جداول مواقيت الصلاة
واتجاه القبلة للملاحين

تأليف
عادل أحمد رضا قوتي

جداول

مواقيت الصلاه وإتجاه القبلة

للملاحين

تأليف

عميد بحرى / عادل أحمد مصطفى

بسم الله الرحمن الرحيم

إن الحمد لله ، نحمده ونستعينه ونستغفره ونتوب إليه ونعوذ بالله من شرور أنفسنا ومن سيئات أعمالنا ، من يهده الله فلا مضل له ، ومن يضلل فلا هادى له ، وأشهد ان لاإله إلا الله وحده لاشريك له وأشهد أن محمدا عبده ورسوله ، صلى الله عليه وعلى آله وأصحابه ومن تبعهم بإحسان ، وسلم تسليما .

أما بعد ،

فإن الله سبحانه وتعالى فرض على عباده خمس صلوات فى اليوم والليلة مؤقتة بأوقات إقتضتها حكمته . فسبحان الحكيم الرحيم ، ونسأله تعالى أن يهب لنا من لدنه رحمة وحكمة إنه هو الوهاب ، والحمد لله رب العالمين الذى بنعمته تتم الصالحات وصلى الله على نبينا محمد خير خلق الله وعلى آله وأصحابه والتابعين له بإحسان مدى الأوقات إلى يوم الدين .

نبذة عن المؤلف

عادل أحمد أحمد مصطفى

أولا : المناصب الرسمية

الأكاديمية العربية للعلوم و التكنولوجيا و النقل البحرى
كلية النقل البحرى والتكنولوجيا

- مساعد العميد للتعليم والبحوث — يوليو2004– يوليو2007
- رئيس قسم الملاحة البحرية — يوليو 1999– يوليو 2003

القوات البحرية
الكلية البحرية

- قائد جناح الملاحة البحرية (رتبة عميد بحرى علوم) — يوليو1988– يوليو 1991

ثانيا : المؤهلات العلمية

- ماجستير العلوم فى الفلك / جامعة القاهرة 1983 .
- بكالوريوس العلوم (رياضة بحتة / فلك) جامعة القاهرة يونية 1966.

ثالثا : المؤلفات العلمية

- كتاب الملاحة العامة.
- كتاب الملاحة الفلكية – تطبيقات عملية.
- مجموعة كراسات التدريب (عدد 3) فى الملاحة الفلكية.

رابعا : النشاط العلمى

- مخترع الطريقة المصرية لتحديد موقع السفينة فى البحر بإستخدام حساب المثلثات الكروية.
- عضو لجنة التحكيم لعدد 2 رسالة ماجستير .

الفهرس

مقدمة

هذه الجداول خاصة بإستخراج مواقيت الصلاة للمسافرين بحرا ؛ حيث لاحظ المؤلف أن حساب مواقيت الصلاة اثناء الإبحار يستغرق وقتا طويلا لحسابها بإستخدام حساب المثلثات الكروية وبعضها (وقت رفع أذان العصر) يخضع لإجتهادات كثيرة تختلف من ملاح لأخر ؛ لذلك روعى أن تكون الحسابات أقل مايمكن .

وهذه الجداول تعطى الوقت المحلى الظاهرى لأقرب دقيقة ؛ لميقات الصلاة المطلوب لكل درجة من درجات العرض وكل درجة من درجات ميل الشمس ؛ حيث يمكن عمل التحشية اللازمة لكل من عرض الراصد و ميل الشمس للحصول على الدقة المطلوبة .

لتحويل الوقت المحلى الظاهرى إلى وقت منطقة يستخدم نموذج الحل التالى :

الوقت المحلى الظاهرى	L.A.T.	
الطول الحسابى	±Long.	
وقت جرينتش الظاهرى	G.A.T.	
معادلة الوقت	Eq.of time	
الوقت جرينتش المتوسط	G.M.T.	
رقم المنطقة	Z.N.	
وقت المنطقة	Z.T.	

تقريبية لإستخراج معادلة ولتسهيل الحسابات تم إضافة جداول تقريبية لإستخراج ميل الشمس وكذلك جداول الوقت طبقا ليوم السؤال .

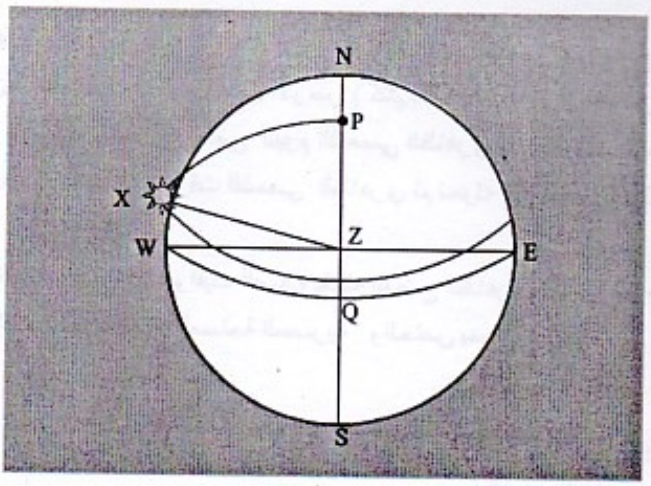
تعريف مواقيت الصلاة شرعيا وفلكيا :

يرتبط التعريف الشرعى لمواقيت الصلاة بالمواقع الظاهرية للشمس على سطح الكرة السماوية. ومن البديهى أن الشمس تدور ظاهريا حول الأرض (كنتيجة عكسية لدوران الأرض حول محورها) دورة كاملة فى فترة زمنية متغيرة تسمى **اليوم الشمسى الظاهرى** . ولذلك فلحساب مواقيت الصلاة فى مكان ما ؛ فاننا نحسب أولا الوقت الشمسى الظاهرى ثم نحوله الى الوقت المحلى المتوسط .

فيما يلى التعريف الشرعى لمواقيت الصلاة يقابله الوضع الظاهرى للشمس فى بداية الوقت طبقا لما جاء في الكتاب السنوى لهيئة المساحة المصرية . والخاص بمواقيت الصلاة فى جمهورية مصر العربية .

اسم الصلاة	التعريف الشرعى	الموقع الظاهرى للشمس عند بداية الوقت
المغرب	**من** : لحظة اختفاء قرص الشمس تماما تحت الأفق الغربى **حتى** : دخول وقت العشاء .	الغروب الظاهرى ؛ أى عندما تمس الحافة العليا للشمس دائرة الأفق المرئى. ويحدث ذلك عندما يكون مركز قرص الشمس تحت الأفق المرئى بمقدار (**00" 52` 38"**) فى المتوسط.
العشاء	**من** : نهاية الشفق الأحمر **حتى** : دخول وقت الفجر.	عندما يبلغ انخفاض مركز قرص الشمس (**17° 30` 00"**) تحت الأفق الغربى .
الفجر	**من** : ظهور الشفق الصباحى بضوئه المستطير على الأفق الشرقى(الفجر الصادق) **حتى** : بداية شروق الشمس .	عندما يبلغ انخفاض مركز قرص الشمس (**19° 30` 00"**) تحت الأفق الشرقى .
الظهر	**من** : عبور الشمس خط وسط النهار (دائرة الزوال) **حتى** : دخول وقت العصر .	عندما يكون اتجاه الشمس هو الجنوب تماما أو الشمال تماما .
العصر	**من** : بلوغ ظل الشاخص مثله مضافا اليه ظله عند الظهر . **حتى** : دخول وقت المغرب . (**لغير الحنفى**) أو **من** : بلوغ ظل الشاخص مثليه مضافا اليه ظله عند الظهر . **حتى** : دخول وقت المغرب . (**للحنفى**)	عندما يحقق ارتفاع الشمس شرط الظل.

الأساس العلمى لحساب وقت المنطقة لرفع آذان المغرب :



فى الشكل عاليه ؛
X تمثل موقع الشمس حيث يكون الضلع **ZX** وهو البعد السمتى يساوى **90° 52` 38"** طبقا للتعريف.

بمعلومية الأضلاع الثلاثة :

PZ = 90° - Lat
PX = 90° - Dec
ZX = 90° 52` 38"

وبتطبيق العلاقة التالية ؛

hav (P) = { hav ZX - hav (PZ ~ PX)} / sin PZ . sin PX

نحصل على الزاوية P .

فى نصف الكرة الغربى ؛ تكون

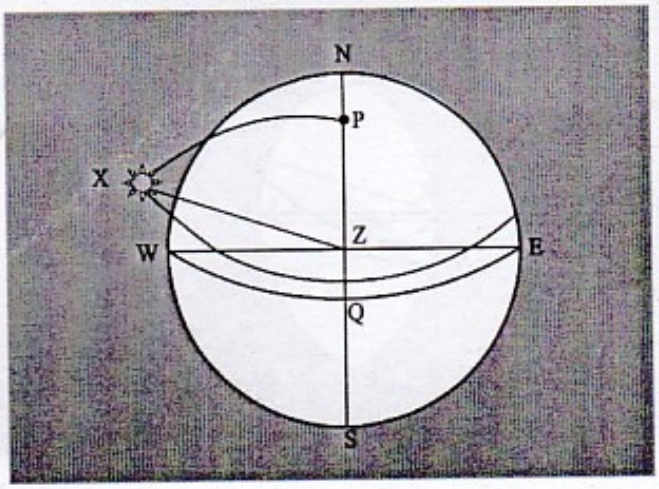
L.H.A. SUN = P

i.e. L.A.T. = L.H.A. SUN +12h

ومن ثم يكون نموذج الحل كما يلى :

L.H.A. SUN +12h	
L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

الأساس العلمى لحساب وقت المنطقة لرفع آذان العشاء :



فى الشكل عاليه ؛
X تمثل موقع الشمس حيث يكون الضلع ZX وهو البعد السمتى يساوى 107° 30` طبقا للتعريف.

بمعلومية الأضلاع الثلاثة :

PZ = 90° - Lat
PX = 90° - Dec
ZX = 107° 30`

وبتطبيق العلاقة التالية ؛

hav (P) = { hav ZX - hav (PZ ~ PX)} / sin PZ . sin PX

نحصل على الزاوية P .

فى نصف الكرة الغربى ؛ تكون

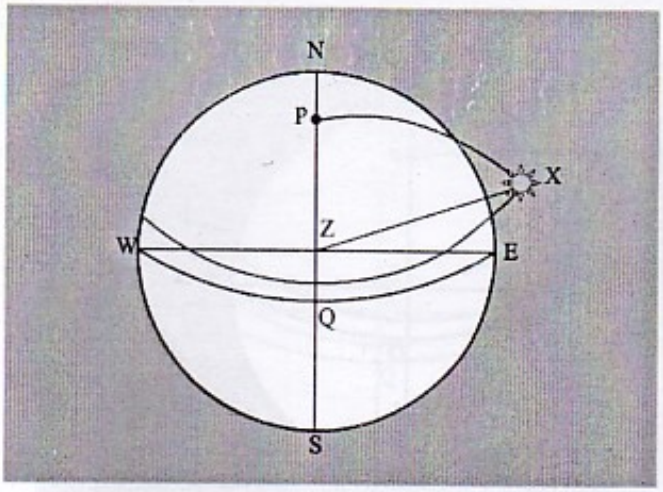
L.H.A. SUN = P

i.e. L.A.T. = L.H.A. SUN +12h

ومن ثم يكون نموذج الحل كما يلى :

L.H.A. SUN +12h	
L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

الأساس العلمى لحساب وقت المنطقة لرفع آذان الفجر :



فى الشكل عاليه ؛

X تمثل موقع الشمس حيث يكون الضلع **ZX** وهو البعد السمتى يساوى **109° 30`** طبقا للتعريف.

بمعلومية الأضلاع الثلاثة :

PZ = 90° - Lat
PX = 90° - Dec
ZX = 109° 30`

وبتطبيق العلاقة التالية ؛

hav (P) = { hav ZX - hav (PZ ~ PX)} / sin PZ . sin PX

نحصل على الزاوية P .

فى نصف الكرة الشرقى ؛ تكون

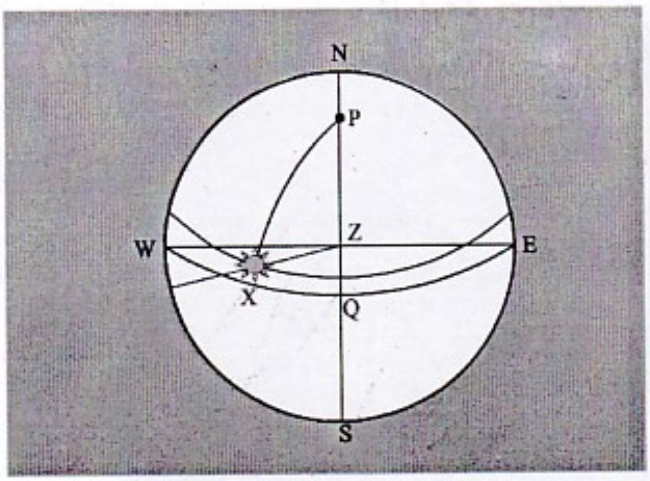
L.H.A. SUN = 360° - P

i.e. L.A.T. = L.H.A. SUN - 12h

ومن ثم يكون نموذج الحل كما يلى :

L.H.A. SUN -12h	
L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

الأساس العلمى لحساب وقت المنطقة لرفع آذان العصر :



فى الشكل عاليه ؛

X تمثل موقع الشمس حيث يكون الضلع **ZX** وهو البعد السمتى يساوى **(90° - h)** طبقا للتعريف. حيث h تعطى بالعلاقة (انظر الملحوظة) :

$$h = \text{Cot}^{-1} (1 + \tan (\text{lat.} \pm \text{Dec.}))$$

بمعلومية الأضلاع الثلاثة :

$$PZ = 90° - \text{Lat}$$
$$PX = 90° - \text{Dec}$$
$$ZX = 90° - h$$

وبتطبيق العلاقة التالية ؛

$$\text{hav (P)} = \{ \text{hav ZX} - \text{hav} (\text{PZ} \sim \text{PX}) \} / \sin \text{PZ} . \sin \text{PX}$$

نحصل على الزاوية P .

فى نصف الكرة الغربى ؛ تكون

$$\text{L.H.A. SUN} = P$$

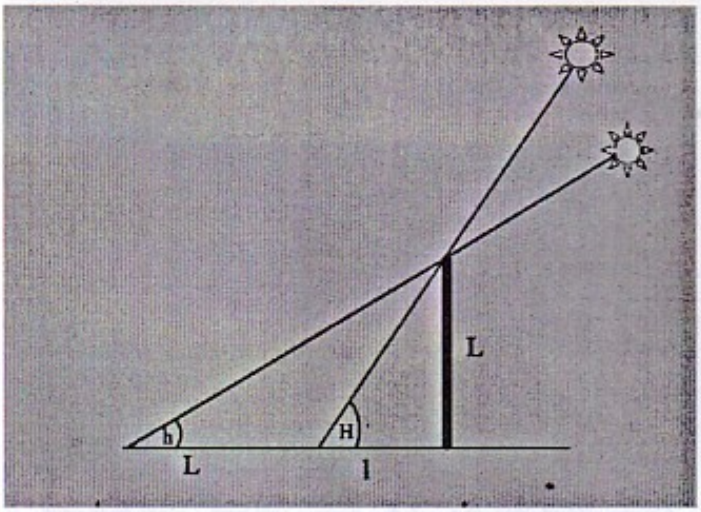
$$\text{i.e.} \quad \text{L.A.T.} = \text{L.H.A. SUN} + 12h$$

ومن ثم يكون نموذج الحل كما يلى :

L.H.A. SUN +12h	
L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

ملحوظة :

كيفية الحصول على ارتفاع الشمس h وقت العصر :



نفترض أن طول شاخص ما هو **L**
وأن طول ظل نفس الشاخص فى وقت الظهر(أقصر ظل) هو **l** .

عند حلول وقت آذان العصر يكون ارتفاع الشمس **h** ؛ وبالتالى :

$$h = \text{Cot}^{-1}(1 + l / L)$$

$$h = \text{Cot}^{-1}(1 + \text{Cot } H) \text{ ---------- (1)}$$

حيث **H** الأرتفاع الزوالى ويعطى من العلاقة :

$$H = 90^\circ - \text{ mer. Z.D.}$$
$$H = 90^\circ - (\text{lat.} \pm \text{Dec.})$$

$$\text{Cot } H = \text{Cot}(90^\circ - (\text{lat.} \pm \text{Dec.}))$$
$$\text{Cot } H = \tan(\text{lat.} \pm \text{Dec.}) \text{ ----------(2)}$$

بالتعويض من (2) فى (1) :

$$h = \text{Cot}^{-1}(1 + \tan(\text{lat.} \pm \text{Dec.}))$$

الأساس العلمي لحساب إتجاه القبلة :

يخضع الأساس الرياضي لتحديد اتجاه القبلة (**الكعبة المشرفة**) من أى موقع على سطح الأرض ؛ لمبادىء حسابات الأبحار على الدائرة العظمى .
فاذا فرضنا أن موقع **مكة المكرمة** هو position M وأن موقع الراصد هو position N ؛ فان اتجاه مكة المكرمة من الموقع N يكون هو خط السير الأبتدائى (فرضا) لمسار الدائرة العظمى من الموقع N الى الموقع M .
الأسلوب المتبع لايجاد خط السير الأبتدائى (اتجاه القبلة) هو اسلوب جداول A/B/C حيث نتبع الخطوات التالية للحصول على المدخلات وهى ؛ : **Lat. / Dec. / L.H.A.**

١) احسب فرق الطول على أن يكون مقاسا فى اتجاه الغرب من موقع الراصد N الى موقع مكة المكرمة M . أى (N → M) d.long .

٢) أعتبر المدخلات الأساسية للأستخدام هى :

Lat. = Lat. $_N$
Dec. = Lat. $_M$
L.H.A. = d.long (N → M)

ملحوظة : موقع مكة المكرمة :
(21° 25`.3 N ; 39° 49`.5 E)

مثال محلول (١) :

سفينتك فى الموقع الحسابى (31° 15`.0 E ; 31° 30`.0 N) N .
احسب اتجاه القبلة .

Long $_N$	31° 15`.0 E
Long $_M$	39° 49`.5 E
d.Long	08° 34`.5 E
	351° 25`.5 W

L.H.A.	351° 25`.5	A	4.064 S
Lat	31° 30`.0 N	B	2.631 N
Dec.	21° 25`.3 N	C	1.433 S
		Az.	S 39.3 E
		T.Bg.	**140°.7**

مثال محلول (٢) :

سفينتك فى الموقع الحسابى (55° 40`.0 S ; 179° 10`.0 E) N .
احسب اتجاه القبلة .

Long $_N$	179° 10`.0 E
Long $_M$	39° 49`.5 E
d.Long	139° 20`.5 W

L.H.A.	139° 20`.5	A	1.705 S
Lat	55° 40`.0 S	B	0.602 N
Dec.	21° 25`.3 N	C	1.103 S
		Az.	S 58°.1 W
		T.Bg.	**238°.1**

مثال محلول (٣) :

سفينتك فى الموقع الحسابى (10° 15`.0 N ; 39° 15`.0 W) N .
احسب اتجاه القبلة .

Long $_N$	39° 15`.0 W
Long $_M$	39° 49`.5 E
d.Long	79° 04`.5 E
	280° 55`.5 W

L.H.A.	**280° 55`.5**	A	0.035 S
Lat	10° 15`.0 N	B	0.400 N
Dec.	21° 25`.3 N	C	0.365 N
		Az.	N 70°.2 E
		T.Bg.	**070°.2**

مثال عام (١) :

بناءا على المعلومات التالية :

Z.T. 1230 June 1st 2008.
D.R. position (40° 05`.0 N ; 48° 38`.0 W).
True Course 205°
Steaming Speed 14.3 knots

احسب :
١) Z.T. لرفع أذان العصر
٢) اتجاه القبلة.

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أولا : حساب وقت المنطقة (ZT) لرفع آذان العصر

From table ( )
Extracted Equation of Time (ET) + 2^m 24^s

From table ( )
Extracted declination of the Sun (δ_s) + 22.031

Applying the Formula (4) of EL-ASR

hav P = { hav (90° - Cot^{-1} (1+ tan (Lat. ~ Dec.)) – hav (Lat. ~ Dec.)} / Cos Lat. Cos Dec.

hav P = 0.24578
P = 59°.440 = 3^h 57^m 46^s = L.H.A

L.H.A. SUN	3^h 57^m 46^s
+12h	12
L.A.T.	15^h 57^m 46^s
±Long.(1)	03 14 32
G.A.T.	19^h 12^m 18^s
Eq.of time	+ 2^m 24^s
G.M.T.	19^h 14^m 42^s
Z.N.	-3
Z.T.$_1$	**16^h 14^m 42^s**
Z.T.	12 30 00
Δ T	03 44 42

1st Approximation)

Distance Run = Δ T x Speed = 53.55 M

Applying : **d.Lat. = Dist. Cos T.Course**
dep = Dist. Sin T.Course
d.Long. = dep. / Cos m.Lat.

d.Lat. dep. == m.Lat. 39°.7 ======== **d.Long.**
48.5 N 22.6 W **29.4 W**

D.R position	lat.	40° 05`.0 N	long	48° 38`.0 W
	d.lat.	48`.5 N	d.long.	29`.4 W
D.R.$_2$ position	lat.	39° 16`.5 N	long	49° 07`.4 W

Applying the Formula (4) of EL-ASR (Using D.R.$_2$ position)

hav P = { hav (90° - Cot^{-1} (1+ tan (Lat. ~ Dec.)) – hav (Lat. ~ Dec.)} / Cos Lat. Cos Dec.

hav P = 0.24275

P = 59° 02`.2 = 3^h 56^m 09^s = L.H.A

L.H.A. SUN	3^h 56^m 09^s
+12h	12
L.A.T.	15^h 56^m 09^s
±Long.(1)	03 16 30
G.A.T.	19^h 12^m 39^s
Eq.of time	⊕ 2^m 24^s
G.M.T.	19^h 15^m 03^s
Z.N.	-3
Z.T.$_1$	**16^h 15^m 03^s**

2nd Approximation

19 12 30
1 18
19 11 12
3
16 11 12

15 30
15 32

ثانيا : حساب إتجاه القبلة :

(39° 16`.5 N ; 49° 07`.4 W) : موقع السفينة

(21° 25`.3 N ; 39° 49`.5 E) : موقع مكة المكرمة

Long $_N$	49° 07`.4 W
Long $_M$	39° 49`.5 E
d.Long	88° 56`.9 E
	271° 03`.6 W

L.H.A.	271° 03`.6	A	0.015 S
Lat	39° 16`.5 N	B	0.392 N
Dec.	21° 25`.3 N	C	0.377 N
		Az.	N 73°.7 E
		T.Bg.	**073°.7**

مثال عام (٢) :

بناءا على المعلومات التالية :

Z.T. 1000 ; January 12th , 2008
Ship departed from Alexandria harbor in
D.R. position (31° 12`.0 N ; 29° 52`.0 E).
True Course 309°
Steaming Speed 18 knots

احسب :
١) Z.T. لرفع آذان العصر
٢) اتجاه القبلة.

أولا : حساب وقت المنطقة (ZT) لرفع آذان العصر

From table ( )
Extracted Equation of Time (ET) + 8^m 03^s

From table ( )
Extracted declination of the Sun (δ_s) - 21.779

Applying the Formula (4) of EL-ASR

hav P = { hav (90° - Cot^{-1} (1+ tan (Lat. ~ Dec.)) – hav (Lat. ~ Dec.)} / Cos Lat. Cos Dec.

hav P = 0.13039
P = 42° 20`.1 = 2^h 49^m 20^s = L.H.A

L.H.A. SUN	2^h 49^m 20^s
+12h	12
L.A.T.	14^h 49^m 20^s
±Long.(1)	01 59 28
G.A.T.	12^h 49^m 52^s
Eq.of time	+ 8^m 03^s
G.M.T.	12^h 57^m 55^s
Z.N.	+2
Z.T.$_1$	**14^h 57^m 55^s**
Z.T.	10 00 00
Δ T	04 57 55

1st Approximation)

Distance Run = Δ T x Speed = 89.4 M

Applying :

d.Lat. = Dist. Cos T.Course
dep = Dist. Sin T.Course
d.Long. = dep. / Cos m.Lat.

d.Lat. dep. == m.Lat. 31°.7 ======== **d.Long.**
56.3 N 69.5 W **81.7 W**

D.R position	lat.	31° 12`.0 N	long	29° 52`.0 E
	d.lat.	56`.3 N	d.long.	1° 21`.7 W
$D.R._2$ position	lat.	32° 08`.3 N	long	28° 30`.3 E

Applying the Formula (4) of EL-ASR (Using $D.R._2$ position)

hav P = { hav (90° - Cot^{-1} (1+ tan (Lat. ~ Dec.)) – hav (Lat. ~ Dec.)} / Cos Lat. Cos Dec.

hav P = 0.12750

P = 41° 50`.4 = 2^h 47^m 22^s = L.H.A

L.H.A. SUN	2^h 47^m 22^s
+12h	12
L.A.T.	14^h 47^m 22^s
±Long.(1)	01 54 01
G.A.T.	12^h 53^m 21^s
Eq.of time	+ 8^m 03^s
G.M.T.	13^h 01^m 24^s
Z.N.	+2
$Z.T._1$	**15^h 01^m 24^s**

2^{nd} Approximation

ثانيا : حساب إتجاه القبلة :

(**32° 08`.3 N ; 28° 30`.3 E**) : موقع السفينة

(**21° 25`.3 N ; 39° 49`.5 E**) : موقع مكة المكرمة

$Long_N$	28° 30`.3 E
$Long_M$	39° 49`.5 E
d.Long	11° 19`.2 E
	348° 40`.8 W

L.H.A.	348° 40`.8	A	3.138 S
Lat	32° 08`.3 N	B	1.999 N
Dec.	21° 25`.3 N	C	1.139 S
		Az.	S 46°.0 E
		T.Bg.	**134°**

الجداول المساعدة

Solar Declination

For Simple Years

للسنين البسيطة

Day	January	February	March	April	May	June	July	August	September	October	November	December
1	-23.058	-17.335	-7.68	4.242	14.829	21.949	23.178	18.224	8.571	-2.866	-14.189	-21.691
2	-22.979	-17.052	-7.499	4.628	15.133	22.088	23.113	17.973	8.209	-3.255	-14.512	-21.847
3	-22.892	-16.764	-7.117	5.012	15.432	22.22	23.041	17.717	7.846	-3.642	-14.83	-21.997
4	-22.797	-16.47	-6.734	5.395	15.728	22.345	22.962	17.457	7.48	-4.03	-15.145	-22.139
5	-22.695	-16.172	-6.349	5.776	16.019	22.464	22.877	17.192	7.112	-4.416	-15.455	-22.274
6	-22.586	-15.87	-5.962	6.155	16.305	22.576	22.785	16.922	6.742	-4.802	-15.761	-22.402
7	-22.469	-15.562	-5.574	6.533	16.588	22.682	22.686	16.648	6.371	-5.186	-16.063	-22.523
8	-22.345	-15.25	-5.185	6.909	16.865	22.781	22.581	16.369	5.997	-5.57	-16.36	-22.636
9	-22.213	-14.934	-4.795	7.283	17.138	22.874	22.469	16.086	5.622	-5.953	-16.652	-22.742
10	-22.074	-14.614	-4.404	7.655	17.406	22.959	22.351	15.799	5.246	-6.334	-16.94	-22.84
11	-21.928	-14.289	-4.012	8.025	17.67	23.038	22.226	15.507	4.868	-6.714	-17.223	-22.931
12	-21.774	-13.961	-3.619	8.392	17.928	23.11	22.095	15.211	4.488	-7.092	-17.501	-23.015
13	-21.614	-13.628	-3.226	8.757	18.182	23.176	21.958	14.912	4.108	-7.469	-17.773	-23.09
14	-21.447	-13.292	-2.832	9.12	18.43	23.235	21.814	14.608	3.726	-7.845	-18.041	-23.159
15	-21.272	-12.952	-2.437	9.48	18.674	23.286	21.664	14.301	3.343	-8.218	-18.303	-23.219
16	-21.091	-12.609	-2.042	9.838	18.912	23.331	21.508	13.989	2.959	-8.59	-18.56	-23.272
17	-20.903	-12.262	-1.647	10.193	19.144	23.369	21.346	13.674	2.574	-8.959	-18.811	-23.317
18	-20.709	-11.912	-1.252	10.545	19.372	23.4	21.178	13.356	2.188	-9.327	-19.057	-23.354
19	-20.507	-11.559	-0.857	10.894	19.594	23.425	21.003	13.034	1.801	-9.692	-19.297	-23.384
20	-20.3	-11.203	-0.461	11.241	19.81	23.442	20.823	12.709	1.414	-10.055	-19.531	-23.406
21	-20.086	-10.844	-0.066	11.584	20.021	23.452	20.637	12.38	1.026	-10.416	-19.759	-23.419
22	-19.865	-10.482	0.329	11.924	20.226	23.456	20.445	12.048	0.637	-10.774	-19.981	-23.426
23	-19.638	-10.117	0.723	12.261	20.425	23.453	20.248	11.713	0.248	-11.13	-20.197	-23.424
24	-19.406	-9.75	1.117	12.595	20.619	23.442	20.044	11.375	-0.141	-11.482	-20.406	-23.414
25	-19.167	-9.38	1.511	12.925	20.806	23.425	19.835	11.034	-0.53	-11.832	-20.61	-23.397
26	-18.922	-9.008	1.903	13.252	20.988	23.401	19.621	10.69	-0.92	-12.179	-20.806	-23.372
27	-18.672	-8.634	2.296	13.575	21.164	23.37	19.401	10.343	-1.309	-12.522	-20.997	-23.339
28	-18.415	-8.258	2.687	13.894	21.333	23.332	19.176	9.994	-1.699	-12.863	-21.18	-23.298
29	-18.153		3.077	14.21	21.497	23.288	18.946	9.642	-2.088	-13.2	-21.357	-23.25
30	-17.886		3.467	14.521	21.654	23.236	18.71	9.287	-2.477	-13.533	-21.528	-23.194
31	-17.613		3.855		21.805		18.469	8.93		-13.863		-23.13

Solar Declination

For Leap Years

للسنين الكبيسة

Day	January	February	March	April	May	June	July	August	September	October	November	December
1	-23.058	-17.359	-7.562	4.532	15.033	22.031	23.146	18.119	8.451	-2.964	-14.243	-21.704
2	-22.979	-17.077	-7.181	4.915	15.333	22.165	23.077	17.867	8.089	-3.351	-14.564	-21.86
3	-22.892	-16.79	-6.799	5.298	15.629	22.293	23.002	17.61	7.726	-3.738	-14.881	-22.008
4	-22.798	-16.498	-6.415	5.678	15.921	22.414	22.921	17.349	7.36	-4.124	-15.194	-22.15
5	-22.697	-16.201	-6.03	6.057	16.208	22.529	22.832	17.082	6.993	-4.509	-15.503	-22.284
6	-22.587	-15.9	-5.643	6.434	16.491	22.637	22.737	16.812	6.624	-4.893	-15.808	-22.411
7	-22.471	-15.593	-5.256	6.81	16.769	22.739	22.636	16.536	6.252	-5.277	-16.108	-22.531
8	-22.347	-15.283	-4.867	7.183	17.043	22.834	22.528	16.257	5.88	-5.659	-16.403	-22.643
9	-22.216	-14.968	-4.477	7.555	17.312	22.923	22.413	15.973	5.505	-6.04	-16.694	-22.748
10	-22.077	-14.649	-4.086	7.924	17.577	23.004	22.292	15.684	5.129	-6.42	-16.98	-22.846
11	-21.932	-14.326	-3.694	8.291	17.836	23.079	22.165	15.392	4.752	-6.799	-17.262	-22.936
12	-21.779	-13.999	-3.302	8.656	18.091	23.148	22.031	15.096	4.373	-7.176	-17.538	-23.019
13	-21.619	-13.668	-2.909	9.018	18.341	23.209	21.891	14.795	3.993	-7.552	-17.81	-23.094
14	-21.453	-13.333	-2.516	9.378	18.585	23.264	21.745	14.491	3.612	-7.925	-18.076	-23.162
15	-21.279	-12.994	-2.122	9.736	18.824	23.312	21.593	14.183	3.229	-8.298	-18.336	-23.222
16	-21.099	-12.652	-1.728	10.09	19.059	23.353	21.434	13.871	2.846	-8.668	-18.592	-23.274
17	-20.912	-12.307	-1.334	10.442	19.287	23.387	21.269	13.556	2.462	-9.036	-18.842	-23.319
18	-20.718	-11.958	-0.94	10.792	19.511	23.414	21.099	13.237	2.077	-9.402	-19.086	-23.355
19	-20.517	-11.607	-0.546	11.138	19.729	23.435	20.922	12.914	1.691	-9.766	-19.325	-23.385
20	-20.311	-11.252	-0.152	11.481	19.941	23.448	20.74	12.589	1.304	-10.128	-19.557	-23.406
21	-20.097	-10.894	0.242	11.821	20.148	23.455	20.552	12.26	0.917	-10.487	-19.784	-23.42
22	-19.878	-10.533	0.636	12.158	20.349	23.455	20.358	11.928	0.53	-10.843	-20.005	-23.426
23	-19.652	-10.17	1.029	12.492	20.544	23.448	20.158	11.592	0.142	-11.197	-20.219	-23.424
24	-19.42	-9.804	1.421	12.822	20.733	23.434	19.953	11.254	-0.246	-11.548	-20.428	-23.414
25	-19.183	-9.436	1.813	13.149	20.917	23.413	19.742	10.913	-0.635	-11.897	-20.63	-23.397
26	-18.939	-9.065	2.205	13.473	21.094	23.386	19.526	10.569	-1.023	-12.242	-20.825	-23.372
27	-18.69	-8.693	2.595	13.792	21.266	23.351	19.305	10.222	-1.412	-12.584	-21.015	-23.339
28	-18.434	-8.318	2.985	14.108	21.431	23.31	19.078	9.873	-1.8	-12.923	-21.197	-23.298
29	-18.174	-7.941	3.373	14.42	21.591	23.262	18.846	9.521	-2.188	-13.258	-21.373	-23.25
30	-17.907		3.761	14.729	21.744	23.207	18.609	9.167	-2.576	-13.59	-21.542	-23.193
31	-17.636		4.147		21.891		18.367	8.81		-13.919		-23.13

Equation of Time At Mean Noon At Greenwich

For reducing Mean Time to Apparent Time

For Simple Years

للسنين البسيطه

Day	Jan.	Feb	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	m s	m s	m s	m s	m s	m s	m s	m s	m s	m s	m s	m s
1	-3 45	-13 22	-12 31	-4 00	02 58	02 22	-3 26	-6 18	00 21	10 17	16 26	11 14
2	-4 11	-13 30	-12 20	-3 42	03 05	02 13	-3 37	-6 15	00 01	10 37	16 27	10 52
3	-4 37	-13 38	-12 08	-3 23	03 12	02 03	-3 49	-6 12	00 17	10 56	16 27	10 30
4	-5 03	-13 44	-11 55	-3 05	03 18	01 54	-4 00	-6 08	00 37	11 15	16 26	10 08
5	-5 28	-13 50	-11 42	-2 47	03 23	01 44	-4 10	-6 03	00 57	11 34	16 25	09 45
6	-5 53	-13 55	-11 29	-2 30	03 28	01 34	-4 21	-5 58	01 18	11 52	16 23	09 21
7	-6 17	-13 59	-11 15	-2 12	03 32	01 23	-4 31	-5 52	01 39	12 10	16 20	08 57
8	-6 41	-14 03	-11 01	-1 55	03 36	01 12	-4 40	-5 45	02 00	12 28	16 16	08 33
9	-7 05	-14 06	-10 46	-1 38	03 39	01 01	-4 50	-5 38	02 21	12 45	16 11	08 08
10	-7 28	-14 07	-10 31	-1 21	03 41	00 50	-4 59	-5 30	02 43	13 01	16 05	07 42
11	-7 50	-14 09	-10 15	-1 05	03 43	00 38	-5 08	-5 22	03 04	13 17	15 59	07 17
12	-8 12	-14 09	-9 59	00 49	03 45	00 27	-5 16	-5 13	03 26	13 33	15 52	06 51
13	-8 34	-14 09	-9 43	00 33	03 45	00 15	-5 24	-5 04	03 48	13 48	15 44	06 24
14	-8 55	-14 08	-9 26	00 17	03 46	00 03	-5 31	-4 53	04 10	14 02	15 35	05 57
15	-9 15	-14 06	-9 10	00 02	03 45	00 09	-5 38	-4 43	04 32	14 16	15 26	05 30
16	-9 35	-14 04	-8 53	00 11	03 44	00 21	-5 45	-4 31	04 54	14 29	15 15	05 03
17	-9 54	-14 01	-8 35	00 26	03 43	00 33	-5 51	-4 20	05 16	14 41	15 04	04 35
18	-10 13	-13 57	-8 18	00 40	03 41	00 46	-5 56	-4 07	05 38	14 53	14 53	04 07
19	-10 31	-13 52	-8 00	00 53	03 39	00 58	-6 01	-3 54	06 01	15 05	14 40	03 39
20	-10 48	-13 47	-7 42	01 06	03 36	-1 11	-6 06	-3 41	06 23	15 15	14 27	03 11
21	-11 05	-13 41	-7 24	01 19	03 32	-1 24	-6 10	-3 27	06 45	15 25	14 12	02 43
22	-11 21	-13 35	-7 05	01 31	03 28	-1 36	-6 14	-3 12	07 07	15 34	13 58	02 14
23	-11 36	-13 27	-6 47	01 43	03 23	-1 49	-6 17	-2 57	07 29	15 43	13 42	01 45
24	-11 51	-13 19	-6 28	01 54	03 18	-2 01	-6 19	-2 41	07 50	15 51	13 26	01 17
25	-12 05	-13 11	-6 10	02 05	03 13	-2 14	-6 21	-2 25	08 12	15 58	13 09	00 48
26	-12 18	-13 02	-5 51	02 15	03 07	-2 26	-6 22	-2 09	08 33	16 04	12 51	00 19
27	-12 31	-12 52	-5 33	02 25	03 00	-2 38	-6 23	-1 52	08 55	16 10	12 33	00 09
28	-12 42	-12 42	-5 14	02 34	02 53	-2 51	-6 23	-1 34	09 16	16 14	12 14	00 38
29	-12 54		-4 55	02 43	02 46	-3 03	-6 23	-1 17	09 36	16 19	11 55	-1 06
30	-13 04		-4 37	02 51	02 38	-3 14	-6 22	00 58	09 57	16 22	11 34	-1 35
31	-13 13		-4 18		02 30		-6 20	00 40		16 24		-2 04

Equation of Time At Mean Noon At Greenwich

For reducing Mean Time to Apparent Time

For Leap Years

للسنين الكبيسة

Day	Jan.	Feb	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	m s	m s	m s	m s	m s	m s	m s	m s	m s	m s	m s	m s
1	-3 45	-13 22	-12 20	-3 42	03 05	02 13	-3 37	-6 15	00 01	10 37	16 27	10 52
2	-4 11	-13 30	-12 08	-3 23	03 12	02 03	-3 49	-6 12	00 17	10 56	16 27	10 30
3	-4 37	-13 38	-11 55	-3 05	03 18	01 54	-4 00	-6 08	00 37	11 15	16 26	10 08
4	-5 03	-13 44	-11 42	-2 47	03 23	01 44	-4 10	-6 03	00 57	11 34	16 25	09 45
5	-5 28	-13 50	-11 29	-2 30	03 28	01 34	-4 21	-5 58	01 18	11 52	16 23	09 21
6	-5 53	-13 55	-11 15	-2 12	03 32	01 23	-4 31	-5 52	01 39	12 10	16 20	08 57
7	-6 17	-13 59	-11 01	-1 55	03 36	01 12	-4 40	-5 45	02 00	12 28	16 16	08 33
8	-6 41	-14 03	-10 46	-1 38	03 39	01 01	-4 50	-5 38	02 21	12 45	16 11	08 08
9	-7 05	-14 06	-10 31	-1 21	03 41	00 50	-4 59	-5 30	02 43	13 01	16 05	07 42
10	-7 28	-14 07	-10 15	-1 05	03 43	00 38	-5 08	-5 22	03 04	13 17	15 59	07 17
11	-7 50	-14 09	-9 59	00 49	03 45	00 27	-5 16	-5 13	03 26	13 33	15 52	06 51
12	-8 12	-14 09	-9 43	00 33	03 45	00 15	-5 24	-5 04	03 48	13 48	15 44	06 24
13	-8 34	-14 09	-9 26	00 17	03 46	00 03	-5 31	-4 53	04 10	14 02	15 35	05 57
14	-8 55	-14 08	-9 10	00 02	03 45	00 09	-5 38	-4 43	04 32	14 16	15 26	05 30
15	-9 15	-14 06	-8 53	00 11	03 44	00 21	-5 45	-4 31	04 54	14 29	15 15	05 03
16	-9 35	-14 04	-8 35	00 26	03 43	00 33	-5 51	-4 20	05 16	14 41	15 04	04 35
17	-9 54	-14 01	-8 18	00 40	03 41	00 46	-5 56	-4 07	05 38	14 53	14 53	04 07
18	-10 13	-13 57	-8 00	00 53	03 39	00 58	-6 01	-3 54	06 01	15 05	14 40	03 39
19	-10 31	-13 52	-7 42	01 06	03 36	-1 11	-6 06	-3 41	06 23	15 15	14 27	03 11
20	-10 48	-13 47	-7 24	01 19	03 32	-1 24	-6 10	-3 27	06 45	15 25	14 12	02 43
21	-11 05	-13 41	-7 05	01 31	03 28	-1 36	-6 14	-3 12	07 07	15 34	13 58	02 14
22	-11 21	-13 35	-6 47	01 43	03 23	-1 49	-6 17	-2 57	07 29	15 43	13 42	01 45
23	-11 36	-13 27	-6 28	01 54	03 18	-2 01	-6 19	-2 41	07 50	15 51	13 26	01 17
24	-11 51	-13 19	-6 10	02 05	03 13	-2 14	-6 21	-2 25	08 12	15 58	13 09	00 48
25	-12 05	-13 11	-5 51	02 15	03 07	-2 26	-6 22	-2 09	08 33	16 04	12 51	00 19
26	-12 18	-13 02	-5 33	02 25	03 00	-2 38	-6 23	-1 52	08 55	16 10	12 33	00 09
27	-12 31	-12 52	-5 14	02 34	02 53	-2 51	-6 23	-1 34	09 16	16 14	12 14	00 38
28	-12 42	-12 42	-4 55	02 43	02 46	-3 03	-6 23	-1 17	09 36	16 19	11 55	-1 06
29	-12 54	-12 31	-4 37	02 51	02 38	-3 14	-6 22	00 58	09 57	16 22	11 34	-1 35
30	-13 04		-4 18	02 58	02 30	-3 26	-6 20	00 40	10 17	16 24	11 14	-2 04
31	-13 13		-4 00		02 22		-6 18	00 21		16 26		-2 32

الجداول الرئيسية

Latitude 0°						
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 42	05 56	12 00	15 00	18 04	19 10
01°	04 42	05 56	12 00	15 02	18 04	19 10
02°	04 42	05 56	12 00	15 04	18 04	19 10
03°	04 42	05 56	12 00	15 06	18 04	19 10
04°	04 42	05 56	12 00	15 07	18 04	19 10
05°	04 42	05 56	12 00	15 09	18 04	19 10
06°	04 42	05 56	12 00	15 10	18 04	19 10
07°	04 41	05 56	12 00	15 12	18 04	19 11
08°	04 41	05 56	12 00	15 13	18 04	19 11
09°	04 41	05 56	12 00	15 14	18 04	19 11
10°	04 41	05 56	12 00	15 16	18 04	19 11
11°	04 40	05 56	12 00	15 17	18 04	19 11
12°	04 40	05 56	12 00	15 18	18 04	19 12
13°	04 40	05 56	12 00	15 19	18 04	19 12
14°	04 40	05 56	12 00	15 20	18 04	19 12
15°	04 39	05 56	12 00	15 21	18 04	19 13
16°	04 39	05 56	12 00	15 21	18 04	19 13
17°	04 38	05 56	12 00	15 22	18 04	19 13
18°	04 38	05 56	12 00	15 23	18 04	19 14
19°	04 37	05 56	12 00	15 23	18 04	19 14
20°	04 37	05 56	12 00	15 24	18 04	19 15
21°	04 36	05 56	12 00	15 25	18 04	19 15
22°	04 36	05 56	12 00	15 25	18 04	19 16
23°	04 35	05 56	12 00	15 26	18 04	19 16
24°	04 34	05 56	12 00	15 26	18 04	19 17

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 1°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 42	05 56	12 00	15 02	18 04	19 10
01°	04 42	05 57	12 00	15 04	18 03	19 10
02°	04 42	05 57	12 00	15 05	18 03	19 10
03°	04 42	05 57	12 00	15 07	18 03	19 10
04°	04 42	05 57	12 00	15 09	18 03	19 10
05°	04 42	05 57	12 00	15 10	18 03	19 10
06°	04 42	05 57	12 00	15 12	18 03	19 10
07°	04 42	05 57	12 00	15 13	18 03	19 10
08°	04 42	05 57	12 00	15 14	18 03	19 10
09°	04 42	05 57	12 00	15 15	18 03	19 10
10°	04 41	05 57	12 00	15 16	18 03	19 10
11°	04 41	05 57	12 00	15 17	18 03	19 11
12°	04 41	05 57	12 00	15 18	18 03	19 11
13°	04 41	05 57	12 00	15 19	18 03	19 11
14°	04 41	05 57	12 00	15 20	18 03	19 11
15°	04 40	05 57	12 00	15 21	18 03	19 11
16°	04 40	05 57	12 00	15 22	18 03	19 12
17°	04 40	05 58	12 00	15 22	18 02	19 12
18°	04 39	05 58	12 00	15 23	18 02	19 12
19°	04 39	05 58	12 00	15 23	18 02	19 13
20°	04 38	05 58	12 00	15 24	18 02	19 13
21°	04 38	05 58	12 00	15 24	18 02	19 14
22°	04 37	05 58	12 00	15 25	18 02	19 14
23°	04 37	05 58	12 00	15 25	18 02	19 14
24°	04 36	05 58	12 00	15 25	18 02	19 15

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude 1°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	El-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 42	05 56	12 00	15 02	18 04	19 10
01°	04 42	05 56	12 00	15 00	18 04	19 10
02°	04 42	05 56	12 00	15 02	18 04	19 10
03°	04 42	05 56	12 00	15 04	18 04	19 10
04°	04 41	05 56	12 00	15 06	18 04	19 10
05°	04 41	05 56	12 00	15 07	18 04	19 11
06°	04 41	05 56	12 00	15 09	18 04	19 11
07°	04 41	05 56	12 00	15 11	18 04	19 11
08°	04 41	05 56	12 00	15 12	18 04	19 11
09°	04 40	05 56	12 00	15 13	18 04	19 12
10°	04 40	05 56	12 00	15 15	18 04	19 12
11°	04 40	05 56	12 00	15 16	18 04	19 12
12°	04 39	05 56	12 00	15 17	18 04	19 13
13°	04 39	05 55	12 00	15 18	18 05	19 13
14°	04 38	05 55	12 00	15 19	18 05	19 13
15°	04 38	05 55	12 00	15 20	18 05	19 14
16°	04 37	05 55	12 00	15 21	18 05	19 14
17°	04 37	05 55	12 00	15 22	18 05	19 15
18°	04 36	05 55	12 00	15 23	18 05	19 15
19°	04 36	05 55	12 00	15 23	18 05	19 16
20°	04 35	05 55	12 00	15 24	18 05	19 16
21°	04 35	05 55	12 00	15 25	18 05	19 17
22°	04 34	05 55	12 00	15 25	18 05	19 17
23°	04 33	05 54	12 00	15 26	18 06	19 18
24°	04 32	05 54	12 00	15 26	18 06	19 19

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 2°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 42	05 56	12 00	15 04	18 04	19 10
01°	04 42	05 57	12 00	15 05	18 03	19 10
02°	04 42	05 57	12 00	15 07	18 03	19 10
03°	04 42	05 57	12 00	15 09	18 03	19 10
04°	04 42	05 57	12 00	15 10	18 03	19 10
05°	04 42	05 57	12 00	15 11	18 03	19 10
06°	04 42	05 57	12 00	15 13	18 03	19 10
07°	04 42	05 57	12 00	15 14	18 03	19 10
08°	04 42	05 58	12 00	15 15	18 02	19 10
09°	04 42	05 58	12 00	15 16	18 02	19 10
10°	04 42	05 58	12 00	15 17	18 02	19 10
11°	04 42	05 58	12 00	15 18	18 02	19 10
12°	04 42	05 58	12 00	15 19	18 02	19 10
13°	04 42	05 58	12 00	15 20	18 02	19 10
14°	04 42	05 58	12 00	15 20	18 02	19 10
15°	04 41	05 59	12 00	15 21	18 01	19 10
16°	04 41	05 59	12 00	15 22	18 01	19 11
17°	04 41	05 59	12 00	15 22	18 01	19 11
18°	04 41	05 59	12 00	15 23	18 01	19 11
19°	04 40	05 59	12 00	15 23	18 01	19 11
20°	04 40	05 59	12 00	15 24	18 01	19 12
21°	04 39	05 59	12 00	15 24	18 01	19 12
22°	04 39	05 59	12 00	15 24	18 01	19 12
23°	04 39	06 00	12 00	15 25	18 00	19 13
24°	04 38	06 00	12 00	15 25	18 00	19 13

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude 2°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 42	05 56	12 00	15 04	18 04	19 10
01°	04 42	05 56	12 00	15 02	18 04	19 10
02°	04 42	05 56	12 00	15 00	18 04	19 10
03°	04 41	05 56	12 00	15 02	18 04	19 11
04°	04 41	05 56	12 00	15 04	18 04	19 11
05°	04 41	05 56	12 00	15 06	18 04	19 11
06°	04 41	05 56	12 00	15 08	18 04	19 11
07°	04 40	05 55	12 00	15 09	18 05	19 12
08°	04 40	05 55	12 00	15 11	18 05	19 12
09°	04 40	05 55	12 00	15 12	18 05	19 12
10°	04 39	05 55	12 00	15 14	18 05	19 13
11°	04 39	05 55	12 00	15 15	18 05	19 13
12°	04 38	05 55	12 00	15 16	18 05	19 13
13°	04 38	05 55	12 00	15 17	18 05	19 14
14°	04 37	05 54	12 00	15 19	18 06	19 14
15°	04 37	05 54	12 00	15 20	18 06	19 15
16°	04 36	05 54	12 00	15 21	18 06	19 15
17°	04 36	05 54	12 00	15 22	18 06	19 16
18°	04 35	05 54	12 00	15 23	18 06	19 17
19°	04 34	05 54	12 00	15 23	18 06	19 17
20°	04 34	05 53	12 00	15 24	18 07	19 18
21°	04 33	05 53	12 00	15 25	18 07	19 18
22°	04 32	05 53	12 00	15 26	18 07	19 19
23°	04 31	05 53	12 00	15 26	18 07	19 20
24°	04 30	05 53	12 00	15 27	18 07	19 21

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 3°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL_ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	El-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 42	05 56	12 00	15 06	18 04	19 10
01°	04 42	05 57	12 00	15 07	18 03	19 10
02°	04 42	05 57	12 00	15 09	18 03	19 10
03°	04 42	05 57	12 00	15 10	18 03	19 10
04°	04 43	05 57	12 00	15 11	18 03	19 09
05°	04 43	05 58	12 00	15 13	18 02	19 09
06°	04 43	05 58	12 00	15 14	18 02	19 09
07°	04 43	05 58	12 00	15 15	18 02	19 09
08°	04 43	05 58	12 00	15 16	18 02	19 09
09°	04 43	05 58	12 00	15 17	18 02	19 09
10°	04 43	05 59	12 00	15 18	18 01	19 09
11°	04 43	05 59	12 00	15 19	18 01	19 09
12°	04 43	05 59	12 00	15 19	18 01	19 09
13°	04 43	05 59	12 00	15 20	18 01	19 09
14°	04 43	05 59	12 00	15 21	18 01	19 09
15°	04 42	06 00	12 00	15 21	18 00	19 09
16°	04 42	06 00	12 00	15 22	18 00	19 09
17°	04 42	06 00	12 00	15 22	18 00	19 10
18°	04 42	06 00	12 00	15 23	18 00	19 10
19°	04 42	06 00	12 00	15 23	18 00	19 10
20°	04 41	06 01	12 00	15 23	17 59	19 10
21°	04 41	06 01	12 00	15 24	17 59	19 10
22°	04 41	06 01	12 00	15 24	17 59	19 11
23°	04 40	06 01	12 00	15 24	17 59	19 11
24°	04 40	06 02	12 00	15 24	17 58	19 11

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 3°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 42	05 56	12 00	15 06	18 04	19 10
01°	04 42	05 56	12 00	15 04	18 04	19 10
02°	04 41	05 56	12 00	15 02	18 04	19 11
03°	04 41	05 56	12 00	15 00	18 04	19 11
04°	04 41	05 56	12 00	15 02	18 04	19 11
05°	04 40	05 55	12 00	15 04	18 05	19 11
06°	04 40	05 55	12 00	15 06	18 05	19 12
07°	04 40	05 55	12 00	15 08	18 05	19 12
08°	04 39	05 55	12 00	15 10	18 05	19 13
09°	04 39	05 55	12 00	15 11	18 05	19 13
10°	04 38	05 54	12 00	15 13	18 06	19 13
11°	04 38	05 54	12 00	15 14	18 06	19 14
12°	04 37	05 54	12 00	15 15	18 06	19 14
13°	04 37	05 54	12 00	15 17	18 06	19 15
14°	04 36	05 53	12 00	15 18	18 07	19 15
15°	04 36	05 53	12 00	15 19	18 07	19 16
16°	04 35	05 53	12 00	15 20	18 07	19 17
17°	04 34	05 53	12 00	15 21	18 07	19 17
18°	04 34	05 52	12 00	15 22	18 08	19 18
19°	04 33	05 52	12 00	15 23	18 08	19 19
20°	04 32	05 52	12 00	15 24	18 08	19 19
21°	04 31	05 52	12 00	15 25	18 08	19 20
22°	04 30	05 51	12 00	15 26	18 09	19 21
23°	04 29	05 51	12 00	15 26	18 09	19 22
24°	04 28	05 51	12 00	15 27	18 09	19 23

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 4°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL_ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 42	05 56	12 00	15 07	18 04	19 10
01°	04 42	05 57	12 00	15 09	18 03	19 10
02°	04 42	05 57	12 00	15 10	18 03	19 10
03°	04 43	05 57	12 00	15 11	18 03	19 09
04°	04 43	05 58	12 00	15 13	18 02	19 09
05°	04 43	05 58	12 00	15 14	18 02	19 09
06°	04 43	05 58	12 00	15 15	18 02	19 09
07°	04 43	05 58	12 00	15 16	18 02	19 09
08°	04 43	05 59	12 00	15 17	18 01	19 09
09°	04 43	05 59	12 00	15 18	18 01	19 08
10°	04 44	05 59	12 00	15 18	18 01	19 08
11°	04 44	06 00	12 00	15 19	18 00	19 08
12°	04 44	06 00	12 00	15 20	18 00	19 08
13°	04 44	06 00	12 00	15 20	18 00	19 08
14°	04 44	06 00	12 00	15 21	18 00	19 08
15°	04 43	06 01	12 00	15 21	17 59	19 08
16°	04 43	06 01	12 00	15 22	17 59	19 08
17°	04 43	06 01	12 00	15 22	17 59	19 08
18°	04 43	06 02	12 00	15 23	17 58	19 08
19°	04 43	06 02	12 00	15 23	17 58	19 09
20°	04 43	06 02	12 00	15 23	17 58	19 09
21°	04 43	06 02	12 00	15 23	17 58	19 09
22°	04 42	06 03	12 00	15 23	17 57	19 09
23°	04 42	06 03	12 00	15 23	17 57	19 09
24°	04 42	06 03	12 00	15 24	17 57	19 10

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 4°	***Latitude & Declination SAME Names***					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	El-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 42	05 56	12 00	15 07	18 04	19 10
01°	04 41	05 56	12 00	15 06	18 04	19 10
02°	04 41	05 56	12 00	15 04	18 04	19 11
03°	04 41	05 56	12 00	15 02	18 04	19 11
04°	04 40	05 55	12 00	15 00	18 05	19 12
05°	04 40	05 55	12 00	15 03	18 05	19 12
06°	04 40	05 55	12 00	15 05	18 05	19 12
07°	04 39	05 54	12 00	15 06	18 06	19 13
08°	04 39	05 54	12 00	15 08	18 06	19 13
09°	04 38	05 54	12 00	15 10	18 06	19 14
10°	04 38	05 54	12 00	15 12	18 06	19 14
11°	04 37	05 53	12 00	15 13	18 07	19 15
12°	04 36	05 53	12 00	15 15	18 07	19 15
13°	04 36	05 53	12 00	15 16	18 07	19 16
14°	04 35	05 52	12 00	15 17	18 08	19 17
15°	04 34	05 52	12 00	15 19	18 08	19 17
16°	04 34	05 52	12 00	15 20	18 08	19 18
17°	04 33	05 51	12 00	15 21	18 09	19 19
18°	04 32	05 51	12 00	15 22	18 09	19 19
19°	04 31	05 51	12 00	15 23	18 09	19 20
20°	04 30	05 50	12 00	15 24	18 10	19 21
21°	04 29	05 50	12 00	15 25	18 10	19 22
22°	04 28	05 50	12 00	15 26	18 10	19 23
23°	04 27	05 49	12 00	15 27	18 11	19 24
24°	04 26	05 49	12 00	15 27	18 11	19 25

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T**. of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 5°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 42	05 56	12 00	15 09	18 04	19 10
01°	04 42	05 57	12 00	15 10	18 03	19 10
02°	04 42	05 57	12 00	15 11	18 03	19 10
03°	04 43	05 58	12 00	15 13	18 02	19 09
04°	04 43	05 58	12 00	15 14	18 02	19 09
05°	04 43	05 58	12 00	15 15	18 02	19 09
06°	04 43	05 59	12 00	15 16	18 01	19 08
07°	04 44	05 59	12 00	15 17	18 01	19 08
08°	04 44	05 59	12 00	15 17	18 01	19 08
09°	04 44	06 00	12 00	15 18	18 00	19 08
10°	04 44	06 00	12 00	15 19	18 00	19 08
11°	04 44	06 00	12 00	15 19	18 00	19 08
12°	04 44	06 01	12 00	15 20	17 59	19 07
13°	04 44	06 01	12 00	15 21	17 59	19 07
14°	04 44	06 01	12 00	15 21	17 59	19 07
15°	04 45	06 02	12 00	15 21	17 58	19 07
16°	04 45	06 02	12 00	15 22	17 58	19 07
17°	04 44	06 02	12 00	15 22	17 58	19 07
18°	04 44	06 03	12 00	15 22	17 57	19 07
19°	04 44	06 03	12 00	15 23	17 57	19 07
20°	04 44	06 04	12 00	15 23	17 56	19 07
21°	04 44	06 04	12 00	15 23	17 56	19 07
22°	04 44	06 04	12 00	15 23	17 56	19 07
23°	04 44	06 05	12 00	15 23	17 55	19 08
24°	04 43	06 05	12 00	15 23	17 55	19 08

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 5°	Latitude & Declination SAME Names					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 42	05 56	12 00	15 09	18 04	19 10
01°	04 41	05 56	12 00	15 07	18 04	19 11
02°	04 41	05 56	12 00	15 06	18 04	19 11
03°	04 40	05 55	12 00	15 04	18 05	19 11
04°	04 40	05 55	12 00	15 03	18 05	19 12
05°	04 40	05 55	12 00	15 01	18 05	19 12
06°	04 39	05 54	12 00	15 03	18 06	19 13
07°	04 38	05 54	12 00	15 05	18 06	19 13
08°	04 38	05 54	12 00	15 07	18 06	19 14
09°	04 37	05 53	12 00	15 09	18 07	19 15
10°	04 37	05 53	12 00	15 10	18 07	19 15
11°	04 36	05 53	12 00	15 12	18 07	19 16
12°	04 35	05 52	12 00	15 14	18 08	19 16
13°	04 35	05 52	12 00	15 15	18 08	19 17
14°	04 34	05 51	12 00	15 17	18 09	19 18
15°	04 33	05 51	12 00	15 18	18 09	19 19
16°	04 32	05 51	12 00	15 19	18 09	19 19
17°	04 31	05 50	12 00	15 21	18 10	19 20
18°	04 30	05 50	12 00	15 22	18 10	19 21
19°	04 30	05 49	12 00	15 23	18 11	19 22
20°	04 29	05 49	12 00	15 24	18 11	19 23
21°	04 28	05 49	12 00	15 25	18 11	19 24
22°	04 27	05 48	12 00	15 26	18 12	19 25
23°	04 25	05 48	12 00	15 27	18 12	19 26
24°	04 24	05 47	12 00	15 28	18 13	19 27

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 6°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 42	05 56	12 00	15 10	18 04	19 10
01°	04 42	05 57	12 00	15 12	18 03	19 10
02°	04 42	05 57	12 00	15 13	18 03	19 10
03°	04 43	05 58	12 00	15 14	18 02	19 09
04°	04 43	05 58	12 00	15 15	18 02	19 09
05°	04 43	05 59	12 00	15 16	18 01	19 08
06°	04 44	05 59	12 00	15 17	18 01	19 08
07°	04 44	05 59	12 00	15 17	18 01	19 08
08°	04 44	06 00	12 00	15 18	18 00	19 08
09°	04 45	06 00	12 00	15 19	18 00	19 07
10°	04 45	06 01	12 00	15 19	17 59	19 07
11°	04 45	06 01	12 00	15 20	17 59	19 07
12°	04 45	06 02	12 00	15 20	17 58	19 07
13°	04 45	06 02	12 00	15 21	17 58	19 06
14°	04 45	06 02	12 00	15 21	17 58	19 06
15°	04 46	06 03	12 00	15 21	17 57	19 06
16°	04 46	06 03	12 00	15 22	17 57	19 06
17°	04 46	06 04	12 00	15 22	17 56	19 06
18°	04 46	06 04	12 00	15 22	17 56	19 06
19°	04 46	06 05	12 00	15 22	17 55	19 06
20°	04 46	06 05	12 00	15 22	17 55	19 06
21°	04 46	06 05	12 00	15 22	17 55	19 06
22°	04 45	06 06	12 00	15 22	17 54	19 06
23°	04 45	06 06	12 00	15 22	17 54	19 06
24°	04 45	06 07	12 00	15 22	17 53	19 06

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 6°	***Latitude & Declination SAME Names***					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	El-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 42	05 56	12 00	15 10	18 04	19 10
01°	04 41	05 56	12 00	15 09	18 04	19 11
02°	04 41	05 56	12 00	15 08	18 04	19 11
03°	04 40	05 55	12 00	15 06	18 05	19 12
04°	04 40	05 55	12 00	15 05	18 05	19 12
05°	04 39	05 54	12 00	15 03	18 06	19 13
06°	04 38	05 54	12 00	15 01	18 06	19 13
07°	04 38	05 53	12 00	15 03	18 07	19 14
08°	04 37	05 53	12 00	15 05	18 07	19 15
09°	04 36	05 53	12 00	15 07	18 07	19 15
10°	04 36	05 52	12 00	15 09	18 08	19 16
11°	04 35	05 52	12 00	15 11	18 08	19 17
12°	04 34	05 51	12 00	15 13	18 09	19 17
13°	04 33	05 51	12 00	15 14	18 09	19 18
14°	04 33	05 50	12 00	15 16	18 10	19 19
15°	04 32	05 50	12 00	15 17	18 10	19 20
16°	04 31	05 49	12 00	15 19	18 11	19 21
17°	04 30	05 49	12 00	15 20	18 11	19 22
18°	04 29	05 48	12 00	15 21	18 12	19 22
19°	04 28	05 48	12 00	15 23	18 12	19 23
20°	04 27	05 47	12 00	15 24	18 13	19 24
21°	04 26	05 47	12 00	15 25	18 13	19 25
22°	04 25	05 46	12 00	15 26	18 14	19 27
23°	04 23	05 46	12 00	15 27	18 14	19 28
24°	04 22	05 45	12 00	15 28	18 15	19 29

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 7°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 41	05 56	12 00	15 12	18 04	19 11
01°	04 42	05 57	12 00	15 13	18 03	19 10
02°	04 42	05 57	12 00	15 14	18 03	19 10
03°	04 43	05 58	12 00	15 15	18 02	19 09
04°	04 43	05 58	12 00	15 16	18 02	19 09
05°	04 44	05 59	12 00	15 17	18 01	19 08
06°	04 44	05 59	12 00	15 17	18 01	19 08
07°	04 44	06 00	12 00	15 18	18 00	19 07
08°	04 45	06 00	12 00	15 19	18 00	19 07
09°	04 45	06 01	12 00	15 19	17 59	19 07
10°	04 45	06 01	12 00	15 20	17 59	19 06
11°	04 46	06 02	12 00	15 20	17 58	19 06
12°	04 46	06 02	12 00	15 21	17 58	19 06
13°	04 46	06 03	12 00	15 21	17 57	19 06
14°	04 46	06 03	12 00	15 21	17 57	19 05
15°	04 46	06 04	12 00	15 21	17 56	19 05
16°	04 47	06 04	12 00	15 22	17 56	19 05
17°	04 47	06 05	12 00	15 22	17 55	19 05
18°	04 47	06 05	12 00	15 22	17 55	19 05
19°	04 47	06 06	12 00	15 22	17 54	19 05
20°	04 47	06 06	12 00	15 22	17 54	19 04
21°	04 47	06 07	12 00	15 22	17 53	19 04
22°	04 47	06 08	12 00	15 22	17 52	19 04
23°	04 47	06 08	12 00	15 21	17 52	19 04
24°	04 47	06 09	12 00	15 21	17 51	19 04

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T**. of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude 7°	***Latitude & Declination SAME Names***					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	El-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 41	05 56	12 00	15 12	18 04	19 11
01°	04 41	05 56	12 00	15 11	18 04	19 11
02°	04 40	05 55	12 00	15 09	18 05	19 12
03°	04 40	05 55	12 00	15 08	18 05	19 12
04°	04 39	05 54	12 00	15 06	18 06	19 13
05°	04 38	05 54	12 00	15 05	18 06	19 13
06°	04 38	05 53	12 00	15 03	18 07	19 14
07°	04 37	05 53	12 00	15 01	18 07	19 15
08°	04 36	05 52	12 00	15 04	18 08	19 15
09°	04 36	05 52	12 00	15 06	18 08	19 16
10°	04 35	05 51	12 00	15 08	18 09	19 17
11°	04 34	05 51	12 00	15 10	18 09	19 18
12°	04 33	05 50	12 00	15 11	18 10	19 18
13°	04 32	05 50	12 00	15 13	18 10	19 19
14°	04 31	05 49	12 00	15 15	18 11	19 20
15°	04 30	05 49	12 00	15 16	18 11	19 21
16°	04 29	05 48	12 00	15 18	18 12	19 22
17°	04 28	05 48	12 00	15 19	18 12	19 23
18°	04 27	05 47	12 00	15 21	18 13	19 24
19°	04 26	05 47	12 00	15 22	18 13	19 25
20°	04 25	05 46	12 00	15 23	18 14	19 26
21°	04 24	05 45	12 00	15 25	18 15	19 27
22°	04 23	05 45	12 00	15 26	18 15	19 28
23°	04 21	05 44	12 00	15 27	18 16	19 30
24°	04 20	05 44	12 00	15 28	18 16	19 31

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 8°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 41	05 56	12 00	15 13	18 04	19 11
01°	04 42	05 57	12 00	15 14	18 03	19 10
02°	04 42	05 58	12 00	15 15	18 02	19 10
03°	04 43	05 58	12 00	15 16	18 02	19 09
04°	04 43	05 59	12 00	15 17	18 01	19 09
05°	04 44	05 59	12 00	15 17	18 01	19 08
06°	04 44	06 00	12 00	15 18	18 00	19 08
07°	04 45	06 00	12 00	15 19	18 00	19 07
08°	04 45	06 01	12 00	15 19	17 59	19 07
09°	04 46	06 02	12 00	15 20	17 58	19 06
10°	04 46	06 02	12 00	15 20	17 58	19 06
11°	04 46	06 03	12 00	15 20	17 57	19 06
12°	04 47	06 03	12 00	15 21	17 57	19 05
13°	04 47	06 04	12 00	15 21	17 56	19 05
14°	04 47	06 04	12 00	15 21	17 56	19 05
15°	04 47	06 05	12 00	15 21	17 55	19 04
16°	04 48	06 06	12 00	15 21	17 54	19 04
17°	04 48	06 06	12 00	15 21	17 54	19 04
18°	04 48	06 07	12 00	15 21	17 53	19 04
19°	04 48	06 07	12 00	15 21	17 53	19 03
20°	04 48	06 08	12 00	15 21	17 52	19 03
21°	04 48	06 09	12 00	15 21	17 51	19 03
22°	04 49	06 09	12 00	15 21	17 51	19 03
23°	04 49	06 10	12 00	15 21	17 50	19 03
24°	04 49	06 10	12 00	15 20	17 50	19 03

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude 8°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 41	05 56	12 00	15 13	18 04	19 11
01°	04 41	05 56	12 00	15 12	18 04	19 11
02°	04 40	05 55	12 00	15 11	18 05	19 12
03°	04 39	05 55	12 00	15 10	18 05	19 13
04°	04 39	05 54	12 00	15 08	18 06	19 13
05°	04 38	05 54	12 00	15 07	18 06	19 14
06°	04 37	05 53	12 00	15 05	18 07	19 15
07°	04 36	05 52	12 00	15 04	18 08	19 15
08°	04 36	05 52	12 00	15 02	18 08	19 16
09°	04 35	05 51	12 00	15 04	18 09	19 17
10°	04 34	05 51	12 00	15 06	18 09	19 18
11°	04 33	05 50	12 00	15 08	18 10	19 19
12°	04 32	05 50	12 00	15 10	18 10	19 20
13°	04 31	05 49	12 00	15 12	18 11	19 21
14°	04 30	05 48	12 00	15 14	18 12	19 21
15°	04 29	05 48	12 00	15 16	18 12	19 22
16°	04 28	05 47	12 00	15 17	18 13	19 23
17°	04 27	05 46	12 00	15 19	18 14	19 25
18°	04 26	05 46	12 00	15 20	18 14	19 26
19°	04 24	05 45	12 00	15 22	18 15	19 27
20°	04 23	05 44	12 00	15 23	18 16	19 28
21°	04 22	05 44	12 00	15 24	18 16	19 29
22°	04 21	05 43	12 00	15 26	18 17	19 30
23°	04 19	05 42	12 00	15 27	18 18	19 32
24°	04 18	05 42	12 00	15 28	18 18	19 33

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 9°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 41	05 56	12 00	15 14	18 04	19 11
01°	04 42	05 57	12 00	15 15	18 03	19 10
02°	04 42	05 58	12 00	15 16	18 02	19 10
03°	04 43	05 58	12 00	15 17	18 02	19 09
04°	04 43	05 59	12 00	15 18	18 01	19 08
05°	04 44	06 00	12 00	15 18	18 00	19 08
06°	04 45	06 00	12 00	15 19	18 00	19 07
07°	04 45	06 01	12 00	15 19	17 59	19 07
08°	04 46	06 02	12 00	15 20	17 58	19 06
09°	04 46	06 02	12 00	15 20	17 58	19 06
10°	04 46	06 03	12 00	15 20	17 57	19 05
11°	04 47	06 03	12 00	15 21	17 57	19 05
12°	04 47	06 04	12 00	15 21	17 56	19 04
13°	04 48	06 05	12 00	15 21	17 55	19 04
14°	04 48	06 05	12 00	15 21	17 55	19 04
15°	04 48	06 06	12 00	15 21	17 54	19 03
16°	04 49	06 07	12 00	15 21	17 53	19 03
17°	04 49	06 07	12 00	15 21	17 53	19 03
18°	04 49	06 08	12 00	15 21	17 52	19 02
19°	04 49	06 09	12 00	15 21	17 51	19 02
20°	04 50	06 09	12 00	15 21	17 51	19 02
21°	04 50	06 10	12 00	15 20	17 50	19 02
22°	04 50	06 11	12 00	15 20	17 49	19 01
23°	04 50	06 12	12 00	15 20	17 48	19 01
24°	04 50	06 12	12 00	15 19	17 48	19 01

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T**. of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 9°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 41	05 56	12 00	15 14	18 04	19 11
01°	04 40	05 56	12 00	15 13	18 04	19 12
02°	04 40	05 55	12 00	15 12	18 05	19 12
03°	04 39	05 55	12 00	15 11	18 05	19 13
04°	04 38	05 54	12 00	15 10	18 06	19 14
05°	04 37	05 53	12 00	15 09	18 07	19 15
06°	04 36	05 53	12 00	15 07	18 07	19 15
07°	04 36	05 52	12 00	15 06	18 08	19 16
08°	04 35	05 51	12 00	15 04	18 09	19 17
09°	04 34	05 51	12 00	15 02	18 09	19 18
10°	04 33	05 50	12 00	15 05	18 10	19 19
11°	04 32	05 49	12 00	15 07	18 11	19 20
12°	04 31	05 49	12 00	15 09	18 11	19 21
13°	04 30	05 48	12 00	15 11	18 12	19 22
14°	04 29	05 47	12 00	15 13	18 13	19 23
15°	04 28	05 47	12 00	15 15	18 13	19 24
16°	04 26	05 46	12 00	15 16	18 14	19 25
17°	04 25	05 45	12 00	15 18	18 15	19 26
18°	04 24	05 44	12 00	15 20	18 16	19 27
19°	04 23	05 44	12 00	15 21	18 16	19 28
20°	04 21	05 43	12 00	15 23	18 17	19 30
21°	04 20	05 42	12 00	15 24	18 18	19 31
22°	04 19	05 41	12 00	15 25	18 19	19 32
23°	04 17	05 41	12 00	15 27	18 19	19 34
24°	04 15	05 40	12 00	15 28	18 20	19 35

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 10°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 41	05 56	12 00	15 16	18 04	19 11
01°	04 41	05 57	12 00	15 16	18 03	19 10
02°	04 42	05 58	12 00	15 17	18 02	19 10
03°	04 43	05 59	12 00	15 18	18 01	19 09
04°	04 44	05 59	12 00	15 18	18 01	19 08
05°	04 44	06 00	12 00	15 19	18 00	19 08
06°	04 45	06 01	12 00	15 19	17 59	19 07
07°	04 45	06 01	12 00	15 20	17 59	19 06
08°	04 46	06 02	12 00	15 20	17 58	19 06
09°	04 46	06 03	12 00	15 20	17 57	19 05
10°	04 47	06 04	12 00	15 21	17 56	19 05
11°	04 48	06 04	12 00	15 21	17 56	19 04
12°	04 48	06 05	12 00	15 21	17 55	19 04
13°	04 48	06 06	12 00	15 21	17 54	19 03
14°	04 49	06 06	12 00	15 21	17 54	19 03
15°	04 49	06 07	12 00	15 21	17 53	19 02
16°	04 50	06 08	12 00	15 21	17 52	19 02
17°	04 50	06 09	12 00	15 21	17 51	19 02
18°	04 50	06 09	12 00	15 21	17 51	19 01
19°	04 51	06 10	12 00	15 20	17 50	19 01
20°	04 51	06 11	12 00	15 20	17 49	19 00
21°	04 51	06 12	12 00	15 20	17 48	19 00
22°	04 52	06 12	12 00	15 19	17 48	19 00
23°	04 52	06 13	12 00	15 19	17 47	19 00
24°	04 52	06 14	12 00	15 18	17 46	18 59

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude 10°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL_ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 41	05 56	12 00	15 16	18 04	19 11
01°	04 40	05 56	12 00	15 15	18 04	19 12
02°	04 39	05 55	12 00	15 14	18 05	19 13
03°	04 38	05 54	12 00	15 13	18 06	19 13
04°	04 38	05 54	12 00	15 12	18 06	19 14
05°	04 37	05 53	12 00	15 10	18 07	19 15
06°	04 36	05 52	12 00	15 09	18 08	19 16
07°	04 35	05 51	12 00	15 08	18 09	19 17
08°	04 34	05 51	12 00	15 06	18 09	19 18
09°	04 33	05 50	12 00	15 05	18 10	19 19
10°	04 32	05 49	12 00	15 03	18 11	19 20
11°	04 31	05 49	12 00	15 05	18 11	19 21
12°	04 30	05 48	12 00	15 07	18 12	19 22
13°	04 29	05 47	12 00	15 10	18 13	19 23
14°	04 27	05 46	12 00	15 12	18 14	19 24
15°	04 26	05 45	12 00	15 13	18 15	19 25
16°	04 25	05 45	12 00	15 15	18 15	19 26
17°	04 24	05 44	12 00	15 17	18 16	19 28
18°	04 22	05 43	12 00	15 19	18 17	19 29
19°	04 21	05 42	12 00	15 21	18 18	19 30
20°	04 19	05 41	12 00	15 22	18 19	19 32
21°	04 18	05 41	12 00	15 24	18 19	19 33
22°	04 16	05 40	12 00	15 25	18 20	19 34
23°	04 15	05 39	12 00	15 27	18 21	19 36
24°	04 13	05 38	12 00	15 28	18 22	19 38

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 11°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 40	05 56	12 00	15 17	18 04	19 11
01°	04 41	05 57	12 00	15 17	18 03	19 11
02°	04 42	05 58	12 00	15 18	18 02	19 10
03°	04 43	05 59	12 00	15 19	18 01	19 09
04°	04 44	06 00	12 00	15 19	18 00	19 08
05°	04 44	06 00	12 00	15 19	18 00	19 08
06°	04 45	06 01	12 00	15 20	17 59	19 07
07°	04 46	06 02	12 00	15 20	17 58	19 06
08°	04 46	06 03	12 00	15 20	17 57	19 06
09°	04 47	06 03	12 00	15 21	17 57	19 05
10°	04 48	06 04	12 00	15 21	17 56	19 04
11°	04 48	06 05	12 00	15 21	17 55	19 04
12°	04 49	06 06	12 00	15 21	17 54	19 03
13°	04 49	06 07	12 00	15 21	17 53	19 03
14°	04 50	06 07	12 00	15 21	17 53	19 02
15°	04 50	06 08	12 00	15 21	17 52	19 01
16°	04 51	06 09	12 00	15 21	17 51	19 01
17°	04 51	06 10	12 00	15 20	17 50	19 00
18°	04 52	06 11	12 00	15 20	17 49	19 00
19°	04 52	06 12	12 00	15 20	17 48	19 00
20°	04 52	06 12	12 00	15 19	17 48	18 59
21°	04 53	06 13	12 00	15 19	17 47	18 59
22°	04 53	06 14	12 00	15 18	17 46	18 58
23°	04 53	06 15	12 00	15 18	17 45	18 58
24°	04 54	06 16	12 00	15 17	17 44	18 58

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude 11°	***Latitude & Declination SAME Names***					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL_ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 40	05 56	12 00	15 17	18 04	19 11
01°	04 40	05 56	12 00	15 16	18 04	19 12
02°	04 39	05 55	12 00	15 15	18 05	19 13
03°	04 38	05 54	12 00	15 14	18 06	19 14
04°	04 37	05 53	12 00	15 13	18 07	19 15
05°	04 36	05 53	12 00	15 12	18 07	19 16
06°	04 35	05 52	12 00	15 11	18 08	19 17
07°	04 34	05 51	12 00	15 10	18 09	19 18
08°	04 33	05 50	12 00	15 08	18 10	19 19
09°	04 32	05 49	12 00	15 07	18 11	19 20
10°	04 31	05 49	12 00	15 05	18 11	19 21
11°	04 30	05 48	12 00	15 04	18 12	19 22
12°	04 28	05 47	12 00	15 06	18 13	19 23
13°	04 27	05 46	12 00	15 08	18 14	19 24
14°	04 26	05 45	12 00	15 10	18 15	19 25
15°	04 25	05 44	12 00	15 12	18 16	19 27
16°	04 23	05 43	12 00	15 14	18 17	19 28
17°	04 22	05 43	12 00	15 16	18 17	19 29
18°	04 20	05 42	12 00	15 18	18 18	19 31
19°	04 19	05 41	12 00	15 20	18 19	19 32
20°	04 17	05 40	12 00	15 22	18 20	19 33
21°	04 16	05 39	12 00	15 23	18 21	19 35
22°	04 14	05 38	12 00	15 25	18 22	19 37
23°	04 13	05 37	12 00	15 26	18 23	19 38
24°	04 11	05 36	12 00	15 28	18 24	19 40

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 12°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL_ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	El-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 40	05 56	12 00	15 18	18 04	19 12
01°	04 41	05 57	12 00	15 18	18 03	19 11
02°	04 42	05 58	12 00	15 19	18 02	19 10
03°	04 43	05 59	12 00	15 19	18 01	19 09
04°	04 44	06 00	12 00	15 20	18 00	19 08
05°	04 44	06 01	12 00	15 20	17 59	19 07
06°	04 45	06 02	12 00	15 20	17 58	19 07
07°	04 46	06 02	12 00	15 21	17 58	19 06
08°	04 47	06 03	12 00	15 21	17 57	19 05
09°	04 47	06 04	12 00	15 21	17 56	19 04
10°	04 48	06 05	12 00	15 21	17 55	19 04
11°	04 49	06 06	12 00	15 21	17 54	19 03
12°	04 49	06 07	12 00	15 21	17 53	19 02
13°	04 50	06 08	12 00	15 21	17 52	19 02
14°	04 50	06 08	12 00	15 21	17 52	19 01
15°	04 51	06 09	12 00	15 20	17 51	19 01
16°	04 52	06 10	12 00	15 20	17 50	19 00
17°	04 52	06 11	12 00	15 20	17 49	18 59
18°	04 53	06 12	12 00	15 19	17 48	18 59
19°	04 53	06 13	12 00	15 19	17 47	18 58
20°	04 54	06 14	12 00	15 19	17 46	18 58
21°	04 54	06 15	12 00	15 18	17 45	18 57
22°	04 54	06 16	12 00	15 17	17 44	18 57
23°	04 55	06 17	12 00	15 17	17 43	18 56
24°	04 55	06 18	12 00	15 16	17 42	18 56

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude 12°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 40	05 56	12 00	15 18	18 04	19 12
01°	04 39	05 56	12 00	15 17	18 04	19 13
02°	04 38	05 55	12 00	15 16	18 05	19 13
03°	04 37	05 54	12 00	15 15	18 06	19 14
04°	04 36	05 53	12 00	15 15	18 07	19 15
05°	04 35	05 52	12 00	15 14	18 08	19 16
06°	04 34	05 51	12 00	15 13	18 09	19 17
07°	04 33	05 50	12 00	15 11	18 10	19 18
08°	04 32	05 50	12 00	15 10	18 10	19 20
09°	04 31	05 49	12 00	15 09	18 11	19 21
10°	04 30	05 48	12 00	15 07	18 12	19 22
11°	04 28	05 47	12 00	15 06	18 13	19 23
12°	04 27	05 46	12 00	15 04	18 14	19 24
13°	04 26	05 45	12 00	15 07	18 15	19 26
14°	04 25	05 44	12 00	15 09	18 16	19 27
15°	04 23	05 43	12 00	15 11	18 17	19 28
16°	04 22	05 42	12 00	15 13	18 18	19 30
17°	04 20	05 41	12 00	15 15	18 19	19 31
18°	04 19	05 40	12 00	15 17	18 20	19 32
19°	04 17	05 39	12 00	15 19	18 21	19 34
20°	04 15	05 38	12 00	15 21	18 22	19 35
21°	04 14	05 37	12 00	15 23	18 23	19 37
22°	04 12	05 36	12 00	15 24	18 24	19 39
23°	04 10	05 35	12 00	15 26	18 25	19 40
24°	04 08	05 34	12 00	15 27	18 26	19 42

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 13°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	El-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 40	05 56	12 00	15 19	18 04	19 12
01°	04 41	05 57	12 00	15 19	18 03	19 11
02°	04 42	05 58	12 00	15 20	18 02	19 10
03°	04 43	05 59	12 00	15 20	18 01	19 09
04°	04 44	06 00	12 00	15 20	18 00	19 08
05°	04 44	06 01	12 00	15 21	17 59	19 07
06°	04 45	06 02	12 00	15 21	17 58	19 06
07°	04 46	06 03	12 00	15 21	17 57	19 06
08°	04 47	06 04	12 00	15 21	17 56	19 05
09°	04 48	06 05	12 00	15 21	17 55	19 04
10°	04 48	06 06	12 00	15 21	17 54	19 03
11°	04 49	06 07	12 00	15 21	17 53	19 03
12°	04 50	06 08	12 00	15 21	17 52	19 02
13°	04 51	06 09	12 00	15 21	17 51	19 01
14°	04 51	06 09	12 00	15 20	17 51	19 00
15°	04 52	06 10	12 00	15 20	17 50	19 00
16°	04 53	06 11	12 00	15 20	17 49	18 59
17°	04 53	06 12	12 00	15 19	17 48	18 58
18°	04 54	06 13	12 00	15 19	17 47	18 58
19°	04 54	06 14	12 00	15 18	17 46	18 57
20°	04 55	06 15	12 00	15 18	17 45	18 57
21°	04 55	06 16	12 00	15 17	17 44	18 56
22°	04 56	06 18	12 00	15 16	17 42	18 55
23°	04 56	06 19	12 00	15 16	17 41	18 55
24°	04 57	06 20	12 00	15 15	17 40	18 54

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T**. of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude 13°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 40	05 56	12 00	15 19	18 04	19 12
01°	04 39	05 55	12 00	15 18	18 05	19 13
02°	04 38	05 55	12 00	15 17	18 05	19 14
03°	04 37	05 54	12 00	15 17	18 06	19 15
04°	04 36	05 53	12 00	15 16	18 07	19 16
05°	04 35	05 52	12 00	15 15	18 08	19 17
06°	04 33	05 51	12 00	15 14	18 09	19 18
07°	04 32	05 50	12 00	15 13	18 10	19 19
08°	04 31	05 49	12 00	15 12	18 11	19 21
09°	04 30	05 48	12 00	15 11	18 12	19 22
10°	04 29	05 47	12 00	15 10	18 13	19 23
11°	04 27	05 46	12 00	15 08	18 14	19 24
12°	04 26	05 45	12 00	15 07	18 15	19 26
13°	04 24	05 44	12 00	15 05	18 16	19 27
14°	04 23	05 43	12 00	15 07	18 17	19 28
15°	04 22	05 42	12 00	15 10	18 18	19 30
16°	04 20	05 41	12 00	15 12	18 19	19 31
17°	04 18	05 40	12 00	15 14	18 20	19 33
18°	04 17	05 39	12 00	15 16	18 21	19 34
19°	04 15	05 38	12 00	15 18	18 22	19 36
20°	04 13	05 37	12 00	15 20	18 23	19 37
21°	04 12	05 36	12 00	15 22	18 24	19 39
22°	04 10	05 35	12 00	15 24	18 25	19 41
23°	04 08	05 34	12 00	15 26	18 26	19 43
24°	04 06	05 32	12 00	15 27	18 28	19 45

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 14°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL_ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 40	05 56	12 00	15 20	18 04	19 12
01°	04 41	05 57	12 00	15 20	18 03	19 11
02°	04 42	05 58	12 00	15 20	18 02	19 10
03°	04 43	05 59	12 00	15 21	18 01	19 09
04°	04 44	06 00	12 00	15 21	18 00	19 08
05°	04 44	06 01	12 00	15 21	17 59	19 07
06°	04 45	06 02	12 00	15 21	17 58	19 06
07°	04 46	06 03	12 00	15 21	17 57	19 05
08°	04 47	06 04	12 00	15 21	17 56	19 05
09°	04 48	06 05	12 00	15 21	17 55	19 04
10°	04 49	06 06	12 00	15 21	17 54	19 03
11°	04 50	06 07	12 00	15 21	17 53	19 02
12°	04 50	06 08	12 00	15 21	17 52	19 01
13°	04 51	06 09	12 00	15 20	17 51	19 00
14°	04 52	06 11	12 00	15 20	17 49	19 00
15°	04 53	06 12	12 00	15 20	17 48	18 59
16°	04 53	06 13	12 00	15 19	17 47	18 58
17°	04 54	06 14	12 00	15 19	17 46	18 57
18°	04 55	06 15	12 00	15 18	17 45	18 57
19°	04 55	06 16	12 00	15 18	17 44	18 56
20°	04 56	06 17	12 00	15 17	17 43	18 55
21°	04 57	06 18	12 00	15 16	17 42	18 55
22°	04 57	06 19	12 00	15 15	17 41	18 54
23°	04 58	06 20	12 00	15 15	17 40	18 53
24°	04 58	06 22	12 00	15 14	17 38	18 53

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude 14°	***Latitude & Declination SAME Names***					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	El-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 40	05 56	12 00	15 20	18 04	19 12
01°	04 38	05 55	12 00	15 19	18 05	19 13
02°	04 37	05 54	12 00	15 19	18 06	19 14
03°	04 36	05 53	12 00	15 18	18 07	19 15
04°	04 35	05 52	12 00	15 17	18 08	19 17
05°	04 34	05 51	12 00	15 17	18 09	19 18
06°	04 33	05 50	12 00	15 16	18 10	19 19
07°	04 31	05 49	12 00	15 15	18 11	19 20
08°	04 30	05 48	12 00	15 14	18 12	19 21
09°	04 29	05 47	12 00	15 13	18 13	19 23
10°	04 27	05 46	12 00	15 12	18 14	19 24
11°	04 26	05 45	12 00	15 10	18 15	19 25
12°	04 25	05 44	12 00	15 09	18 16	19 27
13°	04 23	05 43	12 00	15 07	18 17	19 28
14°	04 21	05 42	12 00	15 06	18 18	19 30
15°	04 20	05 41	12 00	15 08	18 19	19 31
16°	04 18	05 40	12 00	15 11	18 20	19 33
17°	04 17	05 39	12 00	15 13	18 21	19 34
18°	04 15	05 38	12 00	15 15	18 22	19 36
19°	04 13	05 36	12 00	15 17	18 24	19 38
20°	04 11	05 35	12 00	15 19	18 25	19 39
21°	04 09	05 34	12 00	15 21	18 26	19 41
22°	04 07	05 33	12 00	15 23	18 27	19 43
23°	04 05	05 32	12 00	15 25	18 28	19 45
24°	04 03	05 31	12 00	15 27	18 29	19 47

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 15°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL_ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 39	05 56	12 00	15 21	18 04	19 13
01°	04 40	05 57	12 00	15 21	18 03	19 11
02°	04 41	05 59	12 00	15 21	18 01	19 10
03°	04 42	06 00	12 00	15 21	18 00	19 09
04°	04 43	06 01	12 00	15 21	17 59	19 08
05°	04 45	06 02	12 00	15 21	17 58	19 07
06°	04 46	06 03	12 00	15 21	17 57	19 06
07°	04 46	06 04	12 00	15 21	17 56	19 05
08°	04 47	06 05	12 00	15 21	17 55	19 04
09°	04 48	06 06	12 00	15 21	17 54	19 03
10°	04 49	06 07	12 00	15 21	17 53	19 02
11°	04 50	06 08	12 00	15 21	17 52	19 01
12°	04 51	06 09	12 00	15 20	17 51	19 01
13°	04 52	06 10	12 00	15 20	17 50	19 00
14°	04 53	06 12	12 00	15 20	17 48	18 59
15°	04 54	06 13	12 00	15 19	17 47	18 58
16°	04 54	06 14	12 00	15 19	17 46	18 57
17°	04 55	06 15	12 00	15 18	17 45	18 56
18°	04 56	06 16	12 00	15 17	17 44	18 56
19°	04 57	06 17	12 00	15 17	17 43	18 55
20°	04 57	06 19	12 00	15 16	17 41	18 54
21°	04 58	06 20	12 00	15 15	17 40	18 53
22°	04 59	06 21	12 00	15 14	17 39	18 53
23°	04 59	06 22	12 00	15 13	17 38	18 52
24°	05 00	06 23	12 00	15 13	17 37	18 51

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude 15°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	El-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 39	05 56	12 00	15 21	18 04	19 13
01°	04 38	05 55	12 00	15 20	18 05	19 14
02°	04 37	05 54	12 00	15 20	18 06	19 15
03°	04 36	05 53	12 00	15 19	18 07	19 16
04°	04 34	05 52	12 00	15 19	18 08	19 17
05°	04 33	05 51	12 00	15 18	18 09	19 19
06°	04 32	05 50	12 00	15 17	18 10	19 20
07°	04 30	05 49	12 00	15 16	18 11	19 21
08°	04 29	05 48	12 00	15 16	18 12	19 22
09°	04 28	05 47	12 00	15 15	18 13	19 24
10°	04 26	05 45	12 00	15 13	18 15	19 25
11°	04 25	05 44	12 00	15 12	18 16	19 27
12°	04 23	05 43	12 00	15 11	18 17	19 28
13°	04 22	05 42	12 00	15 10	18 18	19 30
14°	04 20	05 41	12 00	15 08	18 19	19 31
15°	04 18	05 40	12 00	15 07	18 20	19 33
16°	04 17	05 39	12 00	15 09	18 21	19 34
17°	04 15	05 37	12 00	15 12	18 23	19 36
18°	04 13	05 36	12 00	15 14	18 24	19 38
19°	04 11	05 35	12 00	15 16	18 25	19 40
20°	04 09	05 34	12 00	15 18	18 26	19 42
21°	04 07	05 32	12 00	15 20	18 28	19 43
22°	04 05	05 31	12 00	15 23	18 29	19 45
23°	04 03	05 30	12 00	15 24	18 30	19 47
24°	04 01	05 29	12 00	15 26	18 31	19 50

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 16°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 39	05 56	12 00	15 21	18 04	19 13
01°	04 40	05 57	12 00	15 22	18 03	19 12
02°	04 41	05 59	12 00	15 22	18 01	19 11
03°	04 42	06 00	12 00	15 22	18 00	19 09
04°	04 43	06 01	12 00	15 22	17 59	19 08
05°	04 45	06 02	12 00	15 22	17 58	19 07
06°	04 46	06 03	12 00	15 22	17 57	19 06
07°	04 47	06 04	12 00	15 22	17 56	19 05
08°	04 48	06 06	12 00	15 21	17 54	19 04
09°	04 49	06 07	12 00	15 21	17 53	19 03
10°	04 50	06 08	12 00	15 21	17 52	19 02
11°	04 51	06 09	12 00	15 21	17 51	19 01
12°	04 52	06 10	12 00	15 20	17 50	19 00
13°	04 53	06 11	12 00	15 20	17 49	18 59
14°	04 53	06 13	12 00	15 19	17 47	18 58
15°	04 54	06 14	12 00	15 19	17 46	18 57
16°	04 55	06 15	12 00	15 18	17 45	18 56
17°	04 56	06 16	12 00	15 17	17 44	18 55
18°	04 57	06 18	12 00	15 17	17 42	18 55
19°	04 58	06 19	12 00	15 16	17 41	18 54
20°	04 58	06 20	12 00	15 15	17 40	18 53
21°	04 59	06 21	12 00	15 14	17 39	18 52
22°	05 00	06 23	12 00	15 13	17 37	18 51
23°	05 01	06 24	12 00	15 12	17 36	18 50
24°	05 02	06 25	12 00	15 11	17 35	18 50

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T**. of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 16°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 39	05 56	12 00	15 21	18 04	19 13
01°	04 37	05 55	12 00	15 21	18 05	19 14
02°	04 36	05 54	12 00	15 21	18 06	19 15
03°	04 35	05 53	12 00	15 20	18 07	19 17
04°	04 34	05 52	12 00	15 20	18 08	19 18
05°	04 32	05 51	12 00	15 19	18 09	19 19
06°	04 31	05 49	12 00	15 19	18 11	19 21
07°	04 29	05 48	12 00	15 18	18 12	19 22
08°	04 28	05 47	12 00	15 17	18 13	19 23
09°	04 26	05 46	12 00	15 16	18 14	19 25
10°	04 25	05 45	12 00	15 15	18 15	19 26
11°	04 23	05 43	12 00	15 14	18 17	19 28
12°	04 22	05 42	12 00	15 13	18 18	19 30
13°	04 20	05 41	12 00	15 12	18 19	19 31
14°	04 18	05 40	12 00	15 11	18 20	19 33
15°	04 17	05 39	12 00	15 09	18 21	19 34
16°	04 15	05 37	12 00	15 08	18 23	19 36
17°	04 13	05 36	12 00	15 10	18 24	19 38
18°	04 11	05 35	12 00	15 13	18 25	19 40
19°	04 09	05 33	12 00	15 15	18 27	19 42
20°	04 07	05 32	12 00	15 17	18 28	19 44
21°	04 05	05 31	12 00	15 20	18 29	19 46
22°	04 03	05 29	12 00	15 22	18 31	19 48
23°	04 00	05 28	12 00	15 24	18 32	19 50
24°	03 58	05 27	12 00	15 26	18 33	19 52

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 17°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 38	05 56	12 00	15 22	18 04	19 13
01°	04 40	05 58	12 00	15 22	18 02	19 12
02°	04 41	05 59	12 00	15 22	18 01	19 11
03°	04 42	06 00	12 00	15 22	18 00	19 10
04°	04 43	06 01	12 00	15 22	17 59	19 08
05°	04 44	06 02	12 00	15 22	17 58	19 07
06°	04 46	06 04	12 00	15 22	17 56	19 06
07°	04 47	06 05	12 00	15 22	17 55	19 05
08°	04 48	06 06	12 00	15 21	17 54	19 04
09°	04 49	06 07	12 00	15 21	17 53	19 03
10°	04 50	06 09	12 00	15 21	17 51	19 02
11°	04 51	06 10	12 00	15 20	17 50	19 00
12°	04 52	06 11	12 00	15 20	17 49	18 59
13°	04 53	06 12	12 00	15 19	17 48	18 58
14°	04 54	06 14	12 00	15 19	17 46	18 57
15°	04 55	06 15	12 00	15 18	17 45	18 56
16°	04 56	06 16	12 00	15 17	17 44	18 55
17°	04 57	06 18	12 00	15 17	17 42	18 54
18°	04 58	06 19	12 00	15 16	17 41	18 53
19°	04 59	06 20	12 00	15 15	17 40	18 53
20°	05 00	06 22	12 00	15 14	17 38	18 52
21°	05 01	06 23	12 00	15 13	17 37	18 51
22°	05 01	06 24	12 00	15 12	17 36	18 50
23°	05 02	06 26	12 00	15 11	17 34	18 49
24°	05 03	06 27	12 00	15 10	17 33	18 48

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude 17°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 38	05 56	12 00	15 22	18 04	19 13
01°	04 37	05 55	12 00	15 22	18 05	19 15
02°	04 36	05 54	12 00	15 22	18 06	19 16
03°	04 34	05 53	12 00	15 21	18 07	19 17
04°	04 33	05 51	12 00	15 21	18 09	19 19
05°	04 31	05 50	12 00	15 21	18 10	19 20
06°	04 30	05 49	12 00	15 20	18 11	19 22
07°	04 28	05 48	12 00	15 19	18 12	19 23
08°	04 27	05 46	12 00	15 19	18 14	19 25
09°	04 25	05 45	12 00	15 18	18 15	19 26
10°	04 24	05 44	12 00	15 17	18 16	19 28
11°	04 22	05 43	12 00	15 16	18 17	19 29
12°	04 20	05 41	12 00	15 15	18 19	19 31
13°	04 18	05 40	12 00	15 14	18 20	19 33
14°	04 17	05 39	12 00	15 13	18 21	19 34
15°	04 15	05 37	12 00	15 12	18 23	19 36
16°	04 13	05 36	12 00	15 10	18 24	19 38
17°	04 11	05 35	12 00	15 09	18 25	19 40
18°	04 09	05 33	12 00	15 11	18 27	19 42
19°	04 07	05 32	12 00	15 14	18 28	19 44
20°	04 05	05 31	12 00	15 16	18 29	19 46
21°	04 02	05 29	12 00	15 19	18 31	19 48
22°	04 00	05 28	12 00	15 21	18 32	19 50
23°	03 58	05 26	12 00	15 23	18 34	19 52
24°	03 55	05 25	12 00	15 25	18 35	19 55

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 18°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL_ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 38	05 56	12 00	15 23	18 04	19 14
01°	04 39	05 58	12 00	15 23	18 02	19 12
02°	04 41	05 59	12 00	15 23	18 01	19 11
03°	04 42	06 00	12 00	15 23	18 00	19 10
04°	04 43	06 02	12 00	15 23	17 58	19 08
05°	04 44	06 03	12 00	15 22	17 57	19 07
06°	04 46	06 04	12 00	15 22	17 56	19 06
07°	04 47	06 05	12 00	15 22	17 55	19 05
08°	04 48	06 07	12 00	15 21	17 53	19 04
09°	04 49	06 08	12 00	15 21	17 52	19 02
10°	04 50	06 09	12 00	15 21	17 51	19 01
11°	04 52	06 11	12 00	15 20	17 49	19 00
12°	04 53	06 12	12 00	15 19	17 48	18 59
13°	04 54	06 13	12 00	15 19	17 47	18 58
14°	04 55	06 15	12 00	15 18	17 45	18 57
15°	04 56	06 16	12 00	15 17	17 44	18 56
16°	04 57	06 18	12 00	15 17	17 42	18 55
17°	04 58	06 19	12 00	15 16	17 41	18 53
18°	04 59	06 20	12 00	15 15	17 40	18 52
19°	05 00	06 22	12 00	15 14	17 38	18 51
20°	05 01	06 23	12 00	15 13	17 37	18 50
21°	05 02	06 25	12 00	15 12	17 35	18 49
22°	05 03	06 26	12 00	15 11	17 34	18 48
23°	05 04	06 28	12 00	15 10	17 32	18 47
24°	05 05	06 29	12 00	15 08	17 31	18 46

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude 18°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	El-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 38	05 56	12 00	15 23	18 04	19 14
01°	04 36	05 55	12 00	15 23	18 05	19 15
02°	04 35	05 54	12 00	15 23	18 06	19 17
03°	04 34	05 52	12 00	15 22	18 08	19 18
04°	04 32	05 51	12 00	15 22	18 09	19 19
05°	04 30	05 50	12 00	15 22	18 10	19 21
06°	04 29	05 48	12 00	15 21	18 12	19 22
07°	04 27	05 47	12 00	15 21	18 13	19 24
08°	04 26	05 46	12 00	15 20	18 14	19 26
09°	04 24	05 44	12 00	15 20	18 16	19 27
10°	04 22	05 43	12 00	15 19	18 17	19 29
11°	04 20	05 42	12 00	15 18	18 18	19 31
12°	04 19	05 40	12 00	15 17	18 20	19 32
13°	04 17	05 39	12 00	15 16	18 21	19 34
14°	04 15	05 38	12 00	15 15	18 22	19 36
15°	04 13	05 36	12 00	15 14	18 24	19 38
16°	04 11	05 35	12 00	15 13	18 25	19 40
17°	04 09	05 33	12 00	15 11	18 27	19 42
18°	04 07	05 32	12 00	15 10	18 28	19 44
19°	04 04	05 30	12 00	15 12	18 30	19 46
20°	04 02	05 29	12 00	15 15	18 31	19 48
21°	04 00	05 27	12 00	15 18	18 33	19 50
22°	03 57	05 26	12 00	15 20	18 34	19 53
23°	03 55	05 24	12 00	15 22	18 36	19 55
24°	03 52	05 23	12 00	15 25	18 37	19 58

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 19°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 37	05 56	12 00	15 23	18 04	19 14
01°	04 39	05 58	12 00	15 23	18 02	19 13
02°	04 40	05 59	12 00	15 23	18 01	19 11
03°	04 42	06 00	12 00	15 23	18 00	19 10
04°	04 43	06 02	12 00	15 23	17 58	19 09
05°	04 44	06 03	12 00	15 23	17 57	19 07
06°	04 46	06 05	12 00	15 22	17 55	19 06
07°	04 47	06 06	12 00	15 22	17 54	19 05
08°	04 48	06 07	12 00	15 21	17 53	19 03
09°	04 49	06 09	12 00	15 21	17 51	19 02
10°	04 51	06 10	12 00	15 20	17 50	19 01
11°	04 52	06 12	12 00	15 20	17 48	19 00
12°	04 53	06 13	12 00	15 19	17 47	18 58
13°	04 54	06 14	12 00	15 18	17 46	18 57
14°	04 55	06 16	12 00	15 18	17 44	18 56
15°	04 57	06 17	12 00	15 17	17 43	18 55
16°	04 58	06 19	12 00	15 16	17 41	18 54
17°	04 59	06 20	12 00	15 15	17 40	18 53
18°	05 00	06 22	12 00	15 14	17 38	18 51
19°	05 01	06 23	12 00	15 13	17 37	18 50
20°	05 02	06 25	12 00	15 12	17 35	18 49
21°	05 03	06 26	12 00	15 11	17 34	18 48
22°	05 04	06 28	12 00	15 10	17 32	18 47
23°	05 05	06 30	12 00	15 08	17 30	18 46
24°	05 06	06 31	12 00	15 07	17 29	18 45

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 19°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	El-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 37	05 56	12 00	15 23	18 04	19 14
01°	04 36	05 55	12 00	15 23	18 05	19 16
02°	04 34	05 54	12 00	15 23	18 06	19 17
03°	04 33	05 52	12 00	15 23	18 08	19 19
04°	04 31	05 51	12 00	15 23	18 09	19 20
05°	04 30	05 49	12 00	15 23	18 11	19 22
06°	04 28	05 48	12 00	15 23	18 12	19 23
07°	04 26	05 47	12 00	15 22	18 13	19 25
08°	04 24	05 45	12 00	15 22	18 15	19 27
09°	04 23	05 44	12 00	15 21	18 16	19 28
10°	04 21	05 42	12 00	15 21	18 18	19 30
11°	04 19	05 41	12 00	15 20	18 19	19 32
12°	04 17	05 39	12 00	15 19	18 21	19 34
13°	04 15	05 38	12 00	15 18	18 22	19 36
14°	04 13	05 36	12 00	15 17	18 24	19 38
15°	04 11	05 35	12 00	15 16	18 25	19 40
16°	04 09	05 33	12 00	15 15	18 27	19 42
17°	04 07	05 32	12 00	15 14	18 28	19 44
18°	04 04	05 30	12 00	15 12	18 30	19 46
19°	04 02	05 29	12 00	15 11	18 31	19 48
20°	04 00	05 27	12 00	15 14	18 33	19 51
21°	03 57	05 26	12 00	15 16	18 34	19 53
22°	03 55	05 24	12 00	15 19	18 36	19 55
23°	03 52	05 22	12 00	15 21	18 38	19 58
24°	03 49	05 21	12 00	15 24	18 39	20 00

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 20°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL_ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 37	05 56	12 00	15 24	18 04	19 15
01°	04 38	05 58	12 00	15 24	18 02	19 13
02°	04 40	05 59	12 00	15 24	18 01	19 12
03°	04 41	06 01	12 00	15 23	17 59	19 10
04°	04 43	06 02	12 00	15 23	17 58	19 09
05°	04 44	06 04	12 00	15 23	17 56	19 07
06°	04 46	06 05	12 00	15 22	17 55	19 06
07°	04 47	06 06	12 00	15 22	17 54	19 04
08°	04 48	06 08	12 00	15 21	17 52	19 03
09°	04 50	06 09	12 00	15 21	17 51	19 02
10°	04 51	06 11	12 00	15 20	17 49	19 00
11°	04 52	06 12	12 00	15 19	17 48	18 59
12°	04 54	06 14	12 00	15 19	17 46	18 58
13°	04 55	06 15	12 00	15 18	17 45	18 57
14°	04 56	06 17	12 00	15 17	17 43	18 55
15°	04 57	06 19	12 00	15 16	17 41	18 54
16°	04 58	06 20	12 00	15 15	17 40	18 53
17°	05 00	06 22	12 00	15 14	17 38	18 52
18°	05 01	06 23	12 00	15 13	17 37	18 50
19°	05 02	06 25	12 00	15 12	17 35	18 49
20°	05 03	06 26	12 00	15 11	17 34	18 48
21°	05 04	06 28	12 00	15 09	17 32	18 47
22°	05 05	06 30	12 00	15 08	17 30	18 46
23°	05 06	06 31	12 00	15 07	17 29	18 45
24°	05 08	06 33	12 00	15 05	17 27	18 43

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude 20°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 37	05 56	12 00	15 24	18 04	19 15
01°	04 35	05 55	12 00	15 24	18 05	19 16
02°	04 34	05 53	12 00	15 24	18 07	19 18
03°	04 32	05 52	12 00	15 24	18 08	19 19
04°	04 30	05 50	12 00	15 24	18 10	19 21
05°	04 29	05 49	12 00	15 24	18 11	19 23
06°	04 27	05 47	12 00	15 24	18 13	19 24
07°	04 25	05 46	12 00	15 23	18 14	19 26
08°	04 23	05 44	12 00	15 23	18 16	19 28
09°	04 21	05 43	12 00	15 23	18 17	19 30
10°	04 19	05 41	12 00	15 22	18 19	19 32
11°	04 17	05 40	12 00	15 22	18 20	19 33
12°	04 15	05 38	12 00	15 21	18 22	19 35
13°	04 13	05 37	12 00	15 20	18 23	19 37
14°	04 11	05 35	12 00	15 19	18 25	19 39
15°	04 09	05 34	12 00	15 18	18 26	19 42
16°	04 07	05 32	12 00	15 17	18 28	19 44
17°	04 05	05 31	12 00	15 16	18 29	19 46
18°	04 02	05 29	12 00	15 15	18 31	19 48
19°	04 00	05 27	12 00	15 14	18 33	19 51
20°	03 57	05 26	12 00	15 12	18 34	19 53
21°	03 55	05 24	12 00	15 15	18 36	19 55
22°	03 52	05 22	12 00	15 18	18 38	19 58
23°	03 49	05 20	12 00	15 20	18 40	20 01
24°	03 46	05 19	12 00	15 23	18 41	20 03

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 21°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL_ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 36	05 56	12 00	15 25	18 04	19 15
01°	04 38	05 58	12 00	15 24	18 02	19 14
02°	04 39	05 59	12 00	15 24	18 01	19 12
03°	04 41	06 01	12 00	15 24	17 59	19 10
04°	04 43	06 02	12 00	15 23	17 58	19 09
05°	04 44	06 04	12 00	15 23	17 56	19 07
06°	04 46	06 05	12 00	15 22	17 55	19 06
07°	04 47	06 07	12 00	15 22	17 53	19 04
08°	04 48	06 09	12 00	15 21	17 51	19 03
09°	04 50	06 10	12 00	15 20	17 50	19 02
10°	04 51	06 12	12 00	15 20	17 48	19 00
11°	04 53	06 13	12 00	15 19	17 47	18 59
12°	04 54	06 15	12 00	15 18	17 45	18 57
13°	04 55	06 16	12 00	15 17	17 44	18 56
14°	04 57	06 18	12 00	15 16	17 42	18 55
15°	04 58	06 20	12 00	15 15	17 40	18 53
16°	04 59	06 21	12 00	15 14	17 39	18 52
17°	05 01	06 23	12 00	15 13	17 37	18 51
18°	05 02	06 25	12 00	15 12	17 35	18 49
19°	05 03	06 26	12 00	15 11	17 34	18 48
20°	05 04	06 28	12 00	15 09	17 32	18 47
21°	05 05	06 30	12 00	15 08	17 30	18 46
22°	05 07	06 32	12 00	15 07	17 28	18 44
23°	05 08	06 33	12 00	15 05	17 27	18 43
24°	05 09	06 35	12 00	15 04	17 25	18 42

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 21°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	El-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 36	05 56	12 00	15 25	18 04	19 15
01°	04 35	05 55	12 00	15 25	18 05	19 17
02°	04 33	05 53	12 00	15 25	18 07	19 18
03°	04 31	05 52	12 00	15 25	18 08	19 20
04°	04 29	05 50	12 00	15 25	18 10	19 22
05°	04 28	05 49	12 00	15 25	18 11	19 24
06°	04 26	05 47	12 00	15 25	18 13	19 25
07°	04 24	05 45	12 00	15 25	18 15	19 27
08°	04 22	05 44	12 00	15 24	18 16	19 29
09°	04 20	05 42	12 00	15 24	18 18	19 31
10°	04 18	05 41	12 00	15 24	18 19	19 33
11°	04 16	05 39	12 00	15 23	18 21	19 35
12°	04 14	05 37	12 00	15 23	18 23	19 37
13°	04 12	05 36	12 00	15 22	18 24	19 39
14°	04 09	05 34	12 00	15 21	18 26	19 41
15°	04 07	05 32	12 00	15 20	18 28	19 43
16°	04 05	05 31	12 00	15 20	18 29	19 46
17°	04 02	05 29	12 00	15 19	18 31	19 48
18°	04 00	05 27	12 00	15 18	18 33	19 50
19°	03 57	05 26	12 00	15 16	18 34	19 53
20°	03 55	05 24	12 00	15 15	18 36	19 55
21°	03 52	05 22	12 00	15 14	18 38	19 58
22°	03 49	05 20	12 00	15 16	18 40	20 01
23°	03 46	05 18	12 00	15 19	18 42	20 03
24°	03 43	05 16	12 00	15 22	18 44	20 06

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T**. of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 22°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 36	05 56	12 00	15 25	18 04	19 16
01°	04 37	05 58	12 00	15 25	18 02	19 14
02°	04 39	05 59	12 00	15 24	18 01	19 12
03°	04 41	06 01	12 00	15 24	17 59	19 11
04°	04 42	06 03	12 00	15 23	17 57	19 09
05°	04 44	06 04	12 00	15 23	17 56	19 07
06°	04 45	06 06	12 00	15 22	17 54	19 06
07°	04 47	06 08	12 00	15 22	17 52	19 04
08°	04 49	06 09	12 00	15 21	17 51	19 03
09°	04 50	06 11	12 00	15 20	17 49	19 01
10°	04 52	06 12	12 00	15 19	17 48	19 00
11°	04 53	06 14	12 00	15 18	17 46	18 58
12°	04 54	06 16	12 00	15 17	17 44	18 57
13°	04 56	06 18	12 00	15 16	17 42	18 55
14°	04 57	06 19	12 00	15 15	17 41	18 54
15°	04 59	06 21	12 00	15 14	17 39	18 53
16°	05 00	06 23	12 00	15 13	17 37	18 51
17°	05 01	06 24	12 00	15 12	17 36	18 50
18°	05 03	06 26	12 00	15 11	17 34	18 48
19°	05 04	06 28	12 00	15 10	17 32	18 47
20°	05 05	06 30	12 00	15 08	17 30	18 46
21°	05 07	06 32	12 00	15 07	17 28	18 44
22°	05 08	06 33	12 00	15 05	17 27	18 43
23°	05 09	06 35	12 00	15 04	17 25	18 42
24°	05 11	06 37	12 00	15 02	17 23	18 40

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T**. of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 22°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 36	05 56	12 00	15 25	18 04	19 16
01°	04 34	05 55	12 00	15 25	18 05	19 17
02°	04 32	05 53	12 00	15 26	18 07	19 19
03°	04 30	05 51	12 00	15 26	18 09	19 21
04°	04 28	05 50	12 00	15 26	18 10	19 23
05°	04 27	05 48	12 00	15 26	18 12	19 25
06°	04 25	05 46	12 00	15 26	18 14	19 27
07°	04 23	05 45	12 00	15 26	18 15	19 28
08°	04 21	05 43	12 00	15 26	18 17	19 30
09°	04 19	05 41	12 00	15 25	18 19	19 32
10°	04 16	05 40	12 00	15 25	18 20	19 34
11°	04 14	05 38	12 00	15 25	18 22	19 37
12°	04 12	05 36	12 00	15 24	18 24	19 39
13°	04 10	05 35	12 00	15 24	18 25	19 41
14°	04 07	05 33	12 00	15 23	18 27	19 43
15°	04 05	05 31	12 00	15 23	18 29	19 45
16°	04 03	05 29	12 00	15 22	18 31	19 48
17°	04 00	05 28	12 00	15 21	18 32	19 50
18°	03 57	05 26	12 00	15 20	18 34	19 53
19°	03 55	05 24	12 00	15 19	18 36	19 55
20°	03 52	05 22	12 00	15 18	18 38	19 58
21°	03 49	05 20	12 00	15 16	18 40	20 01
22°	03 46	05 18	12 00	15 15	18 42	20 03
23°	03 43	05 16	12 00	15 18	18 44	20 06
24°	03 40	05 14	12 00	15 21	18 46	20 09

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 23°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL_ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 35	05 56	12 00	15 26	18 04	19 16
01°	04 37	05 58	12 00	15 25	18 02	19 14
02°	04 39	06 00	12 00	15 25	18 00	19 13
03°	04 40	06 01	12 00	15 24	17 59	19 11
04°	04 42	06 03	12 00	15 23	17 57	19 09
05°	04 44	06 05	12 00	15 23	17 55	19 08
06°	04 45	06 06	12 00	15 22	17 54	19 06
07°	04 47	06 08	12 00	15 21	17 52	19 04
08°	04 49	06 10	12 00	15 21	17 50	19 03
09°	04 50	06 12	12 00	15 20	17 48	19 01
10°	04 52	06 13	12 00	15 19	17 47	19 00
11°	04 53	06 15	12 00	15 18	17 45	18 58
12°	04 55	06 17	12 00	15 17	17 43	18 56
13°	04 56	06 19	12 00	15 16	17 41	18 55
14°	04 58	06 20	12 00	15 15	17 40	18 53
15°	04 59	06 22	12 00	15 13	17 38	18 52
16°	05 01	06 24	12 00	15 12	17 36	18 50
17°	05 02	06 26	12 00	15 11	17 34	18 49
18°	05 04	06 28	12 00	15 10	17 32	18 47
19°	05 05	06 30	12 00	15 08	17 30	18 46
20°	05 06	06 31	12 00	15 07	17 29	18 45
21°	05 08	06 33	12 00	15 05	17 27	18 43
22°	05 09	06 35	12 00	15 04	17 25	18 42
23°	05 11	06 37	12 00	15 02	17 23	18 40
24°	05 12	06 39	12 00	15 00	17 21	18 39

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude 23°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	El-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 35	05 56	12 00	15 26	18 04	19 16
01°	04 33	05 54	12 00	15 26	18 06	19 18
02°	04 31	05 53	12 00	15 26	18 07	19 20
03°	04 29	05 51	12 00	15 26	18 09	19 22
04°	04 27	05 49	12 00	15 27	18 11	19 24
05°	04 25	05 48	12 00	15 27	18 12	19 26
06°	04 23	05 46	12 00	15 27	18 14	19 28
07°	04 21	05 44	12 00	15 27	18 16	19 30
08°	04 19	05 42	12 00	15 27	18 18	19 32
09°	04 17	05 41	12 00	15 27	18 19	19 34
10°	04 15	05 39	12 00	15 27	18 21	19 36
11°	04 13	05 37	12 00	15 26	18 23	19 38
12°	04 10	05 35	12 00	15 26	18 25	19 40
13°	04 08	05 34	12 00	15 26	18 26	19 43
14°	04 05	05 32	12 00	15 25	18 28	19 45
15°	04 03	05 30	12 00	15 24	18 30	19 47
16°	04 00	05 28	12 00	15 24	18 32	19 50
17°	03 58	05 26	12 00	15 23	18 34	19 52
18°	03 55	05 24	12 00	15 22	18 36	19 55
19°	03 52	05 22	12 00	15 21	18 38	19 58
20°	03 49	05 20	12 00	15 20	18 40	20 01
21°	03 46	05 18	12 00	15 19	18 42	20 03
22°	03 43	05 16	12 00	15 18	18 44	20 06
23°	03 40	05 14	12 00	15 17	18 46	20 09
24°	03 37	05 12	12 00	15 19	18 48	20 13

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 24°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 34	05 56	12 00	15 26	18 04	19 17
01°	04 36	05 58	12 00	15 25	18 02	19 15
02°	04 38	06 00	12 00	15 25	18 00	19 13
03°	04 40	06 02	12 00	15 24	17 58	19 11
04°	04 42	06 03	12 00	15 24	17 57	19 10
05°	04 43	06 05	12 00	15 23	17 55	19 08
06°	04 45	06 07	12 00	15 22	17 53	19 06
07°	04 47	06 09	12 00	15 21	17 51	19 04
08°	04 49	06 10	12 00	15 20	17 50	19 03
09°	04 50	06 12	12 00	15 19	17 48	19 01
10°	04 52	06 14	12 00	15 18	17 46	18 59
11°	04 54	06 16	12 00	15 17	17 44	18 58
12°	04 55	06 18	12 00	15 16	17 42	18 56
13°	04 57	06 20	12 00	15 15	17 40	18 54
14°	04 58	06 22	12 00	15 14	17 38	18 53
15°	05 00	06 23	12 00	15 13	17 37	18 51
16°	05 02	06 25	12 00	15 11	17 35	18 50
17°	05 03	06 27	12 00	15 10	17 33	18 48
18°	05 05	06 29	12 00	15 08	17 31	18 46
19°	05 06	06 31	12 00	15 07	17 29	18 45
20°	05 08	06 33	12 00	15 05	17 27	18 43
21°	05 09	06 35	12 00	15 04	17 25	18 42
22°	05 11	06 37	12 00	15 02	17 23	18 40
23°	05 12	06 39	12 00	15 00	17 21	18 39
24°	05 13	06 41	12 00	14 59	17 19	18 37

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude 24°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 34	05 56	12 00	15 26	18 04	19 17
01°	04 32	05 54	12 00	15 26	18 06	19 19
02°	04 30	05 53	12 00	15 27	18 07	19 21
03°	04 28	05 51	12 00	15 27	18 09	19 23
04°	04 26	05 49	12 00	15 27	18 11	19 25
05°	04 24	05 47	12 00	15 28	18 13	19 27
06°	04 22	05 45	12 00	15 28	18 15	19 29
07°	04 20	05 44	12 00	15 28	18 16	19 31
08°	04 18	05 42	12 00	15 28	18 18	19 33
09°	04 15	05 40	12 00	15 28	18 20	19 35
10°	04 13	05 38	12 00	15 28	18 22	19 38
11°	04 11	05 36	12 00	15 28	18 24	19 40
12°	04 08	05 34	12 00	15 27	18 26	19 42
13°	04 06	05 32	12 00	15 27	18 28	19 45
14°	04 03	05 31	12 00	15 27	18 29	19 47
15°	04 01	05 29	12 00	15 26	18 31	19 50
16°	03 58	05 27	12 00	15 26	18 33	19 52
17°	03 55	05 25	12 00	15 25	18 35	19 55
18°	03 52	05 23	12 00	15 25	18 37	19 58
19°	03 49	05 21	12 00	15 24	18 39	20 00
20°	03 46	05 19	12 00	15 23	18 41	20 03
21°	03 43	05 16	12 00	15 22	18 44	20 06
22°	03 40	05 14	12 00	15 21	18 46	20 09
23°	03 37	05 12	12 00	15 19	18 48	20 13
24°	03 33	05 10	12 00	15 18	18 50	20 16

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 25°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 34	05 56	12 00	15 26	18 04	19 18
01°	04 36	05 58	12 00	15 26	18 02	19 16
02°	04 37	06 00	12 00	15 25	18 00	19 14
03°	04 39	06 02	12 00	15 24	17 58	19 12
04°	04 41	06 04	12 00	15 23	17 56	19 10
05°	04 43	06 05	12 00	15 23	17 55	19 08
06°	04 45	06 07	12 00	15 22	17 53	19 06
07°	04 47	06 09	12 00	15 21	17 51	19 04
08°	04 49	06 11	12 00	15 20	17 49	19 03
09°	04 50	06 13	12 00	15 19	17 47	19 01
10°	04 52	06 15	12 00	15 18	17 45	18 59
11°	04 54	06 17	12 00	15 17	17 43	18 57
12°	04 56	06 19	12 00	15 15	17 41	18 56
13°	04 57	06 21	12 00	15 14	17 39	18 54
14°	04 59	06 23	12 00	15 13	17 37	18 52
15°	05 01	06 25	12 00	15 12	17 35	18 50
16°	05 02	06 27	12 00	15 10	17 33	18 49
17°	05 04	06 29	12 00	15 09	17 31	18 47
18°	05 05	06 31	12 00	15 07	17 29	18 46
19°	05 07	06 33	12 00	15 06	17 27	18 44
20°	05 09	06 35	12 00	15 04	17 25	18 42
21°	05 10	06 37	12 00	15 02	17 23	18 41
22°	05 12	06 39	12 00	15 00	17 21	18 39
23°	05 13	06 41	12 00	14 59	17 19	18 37
24°	05 15	06 44	12 00	14 57	17 16	18 36

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 25°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 34	05 56	12 00	15 26	18 04	19 18
01°	04 32	05 54	12 00	15 27	18 06	19 20
02°	04 29	05 52	12 00	15 27	18 08	19 22
03°	04 27	05 51	12 00	15 28	18 09	19 24
04°	04 25	05 49	12 00	15 28	18 11	19 26
05°	04 23	05 47	12 00	15 28	18 13	19 28
06°	04 21	05 45	12 00	15 29	18 15	19 30
07°	04 19	05 43	12 00	15 29	18 17	19 32
08°	04 16	05 41	12 00	15 29	18 19	19 34
09°	04 14	05 39	12 00	15 29	18 21	19 37
10°	04 11	05 37	12 00	15 29	18 23	19 39
11°	04 09	05 35	12 00	15 29	18 25	19 42
12°	04 06	05 33	12 00	15 29	18 27	19 44
13°	04 04	05 31	12 00	15 29	18 29	19 47
14°	04 01	05 29	12 00	15 29	18 31	19 49
15°	03 58	05 27	12 00	15 28	18 33	19 52
16°	03 56	05 25	12 00	15 28	18 35	19 54
17°	03 53	05 23	12 00	15 27	18 37	19 57
18°	03 50	05 21	12 00	15 27	18 39	20 00
19°	03 47	05 19	12 00	15 26	18 41	20 03
20°	03 43	05 17	12 00	15 25	18 43	20 06
21°	03 40	05 15	12 00	15 24	18 45	20 09
22°	03 37	05 12	12 00	15 23	18 48	20 12
23°	03 33	05 10	12 00	15 22	18 50	20 16
24°	03 29	05 08	12 00	15 21	18 52	20 19

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 26°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 33	05 56	12 00	15 27	18 04	19 18
01°	04 35	05 58	12 00	15 26	18 02	19 16
02°	04 37	06 00	12 00	15 25	18 00	19 14
03°	04 39	06 02	12 00	15 24	17 58	19 12
04°	04 41	06 04	12 00	15 23	17 56	19 10
05°	04 43	06 06	12 00	15 23	17 54	19 08
06°	04 45	06 08	12 00	15 22	17 52	19 06
07°	04 47	06 10	12 00	15 21	17 50	19 04
08°	04 49	06 12	12 00	15 19	17 48	19 02
09°	04 50	06 14	12 00	15 18	17 46	19 01
10°	04 52	06 16	12 00	15 17	17 44	18 59
11°	04 54	06 18	12 00	15 16	17 42	18 57
12°	04 56	06 20	12 00	15 15	17 40	18 55
13°	04 58	06 22	12 00	15 13	17 38	18 53
14°	04 59	06 24	12 00	15 12	17 36	18 52
15°	05 01	06 26	12 00	15 10	17 34	18 50
16°	05 03	06 28	12 00	15 09	17 32	18 48
17°	05 05	06 30	12 00	15 07	17 30	18 46
18°	05 06	06 32	12 00	15 06	17 28	18 45
19°	05 08	06 34	12 00	15 04	17 26	18 43
20°	05 10	06 37	12 00	15 02	17 23	18 41
21°	05 11	06 39	12 00	15 01	17 21	18 39
22°	05 13	06 41	12 00	14 59	17 19	18 38
23°	05 15	06 43	12 00	14 57	17 17	18 36
24°	05 16	06 46	12 00	14 55	17 14	18 34

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 26°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL_ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 33	05 56	12 00	15 27	18 04	19 18
01°	04 31	05 54	12 00	15 27	18 06	19 20
02°	04 29	05 52	12 00	15 28	18 08	19 22
03°	04 26	05 50	12 00	15 28	18 10	19 25
04°	04 24	05 48	12 00	15 29	18 12	19 27
05°	04 22	05 46	12 00	15 29	18 14	19 29
06°	04 19	05 44	12 00	15 30	18 16	19 31
07°	04 17	05 42	12 00	15 30	18 18	19 34
08°	04 15	05 40	12 00	15 30	18 20	19 36
09°	04 12	05 38	12 00	15 30	18 22	19 38
10°	04 10	05 36	12 00	15 30	18 24	19 41
11°	04 07	05 34	12 00	15 30	18 26	19 43
12°	04 04	05 32	12 00	15 30	18 28	19 46
13°	04 02	05 30	12 00	15 30	18 30	19 49
14°	03 59	05 28	12 00	15 30	18 32	19 51
15°	03 56	05 26	12 00	15 30	18 34	19 54
16°	03 53	05 24	12 00	15 30	18 36	19 57
17°	03 50	05 22	12 00	15 29	18 38	20 00
18°	03 47	05 19	12 00	15 29	18 41	20 03
19°	03 44	05 17	12 00	15 28	18 43	20 06
20°	03 40	05 15	12 00	15 28	18 45	20 09
21°	03 37	05 13	12 00	15 27	18 47	20 12
22°	03 33	05 10	12 00	15 26	18 50	20 16
23°	03 29	05 08	12 00	15 25	18 52	20 19
24°	03 26	05 05	12 00	15 24	18 55	20 23

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 27°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL_ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 32	05 56	12 00	15 27	18 04	19 19
01°	04 30	05 54	12 00	15 28	18 06	19 21
02°	04 28	05 52	12 00	15 28	18 08	19 23
03°	04 25	05 50	12 00	15 29	18 10	19 26
04°	04 23	05 48	12 00	15 29	18 12	19 28
05°	04 20	05 46	12 00	15 30	18 14	19 30
06°	04 18	05 44	12 00	15 30	18 16	19 33
07°	04 16	05 42	12 00	15 31	18 18	19 35
08°	04 13	05 40	12 00	15 31	18 20	19 37
09°	04 10	05 37	12 00	15 31	18 23	19 40
10°	04 08	05 35	12 00	15 32	18 25	19 43
11°	04 05	05 33	12 00	15 32	18 27	19 45
12°	04 02	05 31	12 00	15 32	18 29	19 48
13°	03 59	05 29	12 00	15 32	18 31	19 51
14°	03 57	05 27	12 00	15 32	18 33	19 53
15°	03 53	05 24	12 00	15 32	18 36	19 56
16°	03 50	05 22	12 00	15 32	18 38	19 59
17°	03 47	05 20	12 00	15 31	18 40	20 02
18°	03 44	05 18	12 00	15 31	18 42	20 05
19°	03 41	05 15	12 00	15 30	18 45	20 09
20°	03 37	05 13	12 00	15 30	18 47	20 12
21°	03 33	05 11	12 00	15 29	18 49	20 15
22°	03 30	05 08	12 00	15 29	18 52	20 19
23°	03 26	05 06	12 00	15 28	18 54	20 23
24°	03 22	05 03	12 00	15 27	18 57	20 26

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 27°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 32	05 56	12 00	15 27	18 04	19 19
01°	04 30	05 54	12 00	15 28	18 06	19 21
02°	04 28	05 52	12 00	15 28	18 08	19 23
03°	04 25	05 50	12 00	15 29	18 10	19 26
04°	04 23	05 48	12 00	15 29	18 12	19 28
05°	04 20	05 46	12 00	15 30	18 14	19 30
06°	04 18	05 44	12 00	15 30	18 16	19 33
07°	04 16	05 42	12 00	15 31	18 18	19 35
08°	04 13	05 40	12 00	15 31	18 20	19 37
09°	04 10	05 37	12 00	15 31	18 23	19 40
10°	04 08	05 35	12 00	15 32	18 25	19 43
11°	04 05	05 33	12 00	15 32	18 27	19 45
12°	04 02	05 31	12 00	15 32	18 29	19 48
13°	03 59	05 29	12 00	15 32	18 31	19 51
14°	03 57	05 27	12 00	15 32	18 33	19 53
15°	03 53	05 24	12 00	15 32	18 36	19 56
16°	03 50	05 22	12 00	15 32	18 38	19 59
17°	03 47	05 20	12 00	15 31	18 40	20 02
18°	03 44	05 18	12 00	15 31	18 42	20 05
19°	03 41	05 15	12 00	15 30	18 45	20 09
20°	03 37	05 13	12 00	15 30	18 47	20 12
21°	03 33	05 11	12 00	15 29	18 49	20 15
22°	03 30	05 08	12 00	15 29	18 52	20 19
23°	03 26	05 06	12 00	15 28	18 54	20 23
24°	03 22	05 03	12 00	15 27	18 57	20 26

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 28°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 31	05 56	12 00	15 27	18 04	19 20
01°	04 33	05 58	12 00	15 26	18 02	19 17
02°	04 36	06 00	12 00	15 25	18 00	19 15
03°	04 38	06 02	12 00	15 24	17 58	19 13
04°	04 40	06 05	12 00	15 23	17 55	19 11
05°	04 42	06 07	12 00	15 22	17 53	19 09
06°	04 44	06 09	12 00	15 21	17 51	19 07
07°	04 46	06 11	12 00	15 20	17 49	19 05
08°	04 48	06 13	12 00	15 18	17 47	19 02
09°	04 51	06 15	12 00	15 17	17 45	19 00
10°	04 53	06 17	12 00	15 16	17 43	18 58
11°	04 55	06 20	12 00	15 14	17 40	18 56
12°	04 57	06 22	12 00	15 13	17 38	18 54
13°	04 58	06 24	12 00	15 11	17 36	18 52
14°	05 00	06 26	12 00	15 10	17 34	18 50
15°	05 02	06 29	12 00	15 08	17 31	18 49
16°	05 04	06 31	12 00	15 07	17 29	18 47
17°	05 06	06 33	12 00	15 05	17 27	18 45
18°	05 08	06 36	12 00	15 03	17 24	18 43
19°	05 10	06 38	12 00	15 01	17 22	18 41
20°	05 12	06 40	12 00	14 59	17 20	18 39
21°	05 14	06 43	12 00	14 57	17 17	18 37
22°	05 16	06 45	12 00	14 55	17 15	18 35
23°	05 17	06 48	12 00	14 53	17 12	18 33
24°	05 19	06 50	12 00	14 51	17 10	18 31

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 28°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 31	05 56	12 00	15 27	18 04	19 20
01°	04 29	05 54	12 00	15 28	18 06	19 22
02°	04 26	05 52	12 00	15 29	18 08	19 24
03°	04 24	05 50	12 00	15 29	18 10	19 27
04°	04 22	05 47	12 00	15 30	18 13	19 29
05°	04 19	05 45	12 00	15 31	18 15	19 31
06°	04 17	05 43	12 00	15 31	18 17	19 34
07°	04 14	05 41	12 00	15 32	18 19	19 36
08°	04 11	05 39	12 00	15 32	18 21	19 39
09°	04 09	05 37	12 00	15 32	18 23	19 42
10°	04 06	05 34	12 00	15 33	18 26	19 44
11°	04 03	05 32	12 00	15 33	18 28	19 47
12°	04 00	05 30	12 00	15 33	18 30	19 50
13°	03 57	05 28	12 00	15 33	18 32	19 53
14°	03 54	05 25	12 00	15 33	18 35	19 56
15°	03 51	05 23	12 00	15 33	18 37	19 59
16°	03 48	05 21	12 00	15 33	18 39	20 02
17°	03 44	05 18	12 00	15 33	18 42	20 05
18°	03 41	05 16	12 00	15 33	18 44	20 08
19°	03 37	05 14	12 00	15 33	18 46	20 12
20°	03 34	05 11	12 00	15 32	18 49	20 15
21°	03 30	05 09	12 00	15 32	18 51	20 19
22°	03 26	05 06	12 00	15 31	18 54	20 22
23°	03 22	05 03	12 00	15 30	18 57	20 26
24°	03 18	05 01	12 00	15 30	18 59	20 30

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						Latitude 29°
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 30	05 56	12 00	15 27	18 04	19 20
01°	04 33	05 58	12 00	15 26	18 02	19 18
02°	04 35	06 00	12 00	15 25	18 00	19 16
03°	04 37	06 03	12 00	15 24	17 57	19 13
04°	04 40	06 05	12 00	15 23	17 55	19 11
05°	04 42	06 07	12 00	15 22	17 53	19 09
06°	04 44	06 09	12 00	15 21	17 51	19 07
07°	04 46	06 12	12 00	15 19	17 48	19 05
08°	04 48	06 14	12 00	15 18	17 46	19 02
09°	04 51	06 16	12 00	15 16	17 44	19 00
10°	04 53	06 18	12 00	15 15	17 42	18 58
11°	04 55	06 21	12 00	15 14	17 39	18 56
12°	04 57	06 23	12 00	15 12	17 37	18 54
13°	04 59	06 25	12 00	15 10	17 35	18 52
14°	05 01	06 28	12 00	15 09	17 32	18 50
15°	05 03	06 30	12 00	15 07	17 30	18 48
16°	05 05	06 32	12 00	15 05	17 28	18 46
17°	05 07	06 35	12 00	15 03	17 25	18 44
18°	05 09	06 37	12 00	15 01	17 23	18 42
19°	05 11	06 40	12 00	15 00	17 20	18 40
20°	05 13	06 42	12 00	14 57	17 18	18 38
21°	05 15	06 45	12 00	14 55	17 15	18 36
22°	05 17	06 47	12 00	14 53	17 13	18 34
23°	05 19	06 50	12 00	14 51	17 10	18 32
24°	05 21	06 53	12 00	14 49	17 07	18 30

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 29°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	El-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 30	05 56	12 00	15 27	18 04	19 20
01°	04 28	05 54	12 00	15 28	18 06	19 23
02°	04 25	05 52	12 00	15 29	18 08	19 25
03°	04 23	05 49	12 00	15 30	18 11	19 28
04°	04 20	05 47	12 00	15 31	18 13	19 30
05°	04 18	05 45	12 00	15 31	18 15	19 33
06°	04 15	05 43	12 00	15 32	18 17	19 35
07°	04 12	05 40	12 00	15 32	18 20	19 38
08°	04 10	05 38	12 00	15 33	18 22	19 41
09°	04 07	05 36	12 00	15 33	18 24	19 43
10°	04 04	05 33	12 00	15 34	18 27	19 46
11°	04 01	05 31	12 00	15 34	18 29	19 49
12°	03 58	05 29	12 00	15 35	18 31	19 52
13°	03 55	05 26	12 00	15 35	18 34	19 55
14°	03 52	05 24	12 00	15 35	18 36	19 58
15°	03 48	05 22	12 00	15 35	18 38	20 01
16°	03 45	05 19	12 00	15 35	18 41	20 04
17°	03 41	05 17	12 00	15 35	18 43	20 08
18°	03 38	05 14	12 00	15 35	18 46	20 11
19°	03 34	05 12	12 00	15 35	18 48	20 15
20°	03 30	05 09	12 00	15 34	18 51	20 18
21°	03 26	05 06	12 00	15 34	18 54	20 22
22°	03 22	05 04	12 00	15 34	18 56	20 26
23°	03 18	05 01	12 00	15 33	18 59	20 30
24°	03 13	04 58	12 00	15 32	19 02	20 34

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 30°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 29	05 56	12 00	15 27	18 04	19 21
01°	04 32	05 58	12 00	15 26	18 02	19 19
02°	04 34	06 01	12 00	15 25	17 59	19 16
03°	04 37	06 03	12 00	15 24	17 57	19 14
04°	04 39	06 05	12 00	15 23	17 55	19 12
05°	04 41	06 08	12 00	15 21	17 52	19 09
06°	04 44	06 10	12 00	15 20	17 50	19 07
07°	04 46	06 12	12 00	15 19	17 48	19 05
08°	04 48	06 15	12 00	15 17	17 45	19 03
09°	04 50	06 17	12 00	15 16	17 43	19 00
10°	04 53	06 19	12 00	15 14	17 41	18 58
11°	04 55	06 22	12 00	15 13	17 38	18 56
12°	04 57	06 24	12 00	15 11	17 36	18 54
13°	04 59	06 26	12 00	15 09	17 34	18 52
14°	05 01	06 29	12 00	15 08	17 31	18 49
15°	05 03	06 31	12 00	15 06	17 29	18 47
16°	05 06	06 34	12 00	15 04	17 26	18 45
17°	05 08	06 36	12 00	15 02	17 24	18 43
18°	05 10	06 39	12 00	15 00	17 21	18 41
19°	05 12	06 42	12 00	14 58	17 18	18 39
20°	05 14	06 44	12 00	14 56	17 16	18 37
21°	05 16	06 47	12 00	14 54	17 13	18 35
22°	05 18	06 49	12 00	14 51	17 11	18 32
23°	05 20	06 52	12 00	14 49	17 08	18 30
24°	05 22	06 55	12 00	14 47	17 05	18 28

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 30°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 29	05 56	12 00	15 27	18 04	19 21
01°	04 27	05 54	12 00	15 28	18 06	19 24
02°	04 24	05 51	12 00	15 29	18 09	19 26
03°	04 22	05 49	12 00	15 30	18 11	19 29
04°	04 19	05 47	12 00	15 31	18 13	19 31
05°	04 16	05 44	12 00	15 32	18 16	19 34
06°	04 13	05 42	12 00	15 33	18 18	19 37
07°	04 11	05 40	12 00	15 33	18 20	19 40
08°	04 08	05 37	12 00	15 34	18 23	19 42
09°	04 05	05 35	12 00	15 34	18 25	19 45
10°	04 02	05 32	12 00	15 35	18 28	19 48
11°	03 59	05 30	12 00	15 35	18 30	19 51
12°	03 56	05 28	12 00	15 36	18 32	19 54
13°	03 52	05 25	12 00	15 36	18 35	19 57
14°	03 49	05 23	12 00	15 36	18 37	20 00
15°	03 46	05 20	12 00	15 37	18 40	20 04
16°	03 42	05 18	12 00	15 37	18 42	20 07
17°	03 38	05 15	12 00	15 37	18 45	20 11
18°	03 35	05 12	12 00	15 37	18 48	20 14
19°	03 31	05 10	12 00	15 37	18 50	20 18
20°	03 27	05 07	12 00	15 37	18 53	20 22
21°	03 22	05 04	12 00	15 36	18 56	20 26
22°	03 18	05 02	12 00	15 36	18 58	20 30
23°	03 14	04 59	12 00	15 36	19 01	20 34
24°	03 09	04 56	12 00	15 35	19 04	20 38

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 31°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 28	05 56	12 00	15 27	18 04	19 22
01°	04 31	05 58	12 00	15 26	18 02	19 20
02°	04 33	06 01	12 00	15 25	17 59	19 17
03°	04 36	06 03	12 00	15 24	17 57	19 15
04°	04 38	06 06	12 00	15 22	17 54	19 12
05°	04 41	06 08	12 00	15 21	17 52	19 10
06°	04 43	06 10	12 00	15 20	17 50	19 07
07°	04 46	06 13	12 00	15 18	17 47	19 05
08°	04 48	06 15	12 00	15 17	17 45	19 03
09°	04 50	06 18	12 00	15 15	17 42	19 00
10°	04 53	06 20	12 00	15 13	17 40	18 58
11°	04 55	06 23	12 00	15 12	17 37	18 56
12°	04 57	06 25	12 00	15 10	17 35	18 53
13°	04 59	06 28	12 00	15 08	17 32	18 51
14°	05 02	06 30	12 00	15 06	17 30	18 49
15°	05 04	06 33	12 00	15 04	17 27	18 47
16°	05 06	06 35	12 00	15 02	17 25	18 44
17°	05 08	06 38	12 00	15 00	17 22	18 42
18°	05 11	06 41	12 00	14 58	17 19	18 40
19°	05 13	06 43	12 00	14 56	17 17	18 38
20°	05 15	06 46	12 00	14 54	17 14	18 36
21°	05 17	06 49	12 00	14 52	17 11	18 33
22°	05 19	06 52	12 00	14 49	17 08	18 31
23°	05 21	06 55	12 00	14 47	17 05	18 29
24°	05 23	06 57	12 00	14 44	17 03	18 27

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 31°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL_ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 28	05 56	12 00	15 27	18 04	19 22
01°	04 26	05 54	12 00	15 28	18 06	19 25
02°	04 23	05 51	12 00	15 29	18 09	19 27
03°	04 20	05 49	12 00	15 30	18 11	19 30
04°	04 18	05 46	12 00	15 31	18 14	19 33
05°	04 15	05 44	12 00	15 32	18 16	19 35
06°	04 12	05 41	12 00	15 33	18 19	19 38
07°	04 09	05 39	12 00	15 34	18 21	19 41
08°	04 06	05 36	12 00	15 35	18 24	19 44
09°	04 03	05 34	12 00	15 35	18 26	19 47
10°	04 00	05 31	12 00	15 36	18 29	19 50
11°	03 56	05 29	12 00	15 37	18 31	19 53
12°	03 53	05 26	12 00	15 37	18 34	19 56
13°	03 50	05 24	12 00	15 37	18 36	20 00
14°	03 46	05 21	12 00	15 38	18 39	20 03
15°	03 43	05 19	12 00	15 38	18 41	20 06
16°	03 39	05 16	12 00	15 38	18 44	20 10
17°	03 35	05 13	12 00	15 39	18 47	20 14
18°	03 31	05 11	12 00	15 39	18 49	20 17
19°	03 27	05 08	12 00	15 39	18 52	20 21
20°	03 23	05 05	12 00	15 39	18 55	20 25
21°	03 19	05 02	12 00	15 39	18 58	20 29
22°	03 14	04 59	12 00	15 38	19 01	20 34
23°	03 09	04 56	12 00	15 38	19 04	20 38
24°	03 04	04 53	12 00	15 38	19 07	20 43

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T**. of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 32°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 27	05 56	12 00	15 27	18 04	19 23
01°	04 30	05 58	12 00	15 26	18 02	19 20
02°	04 33	06 01	12 00	15 25	17 59	19 18
03°	04 35	06 03	12 00	15 23	17 57	19 15
04°	04 38	06 06	12 00	15 22	17 54	19 13
05°	04 40	06 08	12 00	15 21	17 52	19 10
06°	04 43	06 11	12 00	15 19	17 49	19 08
07°	04 45	06 13	12 00	15 17	17 47	19 05
08°	04 48	06 16	12 00	15 16	17 44	19 03
09°	04 50	06 19	12 00	15 14	17 41	19 00
10°	04 53	06 21	12 00	15 12	17 39	18 58
11°	04 55	06 24	12 00	15 11	17 36	18 55
12°	04 57	06 26	12 00	15 09	17 34	18 53
13°	05 00	06 29	12 00	15 07	17 31	18 51
14°	05 02	06 32	12 00	15 05	17 28	18 48
15°	05 04	06 34	12 00	15 03	17 26	18 46
16°	05 07	06 37	12 00	15 01	17 23	18 44
17°	05 09	06 40	12 00	14 59	17 20	18 41
18°	05 11	06 42	12 00	14 57	17 18	18 39
19°	05 14	06 45	12 00	14 54	17 15	18 37
20°	05 16	06 48	12 00	14 52	17 12	18 34
21°	05 18	06 51	12 00	14 50	17 09	18 32
22°	05 20	06 54	12 00	14 47	17 06	18 30
23°	05 23	06 57	12 00	14 45	17 03	18 28
24°	05 25	07 00	12 00	14 42	17 00	18 25

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 32°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 27	05 56	12 00	15 27	18 04	19 23
01°	04 25	05 53	12 00	15 29	18 07	19 26
02°	04 22	05 51	12 00	15 30	18 09	19 28
03°	04 19	05 48	12 00	15 31	18 12	19 31
04°	04 16	05 46	12 00	15 32	18 14	19 34
05°	04 13	05 43	12 00	15 33	18 17	19 37
06°	04 10	05 41	12 00	15 34	18 19	19 40
07°	04 07	05 38	12 00	15 35	18 22	19 43
08°	04 04	05 36	12 00	15 35	18 24	19 46
09°	04 01	05 33	12 00	15 36	18 27	19 49
10°	03 57	05 30	12 00	15 37	18 30	19 52
11°	03 54	05 28	12 00	15 38	18 32	19 55
12°	03 51	05 25	12 00	15 38	18 35	19 59
13°	03 47	05 23	12 00	15 39	18 37	20 02
14°	03 43	05 20	12 00	15 39	18 40	20 06
15°	03 40	05 17	12 00	15 40	18 43	20 09
16°	03 36	05 14	12 00	15 40	18 46	20 13
17°	03 32	05 12	12 00	15 40	18 48	20 17
18°	03 28	05 09	12 00	15 41	18 51	20 21
19°	03 23	05 06	12 00	15 41	18 54	20 25
20°	03 19	05 03	12 00	15 41	18 57	20 29
21°	03 14	05 00	12 00	15 41	19 00	20 33
22°	03 10	04 57	12 00	15 41	19 03	20 38
23°	03 05	04 54	12 00	15 40	19 06	20 42
24°	02 59	04 51	12 00	15 40	19 09	20 47

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 33°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 26	05 56	12 00	15 27	18 04	19 24
01°	04 29	05 58	12 00	15 26	18 02	19 21
02°	04 32	06 01	12 00	15 25	17 59	19 19
03°	04 34	06 04	12 00	15 23	17 56	19 16
04°	04 37	06 06	12 00	15 22	17 54	19 13
05°	04 40	06 09	12 00	15 20	17 51	19 11
06°	04 42	06 11	12 00	15 18	17 49	19 08
07°	04 45	06 14	12 00	15 17	17 46	19 05
08°	04 48	06 17	12 00	15 15	17 43	19 03
09°	04 50	06 19	12 00	15 13	17 41	19 00
10°	04 53	06 22	12 00	15 11	17 38	18 58
11°	04 55	06 25	12 00	15 10	17 35	18 55
12°	04 58	06 27	12 00	15 08	17 33	18 53
13°	05 00	06 30	12 00	15 06	17 30	18 50
14°	05 02	06 33	12 00	15 04	17 27	18 48
15°	05 05	06 36	12 00	15 01	17 24	18 45
16°	05 07	06 39	12 00	14 59	17 21	18 43
17°	05 10	06 41	12 00	14 57	17 19	18 41
18°	05 12	06 44	12 00	14 55	17 16	18 38
19°	05 14	06 47	12 00	14 52	17 13	18 36
20°	05 17	06 50	12 00	14 50	17 10	18 33
21°	05 19	06 53	12 00	14 47	17 07	18 31
22°	05 22	06 56	12 00	14 45	17 04	18 29
23°	05 24	06 59	12 00	14 42	17 01	18 26
24°	05 26	07 02	12 00	14 40	16 58	18 24

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude 33°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 26	05 56	12 00	15 27	18 04	19 24
01°	04 23	05 53	12 00	15 29	18 07	19 27
02°	04 20	05 51	12 00	15 30	18 09	19 30
03°	04 17	05 48	12 00	15 31	18 12	19 33
04°	04 14	05 45	12 00	15 32	18 15	19 36
05°	04 11	05 43	12 00	15 33	18 17	19 39
06°	04 08	05 40	12 00	15 34	18 20	19 42
07°	04 05	05 37	12 00	15 35	18 23	19 45
08°	04 02	05 35	12 00	15 36	18 25	19 48
09°	03 58	05 32	12 00	15 37	18 28	19 51
10°	03 55	05 29	12 00	15 38	18 31	19 54
11°	03 52	05 27	12 00	15 39	18 33	19 58
12°	03 48	05 24	12 00	15 39	18 36	20 01
13°	03 44	05 21	12 00	15 40	18 39	20 05
14°	03 40	05 18	12 00	15 41	18 42	20 08
15°	03 36	05 16	12 00	15 41	18 44	20 12
16°	03 32	05 13	12 00	15 42	18 47	20 16
17°	03 28	05 10	12 00	15 42	18 50	20 20
18°	03 24	05 07	12 00	15 42	18 53	20 24
19°	03 19	05 04	12 00	15 43	18 56	20 28
20°	03 15	05 01	12 00	15 43	18 59	20 33
21°	03 10	04 58	12 00	15 43	19 02	20 37
22°	03 05	04 54	12 00	15 43	19 06	20 42
23°	03 00	04 51	12 00	15 43	19 09	20 47
24°	02 54	04 48	12 00	15 43	19 12	20 52

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 34°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL_ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
.	04 25	05 56	12 00	15 27	18 04	19 25
01°	04 28	05 58	12 00	15 26	18 02	19 22
02°	04 31	06 01	12 00	15 24	17 59	19 19
03°	04 34	06 04	12 00	15 23	17 56	19 17
04°	04 36	06 07	12 00	15 21	17 53	19 14
05°	04 39	06 09	12 00	15 19	17 51	19 11
06°	04 42	06 12	12 00	15 18	17 48	19 08
07°	04 45	06 15	12 00	15 16	17 45	19 06
08°	04 47	06 17	12 00	15 14	17 43	19 03
09°	04 50	06 20	12 00	15 12	17 40	19 00
10°	04 53	06 23	12 00	15 10	17 37	18 58
11°	04 55	06 26	12 00	15 08	17 34	18 55
12°	04 58	06 29	12 00	15 06	17 31	18 53
13°	05 00	06 31	12 00	15 04	17 29	18 50
14°	05 03	06 34	12 00	15 02	17 26	18 47
15°	05 05	06 37	12 00	15 00	17 23	18 45
16°	05 08	06 40	12 00	14 58	17 20	18 42
17°	05 10	06 43	12 00	14 55	17 17	18 40
18°	05 13	06 46	12 00	14 53	17 14	18 37
19°	05 15	06 49	12 00	14 50	17 11	18 35
20°	05 18	06 52	12 00	14 48	17 08	18 32
21°	05 20	06 55	12 00	14 45	17 05	18 30
22°	05 23	06 59	12 00	14 43	17 01	18 27
23°	05 25	07 02	12 00	14 40	16 58	18 25
24°	05 28	07 05	12 00	14 37	16 55	18 22

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 34°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 25	05 56	12 00	15 27	18 04	19 25
01°	04 22	05 53	12 00	15 29	18 07	19 28
02°	04 19	05 50	12 00	15 30	18 10	19 31
03°	04 16	05 48	12 00	15 31	18 12	19 34
04°	04 13	05 45	12 00	15 32	18 15	19 37
05°	04 10	05 42	12 00	15 34	18 18	19 40
06°	04 06	05 39	12 00	15 35	18 21	19 43
07°	04 03	05 37	12 00	15 36	18 23	19 47
08°	04 00	05 34	12 00	15 37	18 26	19 50
09°	03 56	05 31	12 00	15 38	18 29	19 53
10°	03 53	05 28	12 00	15 39	18 32	19 57
11°	03 49	05 26	12 00	15 40	18 34	20 00
12°	03 45	05 23	12 00	15 40	18 37	20 04
13°	03 41	05 20	12 00	15 41	18 40	20 07
14°	03 37	05 17	12 00	15 42	18 43	20 11
15°	03 33	05 14	12 00	15 43	18 46	20 15
16°	03 29	05 11	12 00	15 43	18 49	20 19
17°	03 25	05 08	12 00	15 44	18 52	20 23
18°	03 20	05 05	12 00	15 44	18 55	20 28
19°	03 15	05 02	12 00	15 44	18 58	20 32
20°	03 10	04 58	12 00	15 45	19 02	20 37
21°	03 05	04 55	12 00	15 45	19 05	20 41
22°	03 00	04 52	12 00	15 45	19 08	20 46
23°	02 55	04 49	12 00	15 45	19 11	20 51
24°	02 49	04 45	12 00	15 45	19 15	20 57

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 35°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 24	05 56	12 00	15 27	18 04	19 26
01°	04 27	05 59	12 00	15 26	18 01	19 23
02°	04 30	06 01	12 00	15 24	17 59	19 20
03°	04 33	06 04	12 00	15 22	17 56	19 17
04°	04 36	06 07	12 00	15 21	17 53	19 14
05°	04 39	06 10	12 00	15 19	17 50	19 12
06°	04 41	06 13	12 00	15 17	17 47	19 09
07°	04 44	06 15	12 00	15 15	17 45	19 06
08°	04 47	06 18	12 00	15 13	17 42	19 03
09°	04 50	06 21	12 00	15 11	17 39	19 00
10°	04 52	06 24	12 00	15 09	17 36	18 58
11°	04 55	06 27	12 00	15 07	17 33	18 55
12°	04 58	06 30	12 00	15 05	17 30	18 52
13°	05 01	06 33	12 00	15 03	17 27	18 50
14°	05 03	06 36	12 00	15 01	17 24	18 47
15°	05 06	06 39	12 00	14 58	17 21	18 44
16°	05 08	06 42	12 00	14 56	17 18	18 42
17°	05 11	06 45	12 00	14 54	17 15	18 39
18°	05 14	06 48	12 00	14 51	17 12	18 36
19°	05 16	06 51	12 00	14 48	17 09	18 34
20°	05 19	06 54	12 00	14 46	17 06	18 31
21°	05 21	06 58	12 00	14 43	17 02	18 29
22°	05 24	07 01	12 00	14 40	16 59	18 26
23°	05 27	07 04	12 00	14 37	16 56	18 23
24°	05 29	07 08	12 00	14 34	16 52	18 21

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude 35°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 24	05 56	12 00	15 27	18 04	19 26
01°	04 21	05 53	12 00	15 29	18 07	19 29
02°	04 18	05 50	12 00	15 30	18 10	19 32
03°	04 14	05 47	12 00	15 31	18 13	19 35
04°	04 11	05 44	12 00	15 33	18 16	19 39
05°	04 08	05 42	12 00	15 34	18 18	19 42
06°	04 04	05 39	12 00	15 35	18 21	19 45
07°	04 01	05 36	12 00	15 36	18 24	19 48
08°	03 57	05 33	12 00	15 38	18 27	19 52
09°	03 54	05 30	12 00	15 39	18 30	19 55
10°	03 50	05 27	12 00	15 40	18 33	19 59
11°	03 46	05 24	12 00	15 41	18 36	20 03
12°	03 42	05 21	12 00	15 41	18 39	20 06
13°	03 38	05 18	12 00	15 42	18 42	20 10
14°	03 34	05 15	12 00	15 43	18 45	20 14
15°	03 30	05 12	12 00	15 44	18 48	20 18
16°	03 25	05 09	12 00	15 45	18 51	20 23
17°	03 21	05 06	12 00	15 45	18 54	20 27
18°	03 16	05 03	12 00	15 46	18 57	20 31
19°	03 11	05 00	12 00	15 46	19 00	20 36
20°	03 06	04 56	12 00	15 47	19 04	20 41
21°	03 01	04 53	12 00	15 47	19 07	20 46
22°	02 55	04 49	12 00	15 47	19 11	20 51
23°	02 49	04 46	12 00	15 47	19 14	20 56
24°	02 43	04 42	12 00	15 48	19 18	21 02

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 36°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 23	05 56	12 00	15 27	18 04	19 27
01°	04 26	05 59	12 00	15 25	18 01	19 24
02°	04 29	06 01	12 00	15 24	17 59	19 21
03°	04 32	06 04	12 00	15 22	17 56	19 18
04°	04 35	06 07	12 00	15 20	17 53	19 15
05°	04 38	06 10	12 00	15 18	17 50	19 12
06°	04 41	06 13	12 00	15 16	17 47	19 09
07°	04 44	06 16	12 00	15 14	17 44	19 06
08°	04 47	06 19	12 00	15 12	17 41	19 03
09°	04 50	06 22	12 00	15 10	17 38	19 01
10°	04 52	06 25	12 00	15 08	17 35	18 58
11°	04 55	06 28	12 00	15 06	17 32	18 55
12°	04 58	06 31	12 00	15 04	17 29	18 52
13°	05 01	06 34	12 00	15 01	17 26	18 49
14°	05 03	06 37	12 00	14 59	17 23	18 47
15°	05 06	06 40	12 00	14 57	17 20	18 44
16°	05 09	06 43	12 00	14 54	17 17	18 41
17°	05 12	06 47	12 00	14 52	17 13	18 38
18°	05 14	06 50	12 00	14 49	17 10	18 36
19°	05 17	06 53	12 00	14 46	17 07	18 33
20°	05 20	06 57	12 00	14 44	17 03	18 30
21°	05 22	07 00	12 00	14 41	17 00	18 27
22°	05 25	07 03	12 00	14 38	16 57	18 25
23°	05 28	07 07	12 00	14 35	16 53	18 22
24°	05 31	07 10	12 00	14 32	16 50	18 19

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude 36°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL_ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 23	05 56	12 00	15 27	18 04	19 27
01°	04 19	05 53	12 00	15 28	18 07	19 30
02°	04 16	05 50	12 00	15 30	18 10	19 34
03°	04 13	05 47	12 00	15 31	18 13	19 37
04°	04 09	05 44	12 00	15 33	18 16	19 40
05°	04 06	05 41	12 00	15 34	18 19	19 44
06°	04 02	05 38	12 00	15 36	18 22	19 47
07°	03 59	05 35	12 00	15 37	18 25	19 51
08°	03 55	05 32	12 00	15 38	18 28	19 54
09°	03 51	05 29	12 00	15 39	18 31	19 58
10°	03 47	05 26	12 00	15 40	18 34	20 01
11°	03 43	05 23	12 00	15 41	18 37	20 05
12°	03 39	05 20	12 00	15 43	18 40	20 09
13°	03 35	05 17	12 00	15 43	18 43	20 13
14°	03 31	05 14	12 00	15 44	18 46	20 17
15°	03 26	05 11	12 00	15 45	18 49	20 22
16°	03 22	05 07	12 00	15 46	18 53	20 26
17°	03 17	05 04	12 00	15 47	18 56	20 31
18°	03 12	05 01	12 00	15 47	18 59	20 35
19°	03 07	04 57	12 00	15 48	19 03	20 40
20°	03 01	04 54	12 00	15 49	19 06	20 45
21°	02 55	04 50	12 00	15 49	19 10	20 50
22°	02 50	04 47	12 00	15 49	19 13	20 56
23°	02 43	04 43	12 00	15 50	19 17	21 02
24°	02 37	04 39	12 00	15 50	19 21	21 08

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 37°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 21	05 56	12 00	15 27	18 04	19 28
01°	04 24	05 59	12 00	15 25	18 01	19 25
02°	04 28	06 02	12 00	15 23	17 58	19 22
03°	04 31	06 05	12 00	15 21	17 55	19 19
04°	04 34	06 08	12 00	15 19	17 52	19 16
05°	04 37	06 11	12 00	15 17	17 49	19 13
06°	04 40	06 14	12 00	15 15	17 46	19 10
07°	04 43	06 17	12 00	15 13	17 43	19 07
08°	04 46	06 20	12 00	15 11	17 40	19 04
09°	04 49	06 23	12 00	15 09	17 37	19 01
10°	04 52	06 26	12 00	15 07	17 34	18 58
11°	04 55	06 29	12 00	15 05	17 31	18 55
12°	04 58	06 32	12 00	15 02	17 28	18 52
13°	05 01	06 36	12 00	15 00	17 24	18 49
14°	05 04	06 39	12 00	14 57	17 21	18 46
15°	05 07	06 42	12 00	14 55	17 18	18 43
16°	05 09	06 45	12 00	14 52	17 15	18 40
17°	05 12	06 49	12 00	14 50	17 11	18 38
18°	05 15	06 52	12 00	14 47	17 08	18 35
19°	05 18	06 55	12 00	14 44	17 05	18 32
20°	05 21	06 59	12 00	14 41	17 01	18 29
21°	05 24	07 02	12 00	14 38	16 58	18 26
22°	05 26	07 06	12 00	14 35	16 54	18 23
23°	05 29	07 10	12 00	14 32	16 50	18 20
24°	05 32	07 13	12 00	14 29	16 47	18 18

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude 37°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 21	05 56	12 00	15 27	18 04	19 28
01°	04 18	05 53	12 00	15 28	18 07	19 32
02°	04 14	05 50	12 00	15 30	18 10	19 35
03°	04 11	05 47	12 00	15 32	18 13	19 38
04°	04 07	05 44	12 00	15 33	18 16	19 42
05°	04 04	05 40	12 00	15 35	18 20	19 45
06°	04 00	05 37	12 00	15 36	18 23	19 49
07°	03 56	05 34	12 00	15 37	18 26	19 53
08°	03 53	05 31	12 00	15 39	18 29	19 56
09°	03 49	05 28	12 00	15 40	18 32	20 00
10°	03 45	05 25	12 00	15 41	18 35	20 04
11°	03 40	05 22	12 00	15 42	18 38	20 08
12°	03 36	05 19	12 00	15 43	18 41	20 12
13°	03 32	05 15	12 00	15 45	18 45	20 16
14°	03 27	05 12	12 00	15 46	18 48	20 21
15°	03 22	05 09	12 00	15 47	18 51	20 25
16°	03 18	05 05	12 00	15 47	18 55	20 30
17°	03 13	05 02	12 00	15 48	18 58	20 34
18°	03 07	04 59	12 00	15 49	19 01	20 39
19°	03 02	04 55	12 00	15 50	19 05	20 44
20°	02 56	04 51	12 00	15 50	19 09	20 50
21°	02 50	04 48	12 00	15 51	19 12	20 55
22°	02 44	04 44	12 00	15 51	19 16	21 01
23°	02 37	04 40	12 00	15 52	19 20	21 07
24°	02 30	04 36	12 00	15 52	19 24	21 14

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 38°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 20	05 56	12 00	15 26	18 04	19 30
01°	04 23	05 59	12 00	15 25	18 01	19 26
02°	04 27	06 02	12 00	15 23	17 58	19 23
03°	04 30	06 05	12 00	15 21	17 55	19 20
04°	04 33	06 08	12 00	15 19	17 52	19 17
05°	04 36	06 11	12 00	15 17	17 49	19 13
06°	04 40	06 14	12 00	15 15	17 46	19 10
07°	04 43	06 18	12 00	15 12	17 42	19 07
08°	04 46	06 21	12 00	15 10	17 39	19 04
09°	04 49	06 24	12 00	15 08	17 36	19 01
10°	04 52	06 27	12 00	15 06	17 33	18 58
11°	04 55	06 30	12 00	15 03	17 30	18 55
12°	04 58	06 34	12 00	15 01	17 26	18 52
13°	05 01	06 37	12 00	14 58	17 23	18 49
14°	05 04	06 40	12 00	14 56	17 20	18 46
15°	05 07	06 44	12 00	14 53	17 16	18 43
16°	05 10	06 47	12 00	14 50	17 13	18 40
17°	05 13	06 50	12 00	14 48	17 10	18 37
18°	05 16	06 54	12 00	14 45	17 06	18 34
19°	05 19	06 58	12 00	14 42	17 02	18 31
20°	05 22	07 01	12 00	14 39	16 59	18 28
21°	05 25	07 05	12 00	14 36	16 55	18 25
22°	05 28	07 09	12 00	14 33	16 51	18 22
23°	05 30	07 12	12 00	14 29	16 48	18 19
24°	05 33	07 16	12 00	14 26	16 44	18 16

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude 38°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 20	05 56	12 00	15 26	18 04	19 30
01°	04 16	05 52	12 00	15 28	18 08	19 33
02°	04 13	05 49	12 00	15 30	18 11	19 37
03°	04 09	05 46	12 00	15 32	18 14	19 40
04°	04 05	05 43	12 00	15 33	18 17	19 44
05°	04 02	05 40	12 00	15 35	18 20	19 47
06°	03 58	05 37	12 00	15 36	18 23	19 51
07°	03 54	05 33	12 00	15 38	18 27	19 55
08°	03 50	05 30	12 00	15 39	18 30	19 59
09°	03 46	05 27	12 00	15 41	18 33	20 03
10°	03 42	05 24	12 00	15 42	18 36	20 07
11°	03 37	05 20	12 00	15 43	18 40	20 11
12°	03 33	05 17	12 00	15 44	18 43	20 15
13°	03 28	05 14	12 00	15 46	18 46	20 20
14°	03 23	05 10	12 00	15 47	18 50	20 24
15°	03 18	05 07	12 00	15 48	18 53	20 29
16°	03 13	05 03	12 00	15 49	18 57	20 34
17°	03 08	05 00	12 00	15 50	19 00	20 39
18°	03 03	04 56	12 00	15 51	19 04	20 44
19°	02 57	04 53	12 00	15 51	19 07	20 49
20°	02 51	04 49	12 00	15 52	19 11	20 55
21°	02 44	04 45	12 00	15 53	19 15	21 01
22°	02 38	04 41	12 00	15 54	19 19	21 07
23°	02 31	04 37	12 00	15 54	19 23	21 13
24°	02 23	04 33	12 00	15 55	19 27	21 20

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 39°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 18	05 55	12 00	15 26	18 05	19 31
01°	04 22	05 59	12 00	15 24	18 01	19 28
02°	04 25	06 02	12 00	15 22	17 58	19 24
03°	04 29	06 05	12 00	15 20	17 55	19 21
04°	04 32	06 08	12 00	15 18	17 52	19 17
05°	04 36	06 12	12 00	15 16	17 48	19 14
06°	04 39	06 15	12 00	15 14	17 45	19 11
07°	04 42	06 18	12 00	15 11	17 42	19 08
08°	04 45	06 22	12 00	15 09	17 38	19 04
09°	04 49	06 25	12 00	15 07	17 35	19 01
10°	04 52	06 28	12 00	15 04	17 32	18 58
11°	04 55	06 32	12 00	15 02	17 28	18 55
12°	04 58	06 35	12 00	14 59	17 25	18 52
13°	05 01	06 38	12 00	14 57	17 22	18 49
14°	05 04	06 42	12 00	14 54	17 18	18 45
15°	05 07	06 45	12 00	14 51	17 15	18 42
16°	05 10	06 49	12 00	14 48	17 11	18 39
17°	05 13	06 52	12 00	14 46	17 08	18 36
18°	05 17	06 56	12 00	14 43	17 04	18 33
19°	05 20	07 00	12 00	14 40	17 00	18 30
20°	05 23	07 04	12 00	14 36	16 56	18 27
21°	05 26	07 07	12 00	14 33	16 53	18 24
22°	05 29	07 11	12 00	14 30	16 49	18 21
23°	05 32	07 15	12 00	14 27	16 45	18 18
24°	05 35	07 19	12 00	14 23	16 41	18 14

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 39°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 18	05 55	12 00	15 26	18 05	19 31
01°	04 15	05 52	12 00	15 28	18 08	19 35
02°	04 11	05 49	12 00	15 30	18 11	19 38
03°	04 07	05 46	12 00	15 32	18 14	19 42
04°	04 03	05 42	12 00	15 33	18 18	19 46
05°	03 59	05 39	12 00	15 35	18 21	19 49
06°	03 55	05 36	12 00	15 37	18 24	19 53
07°	03 51	05 33	12 00	15 38	18 27	19 57
08°	03 47	05 29	12 00	15 40	18 31	20 01
09°	03 43	05 26	12 00	15 41	18 34	20 05
10°	03 38	05 23	12 00	15 43	18 37	20 10
11°	03 34	05 19	12 00	15 44	18 41	20 14
12°	03 29	05 16	12 00	15 45	18 44	20 18
13°	03 24	05 12	12 00	15 47	18 48	20 23
14°	03 19	05 09	12 00	15 48	18 51	20 28
15°	03 14	05 05	12 00	15 49	18 55	20 33
16°	03 09	05 01	12 00	15 50	18 59	20 38
17°	03 03	04 58	12 00	15 51	19 02	20 43
18°	02 58	04 54	12 00	15 52	19 06	20 48
19°	02 51	04 50	12 00	15 53	19 10	20 54
20°	02 45	04 46	12 00	15 54	19 14	21 00
21°	02 38	04 42	12 00	15 55	19 18	21 06
22°	02 31	04 38	12 00	15 56	19 22	21 12
23°	02 23	04 34	12 00	15 56	19 26	21 19
24°	02 15	04 30	12 00	15 57	19 30	21 27

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 40°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 17	05 55	12 00	15 26	18 05	19 32
01°	04 20	05 59	12 00	15 24	18 01	19 29
02°	04 24	06 02	12 00	15 22	17 58	19 25
03°	04 28	06 05	12 00	15 19	17 55	19 22
04°	04 31	06 09	12 00	15 17	17 51	19 18
05°	04 35	06 12	12 00	15 15	17 48	19 15
06°	04 38	06 16	12 00	15 13	17 44	19 11
07°	04 41	06 19	12 00	15 10	17 41	19 08
08°	04 45	06 22	12 00	15 08	17 38	19 05
09°	04 48	06 26	12 00	15 05	17 34	19 01
10°	04 51	06 29	12 00	15 03	17 31	18 58
11°	04 55	06 33	12 00	15 00	17 27	18 55
12°	04 58	06 36	12 00	14 58	17 24	18 52
13°	05 01	06 40	12 00	14 55	17 20	18 48
14°	05 04	06 43	12 00	14 52	17 17	18 45
15°	05 08	06 47	12 00	14 49	17 13	18 42
16°	05 11	06 51	12 00	14 46	17 09	18 39
17°	05 14	06 55	12 00	14 43	17 05	18 35
18°	05 17	06 58	12 00	14 40	17 02	18 32
19°	05 20	07 02	12 00	14 37	16 58	18 29
20°	05 24	07 06	12 00	14 34	16 54	18 26
21°	05 27	07 10	12 00	14 31	16 50	18 23
22°	05 30	07 14	12 00	14 27	16 46	18 19
23°	05 33	07 18	12 00	14 24	16 42	18 16
24°	05 36	07 22	12 00	14 20	16 38	18 13

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 40°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 17	05 55	12 00	15 26	18 05	19 32
01°	04 13	05 52	12 00	15 28	18 08	19 36
02°	04 09	05 49	12 00	15 30	18 11	19 40
03°	04 05	05 45	12 00	15 31	18 15	19 44
04°	04 01	05 42	12 00	15 33	18 18	19 48
05°	03 57	05 39	12 00	15 35	18 21	19 51
06°	03 53	05 35	12 00	15 37	18 25	19 55
07°	03 49	05 32	12 00	15 39	18 28	20 00
08°	03 44	05 28	12 00	15 40	18 32	20 04
09°	03 40	05 25	12 00	15 42	18 35	20 08
10°	03 35	05 21	12 00	15 43	18 39	20 13
11°	03 31	05 18	12 00	15 45	18 42	20 17
12°	03 26	05 14	12 00	15 46	18 46	20 22
13°	03 21	05 11	12 00	15 48	18 49	20 27
14°	03 15	05 07	12 00	15 49	18 53	20 31
15°	03 10	05 03	12 00	15 50	18 57	20 37
16°	03 04	04 59	12 00	15 51	19 01	20 42
17°	02 58	04 56	12 00	15 53	19 04	20 47
18°	02 52	04 52	12 00	15 54	19 08	20 53
19°	02 46	04 48	12 00	15 55	19 12	20 59
20°	02 39	04 44	12 00	15 56	19 16	21 05
21°	02 32	04 40	12 00	15 57	19 20	21 12
22°	02 24	04 35	12 00	15 58	19 25	21 19
23°	02 16	04 31	12 00	15 58	19 29	21 26
24°	02 07	04 27	12 00	15 59	19 33	21 34

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 41°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 15	05 55	12 00	15 25	18 05	19 34
01°	04 19	05 59	12 00	15 23	18 01	19 30
02°	04 23	06 02	12 00	15 21	17 58	19 26
03°	04 26	06 06	12 00	15 19	17 54	19 23
04°	04 30	06 09	12 00	15 16	17 51	19 19
05°	04 34	06 13	12 00	15 14	17 47	19 16
06°	04 37	06 16	12 00	15 12	17 44	19 12
07°	04 41	06 20	12 00	15 09	17 40	19 09
08°	04 44	06 23	12 00	15 07	17 37	19 05
09°	04 48	06 27	12 00	15 04	17 33	19 02
10°	04 51	06 30	12 00	15 01	17 30	18 58
11°	04 55	06 34	12 00	14 59	17 26	18 55
12°	04 58	06 38	12 00	14 56	17 22	18 51
13°	05 01	06 41	12 00	14 53	17 19	18 48
14°	05 05	06 45	12 00	14 50	17 15	18 45
15°	05 08	06 49	12 00	14 47	17 11	18 41
16°	05 11	06 53	12 00	14 44	17 07	18 38
17°	05 15	06 57	12 00	14 41	17 03	18 35
18°	05 18	07 01	12 00	14 38	16 59	18 31
19°	05 21	07 05	12 00	14 35	16 55	18 28
20°	05 24	07 09	12 00	14 31	16 51	18 25
21°	05 28	07 13	12 00	14 28	16 47	18 21
22°	05 31	07 17	12 00	14 24	16 43	18 18
23°	05 34	07 21	12 00	14 21	16 39	18 15
24°	05 38	07 26	12 00	14 17	16 34	18 11

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude 41°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 15	05 55	12 00	15 25	18 05	19 34
01°	04 11	05 52	12 00	15 27	18 08	19 38
02°	04 07	05 48	12 00	15 29	18 12	19 42
03°	04 03	05 45	12 00	15 31	18 15	19 46
04°	03 59	05 41	12 00	15 33	18 19	19 50
05°	03 55	05 38	12 00	15 35	18 22	19 54
06°	03 50	05 34	12 00	15 37	18 26	19 58
07°	03 46	05 31	12 00	15 39	18 29	20 02
08°	03 41	05 27	12 00	15 41	18 33	20 07
09°	03 37	05 24	12 00	15 42	18 36	20 11
10°	03 32	05 20	12 00	15 44	18 40	20 16
11°	03 27	05 16	12 00	15 45	18 44	20 20
12°	03 22	05 13	12 00	15 47	18 47	20 25
13°	03 16	05 09	12 00	15 49	18 51	20 30
14°	03 11	05 05	12 00	15 50	18 55	20 35
15°	03 05	05 01	12 00	15 51	18 59	20 41
16°	02 59	04 57	12 00	15 53	19 03	20 46
17°	02 53	04 53	12 00	15 54	19 07	20 52
18°	02 46	04 49	12 00	15 55	19 11	20 58
19°	02 40	04 45	12 00	15 56	19 15	21 04
20°	02 32	04 41	12 00	15 57	19 19	21 11
21°	02 25	04 37	12 00	15 59	19 23	21 18
22°	02 16	04 32	12 00	16 00	19 28	21 25
23°	02 07	04 28	12 00	16 00	19 32	21 33
24°	01 58	04 23	12 00	16 01	19 37	21 42

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names

Latitude 42°

Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 13	05 55	12 00	15 25	18 05	19 35
01°	04 17	05 59	12 00	15 23	18 01	19 32
02°	04 21	06 02	12 00	15 20	17 58	19 28
03°	04 25	06 06	12 00	15 18	17 54	19 24
04°	04 29	06 10	12 00	15 15	17 50	19 20
05°	04 33	06 13	12 00	15 13	17 47	19 16
06°	04 36	06 17	12 00	15 11	17 43	19 13
07°	04 40	06 21	12 00	15 08	17 39	19 09
08°	04 44	06 24	12 00	15 05	17 36	19 06
09°	04 47	06 28	12 00	15 03	17 32	19 02
10°	04 51	06 32	12 00	15 00	17 28	18 58
11°	04 54	06 35	12 00	14 57	17 25	18 55
12°	04 58	06 39	12 00	14 54	17 21	18 51
13°	05 01	06 43	12 00	14 51	17 17	18 48
14°	05 05	06 47	12 00	14 48	17 13	18 44
15°	05 08	06 51	12 00	14 45	17 09	18 41
16°	05 12	06 55	12 00	14 42	17 05	18 37
17°	05 15	06 59	12 00	14 39	17 01	18 34
18°	05 19	07 03	12 00	14 35	16 57	18 31
19°	05 22	07 07	12 00	14 32	16 53	18 27
20°	05 25	07 11	12 00	14 28	16 49	18 24
21°	05 29	07 16	12 00	14 25	16 44	18 20
22°	05 32	07 20	12 00	14 21	16 40	18 17
23°	05 36	07 24	12 00	14 18	16 36	18 13
24°	05 39	07 29	12 00	14 14	16 31	18 10

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 42°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL_ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 13	05 55	12 00	15 25	18 05	19 35
01°	04 09	05 52	12 00	15 27	18 08	19 39
02°	04 05	05 48	12 00	15 29	18 12	19 43
03°	04 01	05 44	12 00	15 31	18 16	19 48
04°	03 56	05 41	12 00	15 33	18 19	19 52
05°	03 52	05 37	12 00	15 35	18 23	19 56
06°	03 48	05 34	12 00	15 37	18 26	20 00
07°	03 43	05 30	12 00	15 39	18 30	20 05
08°	03 38	05 26	12 00	15 41	18 34	20 09
09°	03 33	05 22	12 00	15 43	18 38	20 14
10°	03 28	05 19	12 00	15 44	18 41	20 19
11°	03 23	05 15	12 00	15 46	18 45	20 24
12°	03 18	05 11	12 00	15 48	18 49	20 29
13°	03 12	05 07	12 00	15 49	18 53	20 34
14°	03 06	05 03	12 00	15 51	18 57	20 40
15°	03 00	04 59	12 00	15 52	19 01	20 45
16°	02 54	04 55	12 00	15 54	19 05	20 51
17°	02 47	04 51	12 00	15 55	19 09	20 57
18°	02 40	04 47	12 00	15 57	19 13	21 04
19°	02 33	04 42	12 00	15 58	19 18	21 10
20°	02 25	04 38	12 00	15 59	19 22	21 17
21°	02 17	04 34	12 00	16 00	19 26	21 25
22°	02 08	04 29	12 00	16 01	19 31	21 33
23°	01 58	04 25	12 00	16 03	19 35	21 41
24°	01 47	04 20	12 00	16 04	19 40	21 50

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 43°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 11	05 55	12 00	15 24	18 05	19 37
01°	04 16	05 59	12 00	15 22	18 01	19 33
02°	04 20	06 03	12 00	15 20	17 57	19 29
03°	04 24	06 06	12 00	15 17	17 54	19 25
04°	04 28	06 10	12 00	15 15	17 50	19 21
05°	04 32	06 14	12 00	15 12	17 46	19 17
06°	04 35	06 18	12 00	15 09	17 42	19 14
07°	04 39	06 21	12 00	15 07	17 39	19 10
08°	04 43	06 25	12 00	15 04	17 35	19 06
09°	04 47	06 29	12 00	15 01	17 31	19 02
10°	04 50	06 33	12 00	14 58	17 27	18 59
11°	04 54	06 37	12 00	14 55	17 23	18 55
12°	04 58	06 41	12 00	14 52	17 19	18 51
13°	05 01	06 45	12 00	14 49	17 15	18 48
14°	05 05	06 49	12 00	14 46	17 11	18 44
15°	05 09	06 53	12 00	14 43	17 07	18 41
16°	05 12	06 57	12 00	14 40	17 03	18 37
17°	05 16	07 01	12 00	14 36	16 59	18 33
18°	05 19	07 05	12 00	14 33	16 55	18 30
19°	05 23	07 10	12 00	14 29	16 50	18 26
20°	05 26	07 14	12 00	14 26	16 46	18 23
21°	05 30	07 18	12 00	14 22	16 42	18 19
22°	05 33	07 23	12 00	14 18	16 37	18 15
23°	05 37	07 28	12 00	14 14	16 32	18 12
24°	05 41	07 32	12 00	14 10	16 28	18 08

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude 43°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 11	05 55	12 00	15 24	18 05	19 37
01°	04 07	05 51	12 00	15 27	18 09	19 41
02°	04 03	05 48	12 00	15 29	18 12	19 45
03°	03 58	05 44	12 00	15 31	18 16	19 50
04°	03 54	05 40	12 00	15 33	18 20	19 54
05°	03 49	05 36	12 00	15 35	18 24	19 58
06°	03 45	05 33	12 00	15 37	18 27	20 03
07°	03 40	05 29	12 00	15 39	18 31	20 08
08°	03 35	05 25	12 00	15 41	18 35	20 12
09°	03 30	05 21	12 00	15 43	18 39	20 17
10°	03 24	05 17	12 00	15 45	18 43	20 22
11°	03 19	05 13	12 00	15 47	18 47	20 28
12°	03 13	05 09	12 00	15 49	18 51	20 33
13°	03 07	05 05	12 00	15 50	18 55	20 38
14°	03 01	05 01	12 00	15 52	18 59	20 44
15°	02 55	04 57	12 00	15 54	19 03	20 50
16°	02 48	04 53	12 00	15 55	19 07	20 56
17°	02 41	04 48	12 00	15 57	19 12	21 03
18°	02 34	04 44	12 00	15 58	19 16	21 09
19°	02 26	04 40	12 00	16 00	19 20	21 16
20°	02 18	04 35	12 00	16 01	19 25	21 24
21°	02 09	04 31	12 00	16 02	19 29	21 32
22°	01 59	04 26	12 00	16 03	19 34	21 40
23°	01 48	04 21	12 00	16 05	19 39	21 50
24°	01 35	04 16	12 00	16 06	19 44	22 00

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						Latitude 44°
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 09	05 55	12 00	15 24	18 05	19 39
01°	04 14	05 59	12 00	15 21	18 01	19 35
02°	04 18	06 03	12 00	15 19	17 57	19 30
03°	04 22	06 07	12 00	15 16	17 53	19 26
04°	04 26	06 11	12 00	15 14	17 49	19 22
05°	04 30	06 14	12 00	15 11	17 46	19 18
06°	04 34	06 18	12 00	15 08	17 42	19 14
07°	04 38	06 22	12 00	15 05	17 38	19 10
08°	04 42	06 26	12 00	15 02	17 34	19 07
09°	04 46	06 30	12 00	14 59	17 30	19 03
10°	04 50	06 34	12 00	14 57	17 26	18 59
11°	04 54	06 38	12 00	14 53	17 22	18 55
12°	04 58	06 42	12 00	14 50	17 18	18 51
13°	05 01	06 46	12 00	14 47	17 14	18 48
14°	05 05	06 51	12 00	14 44	17 09	18 44
15°	05 09	06 55	12 00	14 41	17 05	18 40
16°	05 12	06 59	12 00	14 37	17 01	18 36
17°	05 16	07 03	12 00	14 34	16 57	18 33
18°	05 20	07 08	12 00	14 30	16 52	18 29
19°	05 24	07 12	12 00	14 26	16 48	18 25
20°	05 27	07 17	12 00	14 23	16 43	18 21
21°	05 31	07 21	12 00	14 19	16 39	18 18
22°	05 35	07 26	12 00	14 15	16 34	18 14
23°	05 38	07 31	12 00	14 11	16 29	18 10
24°	05 42	07 36	12 00	14 07	16 24	18 06

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 44°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 09	05 55	12 00	15 24	18 05	19 39
01°	04 05	05 51	12 00	15 26	18 09	19 43
02°	04 01	05 47	12 00	15 28	18 13	19 47
03°	03 56	05 44	12 00	15 31	18 16	19 52
04°	03 51	05 40	12 00	15 33	18 20	19 56
05°	03 46	05 36	12 00	15 35	18 24	20 01
06°	03 42	05 32	12 00	15 37	18 28	20 06
07°	03 36	05 28	12 00	15 40	18 32	20 11
08°	03 31	05 24	12 00	15 42	18 36	20 16
09°	03 26	05 20	12 00	15 44	18 40	20 21
10°	03 20	05 16	12 00	15 46	18 44	20 26
11°	03 15	05 12	12 00	15 47	18 48	20 31
12°	03 09	05 08	12 00	15 49	18 52	20 37
13°	03 03	05 03	12 00	15 51	18 57	20 43
14°	02 56	04 59	12 00	15 53	19 01	20 49
15°	02 49	04 55	12 00	15 55	19 05	20 55
16°	02 42	04 50	12 00	15 56	19 10	21 02
17°	02 35	04 46	12 00	15 58	19 14	21 08
18°	02 27	04 41	12 00	16 00	19 19	21 16
19°	02 18	04 37	12 00	16 01	19 23	21 23
20°	02 09	04 32	12 00	16 03	19 28	21 31
21°	01 59	04 27	12 00	16 04	19 33	21 40
22°	01 48	04 22	12 00	16 05	19 38	21 49
23°	01 36	04 17	12 00	16 07	19 43	21 59
24°	01 21	04 12	12 00	16 08	19 48	22 10

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 45°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 07	05 55	12 00	15 23	18 05	19 41
01°	04 12	05 59	12 00	15 20	18 01	19 36
02°	04 16	06 03	12 00	15 18	17 57	19 32
03°	04 21	06 07	12 00	15 15	17 53	19 28
04°	04 25	06 11	12 00	15 12	17 49	19 24
05°	04 29	06 15	12 00	15 10	17 45	19 19
06°	04 33	06 19	12 00	15 07	17 41	19 15
07°	04 37	06 23	12 00	15 04	17 37	19 11
08°	04 41	06 27	12 00	15 01	17 33	19 07
09°	04 45	06 31	12 00	14 58	17 29	19 03
10°	04 49	06 36	12 00	14 55	17 24	18 59
11°	04 53	06 40	12 00	14 52	17 20	18 55
12°	04 57	06 44	12 00	14 48	17 16	18 51
13°	05 01	06 48	12 00	14 45	17 12	18 47
14°	05 05	06 52	12 00	14 42	17 08	18 44
15°	05 09	06 57	12 00	14 38	17 03	18 40
16°	05 13	07 01	12 00	14 35	16 59	18 36
17°	05 17	07 06	12 00	14 31	16 54	18 32
18°	05 21	07 10	12 00	14 27	16 50	18 28
19°	05 24	07 15	12 00	14 24	16 45	18 24
20°	05 28	07 20	12 00	14 20	16 40	18 20
21°	05 32	07 25	12 00	14 16	16 35	18 16
22°	05 36	07 30	12 00	14 12	16 30	18 13
23°	05 40	07 35	12 00	14 07	16 25	18 09
24°	05 44	07 40	12 00	14 03	16 20	18 05

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 45°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL_ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 07	05 55	12 00	15 23	18 05	19 41
01°	04 03	05 51	12 00	15 26	18 09	19 45
02°	03 58	05 47	12 00	15 28	18 13	19 50
03°	03 53	05 43	12 00	15 30	18 17	19 54
04°	03 48	05 39	12 00	15 33	18 21	19 59
05°	03 43	05 35	12 00	15 35	18 25	20 04
06°	03 38	05 31	12 00	15 37	18 29	20 09
07°	03 33	05 27	12 00	15 40	18 33	20 14
08°	03 28	05 23	12 00	15 42	18 37	20 19
09°	03 22	05 18	12 00	15 44	18 42	20 24
10°	03 16	05 14	12 00	15 46	18 46	20 30
11°	03 10	05 10	12 00	15 48	18 50	20 35
12°	03 04	05 06	12 00	15 50	18 54	20 41
13°	02 57	05 01	12 00	15 52	18 59	20 47
14°	02 50	04 57	12 00	15 54	19 03	20 54
15°	02 43	04 52	12 00	15 56	19 08	21 00
16°	02 36	04 48	12 00	15 58	19 12	21 07
17°	02 28	04 43	12 00	15 59	19 17	21 15
18°	02 19	04 39	12 00	16 01	19 21	21 22
19°	02 10	04 34	12 00	16 03	19 26	21 30
20°	02 00	04 29	12 00	16 04	19 31	21 39
21°	01 49	04 24	12 00	16 06	19 36	21 48
22°	01 36	04 19	12 00	16 07	19 41	21 58
23°	01 22	04 14	12 00	16 09	19 46	22 10
24°	01 03	04 08	12 00	16 10	19 52	22 22

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 46°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 05	05 55	12 00	15 22	18 05	19 43
01°	04 10	05 59	12 00	15 20	18 01	19 38
02°	04 14	06 03	12 00	15 17	17 57	19 34
03°	04 19	06 07	12 00	15 14	17 53	19 29
04°	04 23	06 12	12 00	15 11	17 48	19 25
05°	04 28	06 16	12 00	15 08	17 44	19 20
06°	04 32	06 20	12 00	15 05	17 40	19 16
07°	04 36	06 24	12 00	15 02	17 36	19 12
08°	04 41	06 28	12 00	14 59	17 32	19 08
09°	04 45	06 33	12 00	14 56	17 27	19 04
10°	04 49	06 37	12 00	14 53	17 23	19 00
11°	04 53	06 41	12 00	14 50	17 19	18 55
12°	04 57	06 46	12 00	14 46	17 14	18 51
13°	05 01	06 50	12 00	14 43	17 10	18 47
14°	05 05	06 54	12 00	14 39	17 06	18 43
15°	05 09	06 59	12 00	14 36	17 01	18 39
16°	05 13	07 04	12 00	14 32	16 56	18 35
17°	05 17	07 08	12 00	14 28	16 52	18 31
18°	05 21	07 13	12 00	14 24	16 47	18 27
19°	05 25	07 18	12 00	14 20	16 42	18 23
20°	05 29	07 23	12 00	14 16	16 37	18 19
21°	05 33	07 28	12 00	14 12	16 32	18 15
22°	05 37	07 33	12 00	14 08	16 27	18 11
23°	05 41	07 38	12 00	14 04	16 22	18 07
24°	05 45	07 44	12 00	13 59	16 16	18 03

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 46°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 05	05 55	12 00	15 22	18 05	19 43
01°	04 00	05 51	12 00	15 25	18 09	19 47
02°	03 55	05 47	12 00	15 28	18 13	19 52
03°	03 50	05 42	12 00	15 30	18 18	19 57
04°	03 45	05 38	12 00	15 33	18 22	20 02
05°	03 40	05 34	12 00	15 35	18 26	20 07
06°	03 35	05 30	12 00	15 37	18 30	20 12
07°	03 29	05 26	12 00	15 40	18 34	20 17
08°	03 24	05 21	12 00	15 42	18 39	20 23
09°	03 18	05 17	12 00	15 44	18 43	20 28
10°	03 12	05 13	12 00	15 47	18 47	20 34
11°	03 05	05 08	12 00	15 49	18 52	20 40
12°	02 59	05 04	12 00	15 51	18 56	20 46
13°	02 52	04 59	12 00	15 53	19 01	20 52
14°	02 44	04 55	12 00	15 55	19 05	20 59
15°	02 37	04 50	12 00	15 57	19 10	21 06
16°	02 29	04 45	12 00	15 59	19 15	21 13
17°	02 20	04 41	12 00	16 01	19 19	21 21
18°	02 11	04 36	12 00	16 02	19 24	21 29
19°	02 01	04 31	12 00	16 04	19 29	21 38
20°	01 49	04 26	12 00	16 06	19 34	21 48
21°	01 37	04 20	12 00	16 08	19 40	21 58
22°	01 22	04 15	12 00	16 09	19 45	22 09
23°	01 04	04 10	12 00	16 11	19 50	22 22
24°	00 37	04 04	12 00	16 12	19 56	22 37

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						Latitude 47°
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 03	05 55	12 00	15 22	18 05	19 45
01°	04 08	05 59	12 00	15 19	18 01	19 40
02°	04 12	06 03	12 00	15 16	17 57	19 35
03°	04 17	06 08	12 00	15 13	17 52	19 31
04°	04 22	06 12	12 00	15 10	17 48	19 26
05°	04 26	06 16	12 00	15 07	17 44	19 22
06°	04 31	06 21	12 00	15 04	17 39	19 17
07°	04 35	06 25	12 00	15 01	17 35	19 13
08°	04 40	06 29	12 00	14 58	17 31	19 09
09°	04 44	06 34	12 00	14 54	17 26	19 04
10°	04 48	06 38	12 00	14 51	17 22	19 00
11°	04 53	06 43	12 00	14 48	17 17	18 56
12°	04 57	06 47	12 00	14 44	17 13	18 52
13°	05 01	06 52	12 00	14 40	17 08	18 47
14°	05 05	06 57	12 00	14 37	17 03	18 43
15°	05 09	07 01	12 00	14 33	16 59	18 39
16°	05 13	07 06	12 00	14 29	16 54	18 35
17°	05 18	07 11	12 00	14 25	16 49	18 31
18°	05 22	07 16	12 00	14 21	16 44	18 26
19°	05 26	07 21	12 00	14 17	16 39	18 22
20°	05 30	07 26	12 00	14 13	16 34	18 18
21°	05 34	07 31	12 00	14 09	16 29	18 14
22°	05 38	07 37	12 00	14 05	16 23	18 10
23°	05 42	07 42	12 00	14 00	16 18	18 05
24°	05 47	07 48	12 00	13 55	16 12	18 01

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude 47°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 03	05 55	12 00	15 22	18 05	19 45
01°	03 58	05 51	12 00	15 24	18 09	19 49
02°	03 53	05 46	12 00	15 27	18 14	19 54
03°	03 48	05 42	12 00	15 30	18 18	19 59
04°	03 42	05 38	12 00	15 32	18 22	20 05
05°	03 37	05 33	12 00	15 35	18 27	20 10
06°	03 31	05 29	12 00	15 37	18 31	20 15
07°	03 25	05 24	12 00	15 40	18 36	20 21
08°	03 19	05 20	12 00	15 42	18 40	20 26
09°	03 13	05 16	12 00	15 45	18 44	20 32
10°	03 07	05 11	12 00	15 47	18 49	20 38
11°	03 00	05 07	12 00	15 49	18 53	20 44
12°	02 53	05 02	12 00	15 51	18 58	20 51
13°	02 46	04 57	12 00	15 54	19 03	20 58
14°	02 38	04 52	12 00	15 56	19 08	21 05
15°	02 30	04 48	12 00	15 58	19 12	21 12
16°	02 21	04 43	12 00	16 00	19 17	21 20
17°	02 12	04 38	12 00	16 02	19 22	21 28
18°	02 01	04 33	12 00	16 04	19 27	21 37
19°	01 50	04 27	12 00	16 06	19 33	21 47
20°	01 37	04 22	12 00	16 07	19 38	21 57
21°	01 22	04 17	12 00	16 09	19 43	22 08
22°	01 04	04 11	12 00	16 11	19 49	22 21
23°	00 37	04 05	12 00	16 13	19 55	22 36
24°		03 59	12 00	16 14	20 01	22 55

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 48°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 00	05 55	12 00	15 21	18 05	19 47
01°	04 05	05 59	12 00	15 18	18 01	19 42
02°	04 10	06 04	12 00	15 15	17 56	19 37
03°	04 15	06 08	12 00	15 12	17 52	19 32
04°	04 20	06 13	12 00	15 09	17 47	19 28
05°	04 25	06 17	12 00	15 06	17 43	19 23
06°	04 29	06 22	12 00	15 02	17 38	19 18
07°	04 34	06 26	12 00	14 59	17 34	19 14
08°	04 39	06 31	12 00	14 56	17 29	19 09
09°	04 43	06 35	12 00	14 52	17 25	19 05
10°	04 48	06 40	12 00	14 49	17 20	19 00
11°	04 52	06 44	12 00	14 45	17 16	18 56
12°	04 56	06 49	12 00	14 42	17 11	18 52
13°	05 01	06 54	12 00	14 38	17 06	18 47
14°	05 05	06 59	12 00	14 34	17 01	18 43
15°	05 09	07 04	12 00	14 30	16 56	18 39
16°	05 14	07 09	12 00	14 26	16 51	18 34
17°	05 18	07 14	12 00	14 22	16 46	18 30
18°	05 22	07 19	12 00	14 18	16 41	18 26
19°	05 27	07 24	12 00	14 14	16 36	18 21
20°	05 31	07 29	12 00	14 10	16 31	18 17
21°	05 35	07 35	12 00	14 05	16 25	18 13
22°	05 40	07 40	12 00	14 01	16 20	18 08
23°	05 44	07 46	12 00	13 56	16 14	18 04
24°	05 48	07 52	12 00	13 51	16 08	17 59

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 48°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	04 00	05 55	12 00	15 21	18 05	19 47
01°	03 55	05 50	12 00	15 24	18 10	19 52
02°	03 50	05 46	12 00	15 27	18 14	19 57
03°	03 44	05 41	12 00	15 29	18 19	20 02
04°	03 39	05 37	12 00	15 32	18 23	20 08
05°	03 33	05 32	12 00	15 35	18 28	20 13
06°	03 27	05 28	12 00	15 37	18 32	20 19
07°	03 21	05 23	12 00	15 40	18 37	20 24
08°	03 15	05 19	12 00	15 42	18 41	20 30
09°	03 08	05 14	12 00	15 45	18 46	20 36
10°	03 02	05 09	12 00	15 47	18 51	20 43
11°	02 54	05 05	12 00	15 50	18 55	20 49
12°	02 47	05 00	12 00	15 52	19 00	20 56
13°	02 39	04 55	12 00	15 54	19 05	21 03
14°	02 31	04 50	12 00	15 57	19 10	21 11
15°	02 22	04 45	12 00	15 59	19 15	21 19
16°	02 13	04 40	12 00	16 01	19 20	21 27
17°	02 02	04 35	12 00	16 03	19 25	21 36
18°	01 51	04 29	12 00	16 05	19 31	21 46
19°	01 38	04 24	12 00	16 07	19 36	21 56
20°	01 23	04 18	12 00	16 09	19 42	22 08
21°	01 04	04 13	12 00	16 11	19 47	22 21
22°	00 37	04 07	12 00	16 13	19 53	22 36
23°		04 01	12 00	16 15	19 59	22 55
24°		03 55	12 00	16 17	20 05	23 22

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 49°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	03 58	05 55	12 00	15 20	18 05	19 49
01°	04 03	05 59	12 00	15 17	18 01	19 44
02°	04 08	06 04	12 00	15 14	17 56	19 39
03°	04 13	06 08	12 00	15 11	17 52	19 34
04°	04 18	06 13	12 00	15 07	17 47	19 29
05°	04 23	06 18	12 00	15 04	17 42	19 24
06°	04 28	06 22	12 00	15 01	17 38	19 19
07°	04 33	06 27	12 00	14 57	17 33	19 15
08°	04 38	06 32	12 00	14 54	17 28	19 10
09°	04 42	06 36	12 00	14 50	17 24	19 05
10°	04 47	06 41	12 00	14 47	17 19	19 01
11°	04 51	06 46	12 00	14 43	17 14	18 56
12°	04 56	06 51	12 00	14 39	17 09	18 52
13°	05 01	06 56	12 00	14 35	17 04	18 47
14°	05 05	07 01	12 00	14 32	16 59	18 43
15°	05 10	07 06	12 00	14 28	16 54	18 38
16°	05 14	07 11	12 00	14 23	16 49	18 34
17°	05 18	07 16	12 00	14 19	16 44	18 29
18°	05 23	07 22	12 00	14 15	16 38	18 25
19°	05 27	07 27	12 00	14 11	16 33	18 20
20°	05 32	07 33	12 00	14 06	16 27	18 16
21°	05 36	07 38	12 00	14 02	16 22	18 11
22°	05 41	07 44	12 00	13 57	16 16	18 07
23°	05 45	07 50	12 00	13 52	16 10	18 02
24°	05 50	07 56	12 00	13 47	16 04	17 58

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 49°	Latitude & Declination SAME Names					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	03 58	05 55	12 00	15 20	18 05	19 49
01°	03 52	05 50	12 00	15 23	18 10	19 54
02°	03 47	05 45	12 00	15 26	18 15	20 00
03°	03 41	05 41	12 00	15 29	18 19	20 05
04°	03 35	05 36	12 00	15 32	18 24	20 11
05°	03 29	05 31	12 00	15 34	18 29	20 16
06°	03 23	05 27	12 00	15 37	18 33	20 22
07°	03 17	05 22	12 00	15 40	18 38	20 28
08°	03 10	05 17	12 00	15 43	18 43	20 35
09°	03 03	05 12	12 00	15 45	18 48	20 41
10°	02 56	05 08	12 00	15 48	18 52	20 48
11°	02 48	05 03	12 00	15 50	18 57	20 55
12°	02 40	04 58	12 00	15 53	19 02	21 02
13°	02 32	04 53	12 00	15 55	19 07	21 10
14°	02 23	04 48	12 00	15 57	19 12	21 18
15°	02 14	04 42	12 00	16 00	19 18	21 26
16°	02 03	04 37	12 00	16 02	19 23	21 35
17°	01 52	04 32	12 00	16 04	19 28	21 45
18°	01 39	04 26	12 00	16 06	19 34	21 55
19°	01 24	04 20	12 00	16 09	19 40	22 07
20°	01 05	04 15	12 00	16 11	19 45	22 20
21°	00 38	04 09	12 00	16 13	19 51	22 35
22°		04 03	12 00	16 15	19 57	22 54
23°		03 56	12 00	16 17	20 04	23 22
24°		03 50	12 00	16 19	20 10	

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 50°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	03 55	05 55	12 00	15 19	18 05	19 52
01°	04 00	05 59	12 00	15 16	18 01	19 46
02°	04 06	06 04	12 00	15 13	17 56	19 41
03°	04 11	06 09	12 00	15 09	17 51	19 36
04°	04 16	06 14	12 00	15 06	17 46	19 31
05°	04 21	06 18	12 00	15 03	17 42	19 26
06°	04 26	06 23	12 00	14 59	17 37	19 21
07°	04 31	06 28	12 00	14 56	17 32	19 16
08°	04 36	06 33	12 00	14 52	17 27	19 11
09°	04 41	06 38	12 00	14 48	17 22	19 06
10°	04 46	06 43	12 00	14 45	17 17	19 01
11°	04 51	06 48	12 00	14 41	17 12	18 57
12°	04 56	06 53	12 00	14 37	17 07	18 52
13°	05 00	06 58	12 00	14 33	17 02	18 47
14°	05 05	07 03	12 00	14 29	16 57	18 43
15°	05 10	07 09	12 00	14 25	16 51	18 38
16°	05 14	07 14	12 00	14 20	16 46	18 33
17°	05 19	07 19	12 00	14 16	16 41	18 29
18°	05 23	07 25	12 00	14 12	16 35	18 24
19°	05 28	07 31	12 00	14 07	16 29	18 19
20°	05 33	07 36	12 00	14 02	16 24	18 15
21°	05 37	07 42	12 00	13 58	16 18	18 10
22°	05 42	07 48	12 00	13 53	16 12	18 05
23°	05 47	07 55	12 00	13 48	16 05	18 01
24°	05 51	08 01	12 00	13 43	15 59	17 56

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 50°	Latitude & Declination SAME Names					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	03 55	05 55	12 00	15 19	18 05	19 52
01°	03 49	05 50	12 00	15 22	18 10	19 57
02°	03 43	05 45	12 00	15 25	18 15	20 03
03°	03 37	05 40	12 00	15 28	18 20	20 08
04°	03 31	05 35	12 00	15 31	18 25	20 14
05°	03 25	05 31	12 00	15 34	18 29	20 20
06°	03 19	05 26	12 00	15 37	18 34	20 26
07°	03 12	05 21	12 00	15 40	18 39	20 33
08°	03 05	05 16	12 00	15 43	18 44	20 39
09°	02 58	05 11	12 00	15 45	18 49	20 46
10°	02 50	05 06	12 00	15 48	18 54	20 53
11°	02 42	05 01	12 00	15 51	18 59	21 00
12°	02 33	04 56	12 00	15 53	19 04	21 08
13°	02 24	04 50	12 00	15 56	19 10	21 16
14°	02 15	04 45	12 00	15 58	19 15	21 25
15°	02 04	04 40	12 00	16 01	19 20	21 34
16°	01 52	04 34	12 00	16 03	19 26	21 44
17°	01 39	04 28	12 00	16 06	19 32	21 54
18°	01 24	04 23	12 00	16 08	19 37	22 06
19°	01 05	04 17	12 00	16 10	19 43	22 19
20°	00 38	04 11	12 00	16 12	19 49	22 35
21°		04 04	12 00	16 15	19 56	22 54
22°		03 58	12 00	16 17	20 02	23 22
23°		03 52	12 00	16 19	20 08	
24°		03 45	12 00	16 21	20 15	

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						Latitude 51°
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	03 52	05 54	12 00	15 18	18 06	19 54
01°	03 58	05 59	12 00	15 15	18 01	19 49
02°	04 03	06 04	12 00	15 11	17 56	19 43
03°	04 09	06 09	12 00	15 08	17 51	19 38
04°	04 14	06 14	12 00	15 05	17 46	19 32
05°	04 20	06 19	12 00	15 01	17 41	19 27
06°	04 25	06 24	12 00	14 57	17 36	19 22
07°	04 30	06 29	12 00	14 54	17 31	19 17
08°	04 35	06 34	12 00	14 50	17 26	19 12
09°	04 40	06 39	12 00	14 46	17 21	19 07
10°	04 45	06 45	12 00	14 42	17 15	19 02
11°	04 50	06 50	12 00	14 38	17 10	18 57
12°	04 55	06 55	12 00	14 34	17 05	18 52
13°	05 00	07 00	12 00	14 30	17 00	18 47
14°	05 05	07 06	12 00	14 26	16 54	18 43
15°	05 10	07 11	12 00	14 22	16 49	18 38
16°	05 14	07 17	12 00	14 17	16 43	18 33
17°	05 19	07 22	12 00	14 13	16 38	18 28
18°	05 24	07 28	12 00	14 08	16 32	18 23
19°	05 29	07 34	12 00	14 03	16 26	18 18
20°	05 34	07 40	12 00	13 59	16 20	18 14
21°	05 38	07 46	12 00	13 54	16 14	18 09
22°	05 43	07 53	12 00	13 49	16 07	18 04
23°	05 48	07 59	12 00	13 44	16 01	17 59
24°	05 53	08 06	12 00	13 38	15 54	17 54

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 51°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	03 52	05 54	12 00	15 18	18 06	19 54
01°	03 46	05 49	12 00	15 21	18 11	20 00
02°	03 40	05 45	12 00	15 25	18 15	20 06
03°	03 34	05 40	12 00	15 28	18 20	20 12
04°	03 27	05 35	12 00	15 31	18 25	20 18
05°	03 21	05 30	12 00	15 34	18 30	20 24
06°	03 14	05 25	12 00	15 37	18 35	20 30
07°	03 07	05 19	12 00	15 40	18 41	20 37
08°	02 59	05 14	12 00	15 43	18 46	20 44
09°	02 52	05 09	12 00	15 46	18 51	20 51
10°	02 43	05 04	12 00	15 48	18 56	20 59
11°	02 35	04 59	12 00	15 51	19 01	21 06
12°	02 26	04 53	12 00	15 54	19 07	21 15
13°	02 16	04 48	12 00	15 56	19 12	21 23
14°	02 05	04 42	12 00	15 59	19 18	21 33
15°	01 53	04 37	12 00	16 02	19 23	21 43
16°	01 40	04 31	12 00	16 04	19 29	21 53
17°	01 25	04 25	12 00	16 07	19 35	22 05
18°	01 06	04 19	12 00	16 09	19 41	22 19
19°	00 38	04 13	12 00	16 12	19 47	22 34
20°		04 06	12 00	16 14	19 54	22 53
21°		04 00	12 00	16 16	20 00	23 21
22°		03 53	12 00	16 19	20 07	
23°		03 46	12 00	16 21	20 14	
24°		03 39	12 00	16 23	20 21	

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 52°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	03 49	05 54	12 00	15 17	18 06	19 57
01°	03 55	05 59	12 00	15 14	18 01	19 51
02°	04 01	06 05	12 00	15 10	17 55	19 45
03°	04 06	06 10	12 00	15 07	17 50	19 40
04°	04 12	06 15	12 00	15 03	17 45	19 34
05°	04 18	06 20	12 00	14 59	17 40	19 29
06°	04 23	06 25	12 00	14 56	17 35	19 24
07°	04 28	06 30	12 00	14 52	17 30	19 18
08°	04 34	06 36	12 00	14 48	17 24	19 13
09°	04 39	06 41	12 00	14 44	17 19	19 08
10°	04 44	06 46	12 00	14 40	17 14	19 03
11°	04 49	06 52	12 00	14 36	17 08	18 58
12°	04 54	06 57	12 00	14 31	17 03	18 53
13°	04 59	07 03	12 00	14 27	16 57	18 47
14°	05 05	07 08	12 00	14 23	16 52	18 42
15°	05 10	07 14	12 00	14 18	16 46	18 37
16°	05 15	07 20	12 00	14 14	16 40	18 32
17°	05 20	07 26	12 00	14 09	16 34	18 27
18°	05 25	07 32	12 00	14 04	16 28	18 22
19°	05 29	07 38	12 00	14 00	16 22	18 17
20°	05 34	07 44	12 00	13 55	16 16	18 12
21°	05 39	07 51	12 00	13 50	16 09	18 07
22°	05 44	07 57	12 00	13 44	16 03	18 02
23°	05 50	08 04	12 00	13 39	15 56	17 57
24°	05 55	08 11	12 00	13 34	15 49	17 52

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 52°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	03 49	05 54	12 00	15 17	18 06	19 57
01°	03 42	05 49	12 00	15 20	18 11	20 03
02°	03 36	05 44	12 00	15 24	18 16	20 09
03°	03 30	05 39	12 00	15 27	18 21	20 15
04°	03 23	05 34	12 00	15 30	18 26	20 22
05°	03 16	05 29	12 00	15 33	18 31	20 28
06°	03 09	05 23	12 00	15 37	18 37	20 35
07°	03 01	05 18	12 00	15 40	18 42	20 42
08°	02 53	05 13	12 00	15 43	18 47	20 49
09°	02 45	05 07	12 00	15 46	18 53	20 57
10°	02 36	05 02	12 00	15 49	18 58	21 05
11°	02 27	04 56	12 00	15 52	19 04	21 13
12°	02 17	04 51	12 00	15 54	19 09	21 22
13°	02 06	04 45	12 00	15 57	19 15	21 31
14°	01 54	04 39	12 00	16 00	19 21	21 41
15°	01 41	04 33	12 00	16 03	19 27	21 52
16°	01 26	04 27	12 00	16 05	19 33	22 04
17°	01 06	04 21	12 00	16 08	19 39	22 18
18°	00 38	04 15	12 00	16 11	19 45	22 33
19°		04 09	12 00	16 13	19 51	22 53
20°		04 02	12 00	16 16	19 58	23 21
21°		03 55	12 00	16 18	20 05	
22°		03 48	12 00	16 20	20 12	
23°		03 41	12 00	16 23	20 19	
24°		03 33	12 00	16 25	20 27	

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 53°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	03 45	05 54	12 00	15 16	18 06	20 00
01°	03 52	05 59	12 00	15 12	18 01	19 54
02°	03 58	06 05	12 00	15 09	17 55	19 48
03°	04 04	06 10	12 00	15 05	17 50	19 42
04°	04 10	06 15	12 00	15 01	17 45	19 36
05°	04 15	06 21	12 00	14 57	17 39	19 31
06°	04 21	06 26	12 00	14 54	17 34	19 25
07°	04 27	06 32	12 00	14 50	17 28	19 20
08°	04 32	06 37	12 00	14 46	17 23	19 14
09°	04 38	06 43	12 00	14 41	17 17	19 09
10°	04 43	06 48	12 00	14 37	17 12	19 03
11°	04 48	06 54	12 00	14 33	17 06	18 58
12°	04 54	06 59	12 00	14 29	17 01	18 53
13°	04 59	07 05	12 00	14 24	16 55	18 48
14°	05 04	07 11	12 00	14 20	16 49	18 42
15°	05 09	07 17	12 00	14 15	16 43	18 37
16°	05 15	07 23	12 00	14 10	16 37	18 32
17°	05 20	07 29	12 00	14 06	16 31	18 27
18°	05 25	07 35	12 00	14 01	16 25	18 22
19°	05 30	07 42	12 00	13 56	16 18	18 16
20°	05 35	07 48	12 00	13 50	16 12	18 11
21°	05 41	07 55	12 00	13 45	16 05	18 06
22°	05 46	08 02	12 00	13 40	15 58	18 01
23°	05 51	08 10	12 00	13 34	15 50	17 55
24°	05 56	08 17	12 00	13 29	15 43	17 50

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 53°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	03 45	05 54	12 00	15 16	18 06	20 00
01°	03 39	05 49	12 00	15 20	18 11	20 06
02°	03 32	05 44	12 00	15 23	18 16	20 12
03°	03 25	05 38	12 00	15 26	18 22	20 19
04°	03 18	05 33	12 00	15 30	18 27	20 26
05°	03 11	05 27	12 00	15 33	18 33	20 33
06°	03 03	05 22	12 00	15 36	18 38	20 40
07°	02 55	05 17	12 00	15 40	18 43	20 47
08°	02 47	05 11	12 00	15 43	18 49	20 55
09°	02 38	05 05	12 00	15 46	18 55	21 03
10°	02 29	05 00	12 00	15 49	19 00	21 11
11°	02 18	04 54	12 00	15 52	19 06	21 20
12°	02 08	04 48	12 00	15 55	19 12	21 30
13°	01 56	04 42	12 00	15 58	19 18	21 40
14°	01 42	04 36	12 00	16 01	19 24	21 51
15°	01 26	04 30	12 00	16 04	19 30	22 03
16°	01 07	04 24	12 00	16 06	19 36	22 17
17°	00 39	04 18	12 00	16 09	19 42	22 33
18°		04 11	12 00	16 12	19 49	22 52
19°		04 04	12 00	16 15	19 56	23 21
20°		03 57	12 00	16 17	20 03	
21°		03 50	12 00	16 20	20 10	
22°		03 43	12 00	16 22	20 17	
23°		03 35	12 00	16 25	20 25	
24°		03 27	12 00	16 27	20 33	

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 54°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	03 42	05 54	12 00	15 15	18 06	20 03
01°	03 48	06 00	12 00	15 11	18 00	19 57
02°	03 55	06 05	12 00	15 07	17 55	19 51
03°	04 01	06 11	12 00	15 03	17 49	19 44
04°	04 07	06 16	12 00	15 00	17 44	19 38
05°	04 13	06 22	12 00	14 56	17 38	19 33
06°	04 19	06 27	12 00	14 52	17 33	19 27
07°	04 25	06 33	12 00	14 47	17 27	19 21
08°	04 31	06 38	12 00	14 43	17 22	19 15
09°	04 36	06 44	12 00	14 39	17 16	19 10
10°	04 42	06 50	12 00	14 35	17 10	19 04
11°	04 48	06 56	12 00	14 30	17 04	18 59
12°	04 53	07 02	12 00	14 26	16 58	18 53
13°	04 59	07 08	12 00	14 21	16 52	18 48
14°	05 04	07 14	12 00	14 16	16 46	18 42
15°	05 09	07 20	12 00	14 12	16 40	18 37
16°	05 15	07 26	12 00	14 07	16 34	18 32
17°	05 20	07 33	12 00	14 02	16 27	18 26
18°	05 26	07 39	12 00	13 57	16 21	18 21
19°	05 31	07 46	12 00	13 51	16 14	18 15
20°	05 36	07 53	12 00	13 46	16 07	18 10
21°	05 42	08 00	12 00	13 41	16 00	18 05
22°	05 47	08 07	12 00	13 35	15 53	17 59
23°	05 53	08 15	12 00	13 29	15 45	17 53
24°	05 58	08 23	12 00	13 24	15 37	17 48

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 54°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	03 42	05 54	12 00	15 15	18 06	20 03
01°	03 35	05 49	12 00	15 19	18 11	20 10
02°	03 28	05 43	12 00	15 22	18 17	20 16
03°	03 21	05 37	12 00	15 26	18 23	20 23
04°	03 13	05 32	12 00	15 29	18 28	20 30
05°	03 05	05 26	12 00	15 33	18 34	20 37
06°	02 57	05 21	12 00	15 36	18 39	20 45
07°	02 49	05 15	12 00	15 39	18 45	20 53
08°	02 40	05 09	12 00	15 43	18 51	21 01
09°	02 30	05 03	12 00	15 46	18 57	21 10
10°	02 20	04 58	12 00	15 49	19 02	21 19
11°	02 09	04 52	12 00	15 52	19 08	21 28
12°	01 57	04 46	12 00	15 55	19 14	21 39
13°	01 43	04 39	12 00	15 58	19 21	21 50
14°	01 27	04 33	12 00	16 01	19 27	22 02
15°	01 08	04 27	12 00	16 04	19 33	22 16
16°	00 39	04 20	12 00	16 07	19 40	22 32
17°		04 14	12 00	16 10	19 46	22 52
18°		04 07	12 00	16 13	19 53	23 20
19°		04 00	12 00	16 16	20 00	
20°		03 52	12 00	16 19	20 08	
21°		03 45	12 00	16 22	20 15	
22°		03 37	12 00	16 24	20 23	
23°		03 29	12 00	16 27	20 31	
24°		03 20	12 00	16 30	20 40	

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 55°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	03 38	05 54	12 00	15 14	18 06	20 06
01°	03 45	06 00	12 00	15 10	18 00	20 00
02°	03 51	06 05	12 00	15 06	17 55	19 53
03°	03 58	06 11	12 00	15 02	17 49	19 47
04°	04 04	06 17	12 00	14 58	17 43	19 41
05°	04 11	06 23	12 00	14 54	17 37	19 35
06°	04 17	06 28	12 00	14 49	17 32	19 29
07°	04 23	06 34	12 00	14 45	17 26	19 23
08°	04 29	06 40	12 00	14 41	17 20	19 17
09°	04 35	06 46	12 00	14 36	17 14	19 11
10°	04 41	06 52	12 00	14 32	17 08	19 05
11°	04 46	06 58	12 00	14 27	17 02	18 59
12°	04 52	07 04	12 00	14 23	16 56	18 54
13°	04 58	07 10	12 00	14 18	16 50	18 48
14°	05 04	07 17	12 00	14 13	16 43	18 42
15°	05 09	07 23	12 00	14 08	16 37	18 37
16°	05 15	07 30	12 00	14 03	16 30	18 31
17°	05 20	07 36	12 00	13 58	16 24	18 26
18°	05 26	07 43	12 00	13 52	16 17	18 20
19°	05 32	07 50	12 00	13 47	16 10	18 14
20°	05 37	07 58	12 00	13 42	16 02	18 09
21°	05 43	08 05	12 00	13 36	15 55	18 03
22°	05 48	08 13	12 00	13 30	15 47	17 57
23°	05 54	08 21	12 00	13 24	15 39	17 52
24°	06 00	08 29	12 00	13 18	15 31	17 46

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 55°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	03 38	05 54	12 00	15 14	18 06	20 06
01°	03 31	05 48	12 00	15 17	18 12	20 13
02°	03 23	05 42	12 00	15 21	18 18	20 20
03°	03 16	05 37	12 00	15 25	18 23	20 27
04°	03 08	05 31	12 00	15 28	18 29	20 35
05°	02 59	05 25	12 00	15 32	18 35	20 43
06°	02 51	05 19	12 00	15 36	18 41	20 51
07°	02 42	05 13	12 00	15 39	18 47	20 59
08°	02 32	05 07	12 00	15 43	18 53	21 08
09°	02 21	05 01	12 00	15 46	18 59	21 17
10°	02 10	04 55	12 00	15 49	19 05	21 27
11°	01 58	04 49	12 00	15 53	19 11	21 37
12°	01 44	04 43	12 00	15 56	19 17	21 48
13°	01 28	04 36	12 00	15 59	19 24	22 01
14°	01 08	04 30	12 00	16 02	19 30	22 15
15°	00 40	04 23	12 00	16 05	19 37	22 31
16°		04 16	12 00	16 08	19 44	22 51
17°		04 09	12 00	16 12	19 51	23 20
18°		04 02	12 00	16 15	19 58	
19°		03 55	12 00	16 18	20 05	
20°		03 47	12 00	16 20	20 13	
21°		03 39	12 00	16 23	20 21	
22°		03 31	12 00	16 26	20 29	
23°		03 22	12 00	16 29	20 38	
24°		03 13	12 00	16 32	20 47	

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 56°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	03 33	05 54	12 00	15 12	18 06	20 10
01°	03 41	06 00	12 00	15 08	18 00	20 03
02°	03 48	06 06	12 00	15 04	17 54	19 56
03°	03 55	06 12	12 00	15 00	17 48	19 50
04°	04 01	06 17	12 00	14 56	17 43	19 43
05°	04 08	06 23	12 00	14 52	17 37	19 37
06°	04 14	06 29	12 00	14 47	17 31	19 31
07°	04 21	06 36	12 00	14 43	17 24	19 24
08°	04 27	06 42	12 00	14 38	17 18	19 18
09°	04 33	06 48	12 00	14 34	17 12	19 12
10°	04 39	06 54	12 00	14 29	17 06	19 06
11°	04 45	07 00	12 00	14 24	17 00	19 00
12°	04 51	07 07	12 00	14 19	16 53	18 54
13°	04 57	07 13	12 00	14 14	16 47	18 48
14°	05 03	07 20	12 00	14 09	16 40	18 43
15°	05 09	07 27	12 00	14 04	16 33	18 37
16°	05 15	07 33	12 00	13 59	16 27	18 31
17°	05 21	07 41	12 00	13 54	16 19	18 25
18°	05 26	07 48	12 00	13 48	16 12	18 19
19°	05 32	07 55	12 00	13 43	16 05	18 13
20°	05 38	08 03	12 00	13 37	15 57	18 07
21°	05 44	08 11	12 00	13 31	15 49	18 02
22°	05 50	08 19	12 00	13 25	15 41	17 56
23°	05 56	08 27	12 00	13 19	15 33	17 50
24°	06 02	08 36	12 00	13 13	15 24	17 44

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 56°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	03 33	05 54	12 00	15 12	18 06	20 10
01°	03 26	05 48	12 00	15 16	18 12	20 17
02°	03 18	05 42	12 00	15 20	18 18	20 25
03°	03 10	05 36	12 00	15 24	18 24	20 32
04°	03 02	05 30	12 00	15 28	18 30	20 40
05°	02 53	05 24	12 00	15 32	18 36	20 48
06°	02 44	05 18	12 00	15 35	18 42	20 57
07°	02 34	05 12	12 00	15 39	18 48	21 05
08°	02 23	05 05	12 00	15 42	18 55	21 15
09°	02 12	04 59	12 00	15 46	19 01	21 25
10°	01 59	04 53	12 00	15 49	19 07	21 35
11°	01 45	04 46	12 00	15 53	19 14	21 47
12°	01 29	04 40	12 00	15 56	19 20	21 59
13°	01 09	04 33	12 00	16 00	19 27	22 14
14°	00 40	04 26	12 00	16 03	19 34	22 30
15°		04 19	12 00	16 06	19 41	22 50
16°		04 12	12 00	16 10	19 48	23 20
17°		04 05	12 00	16 13	19 55	
18°		03 57	12 00	16 16	20 03	
19°		03 49	12 00	16 19	20 11	
20°		03 41	12 00	16 22	20 19	
21°		03 33	12 00	16 25	20 27	
22°		03 24	12 00	16 28	20 36	
23°		03 15	12 00	16 31	20 45	
24°		03 05	12 00	16 34	20 55	

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 57°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	03 29	05 54	12 00	15 11	18 06	20 14
01°	03 36	06 00	12 00	15 07	18 00	20 07
02°	03 44	06 06	12 00	15 02	17 54	20 00
03°	03 51	06 12	12 00	14 58	17 48	19 53
04°	03 58	06 18	12 00	14 54	17 42	19 46
05°	04 05	06 24	12 00	14 49	17 36	19 39
06°	04 12	06 31	12 00	14 45	17 29	19 33
07°	04 19	06 37	12 00	14 40	17 23	19 26
08°	04 25	06 43	12 00	14 36	17 17	19 20
09°	04 31	06 50	12 00	14 31	17 10	19 13
10°	04 38	06 56	12 00	14 26	17 04	19 07
11°	04 44	07 03	12 00	14 21	16 57	19 01
12°	04 50	07 09	12 00	14 16	16 51	18 55
13°	04 57	07 16	12 00	14 11	16 44	18 49
14°	05 03	07 23	12 00	14 06	16 37	18 43
15°	05 09	07 30	12 00	14 00	16 30	18 37
16°	05 15	07 37	12 00	13 55	16 23	18 31
17°	05 21	07 45	12 00	13 49	16 15	18 24
18°	05 27	07 52	12 00	13 44	16 08	18 18
19°	05 33	08 00	12 00	13 38	16 00	18 12
20°	05 39	08 08	12 00	13 32	15 52	18 06
21°	05 45	08 16	12 00	13 26	15 44	18 00
22°	05 51	08 25	12 00	13 20	15 35	17 54
23°	05 57	08 34	12 00	13 13	15 26	17 48
24°	06 03	08 44	12 00	13 07	15 16	17 41

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 57°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	03 29	05 54	12 00	15 11	18 06	20 14
01°	03 21	05 47	12 00	15 15	18 13	20 22
02°	03 13	05 41	12 00	15 19	18 19	20 29
03°	03 04	05 35	12 00	15 23	18 25	20 37
04°	02 55	05 29	12 00	15 27	18 31	20 46
05°	02 46	05 22	12 00	15 31	18 38	20 54
06°	02 36	05 16	12 00	15 35	18 44	21 03
07°	02 25	05 10	12 00	15 39	18 50	21 13
08°	02 13	05 03	12 00	15 42	18 57	21 23
09°	02 01	04 57	12 00	15 46	19 03	21 34
10°	01 47	04 50	12 00	15 50	19 10	21 45
11°	01 30	04 43	12 00	15 53	19 17	21 58
12°	01 10	04 37	12 00	15 57	19 23	22 12
13°	00 40	04 30	12 00	16 00	19 30	22 29
14°		04 22	12 00	16 04	19 38	22 49
15°		04 15	12 00	16 07	19 45	23 19
16°		04 08	12 00	16 11	19 52	
17°		04 00	12 00	16 14	20 00	
18°		03 52	12 00	16 17	20 08	
19°		03 44	12 00	16 21	20 16	
20°		03 35	12 00	16 24	20 25	
21°		03 26	12 00	16 27	20 34	
22°		03 17	12 00	16 30	20 43	
23°		03 07	12 00	16 33	20 53	
24°		02 57	12 00	16 36	21 03	

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 58°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	03 24	05 53	12 00	15 09	18 07	20 18
01°	03 32	06 00	12 00	15 05	18 00	20 11
02°	03 40	06 06	12 00	15 01	17 54	20 03
03°	03 47	06 13	12 00	14 56	17 47	19 56
04°	03 55	06 19	12 00	14 52	17 41	19 49
05°	04 02	06 25	12 00	14 47	17 35	19 42
06°	04 09	06 32	12 00	14 42	17 28	19 35
07°	04 16	06 39	12 00	14 38	17 21	19 28
08°	04 23	06 45	12 00	14 33	17 15	19 21
09°	04 30	06 52	12 00	14 28	17 08	19 15
10°	04 36	06 59	12 00	14 23	17 01	19 08
11°	04 43	07 05	12 00	14 18	16 55	19 02
12°	04 49	07 12	12 00	14 12	16 48	18 56
13°	04 56	07 19	12 00	14 07	16 41	18 49
14°	05 02	07 27	12 00	14 02	16 33	18 43
15°	05 08	07 34	12 00	13 56	16 26	18 37
16°	05 15	07 42	12 00	13 51	16 18	18 30
17°	05 21	07 49	12 00	13 45	16 11	18 24
18°	05 27	07 57	12 00	13 39	16 03	18 18
19°	05 34	08 05	12 00	13 33	15 55	18 11
20°	05 40	08 14	12 00	13 27	15 46	18 05
21°	05 46	08 23	12 00	13 20	15 37	17 59
22°	05 52	08 32	12 00	13 14	15 28	17 52
23°	05 59	08 42	12 00	13 07	15 18	17 46
24°	06 05	08 52	12 00	13 01	15 08	17 39

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 58°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	03 24	05 53	12 00	15 09	18 07	20 18
01°	03 15	05 47	12 00	15 14	18 13	20 26
02°	03 07	05 41	12 00	15 18	18 19	20 34
03°	02 58	05 34	12 00	15 22	18 26	20 43
04°	02 48	05 28	12 00	15 26	18 32	20 52
05°	02 38	05 21	12 00	15 30	18 39	21 01
06°	02 27	05 14	12 00	15 34	18 46	21 11
07°	02 15	05 08	12 00	15 38	18 52	21 21
08°	02 02	05 01	12 00	15 42	18 59	21 32
09°	01 48	04 54	12 00	15 46	19 06	21 44
10°	01 31	04 47	12 00	15 50	19 13	21 57
11°	01 11	04 40	12 00	15 53	19 20	22 11
12°	00 41	04 33	12 00	15 57	19 27	22 28
13°		04 26	12 00	16 01	19 34	22 49
14°		04 18	12 00	16 05	19 42	23 19
15°		04 11	12 00	16 08	19 49	
16°		04 03	12 00	16 12	19 57	
17°		03 55	12 00	16 15	20 05	
18°		03 46	12 00	16 19	20 14	
19°		03 38	12 00	16 22	20 22	
20°		03 29	12 00	16 26	20 31	
21°		03 19	12 00	16 29	20 41	
22°		03 09	12 00	16 32	20 51	
23°		02 59	12 00	16 36	21 01	
24°		02 48	12 00	16 39	21 12	

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 59°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	03 18	05 53	12 00	15 08	18 07	20 23
01°	03 27	06 00	12 00	15 03	18 00	20 15
02°	03 35	06 07	12 00	14 59	17 53	20 07
03°	03 43	06 13	12 00	14 54	17 47	19 59
04°	03 51	06 20	12 00	14 49	17 40	19 52
05°	03 59	06 27	12 00	14 45	17 33	19 45
06°	04 06	06 33	12 00	14 40	17 27	19 37
07°	04 13	06 40	12 00	14 35	17 20	19 30
08°	04 21	06 47	12 00	14 30	17 13	19 23
09°	04 28	06 54	12 00	14 25	17 06	19 16
10°	04 34	07 01	12 00	14 19	16 59	19 10
11°	04 41	07 08	12 00	14 14	16 52	19 03
12°	04 48	07 15	12 00	14 09	16 45	18 56
13°	04 55	07 23	12 00	14 03	16 37	18 50
14°	05 01	07 30	12 00	13 58	16 30	18 43
15°	05 08	07 38	12 00	13 52	16 22	18 36
16°	05 15	07 46	12 00	13 46	16 14	18 30
17°	05 21	07 54	12 00	13 40	16 06	18 23
18°	05 28	08 03	12 00	13 34	15 57	18 17
19°	05 34	08 11	12 00	13 28	15 49	18 10
20°	05 41	08 20	12 00	13 21	15 40	18 04
21°	05 47	08 29	12 00	13 15	15 31	17 57
22°	05 54	08 39	12 00	13 08	15 21	17 50
23°	06 01	08 50	12 00	13 01	15 10	17 43
24°	06 07	09 00	12 00	12 54	15 00	17 37

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 59°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	03 18	05 53	12 00	15 08	18 07	20 23
01°	03 09	05 47	12 00	15 12	18 13	20 31
02°	03 00	05 40	12 00	15 17	18 20	20 40
03°	02 50	05 33	12 00	15 21	18 27	20 49
04°	02 40	05 26	12 00	15 25	18 34	20 58
05°	02 29	05 20	12 00	15 30	18 40	21 08
06°	02 17	05 13	12 00	15 34	18 47	21 19
07°	02 04	05 06	12 00	15 38	18 54	21 30
08°	01 49	04 59	12 00	15 42	19 01	21 42
09°	01 32	04 52	12 00	15 46	19 08	21 55
10°	01 12	04 44	12 00	15 50	19 16	22 10
11°	00 41	04 37	12 00	15 54	19 23	22 27
12°		04 30	12 00	15 58	19 30	22 48
13°		04 22	12 00	16 01	19 38	23 18
14°		04 14	12 00	16 05	19 46	
15°		04 06	12 00	16 09	19 54	
16°		03 58	12 00	16 13	20 02	
17°		03 49	12 00	16 16	20 11	
18°		03 40	12 00	16 20	20 20	
19°		03 31	12 00	16 24	20 29	
20°		03 22	12 00	16 27	20 38	
21°		03 12	12 00	16 31	20 48	
22°		03 01	12 00	16 34	20 59	
23°		02 50	12 00	16 38	21 10	
24°		02 37	12 00	16 41	21 23	

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 60°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	03 12	05 53	12 00	15 06	18 07	20 28
01°	03 22	06 00	12 00	15 02	18 00	20 19
02°	03 30	06 07	12 00	14 57	17 53	20 11
03°	03 39	06 14	12 00	14 52	17 46	20 03
04°	03 47	06 21	12 00	14 47	17 39	19 55
05°	03 55	06 28	12 00	14 42	17 32	19 48
06°	04 03	06 35	12 00	14 37	17 25	19 40
07°	04 10	06 42	12 00	14 32	17 18	19 33
08°	04 18	06 49	12 00	14 27	17 11	19 25
09°	04 25	06 56	12 00	14 21	17 04	19 18
10°	04 33	07 04	12 00	14 16	16 56	19 11
11°	04 40	07 11	12 00	14 11	16 49	19 04
12°	04 47	07 19	12 00	14 05	16 41	18 57
13°	04 54	07 26	12 00	13 59	16 34	18 50
14°	05 01	07 34	12 00	13 53	16 26	18 43
15°	05 08	07 42	12 00	13 47	16 18	18 36
16°	05 14	07 51	12 00	13 41	16 09	18 30
17°	05 21	07 59	12 00	13 35	16 01	18 23
18°	05 28	08 08	12 00	13 29	15 52	18 16
19°	05 35	08 17	12 00	13 22	15 43	18 09
20°	05 42	08 27	12 00	13 16	15 33	18 02
21°	05 48	08 37	12 00	13 09	15 23	17 55
22°	05 55	08 47	12 00	13 02	15 13	17 48
23°	06 02	08 58	12 00	12 55	15 02	17 41
24°	06 09	09 10	12 00	12 48	14 50	17 34

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude 60°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	03 12	05 53	12 00	15 06	18 07	20 28
01°	03 03	05 46	12 00	15 11	18 14	20 37
02°	02 53	05 39	12 00	15 15	18 21	20 46
03°	02 42	05 32	12 00	15 20	18 28	20 55
04°	02 31	05 25	12 00	15 24	18 35	21 06
05°	02 19	05 18	12 00	15 29	18 42	21 16
06°	02 06	05 11	12 00	15 33	18 49	21 28
07°	01 51	05 04	12 00	15 37	18 56	21 40
08°	01 34	04 56	12 00	15 42	19 04	21 53
09°	01 13	04 49	12 00	15 46	19 11	22 08
10°	00 42	04 41	12 00	15 50	19 19	22 25
11°		04 34	12 00	15 54	19 26	22 47
12°		04 26	12 00	15 58	19 34	23 18
13°		04 18	12 00	16 02	19 42	
14°		04 10	12 00	16 06	19 50	
15°		04 01	12 00	16 10	19 59	
16°		03 52	12 00	16 14	20 08	
17°		03 43	12 00	16 18	20 17	
18°		03 34	12 00	16 22	20 26	
19°		03 24	12 00	16 25	20 36	
20°		03 14	12 00	16 29	20 46	
21°		03 03	12 00	16 33	20 57	
22°		02 52	12 00	16 37	21 08	
23°		02 39	12 00	16 40	21 21	
24°		02 26	12 00	16 44	21 34	

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 61°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	03 06	05 53	12 00	15 05	18 07	20 33
01°	03 16	06 00	12 00	15 00	18 00	20 24
02°	03 25	06 07	12 00	14 55	17 53	20 16
03°	03 34	06 14	12 00	14 50	17 46	20 07
04°	03 43	06 22	12 00	14 45	17 38	19 59
05°	03 51	06 29	12 00	14 40	17 31	19 51
06°	03 59	06 36	12 00	14 34	17 24	19 43
07°	04 07	06 44	12 00	14 29	17 16	19 35
08°	04 15	06 51	12 00	14 24	17 09	19 28
09°	04 23	06 59	12 00	14 18	17 01	19 20
10°	04 30	07 06	12 00	14 12	16 54	19 13
11°	04 38	07 14	12 00	14 07	16 46	19 05
12°	04 45	07 22	12 00	14 01	16 38	18 58
13°	04 53	07 30	12 00	13 55	16 30	18 51
14°	05 00	07 39	12 00	13 49	16 21	18 44
15°	05 07	07 47	12 00	13 43	16 13	18 37
16°	05 14	07 56	12 00	13 36	16 04	18 29
17°	05 21	08 05	12 00	13 30	15 55	18 22
18°	05 28	08 14	12 00	13 23	15 46	18 15
19°	05 35	08 24	12 00	13 17	15 36	18 08
20°	05 43	08 34	12 00	13 10	15 26	18 01
21°	05 50	08 45	12 00	13 03	15 15	17 54
22°	05 57	08 56	12 00	12 56	15 04	17 46
23°	06 04	09 08	12 00	12 48	14 52	17 39
24°	06 11	09 21	12 00	12 41	14 39	17 31

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude 61°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	03 06	05 53	12 00	15 05	18 07	20 33
01°	02 56	05 46	12 00	15 09	18 14	20 43
02°	02 45	05 38	12 00	15 14	18 22	20 53
03°	02 33	05 31	12 00	15 19	18 29	21 03
04°	02 21	05 24	12 00	15 23	18 36	21 14
05°	02 08	05 16	12 00	15 28	18 44	21 25
06°	01 52	05 09	12 00	15 32	18 51	21 38
07°	01 35	05 01	12 00	15 37	18 59	21 51
08°	01 14	04 54	12 00	15 41	19 06	22 07
09°	00 43	04 46	12 00	15 46	19 14	22 24
10°		04 38	12 00	15 50	19 22	22 46
11°		04 30	12 00	15 54	19 30	23 17
12°		04 22	12 00	15 58	19 38	
13°		04 13	12 00	16 03	19 47	
14°		04 05	12 00	16 07	19 55	
15°		03 56	12 00	16 11	20 04	
16°		03 46	12 00	16 15	20 14	
17°		03 37	12 00	16 19	20 23	
18°		03 27	12 00	16 23	20 33	
19°		03 16	12 00	16 27	20 44	
20°		03 05	12 00	16 31	20 55	
21°		02 54	12 00	16 35	21 06	
22°		02 41	12 00	16 39	21 19	
23°		02 27	12 00	16 43	21 33	
24°		02 12	12 00	16 46	21 48	

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 62°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	02 59	05 53	12 00	15 03	18 07	20 39
01°	03 09	06 00	12 00	14 58	18 00	20 30
02°	03 19	06 08	12 00	14 53	17 52	20 20
03°	03 29	06 15	12 00	14 47	17 45	20 12
04°	03 38	06 23	12 00	14 42	17 37	20 03
05°	03 47	06 30	12 00	14 37	17 30	19 54
06°	03 55	06 38	12 00	14 31	17 22	19 46
07°	04 04	06 46	12 00	14 26	17 14	19 38
08°	04 12	06 54	12 00	14 20	17 06	19 30
09°	04 20	07 01	12 00	14 14	16 59	19 22
10°	04 28	07 09	12 00	14 09	16 51	19 14
11°	04 36	07 18	12 00	14 03	16 42	19 07
12°	04 44	07 26	12 00	13 57	16 34	18 59
13°	04 51	07 34	12 00	13 50	16 26	18 52
14°	04 59	07 43	12 00	13 44	16 17	18 44
15°	05 06	07 52	12 00	13 38	16 08	18 37
16°	05 14	08 01	12 00	13 31	15 59	18 29
17°	05 21	08 11	12 00	13 25	15 49	18 22
18°	05 29	08 21	12 00	13 18	15 39	18 14
19°	05 36	08 31	12 00	13 11	15 29	18 07
20°	05 43	08 42	12 00	13 04	15 18	17 59
21°	05 51	08 54	12 00	12 56	15 06	17 52
22°	05 58	09 06	12 00	12 49	14 54	17 44
23°	06 06	09 19	12 00	12 41	14 41	17 36
24°	06 14	09 33	12 00	12 33	14 27	17 29

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude 62°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	02 59	05 53	12 00	15 03	18 07	20 39
01°	02 48	05 45	12 00	15 08	18 15	20 49
02°	02 36	05 37	12 00	15 13	18 23	21 00
03°	02 23	05 30	12 00	15 18	18 30	21 11
04°	02 10	05 22	12 00	15 22	18 38	21 23
05°	01 54	05 14	12 00	15 27	18 46	21 35
06°	01 37	05 07	12 00	15 32	18 53	21 49
07°	01 15	04 59	12 00	15 36	19 01	22 05
08°	00 43	04 51	12 00	15 41	19 09	22 23
09°		04 43	12 00	15 46	19 17	22 45
10°		04 34	12 00	15 50	19 26	23 16
11°		04 26	12 00	15 54	19 34	
12°		04 17	12 00	15 59	19 43	
13°		04 08	12 00	16 03	19 52	
14°		03 59	12 00	16 08	20 01	
15°		03 50	12 00	16 12	20 10	
16°		03 40	12 00	16 16	20 20	
17°		03 30	12 00	16 20	20 30	
18°		03 19	12 00	16 25	20 41	
19°		03 08	12 00	16 29	20 52	
20°		02 56	12 00	16 33	21 04	
21°		02 43	12 00	16 37	21 17	
22°		02 29	12 00	16 41	21 31	
23°		02 14	12 00	16 45	21 46	
24°		01 57	12 00	16 49	22 03	

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 63°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	02 51	05 52	12 00	15 01	18 08	20 46
01°	03 02	06 00	12 00	14 56	18 00	20 36
02°	03 13	06 08	12 00	14 50	17 52	20 26
03°	03 23	06 16	12 00	14 45	17 44	20 16
04°	03 33	06 24	12 00	14 39	17 36	20 07
05°	03 42	06 32	12 00	14 34	17 28	19 58
06°	03 51	06 40	12 00	14 28	17 20	19 49
07°	04 00	06 48	12 00	14 22	17 12	19 41
08°	04 09	06 56	12 00	14 17	17 04	19 33
09°	04 17	07 04	12 00	14 11	16 56	19 24
10°	04 26	07 13	12 00	14 05	16 47	19 16
11°	04 34	07 21	12 00	13 58	16 39	19 08
12°	04 42	07 30	12 00	13 52	16 30	19 00
13°	04 50	07 39	12 00	13 46	16 21	18 52
14°	04 58	07 48	12 00	13 39	16 12	18 45
15°	05 06	07 58	12 00	13 33	16 02	18 37
16°	05 13	08 07	12 00	13 26	15 53	18 29
17°	05 21	08 18	12 00	13 19	15 42	18 21
18°	05 29	08 28	12 00	13 12	15 32	18 13
19°	05 37	08 39	12 00	13 04	15 21	18 06
20°	05 44	08 51	12 00	12 57	15 09	17 58
21°	05 52	09 03	12 00	12 50	14 57	17 50
22°	06 00	09 17	12 00	12 42	14 43	17 42
23°	06 08	09 31	12 00	12 34	14 29	17 34
24°	06 16	09 47	12 00	12 26	14 13	17 26

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T**. of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 63°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	02 51	05 52	12 00	15 01	18 08	20 46
01°	02 39	05 44	12 00	15 06	18 16	20 57
02°	02 26	05 37	12 00	15 11	18 23	21 08
03°	02 12	05 29	12 00	15 16	18 31	21 20
04°	01 56	05 21	12 00	15 21	18 39	21 33
05°	01 38	05 13	12 00	15 26	18 47	21 47
06°	01 16	05 04	12 00	15 31	18 56	22 03
07°	00 44	04 56	12 00	15 36	19 04	22 21
08°		04 48	12 00	15 41	19 12	22 43
09°		04 39	12 00	15 45	19 21	23 16
10°		04 31	12 00	15 50	19 29	
11°		04 22	12 00	15 55	19 38	
12°		04 13	12 00	15 59	19 47	
13°		04 03	12 00	16 04	19 57	
14°		03 54	12 00	16 08	20 06	
15°		03 44	12 00	16 13	20 16	
16°		03 33	12 00	16 17	20 27	
17°		03 22	12 00	16 22	20 38	
18°		03 11	12 00	16 26	20 49	
19°		02 59	12 00	16 31	21 01	
20°		02 46	12 00	16 35	21 14	
21°		02 31	12 00	16 39	21 29	
22°		02 16	12 00	16 43	21 44	
23°		01 58	12 00	16 48	22 02	
24°		01 38	12 00	16 52	22 22	

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						Latitude 64°
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	02 42	05 52	12 00	14 59	18 08	20 53
01°	02 54	06 00	12 00	14 53	18 00	20 42
02°	03 05	06 08	12 00	14 48	17 52	20 32
03°	03 16	06 17	12 00	14 42	17 43	20 22
04°	03 27	06 25	12 00	14 37	17 35	20 12
05°	03 37	06 33	12 00	14 31	17 27	20 02
06°	03 46	06 42	12 00	14 25	17 18	19 53
07°	03 56	06 50	12 00	14 19	17 10	19 44
08°	04 05	06 59	12 00	14 13	17 01	19 35
09°	04 14	07 07	12 00	14 07	16 53	19 27
10°	04 23	07 16	12 00	14 00	16 44	19 18
11°	04 31	07 25	12 00	13 54	16 35	19 10
12°	04 40	07 34	12 00	13 47	16 26	19 02
13°	04 48	07 44	12 00	13 41	16 16	18 53
14°	04 56	07 53	12 00	13 34	16 07	18 45
15°	05 05	08 04	12 00	13 27	15 56	18 37
16°	05 13	08 14	12 00	13 20	15 46	18 29
17°	05 21	08 25	12 00	13 13	15 35	18 21
18°	05 29	08 36	12 00	13 05	15 24	18 13
19°	05 37	08 48	12 00	12 58	15 12	18 04
20°	05 45	09 01	12 00	12 50	14 59	17 56
21°	05 53	09 14	12 00	12 42	14 46	17 48
22°	06 02	09 29	12 00	12 34	14 31	17 40
23°	06 10	09 45	12 00	12 26	14 15	17 31
24°	06 18	10 04	12 00	12 18	13 56	17 23

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 64°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL_ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	El-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	02 42	05 52	12 00	14 59	18 08	20 53
01°	02 28	05 44	12 00	15 04	18 16	21 05
02°	02 14	05 36	12 00	15 10	18 24	21 17
03°	01 58	05 27	12 00	15 15	18 33	21 30
04°	01 40	05 19	12 00	15 20	18 41	21 45
05°	01 17	05 10	12 00	15 25	18 50	22 01
06°	00 45	05 02	12 00	15 30	18 58	22 19
07°		04 53	12 00	15 35	19 07	22 42
08°		04 45	12 00	15 40	19 15	23 15
09°		04 36	12 00	15 45	19 24	
10°		04 26	12 00	15 50	19 34	
11°		04 17	12 00	15 55	19 43	
12°		04 07	12 00	16 00	19 53	
13°		03 58	12 00	16 05	20 02	
14°		03 47	12 00	16 09	20 13	
15°		03 37	12 00	16 14	20 23	
16°		03 25	12 00	16 19	20 35	
17°		03 14	12 00	16 23	20 46	
18°		03 01	12 00	16 28	20 59	
19°		02 48	12 00	16 32	21 12	
20°		02 34	12 00	16 37	21 26	
21°		02 18	12 00	16 41	21 42	
22°		02 00	12 00	16 46	22 00	
23°		01 39	12 00	16 50	22 21	
24°		01 12	12 00	16 55	22 48	

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 65°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	02 31	05 52	12 00	14 57	18 08	21 01
01°	02 45	06 00	12 00	14 51	18 00	20 50
02°	02 57	06 09	12 00	14 45	17 51	20 38
03°	03 09	06 17	12 00	14 39	17 43	20 28
04°	03 20	06 26	12 00	14 33	17 34	20 17
05°	03 31	06 35	12 00	14 27	17 25	20 07
06°	03 41	06 44	12 00	14 21	17 16	19 57
07°	03 51	06 52	12 00	14 15	17 08	19 48
08°	04 01	07 01	12 00	14 09	16 59	19 39
09°	04 10	07 11	12 00	14 02	16 49	19 30
10°	04 20	07 20	12 00	13 56	16 40	19 21
11°	04 29	07 29	12 00	13 49	16 31	19 12
12°	04 38	07 39	12 00	13 42	16 21	19 03
13°	04 46	07 49	12 00	13 36	16 11	18 54
14°	04 55	07 59	12 00	13 28	16 01	18 46
15°	05 04	08 10	12 00	13 21	15 50	18 37
16°	05 12	08 21	12 00	13 14	15 39	18 29
17°	05 21	08 33	12 00	13 06	15 27	18 20
18°	05 29	08 45	12 00	12 59	15 15	18 12
19°	05 38	08 58	12 00	12 51	15 02	18 03
20°	05 46	09 12	12 00	12 43	14 48	17 55
21°	05 55	09 27	12 00	12 35	14 33	17 46
22°	06 03	09 43	12 00	12 26	14 17	17 37
23°	06 12	10 02	12 00	12 18	13 58	17 28
24°	06 21	10 25	12 00	12 09	13 35	17 19

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 65°	Latitude & Declination SAME Names					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	02 31	05 52	12 00	14 57	18 08	21 01
01°	02 17	05 43	12 00	15 02	18 17	21 14
02°	02 00	05 34	12 00	15 08	18 26	21 28
03°	01 42	05 26	12 00	15 13	18 34	21 42
04°	01 19	05 17	12 00	15 19	18 43	21 59
05°	00 45	05 08	12 00	15 24	18 52	22 18
06°		04 59	12 00	15 29	19 01	22 41
07°		04 50	12 00	15 35	19 10	23 14
08°		04 41	12 00	15 40	19 19	
09°		04 32	12 00	15 45	19 28	
10°		04 22	12 00	15 50	19 38	
11°		04 12	12 00	15 55	19 48	
12°		04 02	12 00	16 00	19 58	
13°		03 51	12 00	16 05	20 09	
14°		03 40	12 00	16 10	20 20	
15°		03 29	12 00	16 15	20 31	
16°		03 17	12 00	16 20	20 43	
17°		03 04	12 00	16 25	20 56	
18°		02 51	12 00	16 30	21 09	
19°		02 36	12 00	16 34	21 24	
20°		02 20	12 00	16 39	21 40	
21°		02 02	12 00	16 44	21 58	
22°		01 40	12 00	16 49	22 20	
23°		01 13	12 00	16 53	22 47	
24°		00 24	12 00	16 58	23 36	

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 66°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	02 19	05 51	12 00	14 55	18 09	21 11
01°	02 34	06 00	12 00	14 49	18 00	20 58
02°	02 48	06 09	12 00	14 43	17 51	20 46
03°	03 01	06 18	12 00	14 36	17 42	20 34
04°	03 13	06 27	12 00	14 30	17 33	20 23
05°	03 25	06 37	12 00	14 24	17 23	20 12
06°	03 36	06 46	12 00	14 18	17 14	20 02
07°	03 46	06 55	12 00	14 11	17 05	19 52
08°	03 57	07 04	12 00	14 05	16 56	19 42
09°	04 07	07 14	12 00	13 58	16 46	19 33
10°	04 16	07 24	12 00	13 51	16 36	19 23
11°	04 26	07 34	12 00	13 44	16 26	19 14
12°	04 35	07 44	12 00	13 37	16 16	19 05
13°	04 44	07 55	12 00	13 30	16 05	18 56
14°	04 54	08 06	12 00	13 23	15 54	18 47
15°	05 03	08 17	12 00	13 15	15 43	18 38
16°	05 12	08 29	12 00	13 08	15 31	18 29
17°	05 20	08 41	12 00	13 00	15 19	18 20
18°	05 29	08 55	12 00	12 52	15 05	18 11
19°	05 38	09 09	12 00	12 44	14 51	18 02
20°	05 47	09 24	12 00	12 35	14 36	17 53
21°	05 56	09 41	12 00	12 27	14 19	17 44
22°	06 05	10 00	12 00	12 18	14 00	17 35
23°	06 14	10 23	12 00	12 09	13 37	17 25
24°	06 23	10 54	12 00		13 06	17 16

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude 66°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	02 19	05 51	12 00	14 55	18 09	21 11
01°	02 03	05 42	12 00	15 00	18 18	21 25
02°	01 44	05 33	12 00	15 06	18 27	21 40
03°	01 20	05 24	12 00	15 12	18 36	21 56
04°	00 46	05 15	12 00	15 17	18 45	22 16
05°		05 06	12 00	15 23	18 54	22 39
06°		04 56	12 00	15 29	19 04	23 13
07°		04 47	12 00	15 34	19 13	
08°		04 37	12 00	15 39	19 23	
09°		04 27	12 00	15 45	19 33	
10°		04 17	12 00	15 50	19 43	
11°		04 07	12 00	15 55	19 53	
12°		03 56	12 00	16 01	20 04	
13°		03 45	12 00	16 06	20 15	
14°		03 33	12 00	16 11	20 27	
15°		03 21	12 00	16 16	20 39	
16°		03 08	12 00	16 21	20 52	
17°		02 54	12 00	16 26	21 06	
18°		02 39	12 00	16 31	21 21	
19°		02 22	12 00	16 36	21 38	
20°		02 04	12 00	16 41	21 56	
21°		01 42	12 00	16 46	22 18	
22°		01 14	12 00	16 51	22 46	
23°		00 25	12 00	16 56	23 35	
24°			12 00	17 01		

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 67°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	02 05	05 51	12 00	14 52	18 09	21 21
01°	02 22	06 00	12 00	14 46	18 00	21 07
02°	02 38	06 10	12 00	14 40	17 50	20 54
03°	02 52	06 19	12 00	14 33	17 41	20 41
04°	03 05	06 29	12 00	14 27	17 31	20 29
05°	03 17	06 38	12 00	14 20	17 22	20 18
06°	03 29	06 48	12 00	14 14	17 12	20 07
07°	03 41	06 58	12 00	14 07	17 02	19 56
08°	03 52	07 08	12 00	14 00	16 52	19 46
09°	04 02	07 18	12 00	13 53	16 42	19 36
10°	04 12	07 28	12 00	13 46	16 32	19 26
11°	04 23	07 39	12 00	13 39	16 21	19 16
12°	04 32	07 50	12 00	13 32	16 10	19 06
13°	04 42	08 01	12 00	13 24	15 59	18 57
14°	04 52	08 13	12 00	13 17	15 47	18 48
15°	05 01	08 25	12 00	13 09	15 35	18 38
16°	05 11	08 38	12 00	13 01	15 22	18 29
17°	05 20	08 51	12 00	12 53	15 09	18 19
18°	05 29	09 06	12 00	12 44	14 54	18 10
19°	05 39	09 21	12 00	12 36	14 39	18 01
20°	05 48	09 39	12 00	12 27	14 21	17 51
21°	05 58	09 58	12 00	12 18	14 02	17 42
22°	06 07	10 22	12 00	12 09	13 38	17 32
23°	06 16	10 53	12 00		13 07	17 22
24°	06 26		12 00	12 10		17 12

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 67°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	02 05	05 51	12 00	14 52	18 09	21 21
01°	01 46	05 42	12 00	14 58	18 18	21 37
02°	01 22	05 32	12 00	15 04	18 28	21 54
03°	00 47	05 23	12 00	15 10	18 37	22 14
04°		05 13	12 00	15 16	18 47	22 38
05°		05 03	12 00	15 22	18 57	23 13
06°		04 53	12 00	15 28	19 07	
07°		04 43	12 00	15 33	19 17	
08°		04 33	12 00	15 39	19 27	
09°		04 22	12 00	15 45	19 38	
10°		04 12	12 00	15 50	19 48	
11°		04 01	12 00	15 56	19 59	
12°		03 49	12 00	16 01	20 11	
13°		03 37	12 00	16 07	20 23	
14°		03 24	12 00	16 12	20 36	
15°		03 11	12 00	16 17	20 49	
16°		02 57	12 00	16 23	21 03	
17°		02 42	12 00	16 28	21 18	
18°		02 25	12 00	16 33	21 35	
19°		02 06	12 00	16 39	21 54	
20°		01 44	12 00	16 44	22 16	
21°		01 15	12 00	16 49	22 45	
22°		00 25	12 00	16 54	23 35	
23°			12 00	17 00		
24°			12 00	17 05		

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 68°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL_ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	01 48	05 51	12 00	14 50	18 09	21 34
01°	02 08	06 01	12 00	14 43	17 59	21 18
02°	02 25	06 10	12 00	14 37	17 50	21 03
03°	02 41	06 20	12 00	14 30	17 40	20 50
04°	02 56	06 30	12 00	14 23	17 30	20 37
05°	03 09	06 40	12 00	14 17	17 20	20 24
06°	03 22	06 51	12 00	14 10	17 09	20 13
07°	03 34	07 01	12 00	14 03	16 59	20 01
08°	03 46	07 11	12 00	13 56	16 49	19 50
09°	03 57	07 22	12 00	13 48	16 38	19 40
10°	04 08	07 33	12 00	13 41	16 27	19 29
11°	04 19	07 44	12 00	13 33	16 16	19 19
12°	04 29	07 56	12 00	13 26	16 04	19 09
13°	04 40	08 08	12 00	13 18	15 52	18 58
14°	04 50	08 20	12 00	13 10	15 40	18 49
15°	05 00	08 34	12 00	13 02	15 26	18 39
16°	05 10	08 47	12 00	12 54	15 13	18 29
17°	05 20	09 02	12 00	12 45	14 58	18 19
18°	05 29	09 18	12 00	12 37	14 42	18 09
19°	05 39	09 36	12 00	12 28	14 24	17 59
20°	05 49	09 56	12 00	12 19	14 04	17 49
21°	05 59	10 20	12 00	12 09	13 40	17 39
22°	06 09	10 52	12 00		13 08	17 29
23°	06 19		12 00	12 10		17 19
24°	06 29		12 00	12 20		17 08

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude 68°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	01 48	05 51	12 00	14 50	18 09	21 34
01°	01 23	05 41	12 00	14 56	18 19	21 51
02°	00 48	05 31	12 00	15 02	18 29	22 11
03°		05 21	12 00	15 08	18 39	22 36
04°		05 11	12 00	15 15	18 49	23 12
05°		05 00	12 00	15 21	19 00	
06°		04 50	12 00	15 27	19 10	
07°		04 39	12 00	15 33	19 21	
08°		04 28	12 00	15 39	19 32	
09°		04 17	12 00	15 44	19 43	
10°		04 06	12 00	15 50	19 54	
11°		03 54	12 00	15 56	20 06	
12°		03 42	12 00	16 02	20 18	
13°		03 29	12 00	16 07	20 31	
14°		03 15	12 00	16 13	20 45	
15°		03 01	12 00	16 19	20 59	
16°		02 45	12 00	16 24	21 15	
17°		02 28	12 00	16 30	21 32	
18°		02 08	12 00	16 35	21 52	
19°		01 46	12 00	16 41	22 14	
20°		01 17	12 00	16 46	22 43	
21°		00 25	12 00	16 52	23 35	
22°			12 00	16 57		
23°			12 00	17 03		
24°			12 00	17 08		

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						Latitude 69°
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	01 25	05 50	12 00	14 47	18 10	21 48
01°	01 50	06 01	12 00	14 40	17 59	21 30
02°	02 11	06 11	12 00	14 34	17 49	21 14
03°	02 29	06 22	12 00	14 27	17 38	20 59
04°	02 45	06 32	12 00	14 20	17 28	20 45
05°	03 00	06 43	12 00	14 13	17 17	20 32
06°	03 14	06 53	12 00	14 05	17 07	20 19
07°	03 27	07 04	12 00	13 58	16 56	20 07
08°	03 40	07 15	12 00	13 51	16 45	19 55
09°	03 52	07 27	12 00	13 43	16 33	19 44
10°	04 04	07 38	12 00	13 35	16 22	19 32
11°	04 15	07 50	12 00	13 28	16 10	19 22
12°	04 26	08 03	12 00	13 20	15 57	19 11
13°	04 37	08 16	12 00	13 12	15 44	19 00
14°	04 48	08 29	12 00	13 03	15 31	18 50
15°	04 58	08 43	12 00	12 55	15 17	18 39
16°	05 09	08 59	12 00	12 46	15 01	18 29
17°	05 19	09 15	12 00	12 37	14 45	18 19
18°	05 29	09 33	12 00	12 28	14 27	18 08
19°	05 40	09 54	12 00	12 19	14 06	17 58
20°	05 50	10 18	12 00	12 10	13 42	17 47
21°	06 01	10 50	12 00		13 10	17 37
22°	06 11		12 00	12 10		17 26
23°	06 22		12 00	12 20		17 15
24°	06 32		12 00	12 30		17 04

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 69°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	01 25	05 50	12 00	14 47	18 10	21 48
01°	00 49	05 40	12 00	14 54	18 20	22 09
02°		05 29	12 00	15 00	18 31	22 34
03°		05 19	12 00	15 07	18 41	23 11
04°		05 08	12 00	15 13	18 52	
05°		04 57	12 00	15 19	19 03	
06°		04 46	12 00	15 26	19 14	
07°		04 35	12 00	15 32	19 25	
08°		04 23	12 00	15 38	19 37	
09°		04 12	12 00	15 44	19 48	
10°		03 59	12 00	15 50	20 01	
11°		03 47	12 00	15 56	20 13	
12°		03 33	12 00	16 02	20 27	
13°		03 19	12 00	16 08	20 41	
14°		03 04	12 00	16 14	20 56	
15°		02 48	12 00	16 20	21 12	
16°		02 31	12 00	16 26	21 29	
17°		02 11	12 00	16 32	21 49	
18°		01 48	12 00	16 38	22 12	
19°		01 18	12 00	16 43	22 42	
20°		00 26	12 00	16 49	23 34	
21°			12 00	16 55		
22°			12 00	17 01		
23°			12 00	17 07		
24°			12 00	17 12		

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 70°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL_ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	00 50	05 50	12 00	14 44	18 10	22 06
01°	01 27	06 01	12 00	14 37	17 59	21 45
02°	01 53	06 12	12 00	14 30	17 48	21 26
03°	02 14	06 23	12 00	14 23	17 37	21 10
04°	02 33	06 34	12 00	14 16	17 26	20 54
05°	02 49	06 45	12 00	14 08	17 15	20 40
06°	03 05	06 56	12 00	14 01	17 04	20 26
07°	03 19	07 08	12 00	13 53	16 52	20 13
08°	03 33	07 20	12 00	13 45	16 40	20 00
09°	03 46	07 32	12 00	13 38	16 28	19 48
10°	03 58	07 44	12 00	13 30	16 16	19 36
11°	04 10	07 57	12 00	13 21	16 03	19 25
12°	04 22	08 10	12 00	13 13	15 50	19 13
13°	04 34	08 24	12 00	13 05	15 36	19 02
14°	04 45	08 39	12 00	12 56	15 21	18 51
15°	04 56	08 54	12 00	12 47	15 06	18 40
16°	05 07	09 11	12 00	12 38	14 49	18 29
17°	05 18	09 30	12 00	12 29	14 30	18 18
18°	05 29	09 51	12 00	12 19	14 09	18 07
19°	05 40	10 16	12 00	12 10	13 44	17 56
20°	05 51	10 49	12 00		13 11	17 45
21°	06 02		12 00	12 10		17 34
22°	06 13		12 00	12 20		17 23
23°	06 24		12 00	12 31		17 11
24°	06 36		12 00	12 42		17 00

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T**. of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 70°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	El-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°	00 50	05 50	12 00	14 44	18 10	22 06
01°		05 39	12 00	14 51	18 21	22 32
02°		05 28	12 00	14 58	18 32	23 09
03°		05 16	12 00	15 05	18 44	
04°		05 05	12 00	15 11	18 55	
05°		04 54	12 00	15 18	19 06	
06°		04 42	12 00	15 25	19 18	
07°		04 30	12 00	15 31	19 30	
08°		04 18	12 00	15 38	19 42	
09°		04 05	12 00	15 44	19 55	
10°		03 52	12 00	15 50	20 08	
11°		03 38	12 00	15 57	20 22	
12°		03 24	12 00	16 03	20 36	
13°		03 09	12 00	16 09	20 51	
14°		02 52	12 00	16 15	21 08	
15°		02 34	12 00	16 22	21 26	
16°		02 14	12 00	16 28	21 46	
17°		01 50	12 00	16 34	22 10	
18°		01 20	12 00	16 40	22 40	
19°		00 26	12 00	16 46	23 34	
20°			12 00	16 52		
21°			12 00	16 58		
22°			12 00	17 04		
23°			12 00	17 11		
24°			12 00	17 17		

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 71°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL_ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°		05 49	12 00	14 41	18 11	22 30
01°	00 52	06 01	12 00	14 34	17 59	22 03
02°	01 30	06 12	12 00	14 27	17 48	21 41
03°	01 56	06 24	12 00	14 19	17 36	21 22
04°	02 18	06 36	12 00	14 12	17 24	21 05
05°	02 37	06 48	12 00	14 04	17 12	20 49
06°	02 54	07 00	12 00	13 56	17 00	20 34
07°	03 10	07 12	12 00	13 48	16 48	20 20
08°	03 25	07 25	12 00	13 40	16 35	20 07
09°	03 39	07 37	12 00	13 32	16 23	19 53
10°	03 52	07 51	12 00	13 23	16 09	19 41
11°	04 05	08 04	12 00	13 15	15 56	19 28
12°	04 18	08 19	12 00	13 06	15 41	19 16
13°	04 30	08 34	12 00	12 57	15 26	19 04
14°	04 42	08 50	12 00	12 48	15 10	18 53
15°	04 54	09 07	12 00	12 39	14 53	18 41
16°	05 06	09 26	12 00	12 30	14 34	18 29
17°	05 18	09 48	12 00	12 20	14 12	18 18
18°	05 29	10 14	12 00	12 10	13 46	18 06
19°	05 41	10 47	12 00		13 13	17 55
20°	05 52		12 00	12 10		17 43
21°	06 04		12 00	12 21		17 31
22°	06 15		12 00	12 32		17 19
23°	06 27		12 00	12 43		17 07
24°	06 39		12 00	12 54		16 54

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude 71°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°		05 49	12 00	14 41	18 11	22 30
01°		05 38	12 00	14 49	18 22	23 08
02°		05 26	12 00	14 56	18 34	
03°		05 14	12 00	15 03	18 46	
04°		05 02	12 00	15 10	18 58	
05°		04 50	12 00	15 17	19 10	
06°		04 37	12 00	15 24	19 23	
07°		04 25	12 00	15 30	19 35	
08°		04 12	12 00	15 37	19 48	
09°		03 58	12 00	15 44	20 02	
10°		03 44	12 00	15 50	20 16	
11°		03 29	12 00	15 57	20 31	
12°		03 13	12 00	16 04	20 47	
13°		02 56	12 00	16 10	21 04	
14°		02 38	12 00	16 17	21 22	
15°		02 17	12 00	16 23	21 43	
16°		01 53	12 00	16 30	22 07	
17°		01 22	12 00	16 36	22 38	
18°		00 27	12 00	16 43	23 33	
19°			12 00	16 49		
20°			12 00	16 55		
21°			12 00	17 02		
22°			12 00	17 08		
23°			12 00	17 15		
24°			12 00	17 21		

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						Latitude 72°
Declination	EL-FAGR الفجر	SHROUK الشروق	EL_ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°		05 49	12 00	14 38	18 11	23 07
01°		06 01	12 00	14 31	17 59	22 27
02°	00 53	06 13	12 00	14 23	17 47	22 00
03°	01 32	06 26	12 00	14 15	17 34	21 38
04°	01 59	06 38	12 00	14 07	17 22	21 18
05°	02 22	06 51	12 00	13 59	17 09	21 00
06°	02 41	07 04	12 00	13 51	16 56	20 44
07°	02 59	07 17	12 00	13 43	16 43	20 28
08°	03 15	07 30	12 00	13 34	16 30	20 14
09°	03 31	07 44	12 00	13 25	16 16	19 59
10°	03 45	07 58	12 00	13 17	16 02	19 46
11°	03 59	08 13	12 00	13 08	15 47	19 33
12°	04 13	08 28	12 00	12 59	15 32	19 20
13°	04 26	08 45	12 00	12 49	15 15	19 07
14°	04 39	09 03	12 00	12 40	14 57	18 54
15°	04 52	09 23	12 00	12 30	14 37	18 42
16°	05 04	09 45	12 00	12 20	14 15	18 30
17°	05 17	10 11	12 00	12 10	13 49	18 18
18°	05 29	10 46	12 00		13 14	18 05
19°	05 41		12 00	12 11		17 53
20°	05 53		12 00	12 21		17 41
21°	06 06		12 00	12 32		17 28
22°	06 18		12 00	12 44		17 15
23°	06 31		12 00	12 55		17 02
24°	06 43		12 00	13 07		16 49

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude 72°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°		05 49	12 00	14 38	18 11	23 07
01°		05 36	12 00	14 46	18 24	
02°		05 24	12 00	14 53	18 36	
03°		05 11	12 00	15 01	18 49	
04°		04 59	12 00	15 08	19 01	
05°		04 46	12 00	15 15	19 14	
06°		04 32	12 00	15 22	19 28	
07°		04 19	12 00	15 30	19 41	
08°		04 05	12 00	15 37	19 55	
09°		03 50	12 00	15 44	20 10	
10°		03 35	12 00	15 51	20 25	
11°		03 18	12 00	15 58	20 42	
12°		03 01	12 00	16 04	20 59	
13°		02 42	12 00	16 11	21 18	
14°		02 20	12 00	16 18	21 40	
15°		01 55	12 00	16 25	22 05	
16°		01 24	12 00	16 32	22 36	
17°		00 28	12 00	16 39	23 32	
18°			12 00	16 45		
19°			12 00	16 52		
20°			12 00	16 59		
21°			12 00	17 06		
22°			12 00	17 13		
23°			12 00	17 19		
24°			12 00	17 26		

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 73°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°		05 48	12 00	14 35	18 12	
01°		06 01	12 00	14 27	17 59	23 05
02°		06 14	12 00	14 19	17 46	22 25
03°	00 54	06 27	12 00	14 11	17 33	21 57
04°	01 35	06 41	12 00	14 02	17 19	21 33
05°	02 03	06 54	12 00	13 54	17 06	21 13
06°	02 26	07 08	12 00	13 45	16 52	20 55
07°	02 46	07 22	12 00	13 37	16 38	20 38
08°	03 04	07 36	12 00	13 28	16 24	20 21
09°	03 21	07 51	12 00	13 19	16 09	20 06
10°	03 37	08 06	12 00	13 10	15 54	19 52
11°	03 53	08 22	12 00	13 00	15 38	19 37
12°	04 07	08 40	12 00	12 51	15 20	19 23
13°	04 22	08 58	12 00	12 41	15 02	19 10
14°	04 35	09 18	12 00	12 31	14 42	18 57
15°	04 49	09 41	12 00	12 21	14 19	18 43
16°	05 02	10 08	12 00	12 11	13 52	18 30
17°	05 15	10 44	12 00		13 16	18 17
18°	05 28		12 00	12 11		18 04
19°	05 41		12 00	12 22		17 51
20°	05 54		12 00	12 33		17 38
21°	06 07		12 00	12 45		17 25
22°	06 21		12 00	12 57		17 11
23°	06 34		12 00	13 09		16 57
24°	06 48		12 00	13 22		16 43

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude 73°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر h m	SHROUK الشروق h m	EL ZOHR الظهر h m	EL-ASR العصر h m	MAGHRIB المغرب h m	EL-ESHA العشاء h m
00°		05 48	12 00	14 35	18 12	
01°		05 35	12 00	14 43	18 25	
02°		05 22	12 00	14 51	18 38	
03°		05 08	12 00	14 59	18 52	
04°		04 55	12 00	15 06	19 05	
05°		04 41	12 00	15 14	19 19	
06°		04 27	12 00	15 21	19 33	
07°		04 12	12 00	15 29	19 48	
08°		03 57	12 00	15 36	20 03	
09°		03 41	12 00	15 44	20 19	
10°		03 24	12 00	15 51	20 36	
11°		03 06	12 00	15 58	20 54	
12°		02 46	12 00	16 05	21 14	
13°		02 24	12 00	16 13	21 36	
14°		01 58	12 00	16 20	22 02	
15°		01 26	12 00	16 27	22 34	
16°		00 28	12 00	16 34	23 32	
17°			12 00	16 41		
18°			12 00	16 49		
19°			12 00	16 56		
20°			12 00	17 03		
21°			12 00	17 10		
22°			12 00	17 17		
23°			12 00	17 25		
24°			12 00	17 32		

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						Latitude 74°
Declination	EL-FAGR الفجر	SHROUK الشروق	EL_ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°		05 47	12 00	14 32	18 13	
01°		06 01	12 00	14 23	17 59	
02°		06 15	12 00	14 15	17 45	23 04
03°		06 29	12 00	14 06	17 31	22 22
04°	00 56	06 43	12 00	13 57	17 17	21 53
05°	01 38	06 58	12 00	13 48	17 02	21 29
06°	02 07	07 12	12 00	13 39	16 48	21 08
07°	02 31	07 27	12 00	13 30	16 33	20 49
08°	02 52	07 43	12 00	13 21	16 17	20 31
09°	03 11	07 59	12 00	13 12	16 01	20 14
10°	03 28	08 16	12 00	13 02	15 44	19 58
11°	03 45	08 34	12 00	12 52	15 26	19 43
12°	04 01	08 53	12 00	12 42	15 07	19 28
13°	04 16	09 14	12 00	12 32	14 46	19 13
14°	04 31	09 37	12 00	12 22	14 23	18 59
15°	04 46	10 05	12 00	12 11	13 55	18 45
16°	05 00	10 42	12 00		13 18	18 31
17°	05 14		12 00	12 11		18 17
18°	05 28		12 00	12 22		18 03
19°	05 42		12 00	12 34		17 49
20°	05 56		12 00	12 46		17 35
21°	06 10		12 00	12 58		17 21
22°	06 24		12 00	13 11		17 06
23°	06 38		12 00	13 24		16 51
24°	06 52		12 00	13 37		16 36

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude 74°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر h m	SHROUK الشروق h m	EL ZOHR الظهر h m	EL-ASR العصر h m	MAGHRIB المغرب h m	EI-ESHA العشاء h m
00°		05 47	12 00	14 32	18 13	
01°		05 33	12 00	14 40	18 27	
02°		05 19	12 00	14 48	18 41	
03°		05 05	12 00	14 56	18 55	
04°		04 50	12 00	15 04	19 10	
05°		04 35	12 00	15 12	19 25	
06°		04 20	12 00	15 20	19 40	
07°		04 04	12 00	15 28	19 56	
08°		03 48	12 00	15 36	20 12	
09°		03 30	12 00	15 44	20 30	
10°		03 11	12 00	15 51	20 49	
11°		02 51	12 00	15 59	21 09	
12°		02 28	12 00	16 07	21 32	
13°		02 02	12 00	16 14	21 58	
14°		01 28	12 00	16 22	22 32	
15°		00 29	12 00	16 29	23 31	
16°			12 00	16 37		
17°			12 00	16 44		
18°			12 00	16 52		
19°			12 00	17 00		
20°			12 00	17 07		
21°			12 00	17 15		
22°			12 00	17 23		
23°			12 00	17 30		
24°			12 00	17 38		

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude & Declination CONTRARY Names						**Latitude 75°**
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EI-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°		05 46	12 00	14 28	18 14	
01°		06 01	12 00	14 19	17 59	
02°		06 16	12 00	14 10	17 44	
03°		06 31	12 00	14 01	17 29	23 02
04°		06 47	12 00	13 52	17 13	22 19
05°	00 58	07 02	12 00	13 43	16 58	21 48
06°	01 41	07 18	12 00	13 33	16 42	21 24
07°	02 11	07 34	12 00	13 24	16 26	21 02
08°	02 36	07 51	12 00	13 14	16 09	20 42
09°	02 58	08 08	12 00	13 04	15 52	20 23
10°	03 17	08 27	12 00	12 54	15 33	20 06
11°	03 36	08 47	12 00	12 43	15 13	19 49
12°	03 53	09 08	12 00	12 33	14 52	19 33
13°	04 10	09 33	12 00	12 22	14 27	19 17
14°	04 26	10 02	12 00	12 11	13 58	19 02
15°	04 42	10 39	12 00		13 21	18 47
16°	04 57		12 00	12 11		18 32
17°	05 12		12 00	12 23		18 17
18°	05 27		12 00	12 35		18 02
19°	05 42		12 00	12 47		17 47
20°	05 57		12 00	13 00		17 32
21°	06 12		12 00	13 13		17 17
22°	06 27		12 00	13 26		17 01
23°	06 42		12 00	13 40		16 45
24°	06 58		12 00	13 54		16 28

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T. ±Long.	
G.A.T. Eq.of time	
G.M.T. Z.N.	
Z.T.	

Latitude 75°	*Latitude & Declination SAME Names*					
Declination	EL-FAGR الفجر	SHROUK الشروق	EL ZOHR الظهر	EL-ASR العصر	MAGHRIB المغرب	EL-ESHA العشاء
	h m	h m	h m	h m	h m	h m
00°		05 46	12 00	14 28	18 14	
01°		05 31	12 00	14 37	18 29	
02°		05 16	12 00	14 45	18 44	
03°		05 01	12 00	14 54	18 59	
04°		04 45	12 00	15 02	19 15	
05°		04 29	12 00	15 11	19 31	
06°		04 13	12 00	15 19	19 47	
07°		03 55	12 00	15 27	20 05	
08°		03 37	12 00	15 35	20 23	
09°		03 18	12 00	15 44	20 42	
10°		02 56	12 00	15 52	21 04	
11°		02 33	12 00	16 00	21 27	
12°		02 06	12 00	16 08	21 54	
13°		01 31	12 00	16 16	22 29	
14°		00 30	12 00	16 24	23 30	
15°			12 00	16 32		
16°			12 00	16 40		
17°			12 00	16 48		
18°			12 00	16 56		
19°			12 00	17 04		
20°			12 00	17 12		
21°			12 00	17 20		
22°			12 00	17 28		
23°			12 00	17 37		
24°			12 00	17 45		

The given values are the Local Apparent Time **L.A.T.** of the phenomena ; to obtain the Zone Time **Z.T.** of the phenomena , apply the following pattern :

L.A.T.	
±Long.	
G.A.T.	
Eq.of time	
G.M.T.	
Z.N.	
Z.T.	

ملحق

مفهوم معادلة الوقت :

لإيجاد وحدة لقياس الوقت ؛ كان من المنطقى أن نفكر فى حركة الشمس نظرا لإرتباط شؤون حياتنا اليومية بهذه الحركة .
وسميت الفترة الزمنية بين عبورين متتاليين للشمس على نفس دائرة الزوال باليوم الشمسى الظاهرى . وقد وجد أن طول هذا اليوم غير ثابت القيمة وبالتالى لايصلح كوحدة لقياس الوقت . ويرجع عدم ثبات القيمة للأسباب التالية :

1- تتحرك الشمس على دائرة الكسوف بسرعة غير منتظمة .
2- ميل دائرة الكسوف على دائرة الأستواء السماوى بزاوية **23°.5** تقريبا .

وقد تم حل هذه المشكلة بتعريف شمس تخيلية تتحرك على دائرة الأستواء السماوى بسرعة منتظمة تساوى متوسط سرعة الشمس الحقيقية فى مدارها . هذه الشمس هى الشمس المتوسطة . وسميت الفترة الزمنية بين عبورين متتاليين للشمس المتوسطة على نفس دائرة الزوال باليوم الشمسى المتوسط ؛ الذى تم تقسيمه إلى 24 ساعة متوسطة وكل ساعة متوسطة إلى 60 دقيقة متوسطة وهكذا ..

من البديهى أن حركة الشمس الحقيقية ومن ثم الوقت المحلى الظاهرى ؛ هو مؤشرمواقيت الصلاة .
أيضا نرى أن وقت المنطقة لرفع الأذان يرتبط بالوقت المحلى المتوسط الذى يرتبط بدوره بحركة الشمس المتوسطة .
بذلك يكون تعريف معادلة الوقت هو العلاقة التى تربط بين حركة كل من الشمس الحقيقية و الشمس المتوسطة .

Equation of time (ET)

Day number , J (Table 1)
Where
J =1 on 1-January and J = 365 on 31-December
for the years 2009 / 2010 / 2011 / 2013 / 2014 / 2015 / 2017 / 2018 / 2019
i.e. for the years (2008 + 1i) ; i = 1,2,3,5,6,7,9,10,11 ,....

OR

Day number , J (Table 2)
Where
J = 1 on 1-January and J = 366 on 31-December
For the years 2008 / 2012 / 2016
i.e. for the years (2008 + 4i) ; i = 0,1,2,3,

$$ET = 0.170 \sin [4\pi (J - 80) / 373] - 0.129 \sin [2\pi (J - 8) / 355] \text{ hours}$$

Note : The argument of the sine function is in radians.
The equation is accurate to within 40 seconds