

Visibility and the location of Planet Mercury

Period	Morning/Night/Evening	Location - Constellation
January – Mid February	Morning Sky (Dawn)	Between Capricornus and Sagittarius
February End – March End	Evening Sky (Dusk)	Aquarius towards Pisces
Early April – May End	Morning Sky (Dawn)	Pisces towards Taurus
Mid-June – Early August	Evening Sky (Dusk)	Gemini – Cancer – Leo - Cancer
Mid-August – Mid September	Morning Sky (Dawn)	Cancer – Leo - Virgo
Early October – November End	Evening Sky (Dusk)	Virgo – Libra - Scorpius
From Early December	Morning sky	Libra – Scorpius - Ophiuchus

Table 1: Visibility of Mercury

Apparent Magnitudes of Mercury

Month	Jan	Feb	Mar	Apr	May	June	July	August	Sep	Oct	Nov	Dec
Mag	- 0.1	-0.6	-1.2	+2.9	+0.6	-1.9	+0.2	+2.3	-0.7	-0.8	+0.0	+1.9

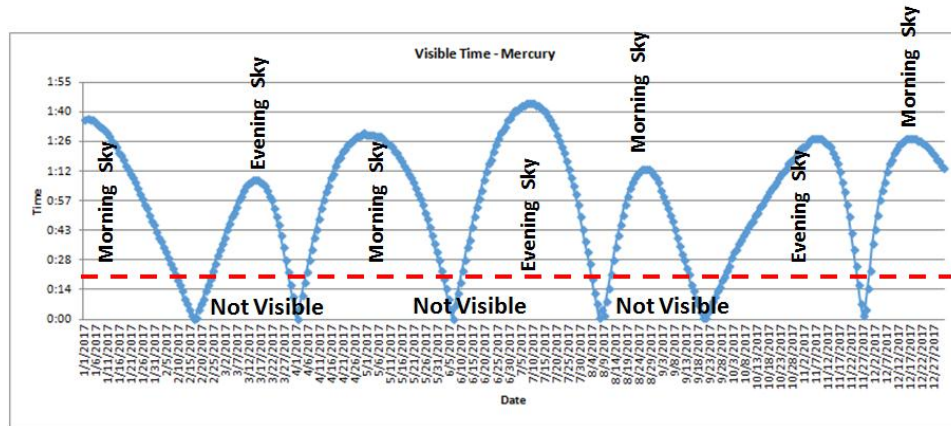


Figure 1: Graphical representation of visible time durations

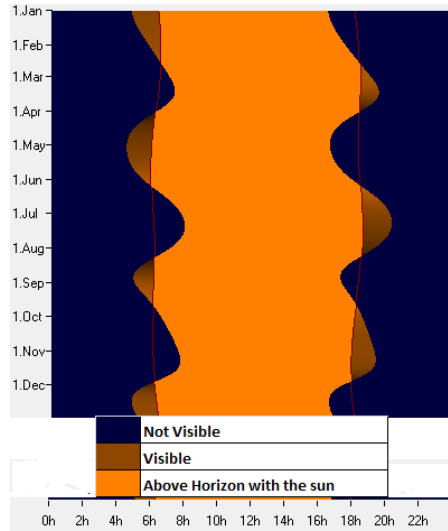


Figure 2: Annual Diagram for Visible Time for Mercury

Planet Mercury (Rise and Set)

	January		February		March		April		May		June	
Date	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
1	4:44	16:28	5:48	17:32	7:01	19:02	6:08	18:16	4:26	16:33	5:29	17:58
2	4:44	16:28	5:50	17:35	7:03	19:06	6:02	18:10	4:26	16:33	5:33	18:03
3	4:45	16:28	5:53	17:38	7:05	19:09	5:55	18:03	4:26	16:34	5:38	18:08
4	4:46	16:29	5:55	17:41	7:07	19:12	5:49	17:56	4:26	16:34	5:43	18:14
5	4:47	16:30	5:58	17:44	7:09	19:14	5:43	17:50	4:26	16:35	5:48	18:20
6	4:48	16:31	6:01	17:47	7:11	19:17	5:37	17:43	4:26	16:36	5:53	18:25
7	4:50	16:32	6:03	17:50	7:13	19:20	5:31	17:37	4:27	16:37	5:59	18:31
8	4:51	16:33	6:06	17:53	7:15	19:22	5:25	17:31	4:28	16:39	6:04	18:37
9	4:53	16:35	6:09	17:56	7:16	19:24	5:20	17:25	4:28	16:40	6:09	18:43
10	4:54	16:37	6:11	17:59	7:17	19:26	5:15	17:20	4:29	16:42	6:15	18:49
11	4:56	16:38	6:14	18:03	7:18	19:27	5:10	17:14	4:30	16:43	6:20	18:54
12	4:58	16:40	6:17	18:06	7:18	19:28	5:05	17:10	4:32	16:45	6:26	19:00
13	5:00	16:42	6:19	18:09	7:18	19:29	5:01	17:05	4:33	16:47	6:31	19:05
14	5:02	16:44	6:22	18:12	7:18	19:29	4:57	17:01	4:34	16:49	6:36	19:11
15	5:05	16:46	6:25	18:16	7:18	19:29	4:53	16:57	4:36	16:52	6:41	19:16
16	5:07	16:49	6:27	18:19	7:17	19:28	4:50	16:54	4:38	16:54	6:47	19:21
17	5:09	16:51	6:30	18:22	7:15	19:27	4:46	16:50	4:40	16:57	6:52	19:26
18	5:12	16:53	6:33	18:26	7:14	19:26	4:43	16:48	4:42	17:00	6:56	19:30

19	5:14	16:56	6:35	18:29	7:11	19:24	4:41	16:45	4:44	17:03	7:01	19:35
20	5:16	16:58	6:38	18:32	7:09	19:21	4:38	16:43	4:46	17:06	7:06	19:39
21	5:19	17:01	6:40	18:36	7:06	19:18	4:36	16:41	4:49	17:09	7:10	19:43
22	5:21	17:03	6:43	18:39	7:02	19:14	4:34	16:39	4:52	17:13	7:14	19:46
23	5:24	17:06	6:46	18:42	6:58	19:10	4:33	16:37	4:54	17:16	7:18	19:50
24	5:27	17:09	6:48	18:46	6:54	19:06	4:31	16:36	4:57	17:20	7:22	19:53
25	5:29	17:11	6:51	18:49	6:49	19:01	4:30	16:35	5:01	17:24	7:25	19:56
26	5:32	17:14	6:53	18:53	6:44	18:55	4:29	16:34	5:04	17:29	7:29	19:59
27	5:34	17:17	6:56	18:56	6:38	18:49	4:28	16:34	5:08	17:33	7:32	20:01
28	5:37	17:20	6:58	18:59	6:33	18:43	4:27	16:33	5:12	17:38	7:35	20:03
29	5:40	17:23			6:27	18:37	4:26	16:33	5:16	17:42	7:38	20:06
30	5:42	17:26			6:21	18:30	4:26	16:33	5:20	17:47	7:40	20:07
31	5:45	17:29			6:14	18:23			5:24	17:52		

July		August		September		October		November		December		
Date	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
1	7:42	20:09	6:56	19:07	4:56	17:17	6:29	18:29	7:32	19:14	5:33	17:15
2	7:45	20:11	6:50	19:01	4:59	17:20	6:32	18:31	7:33	19:14	5:25	17:08
3	7:46	20:12	6:43	18:55	5:02	17:22	6:34	18:33	7:34	19:15	5:18	17:01
4	7:48	20:13	6:37	18:48	5:05	17:25	6:37	18:34	7:35	19:16	5:11	16:55
5	7:50	20:14	6:30	18:41	5:08	17:27	6:39	18:36	7:36	19:17	5:05	16:50
6	7:51	20:14	6:23	18:35	5:11	17:30	6:41	18:38	7:37	19:17	5:00	16:46
7	7:52	20:15	6:16	18:28	5:14	17:33	6:44	18:39	7:37	19:17	4:56	16:42
8	7:53	20:15	6:09	18:21	5:18	17:36	6:46	18:41	7:38	19:17	4:52	16:38
9	7:53	20:15	6:02	18:14	5:21	17:39	6:48	18:42	7:38	19:17	4:49	16:36
10	7:54	20:15	5:55	18:08	5:25	17:42	6:50	18:44	7:37	19:16	4:47	16:34
11	7:54	20:14	5:49	18:02	5:29	17:44	6:52	18:45	7:37	19:15	4:45	16:32
12	7:54	20:14	5:42	17:56	5:32	17:47	6:55	18:47	7:36	19:14	4:44	16:31
13	7:54	20:13	5:35	17:50	5:36	17:50	6:57	18:48	7:34	19:13	4:43	16:30
14	7:53	20:12	5:29	17:44	5:39	17:53	6:59	18:50	7:33	19:10	4:43	16:29
15	7:53	20:11	5:23	17:39	5:43	17:55	7:01	18:51	7:30	19:08	4:43	16:29
16	7:52	20:09	5:18	17:34	5:46	17:58	7:03	18:53	7:27	19:05	4:43	16:29
17	7:50	20:07	5:13	17:29	5:50	18:00	7:05	18:54	7:23	19:01	4:44	16:30
18	7:49	20:05	5:08	17:25	5:53	18:03	7:07	18:56	7:19	18:56	4:45	16:30
19	7:47	20:03	5:04	17:22	5:56	18:05	7:09	18:57	7:14	18:51	4:46	16:31
20	7:45	20:00	5:00	17:19	5:59	18:08	7:11	18:58	7:08	18:45	4:47	16:32
21	7:43	19:57	4:57	17:16	6:02	18:10	7:13	19:00	7:02	18:39	4:48	16:33
22	7:40	19:54	4:55	17:14	6:05	18:12	7:15	19:01	6:54	18:32	4:50	16:34
23	7:37	19:51	4:53	17:13	6:08	18:14	7:17	19:03	6:46	18:24	4:52	16:36
24	7:34	19:47	4:51	17:11	6:11	18:16	7:19	19:04	6:38	18:16	4:54	16:37
25	7:30	19:43	4:50	17:11	6:14	18:18	7:21	19:05	6:29	18:07	4:55	16:39
26	7:26	19:39	4:50	17:11	6:16	18:20	7:22	19:07	6:19	17:58	4:58	16:41
27	7:22	19:35	4:50	17:11	6:19	18:22	7:24	19:08	6:09	17:49	5:00	16:43
28	7:18	19:30	4:50	17:11	6:22	18:24	7:26	19:09	6:00	17:40	5:02	16:45
29	7:13	19:25	4:51	17:12	6:24	18:26	7:28	19:10	5:51	17:32	5:04	16:47
30	7:07	19:19	4:53	17:14	6:27	18:28	7:29	19:11	5:42	17:23	5:07	16:49
31	7:02	19:13	4:54	17:15			7:31	19:13			5:09	16:51

Table 2: Rise and set

Visibility of Venus

Period	Time
February – Mid-October	Evening Sky
November - December	Morning Sky

Location of Mercury in Each month is shown below

Month	Constellation
February	Ophiuchus to Aquarius
March	Aquarius to Pisces
April - May	Pisces to Taurus
June	Taurus to Gemini
July	Gemini – Cancer - Leo
August	Leo – Cancer - Leo
September	Leo to Virgo
October	Virgo - Libra
November	Scorpios
December	Libra - Scorpios

Apparent Magnitudes of Venus

Month	Jan	Feb	Mar	Apr	May	June	July	August	Sep	Oct	Nov	Dec
Mag	- 3.5	-3.4	-3.4	-3.3	-3.4	-3.4	-3.6	-3.8	-4.2	-4.2	-3.5	-4.4

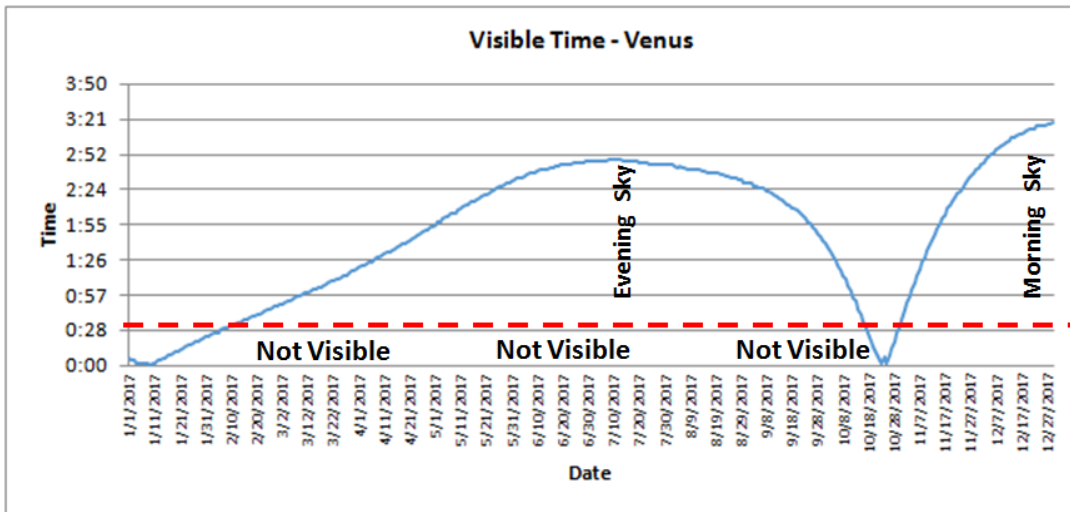


Figure 3: Graphical representation of visible time durations

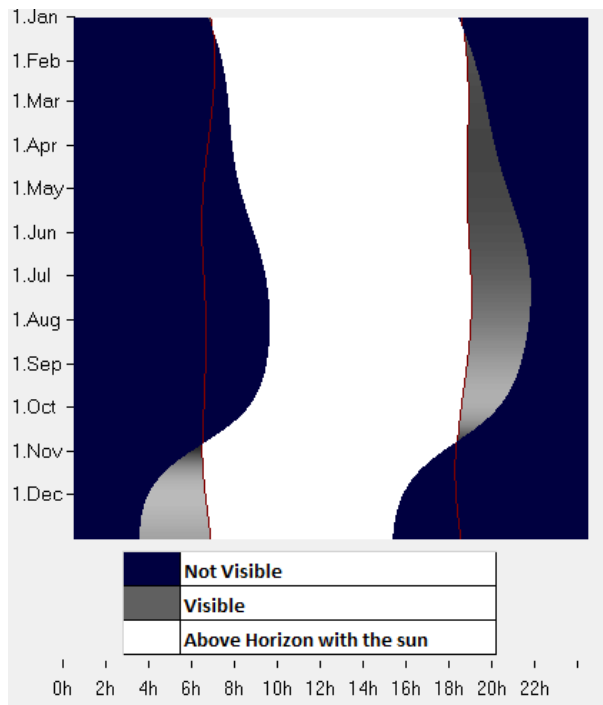


Figure 4: Annual Diagram for Visible Time for Mercury

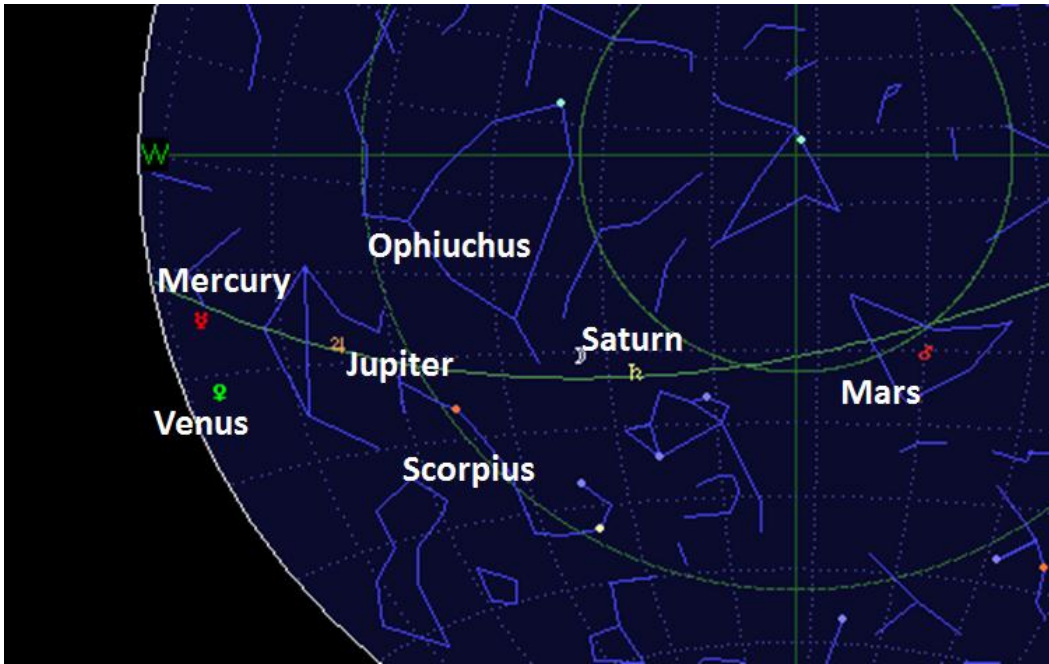


Figure 5: Sky and the planets at 07.30pm on 14th October 2018

Planet Venus (Rise and Set)

Date	January		February		March		April		May		June	
	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
1	6:15	17:56	6:53	18:41	7:10	19:11	7:21	19:38	7:44	20:12	8:22	20:54
2	6:16	17:58	6:54	18:43	7:10	19:12	7:22	19:39	7:45	20:13	8:24	20:55
3	6:18	17:59	6:55	18:44	7:10	19:12	7:22	19:40	7:46	20:15	8:25	20:56
4	6:19	18:01	6:56	18:45	7:11	19:13	7:23	19:41	7:47	20:16	8:26	20:57
5	6:21	18:02	6:56	18:46	7:11	19:14	7:23	19:42	7:48	20:18	8:27	20:58
6	6:22	18:04	6:57	18:47	7:12	19:15	7:24	19:43	7:49	20:19	8:29	20:59
7	6:23	18:05	6:58	18:49	7:12	19:16	7:24	19:44	7:50	20:20	8:30	21:00
8	6:25	18:07	6:59	18:50	7:12	19:17	7:25	19:45	7:52	20:22	8:31	21:01
9	6:26	18:08	6:59	18:51	7:13	19:18	7:26	19:46	7:53	20:23	8:32	21:02
10	6:28	18:10	7:00	18:52	7:13	19:18	7:26	19:47	7:54	20:24	8:34	21:03
11	6:29	18:12	7:01	18:53	7:13	19:19	7:27	19:48	7:55	20:26	8:35	21:04
12	6:30	18:13	7:01	18:54	7:14	19:20	7:27	19:49	7:56	20:27	8:36	21:05
13	6:32	18:15	7:02	18:55	7:14	19:21	7:28	19:50	7:58	20:29	8:37	21:06

14	6:33	18:16	7:03	18:56	7:14	19:22	7:29	19:51	7:59	20:30	8:38	21:07
15	6:34	18:18	7:03	18:57	7:15	19:23	7:30	19:52	8:00	20:31	8:39	21:07
16	6:36	18:19	7:04	18:58	7:15	19:23	7:30	19:53	8:01	20:33	8:40	21:08
17	6:37	18:21	7:04	18:59	7:15	19:24	7:31	19:55	8:03	20:34	8:41	21:09
18	6:38	18:22	7:05	19:00	7:16	19:25	7:32	19:56	8:04	20:36	8:43	21:10
19	6:39	18:24	7:05	19:01	7:16	19:26	7:33	19:57	8:05	20:37	8:44	21:10
20	6:41	18:25	7:06	19:02	7:16	19:27	7:33	19:58	8:06	20:38	8:45	21:11
21	6:42	18:26	7:06	19:03	7:17	19:28	7:34	19:59	8:08	20:40	8:46	21:12
22	6:43	18:28	7:07	19:04	7:17	19:29	7:35	20:01	8:09	20:41	8:47	21:12
23	6:44	18:29	7:07	19:05	7:17	19:29	7:36	20:02	8:10	20:42	8:48	21:13
24	6:45	18:31	7:08	19:06	7:18	19:30	7:37	20:03	8:12	20:44	8:48	21:13
25	6:46	18:32	7:08	19:07	7:18	19:31	7:38	20:04	8:13	20:45	8:49	21:14
26	6:47	18:33	7:09	19:08	7:19	19:32	7:39	20:06	8:14	20:46	8:50	21:14
27	6:48	18:35	7:09	19:09	7:19	19:33	7:40	20:07	8:16	20:48	8:51	21:15
28	6:49	18:36	7:09	19:10	7:19	19:34	7:41	20:08	8:17	20:49	8:52	21:15
29	6:50	18:37			7:20	19:35	7:42	20:09	8:18	20:50	8:53	21:15
30	6:51	18:39			7:20	19:36	7:43	20:11	8:20	20:51	8:53	21:16
31	6:52	18:40			7:21	19:37			8:21	20:52		

	July		August		September		October		November		December	
Date	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
1	8:54	21:16	9:06	21:13	8:55	20:47	8:02	19:44	5:19	17:04	3:24	15:18
2	8:55	21:16	9:06	21:12	8:54	20:46	7:59	19:40	5:13	16:59	3:22	15:16
3	8:56	21:17	9:06	21:12	8:54	20:45	7:56	19:37	5:07	16:54	3:21	15:14
4	8:56	21:17	9:06	21:11	8:53	20:43	7:52	19:33	5:01	16:48	3:19	15:13
5	8:57	21:17	9:06	21:10	8:52	20:42	7:48	19:29	4:56	16:43	3:17	15:11
6	8:58	21:17	9:06	21:10	8:51	20:40	7:44	19:25	4:50	16:38	3:16	15:10
7	8:58	21:17	9:06	21:09	8:50	20:39	7:40	19:20	4:45	16:33	3:15	15:08
8	8:59	21:17	9:05	21:09	8:49	20:38	7:36	19:16	4:40	16:29	3:13	15:07
9	8:59	21:18	9:05	21:08	8:48	20:36	7:31	19:11	4:35	16:24	3:12	15:06

10	9:00	21:18	9:05	21:07	8:46	20:34	7:27	19:07	4:30	16:20	3:11	15:04
11	9:00	21:18	9:05	21:07	8:45	20:33	7:22	19:02	4:25	16:16	3:10	15:03
12	9:01	21:18	9:05	21:06	8:44	20:31	7:17	18:57	4:21	16:12	3:09	15:02
13	9:01	21:18	9:04	21:05	8:42	20:29	7:12	18:52	4:17	16:08	3:08	15:01
14	9:02	21:18	9:04	21:05	8:41	20:27	7:07	18:47	4:12	16:04	3:07	15:00
15	9:02	21:17	9:04	21:04	8:39	20:25	7:01	18:41	4:08	16:00	3:07	14:59
16	9:03	21:17	9:04	21:03	8:38	20:23	6:56	18:36	4:05	15:57	3:06	14:58
17	9:03	21:17	9:03	21:02	8:36	20:21	6:50	18:30	4:01	15:53	3:05	14:58
18	9:03	21:17	9:03	21:01	8:34	20:19	6:44	18:25	3:58	15:50	3:05	14:57
19	9:04	21:17	9:03	21:01	8:32	20:17	6:38	18:19	3:54	15:47	3:04	14:56
20	9:04	21:17	9:02	21:00	8:30	20:15	6:32	18:13	3:51	15:44	3:04	14:55
21	9:04	21:16	9:02	20:59	8:28	20:13	6:26	18:08	3:48	15:41	3:03	14:55
22	9:04	21:16	9:01	20:58	8:26	20:10	6:20	18:02	3:45	15:38	3:03	14:54
23	9:05	21:16	9:01	20:57	8:24	20:08	6:14	17:56	3:42	15:36	3:03	14:54
24	9:05	21:16	9:00	20:56	8:22	20:05	6:08	17:50	3:40	15:33	3:02	14:53
25	9:05	21:15	9:00	20:55	8:19	20:02	6:02	17:45	3:37	15:31	3:02	14:53
26	9:05	21:15	8:59	20:54	8:17	20:00	5:56	17:39	3:35	15:28	3:02	14:53
27	9:05	21:15	8:59	20:53	8:14	19:57	5:49	17:33	3:32	15:26	3:02	14:52
28	9:05	21:14	8:58	20:52	8:11	19:54	5:43	17:27	3:30	15:24	3:02	14:52
29	9:06	21:14	8:57	20:51	8:08	19:50	5:37	17:21	3:28	15:22	3:02	14:52
30	9:06	21:13	8:57	20:50	8:05	19:47	5:31	17:16	3:26	15:20	3:02	14:51
31	9:06	21:13	8:56	20:48			5:25	17:10			3:02	14:51

Table 3: Rise and set

Visibility of Mars

Visible time (Azimuth and Altitude given only first day of the month to get an rough idea to find out the position) (Highlighted angles are above horizon)							
January	Mars Rise at 0221 hrs on 1 st January – Nearly 3.30 hours visible in the Eastern half of the sky. Mars Rise at 0141 hrs on 31 st January – nearly 4 hours visible in the Eastern half of the sky. From 1 st to 31 st January, visible time is increasing. (Note : Mars visible in the Libra)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	247 ⁰ 31'	246 ⁰ 37'	212 ⁰ 07'	119 ⁰ 58'	112 ⁰ 02'
		Azimuth	-06 ⁰ 19'	-33 ⁰ 52'	-70 ⁰ 40'	-53 ⁰ 33'	-12 ⁰ 47'
	Mars	Altitude	249 ⁰ 26'	157 ⁰ 08'	104 ⁰ 32'	105⁰44'	118⁰53'
Azimuth		-62 ⁰ 51'	-80 ⁰ 41'	-41 ⁰ 28'	+01⁰51'	+43⁰35'	
February	Mars Rise at 0140 hrs on 1 st February – Nearly 4 hours visible in the Eastern half of the sky. Mars Rise at 0104 hrs on 28 th February – It is nearly 5 hours visible in the Eastern half of the sky. From 1 st February to 28 th February, visible time is increasing (Note : Visible in the Scorpius Constellation)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	253 ⁰ 15'	254 ⁰ 10'	231 ⁰ 11'	111 ⁰ 03'	105 ⁰ 43'
		Azimuth	-03 ⁰ 25'	-32 ⁰ 03'	-73 ⁰ 21'	-57 ⁰ 36'	-14 ⁰ 50'
	Mars	Altitude	226 ⁰ 09'	134 ⁰ 37'	109 ⁰ 34'	112⁰22'	133⁰10'
Azimuth		-70 ⁰ 01'	-70 ⁰ 19'	-30 ⁰ 25'	+11⁰51'	+43⁰53'	
March	Mars Rise at 0102 hrs on 1 st March – Nearly 5 hours visible in the Eastern half of the sky . Mars Rise at 0019 hrs on 31 st March – nearly 5.30 hours visible in the Eastern half of the sky. From 1 st March to 31 st March, visible time is increasing ((Note : Mars visible in the Ophiuchus)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	262 ⁰ 46'	265 ⁰ 27'	266 ⁰ 33'		
		Azimuth	-02 ⁰ 40'	-32 ⁰ 18'	-76 ⁰ 55'		
	Mars	Altitude	197 ⁰ 58'	126 ⁰ 51'	111 ⁰ 54'	117⁰11'	136⁰36'
Azimuth		-73 ⁰ 05'	-61 ⁰ 32'	-21 ⁰ 30'	+19⁰30'	+54⁰14'	
April	Mars Rise at 0018 hrs on 1 st April – Nearly 5.30 hours visible in the Eastern half of the sky. Mars Rise at 2327 hrs on 30 th April – nearly 6 hours visible in the Eastern half of the sky. From 1 st April to 30 th April, visible time is increasing ((Note : Mars visible in the Sagittarius)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	273 ⁰ 21'	277 ⁰ 11'	293 ⁰ 11'	293 ⁰ 11'	293 ⁰ 11'
		Azimuth	11 ⁰ 30'	-18 ⁰ 09'	-61 ⁰ 33'	-67 ⁰ 49'	-25 ⁰ 06'
	Mars	Altitude	207 ⁰ 20'	132 ⁰ 22'	112 ⁰ 49'	116⁰53'	142⁰47'
Azimuth		-70 ⁰ 79'	-64 ⁰ 03'	-24 ⁰ 57'	+15⁰58'	+51⁰32'	
	Mars Rise at 2325 hrs on 1 st May – Nearly 6 hours visible in the Eastern half of the sky . Mars Rise at 2216 hrs on 31 st May – nearly 7.30 hours visible in the Eastern half of the sky in the Western sky, before sun						

May	rise. From 1 st May to 31 st May, visible time is increasing (Note : Mars visible in the Sagittarius to Capricorn)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	284 ⁰ 11'	288 ⁰ 22'	312 ⁰ 28'	042 ⁰ 44'	070 ⁰ 30'
		Azimuth	10 ⁰ 46'	-17 ⁰ 51'	-57 ⁰ 19'	-59 ⁰ 55'	-21 ⁰ 20'
	Mars	Altitude	168 ⁰ 26'	119 ⁰ 46'	111 ⁰ 45'	119⁰58'	159⁰43'
Azimuth		-73 ⁰ 46'	-54 ⁰ 03'	-13 ⁰ 07'	+27⁰30'	58⁰32'	
June	Mars Rise at 2213 hrs on 1 st June – Nearly 7.30 hours visible in the Eastern half and mid sky, before sun rise. Mars Rise at 2037 hrs on 30 th June – nearly 9.30 hours visible in the Eastern half of the sky, before sun rise. From 1 st June to 30 th June, visible time is increasing (Note : Mars visible in the Capricorn)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	291 ⁰ 14'	295 ⁰ 22'	320 ⁰ 52'	034 ⁰ 08'	063 ⁰ 30'
		Azimuth	11 ⁰ 22'	-16 ⁰ 04'	-52 ⁰ 23'	-54 ⁰ 49'	-19 ⁰ 44'
	Mars	Altitude	128 ⁰ 15'	112 ⁰ 23'	112⁰20'	123⁰02'	192⁰27'
Azimuth		-64 ⁰ 40'	-38 ⁰ 24'	+03⁰19'	+42⁰38'	+60⁰47'	

Visible time (Azimuth and Altitude given only first day of the month to get an rough idea to find out the position)							
(Highlighted angles are above horizon)							
July	Mars Rise at 2032 hrs on 1 st July – Nearly 9.30 hours visible in the Eastern and western half of the sky, before sun rise. Mars Rise at 1812 hrs on 31 st July – Mars is nearly whole night in the sky (Mars rise, When sun set). From 1 st July to 30 th July, visible time is increasing (Note : Mars visible in the Capricorn)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	292 ⁰ 12'	296 ⁰ 00'	320 ⁰ 17'	031 ⁰ 17'	062 ⁰ 08'
		Azimuth	12 ⁰ 48'	-14 ⁰ 28'	-50 ⁰ 43'	-54 ⁰ 52'	-20 ⁰ 49'
	Mars	Altitude	114 ⁰ 54'	111 ⁰ 53'	119⁰26'	156⁰48'	225⁰29'
Azimuth		-42 ⁰ 35'	-15 ⁰ 01'	+25⁰43'	+57⁰38'	+46⁰56'	
August	Mars Rise at 1807 hrs on 1 st August – Mars is nearly whole night in the sky (Mars rise, When sun set). After that Mars will be risen before sun set. Therefore Sun and the Mars are above the horizon and Mars is not visible until Sun set. After sun set mars is visible little above the horizon. This will further increase and the visible time gradually decreases (Note : Mars visible in the Capricorn to Sagittarius)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	286 ⁰ 54'	290 ⁰ 41'	313 ⁰ 31'	036 ⁰ 00'	067 ⁰ 21'
		Azimuth	13 ⁰ 09'	-15 ⁰ 05'	-53 ⁰ 53'	-59 ⁰ 24'	-34 ⁰ 35'
	Mars	Altitude	115 ⁰ 16'	120⁰00'	148⁰21'	214⁰11'	248⁰33'
Azimuth		-08 ⁰ 59'	+17⁰37'	+51⁰11'	+49⁰57'	+15⁰39'	
Mars Rise at 1548 hrs on 1 st September – At that time sun is in the western sky. Therefore both sun and							

September	the Mars are above the horizon and Mars is not visible until Sun set. After sun set mars is visible little above the eastern horizon and visible until it set from the western horizon. (Note : Mars visible in the Capricorn)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	277 ⁰ 04'	280 ⁰ 59'	300 ⁰ 24'	053 ⁰ 30'	078 ⁰ 08'
		Azimuth	10 ⁰ 54'	-18 ⁰ 32'	-60 ⁰ 52'	-65 ⁰ 10'	-23 ⁰ 34'
	Mars	Altitude	121⁰27'	138⁰03'	201⁰21'	237⁰30'	244 ⁰ 57'
Azimuth		+21⁰49'	+45⁰08'	+54⁰45'	+24³25'	-15 ⁰ 07'	
October	Mars Rise at 1417 hrs on 1 st October – At that time sun is in the western sky. Therefore both sun and the Mars are above the horizon and Mars is not visible until Sun set. After sun set mars is visible above the eastern horizon and visible until it set from the western horizon. This will further increase and the visible time gradually decreases(Note : Mars visible in the Capricorn)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	265 ⁰ 50'	269 ⁰ 16'	277 ⁰ 40'	082 ⁰ 34'	090 ⁰ 55'
		Azimuth	06 ⁰ 55'	-22 ⁰ 51'	-67 ⁰ 28'	-67 ⁰ 11'	-22 ⁰ 34'
	Mars	Altitude	128 ⁰ 22'	162 ⁰ 57'	229 ⁰ 07'	246⁰22'	247 ⁰ 14'
Azimuth		+41 ⁰ 37'	+59 ⁰ 21'	+44 ⁰ 23'	+05⁰47'	-35 ⁰ 42'	
November	Mars Rise at 1312 hrs on 1 st November – At that time sun is in the western sky. Therefore both sun and the Mars are above the horizon and Mars is not visible until Sun set. After sun set mars is visible above the eastern horizon and visible until it set from the western horizon. Visible time gradually decreases. (Note : Mars visible in the Aquaria)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	256 ⁰ 26'	256 ⁰ 44'	215 ⁰ 58'	104 ⁰ 49'	103 ⁰ 58'
		Azimuth	-10 ⁰ 31'	-39 ⁰ 32'	-80 ⁰ 19'	-50 ⁰ 48'	-07 ⁰ 20'
	Mars	Altitude	159⁰33'	221⁰51'	249⁰34'	255 ⁰ 00'	245 ⁰ 22'
Azimuth		+65⁰07'	+58⁰39'	+20⁰27'	-22 ⁰ 19'	-64 ⁰ 59'	
December	Mars Rise at 1218 hrs on 1 st October – At that time sun is in the western sky. Therefore both sun and the Mars are above the horizon and Mars is not visible until Sun set. After sun set mars is visible above the eastern horizon and visible until it set from the western horizon Visible time gradually decreases. (Note : Mars visible in the Aquaria to Pisces)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	248 ⁰ 55'	247 ⁰ 36'	204 ⁰ 07'	116 ⁰ 30'	111 ⁰ 10'
		Azimuth	-09 ⁰ 43'	-37 ⁰ 29'	-73 ⁰ 23'	-50 ⁰ 35'	-09 ⁰ 14'
	Mars	Altitude	192⁰47'	245⁰19'	259⁰41'	263 ⁰ 54'	259 ⁰ 03'
Azimuth		+73⁰52'	+53⁰00'	+10⁰00'	-34 ⁰ 14'	-78 ⁰ 40'	

Apparent Magnitudes of Mars

Month	Jan	Feb	Mar	Apr	May	June	July	August	Sep	Oct	Nov	Dec
Mag	+1.7	+1.3	+1.0	+0.5	-0.2	-1.1	-2.0	-2.5	-1.9	-1.1	-0.4	+0.2

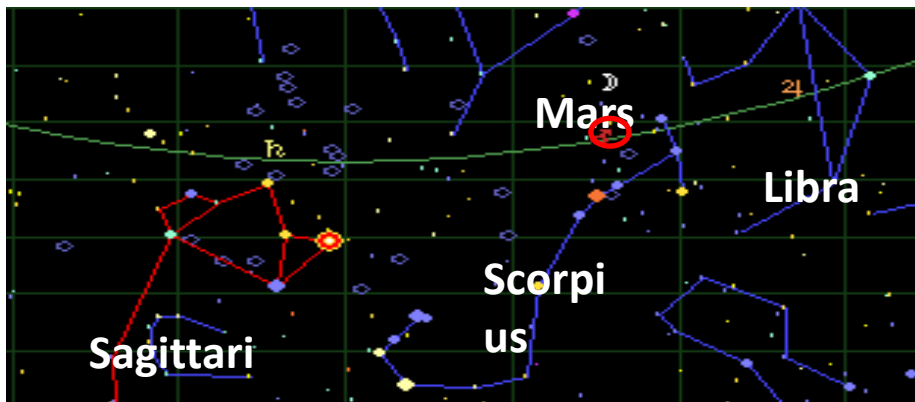


Figure 6: Mars in February

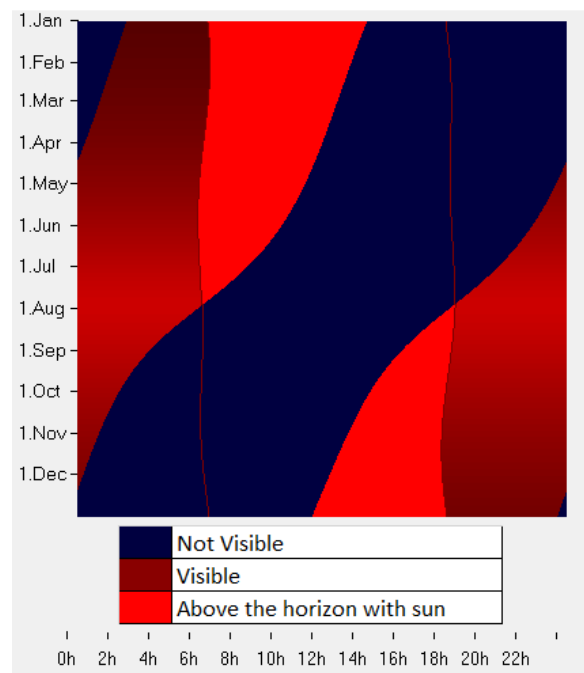


Figure 7: Annual Diagram for Visible Time for Mars

Planet Mars (Rise and Set)

	January		February		March		April		May		June	
Date	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
1	2:21	14:10	1:40	13:23	1:02	12:43	0:18	11:58	23:25	11:07	22:13	9:57
2	2:19	14:08	1:38	13:22	1:01	12:41	0:16	11:56	23:23	11:05	22:10	9:54
3	2:18	14:07	1:37	13:20	1:00	12:40	0:15	11:55	23:21	11:03	22:07	9:52
4	2:17	14:05	1:36	13:19	0:58	12:39	0:13	11:53	23:19	11:01	22:05	9:49
5	2:15	14:03	1:34	13:17	0:57	12:37	0:12	11:52	23:17	10:59	22:02	9:46
6	2:14	14:02	1:33	13:16	0:55	12:36	0:10	11:50	23:15	10:57	21:59	9:43
7	2:13	14:00	1:32	13:14	0:54	12:34	0:08	11:49	23:13	10:55	21:56	9:40
8	2:11	13:59	1:30	13:13	0:53	12:33	0:07	11:47	23:10	10:53	21:53	9:37
9	2:10	13:57	1:29	13:12	0:51	12:31	0:05	11:45	23:08	10:51	21:50	9:34
10	2:09	13:56	1:28	13:10	0:50	12:30	0:04	11:44	23:06	10:49	21:47	9:31
11	2:07	13:54	1:26	13:09	0:48	12:29	0:02	11:42	23:04	10:47	21:44	9:28
12	2:06	13:53	1:25	13:07	0:47	12:27	0:00	11:41	23:02	10:45	21:41	9:25
13	2:05	13:51	1:24	13:06	0:46	12:26	23:57	11:39	23:00	10:43	21:38	9:22
14	2:03	13:50	1:22	13:04	0:44	12:24	23:55	11:37	22:57	10:40	21:35	9:19
15	2:02	13:48	1:21	13:03	0:43	12:23	23:54	11:36	22:55	10:38	21:31	9:15
16	2:01	13:47	1:20	13:01	0:41	12:21	23:52	11:34	22:53	10:36	21:28	9:12
17	1:59	13:45	1:18	13:00	0:40	12:20	23:50	11:32	22:50	10:34	21:25	9:09
18	1:58	13:44	1:17	12:59	0:39	12:18	23:49	11:31	22:48	10:31	21:21	9:05
19	1:57	13:42	1:16	12:57	0:37	12:17	23:47	11:29	22:46	10:29	21:18	9:02
20	1:55	13:41	1:14	12:56	0:36	12:16	23:45	11:27	22:43	10:27	21:14	8:58
21	1:54	13:39	1:13	12:54	0:34	12:14	23:43	11:25	22:41	10:25	21:11	8:55
22	1:53	13:38	1:12	12:53	0:33	12:13	23:42	11:24	22:39	10:22	21:07	8:51
23	1:51	13:36	1:10	12:51	0:31	12:11	23:40	11:22	22:36	10:20	21:04	8:47
24	1:50	13:35	1:09	12:50	0:30	12:10	23:38	11:20	22:34	10:17	21:00	8:43

25	1:49	13:33	1:08	12:49	0:28	12:08	23:36	11:18	22:31	10:15	20:56	8:40
26	1:47	13:32	1:06	12:47	0:27	12:07	23:34	11:16	22:29	10:12	20:52	8:36
27	1:46	13:30	1:05	12:46	0:25	12:05	23:32	11:15	22:26	10:10	20:48	8:32
28	1:45	13:29	1:04	12:44	0:24	12:04	23:31	11:13	22:23	10:07	20:44	8:28
29	1:44	13:28			0:22	12:02	23:29	11:11	22:21	10:05	20:41	8:24
30	1:42	13:26			0:21	12:01	23:27	11:09	22:18	10:02	20:37	8:20
31	1:41	13:25			0:19	11:59			22:16	10:00		

	July		August		September		October		November		December	
Date	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
1	20:32	8:16	18:07	5:48	15:48	3:28	14:17	2:00	13:12	1:01	12:18	0:15
2	20:28	8:12	18:02	5:43	15:44	3:24	14:14	1:58	13:10	0:59	12:16	0:13
3	20:24	8:08	17:57	5:38	15:41	3:20	14:12	1:55	13:08	0:57	12:15	0:12
4	20:20	8:03	17:53	5:33	15:37	3:17	14:10	1:53	13:06	0:56	12:13	0:10
5	20:16	7:59	17:48	5:28	15:33	3:13	14:07	1:51	13:04	0:54	12:11	0:09
6	20:12	7:55	17:43	5:23	15:30	3:10	14:05	1:49	13:03	0:53	12:10	0:08
7	20:07	7:51	17:38	5:18	15:26	3:06	14:03	1:47	13:01	0:51	12:08	0:06
8	20:03	7:46	17:33	5:13	15:23	3:03	14:01	1:45	12:59	0:49	12:06	0:05
9	19:59	7:42	17:28	5:08	15:20	3:00	13:58	1:43	12:57	0:48	12:05	0:03
10	19:54	7:37	17:23	5:03	15:16	2:56	13:56	1:41	12:55	0:46	12:03	0:02
11	19:50	7:33	17:18	4:58	15:13	2:53	13:54	1:39	12:53	0:45	12:01	0:01
12	19:45	7:28	17:13	4:53	15:10	2:50	13:52	1:37	12:52	0:43	12:00	23:58
13	19:41	7:23	17:09	4:48	15:07	2:47	13:50	1:35	12:50	0:41	11:58	23:56
14	19:36	7:18	17:04	4:43	15:04	2:44	13:48	1:33	12:48	0:40	11:56	23:55
15	19:31	7:14	16:59	4:39	15:00	2:41	13:46	1:31	12:46	0:38	11:55	23:54
16	19:27	7:09	16:54	4:34	14:57	2:38	13:44	1:29	12:44	0:37	11:53	23:52
17	19:22	7:04	16:50	4:29	14:54	2:35	13:41	1:27	12:43	0:35	11:51	23:51
18	19:17	6:59	16:45	4:25	14:51	2:32	13:39	1:25	12:41	0:34	11:50	23:50
19	19:12	6:54	16:41	4:20	14:49	2:30	13:37	1:23	12:39	0:32	11:48	23:48

20	19:07	6:49	16:36	4:16	14:46	2:27	13:35	1:22	12:37	0:31	11:46	23:47
21	19:02	6:44	16:32	4:11	14:43	2:24	13:33	1:20	12:36	0:29	11:45	23:45
22	18:57	6:39	16:28	4:07	14:40	2:22	13:31	1:18	12:34	0:28	11:43	23:44
23	18:52	6:34	16:23	4:03	14:37	2:19	13:29	1:16	12:32	0:26	11:41	23:43
24	18:47	6:28	16:19	3:59	14:35	2:17	13:27	1:14	12:30	0:25	11:40	23:41
25	18:42	6:23	16:15	3:55	14:32	2:14	13:25	1:13	12:29	0:23	11:38	23:40
26	18:37	6:18	16:11	3:51	14:29	2:12	13:23	1:11	12:27	0:22	11:37	23:38
27	18:32	6:13	16:07	3:47	14:27	2:09	13:21	1:09	12:25	0:20	11:35	23:37
28	18:27	6:08	16:03	3:43	14:24	2:07	13:20	1:07	12:23	0:19	11:33	23:36
29	18:22	6:03	15:59	3:39	14:22	2:04	13:18	1:06	12:22	0:18	11:32	23:34
30	18:17	5:58	15:55	3:35	14:19	2:02	13:16	1:04	12:20	0:16	11:30	23:33
31	18:12	5:53	15:52	3:31			13:14	1:02			11:28	23:32

Table 4: Rise and set times

Visibility of Jupiter

Time and the Location of Jupiter

Visible time (Azimuth and Altitude given only first day of the month to get an rough idea to find out the position)							
(Highlighted angles are above horizon)							
January	Jupiter Rise at 0233 hrs on 1 st January – Nearly 3-4 hours visible in the Eastern half of the sky . Jupiter Rise at 0052 hrs on 31 st January – nearly 5 hours visible in the Eastern half of the sky. From 1 st January to 31 st January, visible time is increasing (Note : Mars visible in the Aquaria to Libra)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	247 ⁰ 31'	246 ⁰ 37'	212 ⁰ 07'	119 ⁰ 58'	112 ⁰ 02'
		Azimuth	-06 ⁰ 19'	-33 ⁰ 52'	-70 ⁰ 40'	-53 ⁰ 33'	-12 ⁰ 47'
	Jupiter	Altitude	249 ⁰ 36'	172 ⁰ 38'	105 ⁰ 34'	254 ⁰ 21'	253 ⁰ 52'
		Azimuth	-60 ⁰ 19'	-80 ⁰ 48'	-43 ⁰ 47'	-03 ⁰ 26'	-46 ⁰ 53'
	Jupiter Rise at 0049 hrs on 1 st February – Nearly 5 hours visible in the Eastern half of the sky . Jupiter Rise at 2307 hrs on 28 th February nearly 7 hours visible in the Eastern half of the sky. From 1 st to 28 th February, visible time is increasing (Note : Mars visible in the Aquaria to Libra)						

February	Sun	Altitude	01/1830 253 ⁰ 15'	01/2030 254 ⁰ 10'	01/2330 231 ⁰ 11'	02/0230 111 ⁰ 03'	02/0530 105 ⁰ 43'	
		Azimuth	-03 ⁰ 25'	-32 ⁰ 03'	-73 ⁰ 21'	-57 ⁰ 36'	-14 ⁰ 50'	
	Jupiter	Altitude	193 ⁰ 46'	113 ⁰ 18'	105 ⁰ 42'	112⁰04'	117⁰39'	
		Azimuth	-79 ⁰ 28'	-61 ⁰ 17'	-18 ⁰ 35'	+23⁰59'	+60⁰43'	
March	Jupiter Rise at 2303 hrs on 1 st March – Nearly 7 hours visible in the Eastern half and the Western sky . Jupiter Rise at 2102 hrs on 31 st March, nearly 8-9 hours visible in the Eastern half and the Western sky. From 1 st to 31 st March, visible time is increasing (Note : Mars visible in the Aquaria to Libra)							
	Sun	Altitude	01/1830 262 ⁰ 46'	01/2030 265 ⁰ 27'	01/2330 266 ⁰ 33'	02/0230 093 ⁰ 43'	02/0530 096 ⁰ 16'	
		Azimuth	-02 ⁰ 40'	-32 ⁰ 18'	-76 ⁰ 55'	-58 ⁰ 27'	-13 ⁰ 55'	
	Jupiter	Altitude	117 ⁰ 15'	106 ⁰ 42'	108⁰21'	124⁰18'	199⁰10'	
Azimuth		-65 ⁰ 03'	-37 ⁰ 04'	+05⁰50'	+46⁰31'	+14⁰21'		
April	Jupiter Rise at 2058 hrs on 1 st April – Nearly 8-9 hours visible in the Eastern and western sky . Jupiter Rise at 1858 hrs on 30 th April nearly 11 hours visible in the Eastern and Western sky. From 1 st to 30 th April, visible time is increasing (Note : Mars visible in the Aquaria to Libra)							
	Sun	Altitude	01/1830 273 ⁰ 21'	01/2030 277 ⁰ 11'	01/2330 293 ⁰ 11'	02/0230 293 ⁰ 11'	02/0530 293 ⁰ 11'	
		Azimuth	11 ⁰ 30'	-18 ⁰ 09'	-61 ⁰ 33'	-67 ⁰ 49'	-25 ⁰ 06'	
	Jupiter	Altitude	108 ⁰ 42'	105 ⁰ 47'	111⁰21'	140⁰18'	225⁰28'	
Azimuth		-50 ⁰ 11'	-21 ⁰ 34'	+21⁰06'	+58⁰46'	+55⁰41'		
May	Jupiter Rise at 1847 hrs on 1 st August –sun setting and Jupiter rise is nearly closer. Therefore Jupiter will be in the sky whole night. Jupiter Rise at 1638 hrs on 31 st May – sun is in the western sky. Therefore both sun and the Jupiter are above the horizon and Jupiter is not visible until Sun set. From 1 st to 31 st May, visible time is decreasing (Note : Mars visible in the Aquaria to Libra)							
	Sun	Altitude	01/1830 284 ⁰ 11'	01/2030 288 ⁰ 22'	01/2330 312 ⁰ 28'	02/0230 042 ⁰ 44'	02/0530 070 ⁰ 30'	
		Azimuth	10 ⁰ 46'	-17 ⁰ 51'	-57 ⁰ 19'	-59 ⁰ 55'	-21 ⁰ 20'	
	Jupiter	Altitude	104 ⁰ 58'	107⁰53'	125⁰49'	207⁰53'	249⁰14'	
Azimuth		-19 ⁰ 05'	+09⁰37'	+50⁰12'	+63⁰49'	+28⁰33'		
June	Jupiter Rise at 1629 hrs on 1 st June – sun is in the western sky. Therefore both sun and the Jupiter are above the horizon and Jupiter cannot be seen until Sun set. Jupiter will be in the Eastern and Western sky after the sun set until next morning. Therefore Jupiter is visible nearly 10 hours after Sun set. Jupiter Rise at 1427 hrs on 30 th June. Similar explanation as above and Jupiter is visible about 8 hours after sun set. From 1 st to 30 th June, visible time is decreasing (Note : Mars visible in the Aquaria to Libra)							
	Sun	Altitude	01/1830 291 ⁰ 14'	01/2030 295 ⁰ 22'	01/2330 320 ⁰ 52'	02/0230 034 ⁰ 08'	02/0530 063 ⁰ 30'	
		Azimuth	11 ⁰ 22'	-16 ⁰ 04'	-52 ⁰ 23'	-54 ⁰ 49'	-19 ⁰ 44'	

	Jupiter	Altitude	107⁰39'	117⁰27'	184⁰05'	244⁰07'	254 ⁰ 59'
		Azimuth	+13⁰48'	+41⁰31'	+67⁰49'	+38⁰41'	-03 ⁰ 35'
Visible time (Azimuth and Altitude given only first day of the month to get an rough idea to find out the position)							
(Highlighted angles are above horizon)							
July	Jupiter Rise at 1423 hrs on 1 st July – sun is in the western sky. Therefore both sun and the Jupiter are above the horizon and Jupiter is not visible until Sun set. After sun set Jupiter is visible nearly 8 hours. Jupiter rise at 1227 hrs on 31 st July and it is visible nearly 6 hours after sunset. The visible time is gradually decreased from 1 st to 31 st July. (Note : Mars visible in the Aquaria to Libra)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	292 ⁰ 12'	296 ⁰ 00'	320 ⁰ 17'	031 ⁰ 17'	062 ⁰ 08'
		Azimuth	12 ⁰ 48'	-14 ⁰ 28'	-50 ⁰ 43'	-54 ⁰ 52'	-20 ⁰ 49'
	Jupiter	Altitude	117⁰41'	151⁰27'	236⁰33'	253⁰40'	256⁰40'
Azimuth		+4346'	+65⁰21'	50⁰84'	+09⁰23'	-34⁰03'	
August	Jupiter Rise at 1223 hrs on 1 st August – sun is in the mid sky. Therefore both sun and the Jupiter are above the horizon and Jupiter is not visible until Sun set. After sun set Jupiter is visible nearly 6 hours. Jupiter rise at 1038 hrs on 31 st January and it is visible nearly 8 hours after sunset. The visible time is gradually decrease from 1 st to 31 st August (Note : Mars visible in the Aquaria to Libra)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	286 ⁰ 54'	290 ⁰ 41'	313 ⁰ 31'	036 ⁰ 00'	067 ⁰ 21'
		Azimuth	13 ⁰ 09'	-15 ⁰ 05'	-53 ⁰ 53'	-59 ⁰ 24'	-34 ⁰ 35'
	Jupiter	Altitude	151⁰41'	219⁰13'	250⁰10'	2256⁰18'	249 ⁰ 58'
Azimuth		+65⁰04'	+61⁰38'	23⁰36'	-19⁰26'	-62 ⁰ 41'	
September	Jupiter Rise at 1034 hrs on 1 st September – sun is in the western sky. Therefore both sun and the Jupiter are above the horizon and Jupiter is not visible until Sun set. After sun set Jupiter is visible 3 hours in the western sky. Visible time gradually decreases. (Note : Mars visible in the Aquaria to Libra)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	277 ⁰ 04'	280 ⁰ 59'	300 ⁰ 24'	053 ⁰ 30'	078 ⁰ 08'
		Azimuth	10 ⁰ 54'	-18 ⁰ 32'	-60 ⁰ 52'	-65 ⁰ 10'	-23 ⁰ 34'
	Jupiter	Altitude	213⁰34'	242⁰32'	254 ⁰ 00'	253 ⁰ 45'	174 ⁰ 56'
Azimuth		+62⁰23'	+39⁰25'	-02 ⁰ 30'	-45 ⁰ 44'	-80 ⁰ 34'	
October	Jupiter Rise at 0857 hrs on 1 st October – sun is in the western sky. Therefore both sun and the Jupiter are above the horizon and Jupiter is not visible seen until Sun set. After sun set Jupiter is visible nearly 2 hours in the Western sky. Visible time gradually decreases. (Note : Mars visible in the Aquaria to Libra)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	265 ⁰ 50'	269 ⁰ 16'	277 ⁰ 40'	082 ⁰ 34'	090 ⁰ 55'
		Azimuth	06 ⁰ 55'	-22 ⁰ 51'	-67 ⁰ 28'	-67 ⁰ 11'	-22 ⁰ 34'
	Jupiter	Altitude	237⁰55'	249⁰22'	253 ⁰ 42'	238 ⁰ 39'	115 ⁰ 43'

		Azimuth	+43°22'	+16°27'	-26°13'	--68°08'	-62°47'
November	Jupiter Rise at 0722 hrs on 1 st November – sun and the Jupiter are in the eastern sky . Therefore both sun and the Jupiter are above the horizon and Jupiter cannot be seen until Sun set. After sun set Jupiter is visible nearly 1 hour in the western sky. visible time gradually decreases (Note : Mars visible in the Aquaria to Libra)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	256°26'	256°44'	215°58'	104°49'	103°58'
		Azimuth	-10°31'	-39°32'	-80°19'	-50°48'	-07°20'
	Jupiter	Altitude	249°33'	252°03'	241°01'	124°46'	108°02'
Azimuth		+07°41'	-20°33'	-62°21'	-67°15'	-26°02'	
December	Jupiter Rise at 0552 hrs on 1 st October – Jupiter is visible few minutes before sun rise. Jupiter rise at 0422 hrs on 31 st December, Jupiter is visible about 01 and 30 hours in the eastern sky before sun rise. (Note : Mars visible in the Aquaria to Sagittarius)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	248°55'	247°36'	204°07'	116°30'	111°10'
		Azimuth	-09°43'	-37°29'	-73°23'	-50°35'	-09°14'
	Jupiter	Altitude	250°28'	248°30'	190°51'	112°53'	110°08'
Azimuth		-13°38'	-41°42'	-76°01'	-46°49'	-04°47'	

Apparent Magnitudes of Jupiter

Month	Jan	Feb	Mar	Apr	May	June	July	August	Sep	Oct	Nov	Dec
Mag	-1.4	-1.6	-1.8	-1.9	-2.0	-2.0	-1.9	-1.7	-1.5	-1.4	-1.3	-1.3

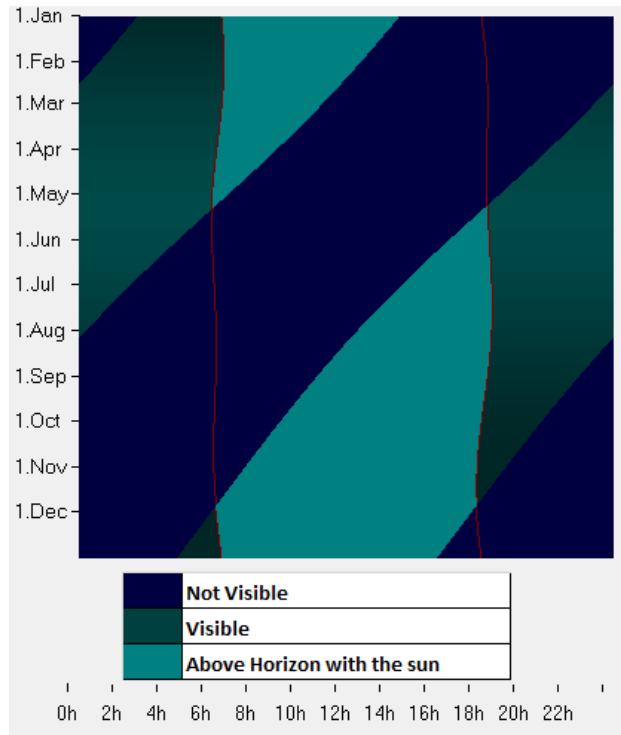


Figure 8: Annual Diagram for Visible Time for Jupiter

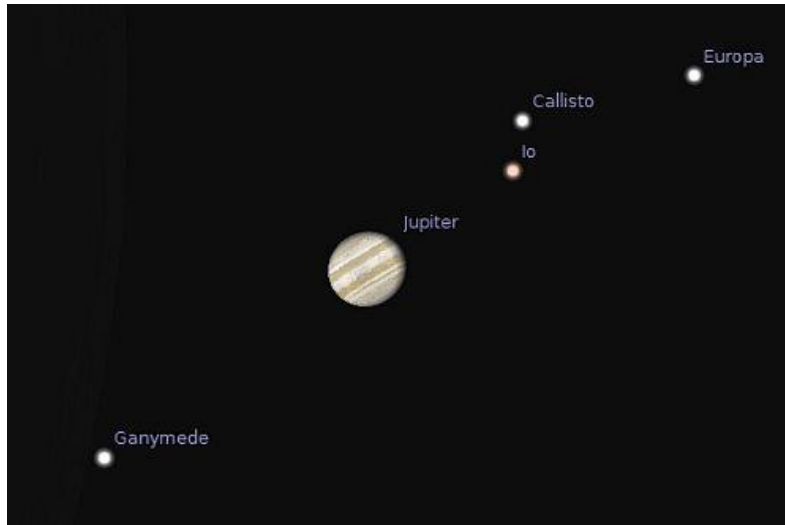


Figure 9: Jupiter and its Moons

Planet Jupiter (Rise and Set)

	January		February		March		April		May		June	
Date	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
1	2:33	14:20	0:49	12:34	23:03	10:52	20:58	8:47	18:47	6:37	16:29	4:21
2	2:29	14:16	0:45	12:31	22:59	10:48	20:53	8:43	18:42	6:33	16:25	4:17
3	2:26	14:13	0:42	12:27	22:55	10:44	20:49	8:39	18:38	6:29	16:21	4:12
4	2:23	14:10	0:38	12:24	22:51	10:40	20:45	8:34	18:33	6:24	16:16	4:08
5	2:20	14:07	0:35	12:20	22:47	10:36	20:41	8:30	18:29	6:20	16:12	4:04
6	2:16	14:03	0:31	12:17	22:43	10:32	20:36	8:26	18:24	6:15	16:08	4:00
7	2:13	14:00	0:27	12:13	22:39	10:28	20:32	8:22	18:20	6:11	16:03	3:55
8	2:10	13:57	0:24	12:10	22:35	10:25	20:28	8:17	18:16	6:07	15:59	3:51
9	2:07	13:54	0:20	12:06	22:31	10:21	20:23	8:13	18:11	6:02	15:55	3:47
10	2:03	13:50	0:17	12:03	22:27	10:17	20:19	8:09	18:07	5:58	15:51	3:43
11	2:00	13:47	0:13	11:59	22:24	10:13	20:15	8:05	18:02	5:54	15:47	3:38
12	1:57	13:44	0:10	11:55	22:20	10:09	20:10	8:01	17:58	5:49	15:42	3:34
13	1:54	13:40	0:06	11:52	22:16	10:05	20:06	7:56	17:54	5:45	15:38	3:30
14	1:50	13:37	0:02	11:48	22:12	10:01	20:02	7:52	17:49	5:40	15:34	3:26
15	1:47	13:34	23:55	11:45	22:08	9:57	19:58	7:48	17:45	5:36	15:30	3:21
16	1:44	13:30	23:52	11:41	22:04	9:53	19:53	7:44	17:40	5:32	15:25	3:17
17	1:40	13:27	23:48	11:37	22:00	9:49	19:49	7:39	17:36	5:27	15:21	3:13
18	1:37	13:23	23:44	11:34	21:56	9:45	19:45	7:35	17:32	5:23	15:17	3:09
19	1:34	13:20	23:41	11:30	21:52	9:41	19:40	7:31	17:27	5:18	15:13	3:04
20	1:30	13:17	23:37	11:26	21:48	9:37	19:36	7:26	17:23	5:14	15:08	3:00
21	1:27	13:13	23:33	11:22	21:44	9:33	19:32	7:22	17:18	5:09	15:04	2:56
22	1:23	13:10	23:30	11:19	21:40	9:29	19:27	7:17	17:14	5:05	15:00	2:52
23	1:20	13:06	23:26	11:15	21:36	9:25	19:23	7:13	17:09	5:00	14:56	2:48
24	1:17	13:03	23:22	11:11	21:31	9:21	19:18	7:08	17:05	4:56	14:52	2:43
25	1:13	12:59	23:18	11:07	21:27	9:17	19:14	7:04	17:00	4:52	14:47	2:39
26	1:10	12:56	23:14	11:03	21:23	9:12	19:09	7:00	16:56	4:47	14:43	2:35

27	1:06	12:52	23:11	11:00	21:19	9:08	19:05	6:55	16:51	4:43	14:39	2:31
28	1:03	12:49	23:07	10:56	21:15	9:04	19:00	6:51	16:47	4:38	14:35	2:27
29	0:59	12:45			21:10	9:00	18:56	6:46	16:43	4:34	14:31	2:23
30	0:56	12:42			21:06	8:56	18:51	6:42	16:38	4:30	14:27	2:19
31	0:52	12:38			21:02	8:51			16:34	4:25		

	July		August		September		October		November		December	
Date	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
1	14:23	2:15	12:23	0:15	10:34	22:21	8:57	20:42	7:22	19:05	5:52	17:34
2	14:19	2:11	12:19	0:11	10:31	22:18	8:54	20:39	7:18	19:02	5:49	17:31
3	14:15	2:07	12:16	0:07	10:27	22:14	8:50	20:36	7:15	18:59	5:46	17:28
4	14:11	2:03	12:12	0:04	10:24	22:11	8:47	20:32	7:12	18:56	5:43	17:25
5	14:07	1:59	12:09	0:00	10:21	22:08	8:44	20:29	7:09	18:53	5:40	17:22
6	14:03	1:55	12:05	23:53	10:17	22:04	8:41	20:26	7:06	18:50	5:37	17:19
7	13:59	1:51	12:02	23:49	10:14	22:01	8:38	20:23	7:03	18:47	5:34	17:16
8	13:55	1:47	11:58	23:46	10:11	21:58	8:35	20:20	7:00	18:44	5:31	17:13
9	13:51	1:43	11:54	23:42	10:08	21:54	8:32	20:17	6:57	18:41	5:28	17:10
10	13:47	1:39	11:51	23:39	10:04	21:51	8:28	20:13	6:54	18:37	5:25	17:07
11	13:43	1:35	11:47	23:35	10:01	21:48	8:25	20:10	6:51	18:34	5:22	17:04
12	13:40	1:31	11:44	23:31	9:58	21:44	8:22	20:07	6:48	18:31	5:19	17:01
13	13:36	1:27	11:40	23:28	9:55	21:41	8:19	20:04	6:45	18:28	5:16	16:58
14	13:32	1:24	11:37	23:24	9:51	21:38	8:16	20:01	6:42	18:25	5:13	16:55
15	13:28	1:20	11:33	23:21	9:48	21:35	8:13	19:58	6:39	18:22	5:10	16:52
16	13:24	1:16	11:30	23:17	9:45	21:31	8:10	19:55	6:36	18:19	5:07	16:49
17	13:20	1:12	11:26	23:13	9:42	21:28	8:07	19:52	6:33	18:16	5:04	16:46
18	13:16	1:08	11:23	23:10	9:39	21:25	8:04	19:49	6:30	18:13	5:01	16:42
19	13:12	1:04	11:19	23:06	9:35	21:21	8:01	19:46	6:27	18:10	4:58	16:39

20	13:08	1:00	11:16	23:03	9:32	21:18	7:58	19:43	6:24	18:07	4:55	16:36
21	13:05	0:56	11:12	22:59	9:29	21:15	7:55	19:39	6:21	18:04	4:52	16:33
22	13:01	0:52	11:09	22:56	9:26	21:12	7:52	19:36	6:18	18:01	4:49	16:30
23	12:57	0:49	11:05	22:52	9:22	21:08	7:49	19:33	6:15	17:58	4:46	16:27
24	12:53	0:45	11:02	22:49	9:19	21:05	7:46	19:30	6:12	17:55	4:43	16:24
25	12:49	0:41	10:58	22:45	9:16	21:02	7:43	19:27	6:09	17:52	4:40	16:21
26	12:46	0:37	10:55	22:42	9:13	20:58	7:40	19:24	6:06	17:49	4:37	16:18
27	12:42	0:33	10:51	22:38	9:10	20:55	7:37	19:21	6:03	17:46	4:34	16:15
28	12:38	0:30	10:48	22:35	9:06	20:52	7:34	19:18	6:00	17:43	4:31	16:12
29	12:34	0:26	10:44	22:31	9:03	20:49	7:31	19:15	5:58	17:40	4:28	16:09
30	12:31	0:22	10:41	22:28	9:00	20:45	7:28	19:12	5:55	17:37	4:25	16:06
31	12:27	0:18	10:38	22:24			7:25	19:08			4:22	16:03

Table 5: Rise and set times

Visibility of Saturn

Visible time (Azimuth and Altitude given only first day of the month to get an rough idea to find out the position)							
(Highlighted angles are above horizon)							
January	Saturn Rise at 0543 hrs on 1 st January – Few minutes visible in the Eastern sky before sun rise. Saturn Rise at 0359 hrs on 31 st January – nearly 2 hours visible in the Eastern sky. From 1 st January to 31 st January, visible time is increasing (Note : Mars visible in the Aquaria to Sagittarius)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	247 ⁰ 31'	246 ⁰ 37'	212 ⁰ 07'	119 ⁰ 58'	112 ⁰ 02'
		Azimuth	-06 ⁰ 19'	-33 ⁰ 52'	-70 ⁰ 40'	-53 ⁰ 33'	-12 ⁰ 47'
	Saturn	Altitude	248 ⁰ 27'	245 ⁰ 14'	189 ⁰ 16'	235 ⁰ 03'	247 ⁰ 38'
	Azimuth	-15 ⁰ 54'	-43 ⁰ 30'	-74 ⁰ 15'	-36 ⁰ 58'	-02 ⁰ 50'	
February	Saturn Rise at 0356 hrs on 1 st February – Nearly 2 hours visible in the Eastern sky. Saturn Rise at 0220 hrs on 28 th February – nearly 4 hours visible in the Eastern part of the sky. From 1 st February to 28 th February, visible time is increasing (Note : Mars visible in the Aquaria to Sagittarius)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	253 ⁰ 15'	254 ⁰ 10'	231 ⁰ 11'	111 ⁰ 03'	105 ⁰ 43'

		Azimuth	-03 ⁰ 25'	-32 ⁰ 03'	-73 ⁰ 21'	-57 ⁰ 36'	-14 ⁰ 50'
	Saturn	Altitude	246 ⁰ 07'	226 ⁰ 58'	124 ⁰ 21'	111 ⁰ 28'	117⁰25'
		Azimuth	-40 ⁰ 35'	-66 ⁰ 09'	-60 ⁰ 04'	-19 ⁰ 35'	+21⁰31'
March	Saturn Rise at 0216 hrs on 1 st March – Nearly 4 hours visible in the Eastern half of the sky . Saturn Rise at 0025 hrs on 31 st March – nearly 5 hours visible in the Eastern half of the sky. From 1 st March to 31 st March, visible time is increasing (Note : Mars visible in the Aquaria to Sagittarius)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	262 ⁰ 46'	265 ⁰ 27'	266 ⁰ 33'	093 ⁰ 43'	096 ⁰ 16'
		Azimuth	-02 ⁰ 40'	-32 ⁰ 18'	-76 ⁰ 55'	-58 ⁰ 27'	-13 ⁰ 55'
	Saturn	Altitude	233 ⁰ 20'	159 ⁰ 19'	113 ⁰ 10'	113⁰10'	128⁰55'
		Azimuth	-62 ⁰ 18'	-73 ⁰ 18'	-38 ⁰ 09'	+03⁰23'	+42⁰27'
April	Saturn Rise at 0021 hrs on 1 st April – Nearly 4 hours visible in the Eastern half of the sky. Saturn Rise at 2223 hrs on 30 th April – nearly 7 hours visible in the Eastern half of the Western sky before sun rise in the Eastern horizon. From 1 st April to 30 th April, visible time is increasing (Note : Mars visible in the Aquaria to Sagittarius)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	273 ⁰ 21'	277 ⁰ 11'	293 ⁰ 11'	293 ⁰ 11'	293 ⁰ 11'
		Azimuth	11 ⁰ 30'	-18 ⁰ 09'	-61 ⁰ 33'	-67 ⁰ 49'	-25 ⁰ 06'
	Saturn	Altitude	210 ⁰ 49'	130 ⁰ 37'	111 ⁰ 26'	115⁰31'	141⁰05'
		Azimuth	-71 ⁰ 08'	-65 ⁰ 11'	-25 ⁰ 26'	+15⁰57'	+52⁰18'
May	Saturn Rise at 2219 hrs on 1 st May – Nearly 7 hours visible in the E Eastern half and the part of Western sky before sun rise in the Eastern horizon. Saturn Rise at 2016 hrs on 31 st May – nearly 10 hours visible in the Eastern and Western sky, before sun rise. From 1 st May to 31 st May, visible time is increasing (Note : Mars visible in the Aquaria to Sagittarius)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	284 ⁰ 11'	288 ⁰ 22'	312 ⁰ 28'	042 ⁰ 44'	070 ⁰ 30'
		Azimuth	10 ⁰ 46'	-17 ⁰ 51'	-57 ⁰ 19'	-59 ⁰ 55'	-21 ⁰ 20'
	Saturn	Altitude	131 ⁰ 22'	113 ⁰ 23'	112⁰30'	127⁰36'	189⁰25'
		Azimuth	-65 ⁰ 38'	-39 ⁰ 48'	+01⁰47'	+41⁰08'	+60⁰32'
June	Saturn Rise at 2012 hrs on 1 st June – Nearly 10 hours visible in the Eastern half and the Western sky before sun rise in the Eastern horizon. Saturn Rise at 1809 hrs on 30 th June. On that day time of sun setting and Saturn rise is almost same. Therefore Saturn will be in the sky whole night. (Note : Mars visible in the Aquaria to Sagittarius)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	291 ⁰ 14'	295 ⁰ 22'	320 ⁰ 52'	034 ⁰ 08'	063 ⁰ 30'
		Azimuth	11 ⁰ 22'	-16 ⁰ 04'	-52 ⁰ 23'	-54 ⁰ 49'	-19 ⁰ 44'
	Saturn	Altitude	113 ⁰ 07'	111 ⁰ 33'	120⁰51'	164⁰56'	230⁰08'

		Azimuth	-38 ⁰ 03'	-10 ⁰ 18'	+07 ⁰ 49'	+59 ⁰ 47'	+43 ⁰ 30'
Visible time (Azimuth and Altitude given only first day of the month to get an rough idea to find out the position)							
(Highlighted angles are above horizon)							
July	Saturn Rise at 1805 hrs on 1 st July – On that day time of sun setting and Saturn rise is almost same. Therefore Saturn will be in the sky whole night. Saturn Rise at 1559 hrs on 31 st July – At that time sun is in the western sky. Therefore both sun and the Saturn are above the horizon and Saturn cannot be seen until Sun set. From 1 st July to 30 th July, visible time is decreasing (Note : Mars visible in the Aquaria to Sagittarius)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	292 ⁰ 12'	296 ⁰ 00'	320 ⁰ 17'	031 ⁰ 17'	062 ⁰ 08'
		Azimuth	12 ⁰ 48'	-14 ⁰ 28'	-50 ⁰ 43'	-54 ⁰ 52'	-20 ⁰ 49'
	Saturn	Altitude	111 ⁰ 47'	116⁰31'	144⁰58'	217⁰46'	244⁰04'
Azimuth		-08 ⁰ 41'	+18⁰39'	53⁰59'	+52⁰38'	+16⁰36'	
August	Saturn Rise at 1555 hrs on 1 st August –sun is in the western sky. Therefore both sun and the Saturn are above the horizon and Saturn cannot be seen until Sun set. Saturn will be in the Eastern and Western sky after the sun set until next morning. Therefore sun visible nearly 10 hours after Sun set. Saturn Rise at 1353 hrs on 31 st July. Similar explanation as above and Saturn is visible about 8 hours after sun set. From 1 st August to 31 st August, visible time is decreasing (Note : Mars visible in the Aquaria to Sagittarius)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	286 ⁰ 54'	290 ⁰ 41'	313 ⁰ 31'	036 ⁰ 00'	067 ⁰ 21'
		Azimuth	13 ⁰ 09'	-15 ⁰ 05'	-53 ⁰ 53'	-59 ⁰ 24'	-34 ⁰ 35'
	Saturn	Altitude	11⁰24'	132⁰36'	200⁰21'	240⁰07'	248 ⁰ 18'
Azimuth		+20⁰58'	+45⁰44'	58⁰34'	+27⁰26'	-13 ⁰ 16'	
September	Explanation is same as above. Saturn Rise at 1349 hrs on 1 st September - Saturn is visible 8 hours after Sunset. Saturn Rise at 1157 hrs on 31 st September. Saturn is visible about 6 hours after sun set. From 1 st September to 31 st September, visible time is decreasing (Note : Mars visible in the Aquaria to Sagittarius)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	277 ⁰ 04'	280 ⁰ 59'	300 ⁰ 24'	053 ⁰ 30'	078 ⁰ 08'
		Azimuth	10 ⁰ 54'	-18 ⁰ 32'	-60 ⁰ 52'	-65 ⁰ 10'	-23 ⁰ 34'
	Saturn	Altitude	133⁰58'	175⁰53'	233⁰36'	247 ⁰ 14'	245 ⁰ 22'
Azimuth		+46⁰47'	+60⁰25'	+38⁰41'	-00 ⁰ 49'	-42 ⁰ 15'	
October	Explanation is same as above. Saturn Rise at 1153 hrs on 1 st October – Saturn is visible 6 hours after Sunset. Saturn Rise at 1003 hrs on 31 st October. Saturn is visible about 4 hours after sun set. From 1 st October to 31 st October, visible time is decreasing. (Note : Mars visible in the Aquaria to Sagittarius)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	265 ⁰ 50'	269 ⁰ 16'	277 ⁰ 40'	082 ⁰ 34'	090 ⁰ 55'
		Azimuth	06 ⁰ 55'	-22 ⁰ 51'	-67 ⁰ 28'	-67 ⁰ 11'	-22 ⁰ 34'

	Saturn	Altitude	$174^{\circ}13'$	$220^{\circ}59'$	$244^{\circ}32'$	$247^{\circ}49'$	$224^{\circ}59'$
		Azimuth	$+60^{\circ}17'$	$+50^{\circ}22'$	$+13^{\circ}28'$	$-27^{\circ}40'$	$-66^{\circ}40'$
November	Explanation is same as above Saturn Rise at 0959 hrs on 1 st November – Saturn is visible 4 hours after Sunset. Saturn Rise at 0817 hrs on 30 th November. Saturn is visible about 2 hours after sun set. From 1 st November to 30 th November, visible time is decreasing. (Note : Mars visible in the Aquaria to Sagittarius)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	$256^{\circ}26'$	$256^{\circ}44'$	$215^{\circ}58'$	$104^{\circ}49'$	$103^{\circ}58'$
		Azimuth	$-10^{\circ}31'$	$-39^{\circ}32'$	$-80^{\circ}19'$	$-50^{\circ}48'$	$-07^{\circ}20'$
	Saturn	Altitude	$231^{\circ}58'$	$244^{\circ}10'$	$247^{\circ}56'$	$227^{\circ}18'$	$125^{\circ}27'$
		Azimuth	$+40^{\circ}39'$	$+15^{\circ}05'$	$-26^{\circ}10'$	$-65^{\circ}29'$	$-60^{\circ}28'$
December	Explanation is same as above. Saturn Rise at 0813 hrs on 1 st December – Saturn is visible 2 hours after Sunset and not visible towards the end of December. (Note : Mars visible in the Aquaria to Sagittarius)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	$248^{\circ}55'$	$247^{\circ}36'$	$204^{\circ}07'$	$116^{\circ}30'$	$111^{\circ}10'$
		Azimuth	$-09^{\circ}43'$	$-37^{\circ}29'$	$-73^{\circ}23'$	$-50^{\circ}35'$	$-09^{\circ}14'$
	Saturn	Altitude	$243^{\circ}20'$	$248^{\circ}01'$	$242^{\circ}55'$	$157^{\circ}24'$	$113^{\circ}25'$
		Azimuth	$+18^{\circ}21'$	$-08^{\circ}57'$	$-50^{\circ}08'$	$-72^{\circ}42'$	$-37^{\circ}22'$

Apparent Magnitudes of Saturn

Month	Jan	Feb	Mar	Apr	May	June	July	August	Sep	Oct	Nov	Dec
Mag	+0.7	+0.7	+0.7	+0.7	+0.5	+0.3	+0.2	+0.4	+0.6	+0.7	+0.8	+0.8

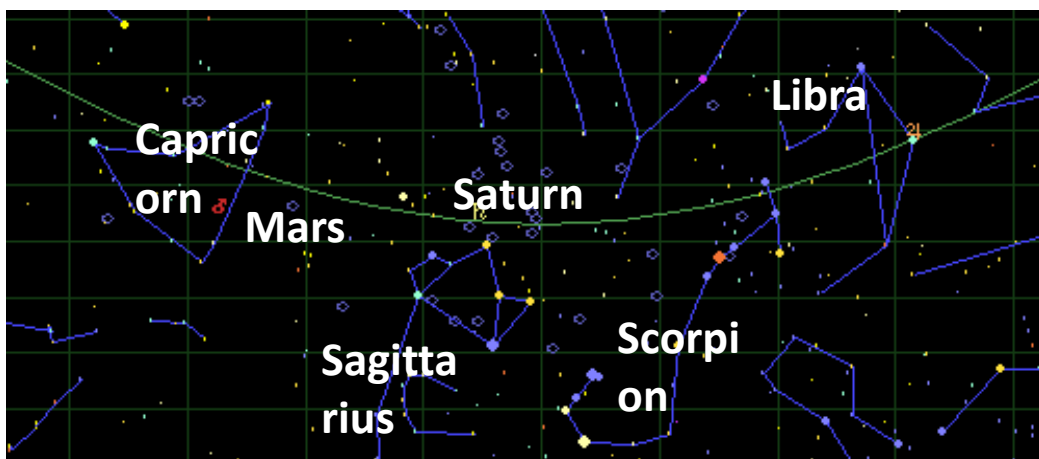


Figure 10: Night Sky in June 09th at 2100 hrs

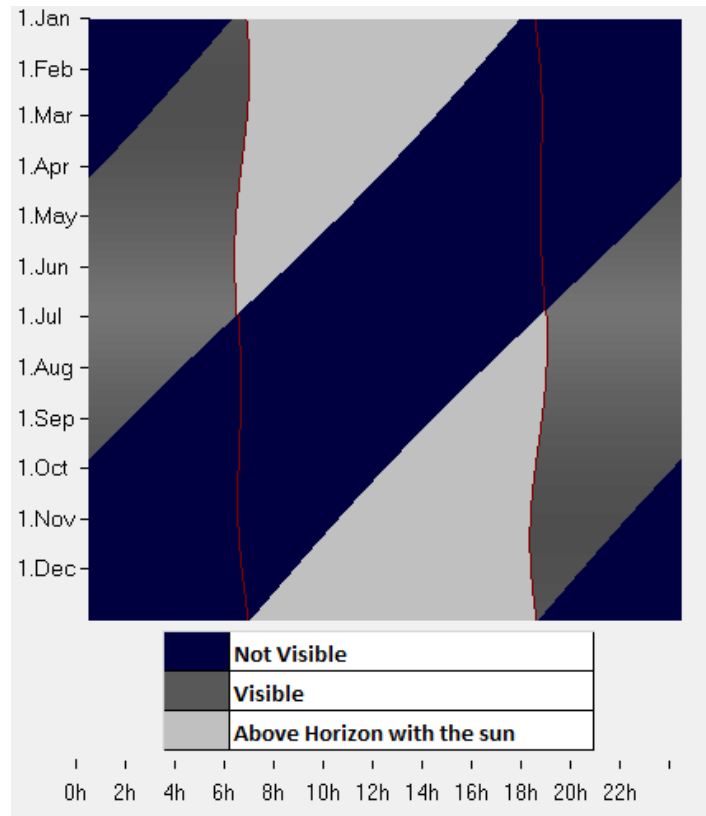


Figure 11: Annual Diagram for Visible Time for Saturn

Planet Saturn (Rise and Set)

	January		February		March		April		May		June	
Date	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
1	5:43	17:23	3:56	15:36	2:16	13:56	0:21	12:01	22:19	10:04	20:12	7:56
2	5:40	17:20	3:52	15:33	2:12	13:53	0:17	11:58	22:15	10:00	20:08	7:52
3	5:36	17:16	3:49	15:29	2:09	13:49	0:13	11:54	22:11	9:56	20:04	7:48
4	5:33	17:13	3:45	15:26	2:05	13:46	0:10	11:50	22:07	9:52	19:59	7:44
5	5:29	17:09	3:42	15:22	2:02	13:42	0:06	11:46	22:03	9:48	19:55	7:40
6	5:26	17:06	3:38	15:18	1:58	13:38	0:02	11:42	21:59	9:44	19:51	7:35
7	5:22	17:02	3:35	15:15	1:55	13:35	23:54	11:39	21:55	9:40	19:47	7:31
8	5:19	16:59	3:31	15:11	1:51	13:31	23:51	11:35	21:51	9:36	19:43	7:27
9	5:16	16:55	3:28	15:08	1:47	13:27	23:47	11:31	21:47	9:32	19:39	7:23
10	5:12	16:52	3:24	15:04	1:44	13:24	23:43	11:27	21:43	9:28	19:34	7:18

11	5:09	16:48	3:21	15:01	1:40	13:20	23:39	11:23	21:39	9:23	19:30	7:14
12	5:05	16:45	3:17	14:57	1:36	13:16	23:35	11:19	21:35	9:19	19:26	7:10
13	5:02	16:41	3:14	14:54	1:33	13:13	23:31	11:15	21:31	9:15	19:22	7:06
14	4:58	16:38	3:10	14:50	1:29	13:09	23:27	11:11	21:27	9:11	19:17	7:01
15	4:55	16:35	3:07	14:46	1:25	13:05	23:23	11:07	21:23	9:07	19:13	6:57
16	4:51	16:31	3:03	14:43	1:22	13:01	23:19	11:03	21:19	9:03	19:09	6:53
17	4:48	16:28	2:59	14:39	1:18	12:58	23:16	10:59	21:15	8:59	19:05	6:48
18	4:44	16:24	2:56	14:36	1:14	12:54	23:12	10:55	21:10	8:54	19:00	6:44
19	4:41	16:21	2:52	14:32	1:10	12:50	23:08	10:51	21:06	8:50	18:56	6:40
20	4:37	16:17	2:48	14:28	1:07	12:46	23:04	10:47	21:02	8:46	18:52	6:36
21	4:34	16:14	2:45	14:25	1:03	12:43	23:00	10:43	20:58	8:42	18:47	6:31
22	4:30	16:10	2:41	14:21	0:59	12:39	22:56	10:39	20:54	8:38	18:43	6:27
23	4:27	16:07	2:38	14:18	0:55	12:35	22:52	10:35	20:50	8:33	18:39	6:23
24	4:23	16:04	2:34	14:14	0:51	12:31	22:48	10:31	20:45	8:29	18:35	6:19
25	4:20	16:00	2:30	14:11	0:48	12:28	22:44	10:28	20:41	8:25	18:30	6:14
26	4:16	15:57	2:27	14:07	0:44	12:24	22:40	10:24	20:37	8:21	18:26	6:10
27	4:13	15:53	2:23	14:04	0:40	12:20	22:35	10:20	20:33	8:17	18:22	6:06
28	4:10	15:50	2:20	14:00	0:36	12:16	22:31	10:16	20:29	8:13	18:18	6:02
29	4:06	15:46			0:32	12:13	22:27	10:12	20:24	8:09	18:13	5:58
30	4:03	15:43			0:29	12:09	22:23	10:08	20:20	8:04	18:09	5:53
31	3:59	15:40			0:25	12:05			20:16	8:00		

	July		August		September		October		November		December	
Date	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
1	18:05	5:49	15:55	3:39	13:49	1:32	11:53	23:33	9:59	21:39	8:13	19:54
2	18:01	5:45	15:51	3:34	13:45	1:28	11:49	23:29	9:56	21:36	8:10	19:50
3	17:57	5:41	15:47	3:30	13:41	1:24	11:45	23:25	9:52	21:32	8:07	19:47

4	17:53	5:37	15:42	3:26	13:37	1:20	11:42	23:21	9:49	21:28	8:03	19:43
5	17:48	5:32	15:38	3:22	13:33	1:16	11:38	23:18	9:45	21:25	8:00	19:40
6	17:44	5:28	15:34	3:18	13:29	1:13	11:34	23:14	9:42	21:21	7:56	19:36
7	17:40	5:24	15:30	3:14	13:25	1:09	11:31	23:10	9:38	21:18	7:53	19:33
8	17:36	5:20	15:26	3:09	13:21	1:05	11:27	23:06	9:34	21:14	7:50	19:30
9	17:31	5:15	15:22	3:05	13:17	1:01	11:23	23:03	9:31	21:11	7:46	19:26
10	17:27	5:11	15:18	3:01	13:13	0:57	11:19	22:59	9:27	21:07	7:43	19:23
11	17:23	5:07	15:13	2:57	13:09	0:53	11:16	22:55	9:24	21:03	7:39	19:19
12	17:19	5:02	15:09	2:53	13:05	0:49	11:12	22:51	9:20	21:00	7:36	19:16
13	17:14	4:58	15:05	2:49	13:02	0:45	11:08	22:48	9:17	20:56	7:32	19:12
14	17:10	4:54	15:01	2:45	12:58	0:41	11:04	22:44	9:13	20:53	7:29	19:09
15	17:06	4:50	14:57	2:40	12:54	0:37	11:01	22:40	9:10	20:49	7:26	19:05
16	17:02	4:45	14:53	2:36	12:50	0:33	10:57	22:37	9:06	20:46	7:22	19:02
17	16:57	4:41	14:49	2:32	12:46	0:29	10:53	22:33	9:02	20:42	7:19	18:58
18	16:53	4:37	14:45	2:28	12:42	0:25	10:50	22:29	8:59	20:39	7:15	18:55
19	16:49	4:33	14:41	2:24	12:38	0:22	10:46	22:26	8:55	20:35	7:12	18:51
20	16:45	4:28	14:36	2:20	12:34	0:18	10:42	22:22	8:52	20:31	7:08	18:48
21	16:40	4:24	14:32	2:16	12:30	0:14	10:39	22:18	8:48	20:28	7:05	18:44
22	16:36	4:20	14:28	2:12	12:27	0:10	10:35	22:15	8:45	20:24	7:01	18:41
23	16:32	4:16	14:24	2:08	12:23	0:06	10:31	22:11	8:41	20:21	6:58	18:38
24	16:28	4:12	14:20	2:04	12:19	0:03	10:28	22:07	8:38	20:18	6:54	18:34
25	16:24	4:07	14:16	2:00	12:15	23:55	10:24	22:04	8:34	20:14	6:51	18:31
26	16:19	4:03	14:12	1:56	12:11	23:51	10:20	22:00	8:31	20:11	6:47	18:27
27	16:15	3:59	14:08	1:52	12:08	23:48	10:17	21:57	8:27	20:07	6:44	18:24
28	16:11	3:55	14:04	1:48	12:04	23:44	10:13	21:53	8:24	20:04	6:40	18:20
29	16:07	3:51	14:00	1:44	12:00	23:40	10:10	21:50	8:20	20:00	6:37	18:17
30	16:03	3:47	13:57	1:40	11:57	23:36	10:06	21:46	8:17	19:57	6:34	18:14
31	15:59	3:43	13:53	1:36			10:03	21:43			6:30	18:10

Table 6: Rise and set times

Visibility of Uranus

Time and the Location of Uranus

Visible time (Azimuth and Altitude given only first day of the month to get an rough idea to find out the position)							
(Highlighted angles are above horizon)							
January	Uranus Rise at 1251 hrs on 1 st January – sun is in the mid sky. Hence both sun and the Uranus are above the horizon and Uranus cannot be seen until Sun set. After sun set Uranus is visible nearly 5 hours. Uranus rise at 1055 hrs on 31 st January and it is visible nearly 7 hours after sunset. The visible time is gradually decrease from 1 st to 31 st January. (Note : Mars visible in the Aquaria to Pisces)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	247 ⁰ 31'	246 ⁰ 37'	212 ⁰ 07'	119 ⁰ 58'	112 ⁰ 02'
		Azimuth	-06 ⁰ 19'	-33 ⁰ 52'	-70 ⁰ 40'	-53 ⁰ 33'	-12 ⁰ 47'
	Uranus	Altitude	071⁰52'	276⁰59'	276⁰57'	083 ⁰ 11'	082 ⁰ 35'
Azimuth		+82⁰47'	+66⁰58'	+22⁰26'	-21 ⁰ 33'	-63 ⁰ 05'	
February	Uranus Rise at 1051 hrs on 1 st February – sun is in the Western sky. Hence both sun and the Uranus are above the horizon and Uranus cannot be seen until Sun set. After sun set Uranus is visible nearly 7 hours. Uranus rise at 0908 hrs on 28 th February and it is visible nearly 9 hours after sunset. The visible time is gradually decrease from 1 st to 28 th February (Note : Mars visible in the Aquaria to Pisces)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	253 ⁰ 15'	254 ⁰ 10'	231 ⁰ 11'	111 ⁰ 03'	105 ⁰ 43'
		Azimuth	-03 ⁰ 25'	-32 ⁰ 03'	-73 ⁰ 21'	-57 ⁰ 36'	-14 ⁰ 50'
	Uranus	Altitude	277⁰22'	276⁰20'	280 ⁰ 09'	293 ⁰ 15'	028 ⁰ 37'
Azimuth		+66⁰51'	+37⁰01'	-07 ⁰ 17'	-50 ⁰ 21'	-71 ⁰ 50'	
March	Uranus Rise at 0904 hrs. on 1 st March – sun is in the Western sky. Hence both sun and the Uranus are above the horizon and Uranus cannot be seen until Sun set. After sun set Uranus is visible nearly 9 hours. Uranus rise at 0712 hrs on 31 st March and it is visible nearly 11 hours after sunset. The visible time is gradually decrease from 1 st to 31 st March (Note : Mars visible in the Aquaria to Pisces)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	262 ⁰ 46'	265 ⁰ 27'	266 ⁰ 33'	093 ⁰ 43'	096 ⁰ 16'
		Azimuth	-02 ⁰ 40'	-32 ⁰ 18'	-76 ⁰ 55'	-58 ⁰ 27'	-13 ⁰ 55'
	Uranus	Altitude	276⁰43'	278⁰26'	286 ⁰ 00'	329 ⁰ 06'	065 ⁰ 32'
Azimuth		+40⁰32'	+10⁰55'	-32 ⁰ 56'	-70 ⁰ 59'	-51 ⁰ 10'	
	Uranus Rise at 0708 hrs on 1 st April – sun is in the Eastern sky. Hence both sun and the Uranus are above the horizon and Uranus cannot be seen until Sun set. After sun set Uranus is visible nearly 11 hours. Uranus rise at 0520 hrs on 30 th April and it is visible few minutes after sunset. (Note : Mars visible in the Aquaria to Pisces)						

April	Sun	Altitude	01/1830 273 ⁰ 21'	01/2030 277 ⁰ 11'	01/2330 293 ⁰ 11'	02/0230 293 ⁰ 11'	02/0530 293 ⁰ 11'
		Azimuth	11 ⁰ 30'	-18 ⁰ 09'	-61 ⁰ 33'	-67 ⁰ 49'	-25 ⁰ 06'
	Uranus	Altitude	277⁰54'	280 ⁰ 35'	292 ⁰ 09'	014 ⁰ 08'	071 ⁰ 29'
		Azimuth	+26⁰44'	-02 ⁰ 44'	-45 ⁰ 56'	-72 ⁰ 34'	-38 ⁰ 00'
May	Uranus Rise at 0516 hrs on 1 st May – Uranus is visible few minutes before sun rise. Uranus rise at 0324 hrs on 31 st May. Uranus is visible 2-3 hours in the eastern sky before sun rise. Visible time is gradually increased. (Note : Mars visible in the Aquaria to Pisces)						
	Sun	Altitude	01/1830 284 ⁰ 11'	01/2030 288 ⁰ 22'	01/2330 312 ⁰ 28'	02/0230 042 ⁰ 44'	02/0530 070 ⁰ 30'
		Azimuth	10 ⁰ 46'	-17 ⁰ 51'	-57 ⁰ 19'	-59 ⁰ 55'	-21 ⁰ 20'
	Uranus	Altitude	280 ⁰ 51'	286 ⁰ 27'	323 ⁰ 37'	061 ⁰ 36'	077 ⁰ 37'
		Azimuth	-00 ⁰ 35'	-29 ⁰ 38'	-68 ⁰ 16'	-53 ⁰ 27'	-11 ⁰ 04'
June	Uranus Rise at 0321 hrs on 1 st June – 2-3 hours visible in the Eastern sky before sun rise. Uranus Rise at 0131 hrs on 30 th June – nearly 4-5 hours visible in the Eastern half. From 1 st to 30 th June , visible time is increasing (Note : Mars visible in the Aquaria to Pisces)						
	Sun	Altitude	01/1830 291 ⁰ 14'	01/2030 295 ⁰ 22'	01/2330 320 ⁰ 52'	02/0230 034 ⁰ 08'	02/0530 063 ⁰ 30'
		Azimuth	11 ⁰ 22'	-16 ⁰ 04'	-52 ⁰ 23'	-54 ⁰ 49'	-19 ⁰ 44'
	Uranus	Altitude	286 ⁰ 47'	301 ⁰ 51'	041 ⁰ 38'	073 ⁰ 46'	080⁰15'
		Azimuth	-28 ⁰ 29'	-55 ⁰ 55'	-65 ⁰ 50'	-26 ⁰ 28'	+17⁰16'

Visible time (Azimuth and Altitude given only first day of the month to get an rough idea to find out the position)							
(Highlighted angles are above horizon)							
July	Uranus Rise at 0127 hrs on 1 st July – nearly 5-6 hours visible in the Eastern sky before sun rise. Uranus Rise at 2327 hrs on 31 st July – nearly 6-7 hours visible in the Eastern half. From 1 st to 31 st July , visible time is increasing (Note : Mars visible in the Aquaria to Pisces)						
	Sun	Altitude	01/1830 292 ⁰ 12'	01/2030 296 ⁰ 00'	01/2330 320 ⁰ 17'	02/0230 031 ⁰ 17'	02/0530 062 ⁰ 08'
		Azimuth	12 ⁰ 48'	-14 ⁰ 28'	-50 ⁰ 43'	-54 ⁰ 52'	-20 ⁰ 49'
	Uranus	Altitude	301 ⁰ 03'	358 ⁰ 16'	067 ⁰ 34'	078⁰22'	080⁰15'
		Azimuth	-54 ⁰ 21'	-71 ⁰ 31'	-41 ⁰ 58'	+01⁰03'	+45⁰10'
	Uranus Rise at 2323 hrs on 1 st August – nearly 6-7 hours visible in the Eastern sky before sun rise. Uranus Rise at 2114 hrs on 31 st August – nearly 8-9 hours visible in the Eastern and western sky. From 1 st to 31 st August , visible time is increasing (Note : Mars visible in the Aquaria to Pisces)						
			01/1830	01/2030	01/2330	02/0230	02/0530

August	Sun	Altitude	286 ⁰ 54'	290 ⁰ 41'	313 ⁰ 31'	036 ⁰ 00'	067 ⁰ 21'
		Azimuth	13 ⁰ 09'	-15 ⁰ 05'	-53 ⁰ 53'	-59 ⁰ 24'	-34 ⁰ 35'
	Uranus	Altitude	358 ⁰ 09'	057 ⁰ 41'	076 ⁰ 02'	080⁰13'	070⁰13'
		Azimuth	-71 ⁰ 20'	-55 ⁰ 15'	-13 ⁰ 30'	+30⁰24'	+76⁰13'
September	Uranus Rise at 2120 hrs on 1 st September – nearly 8-9 hours visible in the Eastern and Western sky before sun rise. Uranus Rise at 1923 hrs on 30 th September – nearly 10-11 hours visible in the Eastern and Western sky. From 1 st to 30 th September , visible time is increasing (Note : Mars visible in the Aquaria to Pisces)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	277 ⁰ 04'	280 ⁰ 59'	300 ⁰ 24'	053 ⁰ 30'	078 ⁰ 08'
		Azimuth	10 ⁰ 54'	-18 ⁰ 32'	-60 ⁰ 52'	-65 ⁰ 10'	-23 ⁰ 34'
	Uranus	Altitude	058 ⁰ 25'	073 ⁰ 00'	079⁰42'	078⁰07'	288⁰56'
		Azimuth	-54 ⁰ 42'	-27 ⁰ 15'	+16⁰22'	+60⁰29'	+73⁰47'
October	Uranus Rise at 1919 hrs on 1 st October – nearly 9-10 hours visible in the Eastern sky before sun rise. Uranus Rise at 1717 hrs on 31 st October – nearly 11-12 hours (almost whole night) visible in the Eastern half. From 1 st to 31 st October , visible time is increasing (Note : Mars visible in the Aquaria to Pisces)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	265 ⁰ 50'	269 ⁰ 16'	277 ⁰ 40'	082 ⁰ 34'	090 ⁰ 55'
		Azimuth	06 ⁰ 55'	-22 ⁰ 51'	-67 ⁰ 28'	-67 ⁰ 11'	-22 ⁰ 34'
	Uranus	Altitude	073 ⁰ 27'	078⁰43'	080⁰31'	347⁰23'	279⁰22'
		Azimuth	-26 ⁰ 27'	+02⁰07'	+46⁰16'	+85⁰14'	+44⁰12'
November	Uranus Rise at 1713 hrs on 1 st November – nearly 11-12 hours visible in the Eastern sky (almost whole night) before sun rise. Uranus Rise at 1515 hrs on 30 th November. Sun is in the western sky. Uranus is visible nearly 8-9 hours after sun set. (Note : Mars visible in the Aquaria to Pisces)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	256 ⁰ 26'	256 ⁰ 44'	215 ⁰ 58'	104 ⁰ 49'	103 ⁰ 58'
		Azimuth	-10 ⁰ 31'	-39 ⁰ 32'	-80 ⁰ 19'	-50 ⁰ 48'	-07 ⁰ 20'
	Uranus	Altitude	080⁰36'	081⁰04'	327⁰47'	278⁰43'	281 ⁰ 17'
		Azimuth	+18⁰24'	+47⁰55'	+85⁰00'	+42⁰35'	-01 ⁰ 35'
December	Uranus Rise at 0511 hrs on 1 st December –sun is in the western sky. Therefore both sun and the Uranus are above the horizon and Uranus cannot be seen until Sun set. After sun set Uranus is visible nearly 8-9 hours and the visible time is gradually decrease towards the end of December. (Note : Mars visible in the Aquaria to Pisces)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	248 ⁰ 55'	247 ⁰ 36'	204 ⁰ 07'	116 ⁰ 30'	111 ⁰ 10'
		Azimuth	-09 ⁰ 43'	-37 ⁰ 29'	-73 ⁰ 23'	-50 ⁰ 35'	-09 ⁰ 14'
	Uranus	Altitude	081⁰35'	070⁰55'	279⁰05'	279⁰26'	286 ⁰ 50'

		Azimuth	+48°25'	+77°41'	+56°52'	+12°34'	-31°09'
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Apparent Magnitudes of Uranus

Month	Jan	Feb	Mar	Apr	May	June	July	August	Sep	Oct	Nov	Dec
Mag	+6.1	+6.2	+6.2	+6.2	+6.2	+6.2	+6.2	+6.1	+6.1	+6.0	+6.0	+6.1

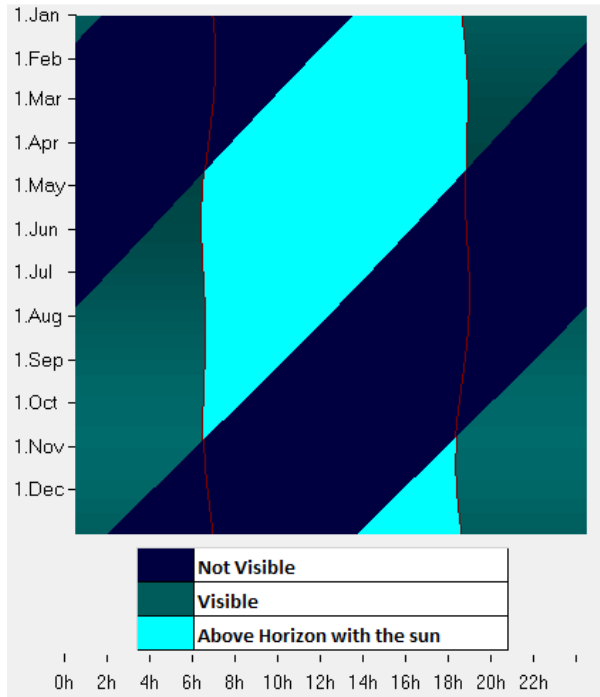


Figure 12 : Annual Diagram for Visible Time (Uranus)

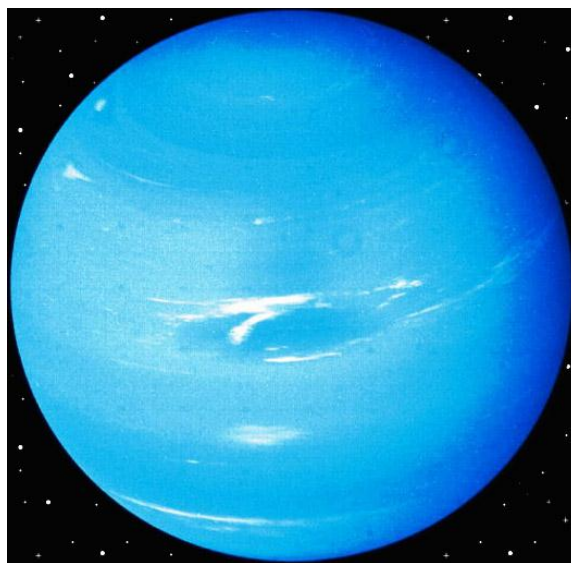


Figure 13 : Planet Uranus

Planet Uranus (Rise and Set)

	January		February		March		April		May		June	
Date	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
1	12:51	1:07	10:51	23:03	9:04	21:17	7:08	19:21	5:16	17:30	3:21	15:34
2	12:47	1:03	10:47	22:59	9:01	21:13	7:04	19:17	5:13	17:26	3:17	15:31
3	12:44	0:59	10:43	22:55	8:57	21:09	7:01	19:14	5:09	17:22	3:13	15:27
4	12:40	0:55	10:39	22:51	8:53	21:05	6:57	19:10	5:05	17:19	3:09	15:23
5	12:36	0:51	10:35	22:47	8:49	21:02	6:53	19:06	5:01	17:15	3:05	15:19
6	12:32	0:47	10:32	22:43	8:45	20:58	6:49	19:02	4:58	17:11	3:02	15:16
7	12:28	0:43	10:28	22:40	8:42	20:54	6:46	18:59	4:54	17:07	2:58	15:12
8	12:24	0:39	10:24	22:36	8:38	20:50	6:42	18:55	4:50	17:04	2:54	15:08
9	12:20	0:35	10:20	22:32	8:34	20:46	6:38	18:51	4:46	17:00	2:50	15:04
10	12:16	0:31	10:16	22:28	8:30	20:43	6:34	18:47	4:43	16:56	2:46	15:00
11	12:12	0:28	10:12	22:24	8:26	20:39	6:31	18:44	4:39	16:52	2:42	14:57
12	12:08	0:24	10:09	22:20	8:23	20:35	6:27	18:40	4:35	16:49	2:39	14:53
13	12:04	0:20	10:05	22:17	8:19	20:31	6:23	18:36	4:31	16:45	2:35	14:49
14	12:01	0:16	10:01	22:13	8:15	20:28	6:19	18:32	4:28	16:41	2:31	14:45
15	11:57	0:12	9:57	22:09	8:12	20:24	6:16	18:29	4:24	16:37	2:27	14:41
16	11:53	0:08	9:54	22:05	8:08	20:20	6:12	18:25	4:20	16:34	2:23	14:38
17	11:49	0:04	9:50	22:02	8:04	20:16	6:08	18:21	4:16	16:30	2:20	14:34
18	11:45	0:01	9:46	21:58	8:00	20:13	6:05	18:18	4:13	16:26	2:16	14:30
19	11:41	23:53	9:42	21:54	7:57	20:09	6:01	18:14	4:09	16:23	2:12	14:26
20	11:38	23:49	9:39	21:51	7:53	20:05	5:57	18:10	4:05	16:19	2:08	14:22
21	11:34	23:45	9:35	21:47	7:49	20:02	5:54	18:07	4:02	16:15	2:05	14:19
22	11:30	23:41	9:31	21:43	7:46	19:58	5:50	18:03	3:58	16:11	2:01	14:15
23	11:26	23:38	9:27	21:39	7:42	19:54	5:46	17:59	3:54	16:08	1:57	14:11
24	11:22	23:34	9:24	21:36	7:38	19:51	5:43	17:56	3:51	16:04	1:53	14:07
25	11:18	23:30	9:20	21:32	7:35	19:47	5:39	17:52	3:47	16:00	1:50	14:04
26	11:14	23:26	9:16	21:28	7:31	19:43	5:35	17:48	3:43	15:57	1:46	14:00

27	11:10	23:22	9:12	21:24	7:27	19:40	5:31	17:45	3:39	15:53	1:42	13:56
28	11:06	23:18	9:08	21:20	7:23	19:36	5:28	17:41	3:36	15:49	1:38	13:52
29	11:03	23:14			7:20	19:32	5:24	17:37	3:32	15:46	1:35	13:49
30	10:59	23:10			7:16	19:29	5:20	17:34	3:28	15:42	1:31	13:45
31	10:55	23:07			7:12	19:25			3:24	15:38		

	July		August		September		October		November		December	
Date	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
1	1:27	13:41	23:23	11:41	21:20	9:39	19:19	7:37	17:13	5:30	15:11	3:28
2	1:23	13:37	23:19	11:38	21:16	9:35	19:15	7:33	17:09	5:26	15:07	3:24
3	1:19	13:34	23:15	11:34	21:12	9:31	19:11	7:29	17:05	5:22	15:03	3:20
4	1:15	13:30	23:11	11:30	21:08	9:27	19:07	7:25	17:00	5:18	14:59	3:16
5	1:11	13:26	23:07	11:26	21:04	9:23	19:03	7:21	16:56	5:14	14:55	3:12
6	1:08	13:22	23:03	11:22	21:00	9:19	18:59	7:17	16:52	5:10	14:51	3:08
7	1:04	13:18	22:59	11:18	20:56	9:14	18:55	7:13	16:48	5:06	14:46	3:04
8	1:00	13:14	22:55	11:14	20:52	9:10	18:50	7:09	16:44	5:02	14:42	3:00
9	0:56	13:10	22:51	11:10	20:48	9:06	18:46	7:04	16:40	4:57	14:38	2:56
10	0:52	13:07	22:47	11:06	20:44	9:02	18:42	7:00	16:36	4:53	14:34	2:52
11	0:48	13:03	22:43	11:02	20:40	8:58	18:38	6:56	16:32	4:49	14:30	2:48
12	0:44	12:59	22:39	10:58	20:36	8:54	18:34	6:52	16:28	4:45	14:26	2:43
13	0:40	12:55	22:35	10:54	20:32	8:50	18:30	6:48	16:23	4:41	14:22	2:39
14	0:36	12:51	22:31	10:50	20:28	8:46	18:26	6:44	16:19	4:37	14:18	2:35
15	0:33	12:47	22:27	10:46	20:24	8:42	18:22	6:40	16:15	4:33	14:14	2:31
16	0:29	12:43	22:24	10:42	20:20	8:38	18:18	6:35	16:11	4:29	14:10	2:27
17	0:25	12:39	22:20	10:38	20:16	8:34	18:14	6:31	16:07	4:25	14:06	2:23
18	0:21	12:35	22:16	10:34	20:12	8:30	18:10	6:27	16:03	4:21	14:02	2:19
19	0:17	12:31	22:12	10:30	20:08	8:26	18:06	6:23	15:59	4:16	13:59	2:15

20	0:13	12:28	22:08	10:26	20:04	8:21	18:02	6:19	15:55	4:12	13:55	2:11
21	0:09	12:24	22:04	10:22	20:00	8:17	17:58	6:15	15:51	4:08	13:51	2:07
22	0:06	12:20	22:00	10:18	19:56	8:13	17:54	6:11	15:47	4:04	13:47	2:04
23	0:02	12:16	21:56	10:14	19:52	8:09	17:50	6:07	15:43	4:00	13:43	2:00
24	23:54	12:12	21:52	10:10	19:48	8:05	17:45	6:03	15:39	3:56	13:39	1:56
25	23:50	12:08	21:48	10:06	19:44	8:01	17:41	5:59	15:35	3:52	13:35	1:52
26	23:46	12:04	21:44	10:02	19:40	7:57	17:37	5:55	15:31	3:48	13:31	1:48
27	23:43	12:01	21:40	9:58	19:35	7:53	17:33	5:51	15:27	3:44	13:27	1:44
28	23:39	11:57	21:36	9:54	19:31	7:49	17:29	5:47	15:23	3:40	13:23	1:40
29	23:35	11:53	21:32	9:51	19:27	7:45	17:25	5:43	15:19	3:36	13:19	1:36
30	23:31	11:49	21:28	9:47	19:23	7:41	17:21	5:39	15:15	3:32	13:15	1:32
31	23:27	11:45	21:24	9:43			17:17	5:35			13:11	1:28

Table 7: Rise and Set times

Visibility of Neptune

Time and the Location of Neptune

Visible time (Azimuth and Altitude given only first day of the month to get an rough idea to find out the position)							
(Highlighted angles are above horizon)							
January	Neptune Rise at 1023 hrs on 1 st January – Sun and the Neptune will be in the eastern sky. After sun set Neptune visible in the western sky nearly 4 hours. Neptune rise at 0828 hrs on 31 st January and it is visible nearly 2 hours after sunset. The visible time is gradually decreases from 1 st to 31 st January (Note : Mars visible in the Aquaria to Aquaria)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	247 ⁰ 31'	246 ⁰ 37'	212 ⁰ 07'	119 ⁰ 58'	112 ⁰ 02'
		Azimuth	-06 ⁰ 19'	-33 ⁰ 52'	-70 ⁰ 40'	-53 ⁰ 33'	-12 ⁰ 47'
	Neptune	Altitude	245 ⁰ 59'	257 ⁰ 42'	263 ⁰ 51'	118 ⁰ 22'	231 ⁰ 27'
	Azimuth	+54 ⁰ 32'	+26 ⁰ 01'	-18 ⁰ 14'	-59 ⁰ 26'	-66 ⁰ 34'	
February	Neptune Rise at 0824 hrs on 1 st February – Sun and the Neptune will be in the eastern sky. After sun set Neptune visible in the western sky nearly 2 hours. Neptune rise at 0641 hrs on 28 th February and it is not visible. The visible time is gradually increases from 1 st to 28 th February (Note : Mars visible in the Aquaria to Aquaria)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	253 ⁰ 15'	254 ⁰ 10'	231 ⁰ 11'	111 ⁰ 03'	105 ⁰ 43'

		Azimuth	-03 ⁰ 25'	-32 ⁰ 03'	-73 ⁰ 21'	-57 ⁰ 36'	-14 ⁰ 50'
	Neptune	Altitude	258⁰00'	262 ⁰ 42'	256 ⁰ 11'	108 ⁰ 27'	094 ⁰ 02'
		Azimuth	+26⁰26'	-03 ⁰ 01'	-47 ⁰ 37'	-87 ⁰ 29'	-42 ⁰ 52'
March	Neptune Rise at 0638 hrs. on 1 st March – and it is not visible. After few days it is visible in the eastern horizon before sun rise and the visible time will gradually increases Neptune rise at 0444 hrs on 31 st March and it is visible nearly 1 hour before sunrise. The visible time is gradually decrease from 1 st to 31 st March (Note : Mars visible in the Aquaria to Aquaria)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	262 ⁰ 46'	265 ⁰ 27'	266 ⁰ 33'	093 ⁰ 43'	096 ⁰ 16'
		Azimuth	-02 ⁰ 40'	-32 ⁰ 18'	-76 ⁰ 55'	-58 ⁰ 27'	-13 ⁰ 55'
	Neptune	Altitude	262⁰42'	265 ⁰ 32'	267 ⁰ 36'	093 ⁰ 34'	095 ⁰ 31'
	Azimuth	+00⁰23'	--29 ⁰ 18'	-74 ⁰ 02'	-61 ⁰ 10'	-16 ⁰ 28'	
April	Neptune Rise at 0440 hrs on 1 st April – and it is visible nearly 1 hour in the eastern sky before sunrise. Neptune rise at 0249 hrs on 30 th April and it is visible nearly 3 hours. (Note : Mars visible in the Aquaria to Aquaria)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	273 ⁰ 21'	277 ⁰ 11'	293 ⁰ 11'	293 ⁰ 11'	293 ⁰ 11'
		Azimuth	11 ⁰ 30'	-18 ⁰ 09'	-61 ⁰ 33'	-67 ⁰ 49'	-25 ⁰ 06'
	Neptune	Altitude	264 ⁰ 10'	267 ⁰ 07'	271 ⁰ 22'	092 ⁰ 38'	096 ⁰ 32'
	Azimuth	-13 ⁰ 48'	-43 ⁰ 36'	-88 ⁰ 23'	-46 ⁰ 19'	-02 ⁰ 09'	
May	Neptune Rise at 0245 hrs on 1 st May – Neptune is visible nearly 3 hours before sun rise. Neptune rises at 0049 hrs on 31 st May. Neptune is visible nearly 5 hours before sun rise. Visible time is gradually increasing. (Note : Mars visible in the Aquaria to Aquaria)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	284 ⁰ 11'	288 ⁰ 22'	312 ⁰ 28'	042 ⁰ 44'	070 ⁰ 30'
		Azimuth	10 ⁰ 46'	-17 ⁰ 51'	-57 ⁰ 19'	-59 ⁰ 55'	-21 ⁰ 20'
	Neptune	Altitude	267 ⁰ 28'	270 ⁰ 09'	090 ⁰ 48'	094 ⁰ 32'	100⁰35'
	Azimuth	-42 ⁰ 14'	-72 ⁰ 05'	-63 ⁰ 04'	-18 ⁰ 19'	+26⁰06'	
June	Neptune Rise at 0045 hrs on 1 st June – nearly 5 hours visible in the Eastern sky before sun rise. Neptune Rise at 2247 hrs on 30 th June – nearly 7 hours visible. From 1 st to 30 th June , visible time is increasing (Note : Mars visible in the Aquaria to Aquaria)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	291 ⁰ 14'	295 ⁰ 22'	320 ⁰ 52'	034 ⁰ 08'	063 ⁰ 30'
		Azimuth	11 ⁰ 22'	-16 ⁰ 04'	-52 ⁰ 23'	-54 ⁰ 49'	-19 ⁰ 44'
	Neptune	Altitude	270 ⁰ 45'	087 ⁰ 58'	093 ⁰ 00'	097⁰47'	111⁰07'
	Azimuth	-72 ⁰ 03'	-78 ⁰ 01'	-33 ⁰ 14'	+11⁰21'	+54⁰57'	
Visible time (Azimuth and Altitude given only first day of the month to get an rough idea to find out the position)							

(Highlighted angles are above horizon)

(Highlighted angles are above horizon)							
July	Neptune Rise at 2243 hrs on 1 st July – nearly 7 hours visible. Neptune Rises at 2044 hrs on 31 st July – nearly 9 hours visible. From 1 st to 31 st July , visible time is increasing (Note : Mars visible in the Aquaria to Aquaria)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	292 ⁰ 12'	296 ⁰ 00'	320 ⁰ 17'	031 ⁰ 17'	062 ⁰ 08'
		Azimuth	12 ⁰ 48'	-14 ⁰ 28'	-50 ⁰ 43'	-54 ⁰ 52'	-20 ⁰ 49'
	Neptune	Altitude	087 ⁰ 50'	091 ⁰ 43'	095 ⁰ 48'	104⁰07'	166⁰43'
Azimuth		-78 ⁰ 34'	-48 ⁰ 43'	-04 ⁰ 00'	+40⁰10'	+76⁰36'	
August	Neptune Rise at 2040 hrs on 1 st August – nearly 9 hours visible before sun rise. Neptune Rise at 1839 hrs on 31 st August – nearly whole night it is visible due the sun set time and Neptune rise time is nearly the same. From 1 st to 31 st August , visible time is increasing (Note : Mars visible in the Aquaria to Aquaria)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	286 ⁰ 54'	290 ⁰ 41'	313 ⁰ 31'	036 ⁰ 00'	067 ⁰ 21'
		Azimuth	13 ⁰ 09'	-15 ⁰ 05'	-53 ⁰ 53'	-59 ⁰ 24'	-34 ⁰ 35'
	Neptune	Altitude	092 ⁰ 04'	094 ⁰ 34'	100⁰39'	127⁰12'	245⁰09'
Azimuth		-47 ⁰ 51'	-18 ⁰ 02'	+26⁰23'	+68⁰18'	+59⁰11'	
September	Neptune Rise at 1835 hrs on 1 st September – nearly whole night it is visible due the sun set time and Neptune rise time is nearly the same. Neptune Rise at 1639 hrs on 30 th September, Both Neptune and Sun are in above horizon, therefore Neptune visible about 9 hours after sun set. From 1 st to 30 th September , visible time is decreasing (Note : Mars visible in the Aquaria to Aquaria)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	277 ⁰ 04'	280 ⁰ 59'	300 ⁰ 24'	053 ⁰ 30'	078 ⁰ 08'
		Azimuth	10 ⁰ 54'	-18 ⁰ 32'	-60 ⁰ 52'	-65 ⁰ 10'	-23 ⁰ 34'
	Neptune	Altitude	094 ⁰ 59'	098⁰30'	112⁰56'	226⁰14'	258⁰17'
Azimuth		-16 ⁰ 54'	+12⁰45'	+56⁰09'	+70⁰31'	+29⁰27'	
October	Neptune Rise at 1635 hrs on 1 st October – nearly 9 hours visible after sun set. Neptune Rise at 1435 hrs on 31 st October – nearly 7 hours visible after sun set. From 1 st to 31 st October , visible time is decreasing (Note : Mars visible in the Aquaria to Aquaria)						
			01/1830	01/2030	01/2330	02/0230	02/0530
	Sun	Altitude	265 ⁰ 50'	269 ⁰ 16'	277 ⁰ 40'	082 ⁰ 34'	090 ⁰ 55'
		Azimuth	06 ⁰ 55'	-22 ⁰ 51'	-67 ⁰ 28'	-67 ⁰ 11'	-22 ⁰ 34'
	Neptune	Altitude	098⁰53'	105⁰59'	177⁰20'	253⁰31'	262 ⁰ 57'
Azimuth		+13⁰04'	+42⁰17'	+76⁰08'	+43⁰30'	-00 ⁰ 26'	
	Neptune Rise at 1431 hrs on 1 st November – nearly 7 hours visible after sun set. Neptune Rise at 1236 hrs on 31 st October – nearly 5 hours visible after sun set. From 1 st to 31 st November , visible time is decreasing (Note : Mars visible in the Aquaria to Aquaria)						

November	Sun	Altitude	01/1830 256 ⁰ 26'	01/2030 256 ⁰ 44'	01/2330 215 ⁰ 58'	02/0230 104 ⁰ 49'	02/0530 103 ⁰ 58'
		Azimuth	-10 ⁰ 31'	-39 ⁰ 32'	-80 ⁰ 19'	-50 ⁰ 48'	-07 ⁰ 20'
	Neptune	Altitude	114⁰51'	181⁰34'	253⁰37'	262 ⁰ 51'	266 ⁰ 34'
		Azimuth	+57⁰12'	+75⁰55'	+42⁰28'	-01 ⁰ 28'	-46 ⁰ 06'
December	Neptune Rise at 1232 hrs on 1 st December nearly 5 hours visible after sun set. Neptune Rise at 1035 hrs on 31 st December – nearly 3 hours visible after sun set. From 1 st to 31 st December , visible time is decreasing (Note : Mars visible in the Aquaria to Aquaria)						
	Sun	Altitude	01/1830 248 ⁰ 55'	01/2030 247 ⁰ 36'	01/2330 204 ⁰ 07'	02/0230 116 ⁰ 30'	02/0530 111 ⁰ 10'
		Azimuth	-09 ⁰ 43'	-37 ⁰ 29'	-73 ⁰ 23'	-50 ⁰ 35'	-09 ⁰ 14'
	Neptune	Altitude	180⁰01'	245⁰22'	260⁰44'	265 ⁰ 31'	267 ⁰ 05'
		Azimuth	+75⁰53'	+56⁰50'	+13⁰40'	-30 ⁰ 49'	-75 ⁰ 33'

Apparent Magnitudes of Neptune

Month	Jan	Feb	Mar	Apr	May	June	July	August	Sep	Oct	Nov	Dec
Mag	+7.7	+7.8	+7.8	+7.8	+7.8	+7.7	+7.7	+7.7	+7.6	+7.6	+7.7	+7.7

Planet Neptune (Rise and Set)

Date	January		February		March		April		May		June	
	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
1	10:23	22:18	8:24	20:19	6:38	18:33	4:40	16:36	2:45	14:41	0:45	12:42
2	10:19	22:14	8:20	20:16	6:34	18:29	4:36	16:32	2:41	14:38	0:41	12:38
3	10:15	22:10	8:16	20:12	6:30	18:26	4:32	16:28	2:37	14:34	0:37	12:34
4	10:11	22:06	8:13	20:08	6:26	18:22	4:28	16:24	2:33	14:30	0:33	12:30
5	10:08	22:03	8:09	20:04	6:22	18:18	4:24	16:21	2:30	14:26	0:29	12:26
6	10:04	21:59	8:05	20:01	6:19	18:14	4:21	16:17	2:26	14:22	0:26	12:22
7	10:00	21:55	8:01	19:57	6:15	18:11	4:17	16:13	2:22	14:18	0:22	12:18
8	9:56	21:51	7:58	19:53	6:11	18:07	4:13	16:09	2:18	14:14	0:18	12:14
9	9:52	21:47	7:54	19:49	6:07	18:03	4:09	16:05	2:14	14:11	0:14	12:10

10	9:49	21:44	7:50	19:46	6:04	17:59	4:06	16:02	2:10	14:07	0:10	12:07
11	9:45	21:40	7:46	19:42	6:00	17:56	4:02	15:58	2:07	14:03	0:06	12:03
12	9:41	21:36	7:43	19:38	5:56	17:52	3:58	15:54	2:03	13:59	0:02	11:59
13	9:37	21:32	7:39	19:34	5:52	17:48	3:54	15:51	1:59	13:56	23:55	11:55
14	9:33	21:28	7:35	19:30	5:49	17:44	3:51	15:47	1:55	13:52	23:51	11:51
15	9:30	21:25	7:31	19:27	5:45	17:41	3:47	15:43	1:51	13:48	23:47	11:47
16	9:26	21:21	7:27	19:23	5:41	17:37	3:43	15:39	1:48	13:44	23:43	11:43
17	9:22	21:17	7:24	19:19	5:37	17:33	3:39	15:35	1:44	13:40	23:39	11:39
18	9:18	21:13	7:20	19:15	5:33	17:29	3:35	15:32	1:40	13:36	23:35	11:36
19	9:14	21:09	7:16	19:11	5:30	17:26	3:32	15:28	1:36	13:33	23:31	11:32
20	9:10	21:05	7:12	19:08	5:26	17:22	3:28	15:24	1:32	13:29	23:27	11:28
21	9:06	21:01	7:08	19:04	5:22	17:18	3:24	15:20	1:28	13:25	23:23	11:24
22	9:03	20:58	7:04	19:00	5:18	17:14	3:20	15:16	1:24	13:21	23:19	11:20
23	8:59	20:54	7:01	18:56	5:14	17:10	3:16	15:12	1:20	13:17	23:15	11:16
24	8:55	20:50	6:57	18:52	5:11	17:06	3:12	15:09	1:17	13:13	23:11	11:12
25	8:51	20:46	6:53	18:48	5:07	17:03	3:08	15:05	1:13	13:09	23:07	11:08
26	8:47	20:42	6:49	18:45	5:03	16:59	3:04	15:01	1:09	13:05	23:03	11:04
27	8:43	20:38	6:45	18:41	4:59	16:55	3:01	14:57	1:05	13:01	22:59	11:00
28	8:39	20:35	6:41	18:37	4:55	16:51	2:57	14:53	1:01	12:57	22:55	10:56
29	8:36	20:31			4:51	16:47	2:53	14:49	0:57	12:53	22:51	10:52
30	8:32	20:27			4:47	16:43	2:49	14:45	0:53	12:49	22:47	10:48
31	8:28	20:23			4:44	16:40			0:49	12:46		

	July		August		September		October		November		December	
Date	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
1	22:43	10:44	20:40	8:40	18:35	6:35	16:35	4:34	14:31	2:30	12:32	0:32
2	22:39	10:40	20:36	8:36	18:31	6:31	16:31	4:30	14:27	2:26	12:28	0:28
3	22:35	10:36	20:32	8:32	18:27	6:27	16:27	4:26	14:23	2:22	12:24	0:24
4	22:31	10:32	20:28	8:28	18:23	6:23	16:23	4:22	14:19	2:18	12:20	0:20

5	22:28	10:28	20:24	8:24	18:19	6:19	16:19	4:18	14:15	2:14	12:17	0:16
6	22:24	10:24	20:20	8:20	18:15	6:15	16:15	4:14	14:11	2:10	12:13	0:12
7	22:20	10:20	20:16	8:16	18:11	6:11	16:11	4:10	14:07	2:06	12:09	0:08
8	22:16	10:16	20:12	8:12	18:07	6:07	16:07	4:06	14:03	2:02	12:05	0:04
9	22:12	10:12	20:08	8:08	18:03	6:03	16:03	4:02	13:59	1:59	12:01	0:01
10	22:08	10:08	20:04	8:04	17:59	5:59	15:59	3:58	13:55	1:55	11:57	23:53
11	22:04	10:04	20:00	8:00	17:55	5:55	15:55	3:54	13:51	1:51	11:53	23:49
12	22:00	10:00	19:56	7:56	17:52	5:51	15:51	3:51	13:47	1:47	11:50	23:45
13	21:56	9:56	19:52	7:52	17:48	5:47	15:47	3:47	13:44	1:43	11:46	23:41
14	21:52	9:53	19:48	7:48	17:44	5:43	15:43	3:43	13:40	1:39	11:42	23:37
15	21:48	9:49	19:44	7:44	17:40	5:39	15:39	3:39	13:36	1:35	11:38	23:34
16	21:44	9:45	19:40	7:40	17:36	5:35	15:35	3:35	13:32	1:31	11:34	23:30
17	21:40	9:41	19:36	7:36	17:31	5:31	15:31	3:31	13:28	1:27	11:30	23:26
18	21:36	9:37	19:32	7:32	17:27	5:27	15:27	3:27	13:24	1:23	11:26	23:22
19	21:32	9:33	19:28	7:28	17:23	5:23	15:23	3:23	13:20	1:19	11:22	23:18
20	21:28	9:29	19:24	7:24	17:19	5:19	15:19	3:18	13:16	1:15	11:19	23:14
21	21:24	9:25	19:20	7:20	17:15	5:15	15:15	3:14	13:12	1:11	11:15	23:10
22	21:20	9:21	19:16	7:16	17:11	5:11	15:11	3:10	13:08	1:07	11:11	23:06
23	21:16	9:17	19:12	7:12	17:07	5:07	15:07	3:06	13:04	1:03	11:07	23:02
24	21:12	9:13	19:08	7:08	17:03	5:03	15:03	3:02	13:00	0:59	11:03	22:58
25	21:08	9:09	19:04	7:04	16:59	4:59	14:59	2:58	12:56	0:55	10:59	22:54
26	21:04	9:05	19:00	7:00	16:55	4:55	14:55	2:54	12:52	0:51	10:55	22:51
27	21:00	9:01	18:56	6:56	16:51	4:51	14:51	2:50	12:48	0:47	10:51	22:47
28	20:56	8:57	18:52	6:52	16:47	4:47	14:47	2:46	12:44	0:43	10:47	22:43
29	20:52	8:52	18:48	6:48	16:43	4:42	14:43	2:42	12:40	0:39	10:43	22:39
30	20:48	8:48	18:44	6:44	16:39	4:38	14:39	2:38	12:36	0:35	10:39	22:35
31	20:44	8:44	18:39	6:40			14:35	2:34			10:35	22:31

Table 8: Rise and Set times