# تقویم ۳۳۸ سالهٔ شمسی و ۱۶۹ سالهٔ میلادی

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عضو هیأت علمی جهاد دانشگاهی
(از ص ۴۰۳ تا ۴۲۲)

**چکیده :**
گاهشماری، علمی است که در خصوص طرز احتساب زمان (روز، ماه، سال) و مبدأ تاریخ بحث می‌کند، و از جمله مهمترین مسایل روش تحقیق تاریخ است، که سابقه شناخت آن در جهان به بیش از ده هزار سال قبل می‌رسد.
برای اندازه‌گیری زمان، آنچه در درجه اوّل اهمیّت قرار دارد، تعیین مبداء یا نقطه آغاز و اتکاء به یک واقعه مهم، و در مرحله دوّم انتخاب واحد اندازه‌گیری و در مرحله سوّم قیاس یا تعیین گذشت زمان نسبت به واقعهٔ مورد نظر است.
مهمترین مبدأ گاهشماری، میلاد حضرت مسیح (ع) و هجرت حضرت محمّد(ص) از مکّه به مدینه می‌باشد، که براساس آن تقویم میلادی و هجری شکل گرفته است.
در زمان حاضر تقویم‌های مختلفی در اختیار داریم که با مراجعه به آنها می‌توان تاریخ روز و ماه و سال مورد نظر در هر یک از ماههای ایرانی و اسلامی و مسیحی را بدست آورد.
نگارنده، با توجّه به قوانین حاکم بر سیر متناوب ماههای سال و تکرار مدخل سال‌ها (اولین روز سال)، جدولی برای استخراج تقویم ۳۳۸ سالهٔ هجری شمسی و ۱۶۹ سالهٔ میلادی تنظیم کرده است که در این مقاله از نظر می‌گذرد.

**واژه‌های کلیدی:** کرونولوژی، تقویم، هجری شمسی و قمری، میلادی، تقویم گرگورین.

مقدمه:

## INTRODUCTION

The word "calendar" refers to tabular presentations inwhich days, weeks, months and year are measured on the basis of the movements of the earth around the sun and the moon around the earth.

The word "calendar" is derived from "calandrium" or "calandae" in Latin. Time has been measured on the basis of the revolution of the earth around the sun and the revolution of the moon around the earth, as well as the recurrence of the earth's days and nights.

As we all know, every different religion and nation have calendars to suit their own use. Each kind of calendar has two basic characteristics: the first relates to its original date and the second concerns the principles on the basis of which its months are fixed. The foundations of calendar-making lie in astronomy, religion, national or racial back-ground history, as well as the motions of the earth and the moon.

The most important foundation of chronology is religion. In the case of the Christian Calendar it is the birth of Jesus Christ that forms its basis. In the Persian language it is called "Taqveeme Miladi".

The Islamic Calendar, too, is religion-oriented, based as it is on the date of migration of the Holy Prophet from Makkah to Madina. Both the A.H (Solar) and the A.H. (Lunar) Calendars begin from the

same date. From what is mentioned above we can identify three major types of calendars: (1) A.H. (Solar), (2) A.H. (Lunar) and (3) A.D. (Christian) Calendars, as discussed below:

**(1) The Anne Hijri (Solar) Calendar :**

The A.H. (Solar) Calendar is calculated on the basis of the revolution of the planet earth around the sun. The revolution is estimated to take 365.2422 days or 365 days, 5 hours, 48 minutes and 46 seconds. The relevant chronology begins on Nowroz, which marks the apparent turn of the year from the time of Spring Equinox (in the northern hemisphere) according to the Jalali Calendar. It represents the natural beginning of the solar year.(Bitashk, A., 1367)

The A.H. (Solar) Calendar's earlier deficiencies were removed in the year 454 A.H. (Solar) / 1075 A.D., during the time of Jalal-al-Deen Malekshah, the Seljuq king and his wise prime minister, Nizam-ul-Mulk. An eight-member research council's work resulted in the formulation of the Jalali Calendar, which has a margin of error of one day only in 141,000 years, as compared to the astronomical passage of time.(Birashk, A., 1367)

The Jalali Calendar's leap-year calculations show all the more exactness and divisibility by four and five years.

**(2) A.H. (Lunar) Calendar:**

This is based on the revolution of the moon around the earth. The lunar year consists of twelve lunar months of 29 days, 12 hours and 44 minutes, or 29.531 days (on the average). The A.H. (Lunar) year has 354 days, 18 hours and 48 minutes, which shows a difference from the solar year of eleven days.

**(3) A.D. (Christian) Calendar:**

Europeans and Christians in the past followed the Julian Calendar, which was derived from the traditional Roman Calendar.

The Christian Calendar has 365.25 days in a year, which is 0.0078 day longer than the actual solar year. This amounts to a difference of one day in 128 years. In view of the possibility that there could be gradual variance from the actual seasons, reformation of this calendar was considered necessary.(Abdollahy, R. 1375)

Detailed investigations towards reformation of the Julian Calendar resulted ultimately in identification of a difference of eleven days from the astronomical calendar in February, 1582 (A.D.). The Pope of the time issued an edict by which 4 October, 1582 was treated as 15 October, 1582; Thus covering the aforesaid difference of eleven days between the Julian and the astronomical calendars. This reform is known in history as Gregorian Reform.(Achelis, E., 1943)

The Gregorian Calendar continues to be used in the Christian world. Its year has 365.2425 days, a difference of 0.0003 day, despite

which it has come to be accepted for use throughout the Christian world.(Naba´i, A. 1366)

## DERIVATIONS FROM A.H. (SOLAR) AND A.D. CALENDARS

For specifying the occurrence in time of a historical event it is necessary to determine the day of the week, the date of the month, the month and the year according to the given calendar.

At present we have small calendars, pocket calendars, desk-top ones and also diaries for all the three major types of calendars, viz: Iranian, Islamic and the Christian ones. By referring to these we can pinpoint the date, the day, the month and the year.

Astronomers and mathematicians after many years of studies and research have established formulae and regulations governing the relationships of the day of the week and months of the year. As a result, these formulae and rules have come to be available for our use.

As we all know, week-days are repeated in every following week. For example, if the first day of a month falls on an Sunday, the eighth, the fifteenth, the twenty-second and the twenty-ninth day of the month, too, will be a Sunday, which repeats itself every seventh day.

Total number of days in the months of a A.H. (Solar) year varies as follows:

From the month of Farvardin up until Shahrivar the monthly total is 31 days. Every one of these first six months of A.H. (Solar) year has 3 more days than the 28 days of 4 weeks. Thus, the 15th of Farvardin, 1379 being Monday, the 15th day of the following month (Ordibehesht) fell on a Thursday, or the third day after Monday.

The subsequent five months of the A.H. (Solar) year, from Mehr to Bahman, have each a total of 30 days, which is two days more than 4 weeks or 28 days. Thus, 15th of Aban, 1379 being a Sunday, the 15th of Azar, 1379 will be a Tuesday, or the second day after Sunday.

On the other hand, the dates pertaining to the week-days of the A.H. (Solar) year's months from Farvardin to Esfand remain the same from year to year. This is because the difference in the monthly days total 28 days which is divisible by 7, as follows:

| (6 | × | 3) | + | (5 | × | 2) | = | 28 |
|---|---|---|---|---|---|---|---|---|
| MONTHS (FARVARDIN TO SHAHRIVAR) | | DIFFERENCE DAYS | | MONTHS (MEHR TO BAHMAN) | | DIFFERENCE DAYS | | DAYS (DIVISIBLE BY 7) |

Accordingly, the 20th of Farvardin, 1379 and the 20th of Esfand, 1379 are Saturdays both. These are paired months, as commonly known. The other paired months are: Ordibehesht + Day, Khordad + Aban, Mordad + Bahman, and Shahrivar + Azar. Their respective first days and week-days are the same, a characteristic exemplified

above in the case of Farvardin and Esfand. This feature is not shared by the months of Tir and Mehr, which are called singular or exceptional months.

From the foregoing, it can also be inferred that the day-totals of all the months, except Esfand, do not change. In a leap-year, Esfand has a total of 30 days. In non-leap years, it has 29 days only. As compared to the four-week total of 28 days, the difference in the case of Esfand in a leap-year is 2, and in ordinary years 1 only. Thus, to illustrate this point, the 1st of Farvardin, 1378 (a non-leap year) was a Sunday, and the corresponding day of 1379 (a leap-year) was a Monday. The impact of 1379 being a leap-year will be evident from the fact that the 1st day of Farvardin, 1380 will be a Wednesday, i-e. the second day after Monday.

## METHOD OF COMPUTAIION OF LEAP-YEAR(A.H.-SOLAR)

For determining occurrence of leap-years in 5-year and 4-year periods the famous Khayyam Table (reproduced below) will be helful.

***TABLE-I: KHAYYAM TABLE***

| 5- YEARLY LEAP-YEAR | 4- YEARLY LEAP-YEAR | | | | | | |
|---|---|---|---|---|---|---|---|
| 1<br>**5** | 2<br>**9** | 3<br>**13** | 4<br>**17** | 5<br>**21** | 6<br>**25** | 7<br>**29** | |
| 8<br>**34** | 9<br>**38** | 10<br>**42** | 11<br>**46** | 12<br>**50** | 13<br>**54** | 14<br>**58** | 15<br>**62** |
| 16<br>**67** | 17<br>**71** | 18<br>**75** | 19<br>**79** | 20<br>**83** | 21<br>**87** | 22<br>**91** | 23<br>**95** |
| 24<br>**100** | 25<br>**104** | 26<br>**108** | 27<br>**112** | 28<br>**116** | 29<br>**120** | 30<br>**124** | **0** |

**SOURCE: Naba'i, A."Taghveem wa Thaghveem Negari dar Tarikh", Astan Quds Razavi, Mashhad, Iran, 1366 (1987), P. 170.**

The above Table can be used in the following manner:

- First we add 2346 to the given year,
- Then we divide the total by 2820, and
- We further divide the balance by 128.

The balance figure resulting from the second division mentioned above if found in the Khayyam Table, too, that will represent a leap-year. If it is not found in the Khayyam Table, the given year will then be treated as a non-leap year. If what is found in the Khayyam Table happens to be in its 4-yearly columns, then the given year will refer to a four-year periodicity of a leap-year. This means that the first three years of the four-year-period have had 365 days each and the fourth year would have 366 days.

Every 33 years, there would have been seven 4-yearly leap-years

and one five-yearly leap-year.

In the abovementioned computations preliminary information about the first day of a month will be helpful. Of course, when a given year ends in 365 days, the first day of the following year will be a Saturday, which should repeat itself once in every seven years. But, then, the actual A.H. (Solar) year has a total of nearly 365.25 days. Therefore, the first day of the year can be expected to repeat itself in 28 years and not 7 years.(Naba'i, A. 1366)

## PROCEDURE FOR ASCERTAINING WEEK-DAY OF FIRST FARVARDIN OR "NOWROZ" OF A HIJAR (SOLAR) YEAR

To ascertain week-day of first Farvardin (the first month) of a Hijri (Solar) new year, known as "Nowroz", the adoptable procedure is as follows:

(1) Add 2346 to the figure of the A.H. (Solar) year the week-day of "Nowroz" of which is to be ascertained.

(2) Divide the sum from (1) above by 2820, which may leave a residual fraction.

(3) Add 1 to the non-fractional result of (2) above and multiply the sum by 3. The result will be the first figure to be used in the final calculation (represented by the symbol "A").(Naba'i,A. 1366)

(4) Divide by 128 the fractional balance from the division as per(2) above and multiply the non-fractional result by 5 (for using the

outcome in the final calculation, represented by "B"). Residual balance, too, is useable in the final calculation, represented by "C", as necessary.

**(5)** Ascertain the number of leap-years preceding the number represented by "C" above from the Khayyam Table, which number will be used in the final calculation (represented by "D").

**(6)** Add up the figures represented by "A + B + C + D" and divide the sum by 7 to give or obtain a balance figure that will indicate or identify the week-day of the first day of the year under consideration.

If the aforementioned balance figure is zero, Nowroz will be on a Saturday; if it is one, that will be a Sunday, and so on as indicated earlier.**(Naba´i,A. 1366)**

The application of the procedure can be exemplified as under for, say, Nowroz of 1380 A.H. (Solar):

(1) 1380 + 2346 = 3726

(2) 3726: 2820 = 1 (leaving a fractional balance of 906)

(3) 1 + 1 = 2, 2 × 3 = 6, $\boxed{A = 6}$

(4) 906 : 128 = 7 (leaving 10 as the fractional balance, and thenon-fractional 7 is multiplied by 5)

$7 \times 5 = 35$ , $\boxed{B = 35}$ , $\boxed{C = 10}$

(5) The number of leap-years preceding 10(C) in the Khayyam Table is 2 $\boxed{D = 2}$

(6) A + B + C + D = 6 + 35 + 10 + 2 = 53, SUM = 53

and divide the sum by 7 to obtain the week-day number, which in this case is 4, representing a wednesday. Thus, the first day or Nowroz of 1380 A.H. (Solar) will be a wednesday.

## THE METHOD OF A CHRISTIAN LEAP-YEAR COMPUTATION

In the case of the Gregorian Calendar, every four years the annual total of days increases to 366 days from 365 days. This is due to the occurrence of leap-year which affects the month of February. February of a leap-year has 29 days instead of the normal 28 days.

The Gregorian Calendar's twelve months, from January to December, has day-totals adjusted and formalised as follows: January:

31 days, February = 28 (29 in leap-years), March = 31, April= 30, May = 31, June = 30, July = 31, August = 31, September = 30, October = 31, November = 30, and December = 31 days.

The method of a Christian leap-year computation is given below: If a given year is divisible by 4, it will be a leap-year; if not, it will be an ordinary or a non-leap year. If the figure of a given year ends in two zeros (as in the case of a century), it is to be divided by 400. Exceptions in this regard are 1900, 1800 and 1700, since, despite their divisibility by 4, they are not leap - years. On the other hand, the year 2000 is a leap-year.**(Bitashk, A. 1367)**

With due attention to the foregoing information and the relevant rules governing reccurrence of months of an year, beginning of an year, etc., this compiler has prepared conversion tables for A.H. (Solar) and A.D. Calendars, which are presented in this article. The tables will be particularly helpful in computing a date or a week-day of occurrence of a significant event in the past.

# *TABLE - II : THE 338-YEAR A.H.(SOLAR) CALENDAR*

## *(1073-1410 A.H.)*

**1- The years**

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1073* | | 1074 | 1075 | 1076 | 1077* | | 1078 | 1079 | 1080 | 1081* | | 1082 | 1083 | 1084 | 1085 | 1086* | | 1087 | 1088 | 1089 | 1090* | | 1091 | 1092 | 1093 | 1094* | |
| 1095 | 1096 | 1097 | 1098* | | 1099 | 1100 | 1101 | 1102* | | 1103 | 1104 | 1105 | 1106* | | 1107 | 1108 | 1109 | 1110* | | 1111 | 1112 | 1113 | 1114* | | 1115 | 1116 | 1117 |
| 1118 | 1119* | | 1120 | 1121 | 1122 | 1123* | | 1124 | 1125 | 1126 | 1127* | | 1128 | 1129 | 1130 | 1131* | | 1132 | 1133 | 1134 | 1135* | | 1136 | 1137 | 1138 | 1139* | |
| 1140 | 1141 | 1142 | 1143* | | 1144 | 1145 | 1146 | 1147 | 1148* | | 1149 | 1150 | 1151 | 1152* | | 1153 | 1154 | 1155 | 1156* | | 1157 | 1158 | 1159 | 1160* | | 1161 | 1162 |
| 1163 | 1164* | | 1165 | 1166 | 1167 | 1168* | | 1169 | 1170 | 1171 | 1172* | | 1173 | 1174 | 1175 | 1176* | | 1177 | 1178 | 1179 | 1180 | 1181* | | 1182 | 1183 | 1184 | 1185 |
| | 1186 | 1187 | 1188 | 1189* | | 1190 | 1191 | 1192 | 1193* | | 1194 | 1195 | 1196 | 1197* | | 1198 | 1199 | 1200 | 1201* | | 1202 | 1203 | 1204 | 1205* | | 1206 | 1207 |
| 1208 | 1209* | | 1210 | 1211 | 1212 | 1213 | 1214* | | 1215. | 1216 | 1217 | 1218* | | 1219 | 1220 | 1221 | 1222* | | 1223 | 1224 | 1225 | 1226* | | 1227 | 1228 | 1229 | 1230 |
| | 1231 | 1232 | 1233 | 1234* | | 1235 | 1236 | 1237 | 1238* | | 1239 | 1240 | 1241 | 1242* | | 1243 | 1244 | 1245 | 1246 | 1247* | | 1248 | 1249 | 1250 | 1251* | | 1252 |
| 1253 | 1254 | 1255* | | 1256 | 1257 | 1258 | 1259* | | 1260 | 1261 | 1262 | 1263* | | 1264 | 1265 | 1266 | 1267* | | 1268 | 1269 | 1270 | 1271* | | 1272 | 1273 | 1274 | 1275 |
| 1276* | | 1277 | 1278 | 1279 | 1280* | | 1281 | 1282 | 1283 | 1284* | | 1285 | 1286 | 1287 | 1288* | | 1289 | 1290 | 1291 | 1292* | | 1293 | 1294 | 1295 | 1296* | | 1297 |
| 1298 | 1299 | 1300* | | 1301 | 1302 | 1303 | 1304* | | 1305 | 1306 | 1307 | 1308 | 1309* | | 1310 | 1311 | 1312 | 1313* | | 1314 | 1315 | 1316 | 1317* | | 1318 | 1319 | 1320 |
| 1321* | | 1322 | 1323 | 1324 | 1325* | | 1326 | 1327 | 1328 | 1329* | | 1330 | 1331 | 1332 | 1333* | | 1334 | 1335 | 1336 | 1337* | | 1338 | 1339 | 1340 | 1341 | 1342* | |
| 1343 | 1344 | 1345 | 1346* | | 1347 | 1348 | 1349 | 1350* | | 1351 | 1352 | 1353 | 1354* | | 1355 | 1356 | 1357 | 1358* | | 1359 | 1360 | 1361 | 1362* | | 1363 | 1364 | 1365 |
| 1366* | | 1367 | 1368 | 1369 | 1370* | | 1371 | 1372 | 1373 | 1374 | 1375* | | 1376 | 1377 | 1378 | 1379* | | 1380 | 1381 | 1382 | 1383* | | 1384 | 1385 | 1386 | 1387* | |
| 1388 | 1389 | 1390 | 1391* | | 1392 | 1393 | 1394 | 1395* | | 1396 | 1397 | 1398 | 1399* | | 1400 | 1401 | 1402 | 1403 | 1404* | | 1405 | 1406 | 1407 | 1408* | | 1409 | 1410 |

**2-The months**

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FARVARDIN | H | U | S | E | I | N | M | H | U | S | E | I | N | M | H | U | S | E | I | N | M | H | U | S | E | I | N | M |
| ORDIBEHESHT | E | I | N | M | H | U | S | E | I | N | M | H | U | S | E | I | N | M | H | U | S | E | I | N | M | H | U | S |
| KHORDAD | M | H | U | S | E | I | N | M | H | U | S | E | I | N | M | H | U | S | E | I | N | M | H | U | S | E | I | N |
| TIR | S | E | I | N | M | H | U | S | E | I | N | M | H | U | S | E | I | N | M | H | U | S | E | I | N | M | H | U |
| MORDAD | N | M | H | U | S | E | I | N | M | H | U | S | E | I | N | M | H | U | S | E | I | N | M | H | U | S | E | I |
| SHAHRIVAR | U | S | E | I | N | M | H | U | S | E | I | N | M | H | U | S | E | I | N | M | H | U | S | E | I | N | M | H |
| MEHR | I | N | M | H | U | S | E | I | N | M | H | U | S | E | I | N | M | H | U | S | E | I | N | M | H | U | S | E |
| ABAN | M | H | U | S | E | I | N | M | H | U | S | E | I | N | M | H | U | S | E | I | N | M | H | U | S | E | I | N |
| AZAR | U | S | E | I | N | M | H | U | S | E | I | N | M | H | U | S | E | I | N | M | H | U | S | E | I | N | M | H |
| DAY | E | I | N | M | H | U | S | E | I | N | M | H | U | S | E | I | N | M | H | U | S | E | I | N | M | H | U | S |
| BAHMAN | N | M | H | U | S | E | I | N | M | H | U | S | E | I | N | M | H | U | S | E | I | N | M | H | U | S | E | I |
| ESFAND | H | U | S | E | I | N | M | H | U | S | E | I | N | M | H | U | S | E | I | N | M | H | U | S | E | I | N | M |

*Leap years

**3- The days of the week**

| H | | | | | | U | | | | | | S | | | | | | E | | | | | | I | | | | | | N | | | | | | M | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SAT. | 1 | 8 | 15 | 22 | 29 | SAT. | | 7 | 14 | 21 | 28 | SAT. | | 6 | 13 | 20 | 27 | SAT. | | 5 | 12 | 19 | 26 | SAT. | | 4 | 11 | 18 | 25 | SAT. | M | 3 | 10 | 17 | 24 | SAT. | 30 | 3 | 9 | 16 | 23 |
| SUN. | 2 | 9 | 16 | 23 | 30 | SUN. | 1 | 8 | 15 | 22 | 29 | SUN. | | 7 | 14 | 21 | 28 | SUN. | | 6 | 13 | 20 | 27 | SUN. | | 5 | 12 | 19 | 26 | SUN. | | 4 | 11 | 18 | 25 | SUN. | M | 3 | 10 | 17 | 24 |
| MON. | 3 | 10 | 17 | 24 | M | MON. | 2 | 9 | 16 | 23 | 30 | MON. | 1 | 8 | 15 | 22 | 29 | MON. | | 7 | 14 | 21 | 28 | MON. | | 6 | 13 | 20 | 27 | MON. | | 5 | 12 | 19 | 26 | MON. | | 4 | 11 | 18 | 25 |
| TUE. | 4 | 11 | 18 | 25 | | TUE. | 3 | 10 | 17 | 24 | M | TUE. | 2 | 9 | 16 | 23 | 30 | TUE. | 1 | 8 | 15 | 22 | 29 | TUE. | | 7 | 14 | 21 | 28 | TUE. | | 6 | 13 | 20 | 27 | TUE. | | 5 | 12 | 19 | 26 |
| WED. | 5 | 12 | 19 | 26 | | WED. | 4 | 11 | 18 | 25 | | WED. | 3 | 10 | 17 | 24 | M | WED. | 2 | 9 | 16 | 23 | 30 | WED. | 1 | 8 | 15 | 22 | 29 | WED. | | 7 | 14 | 21 | 28 | WED. | | 6 | 13 | 20 | 27 |
| THU. | 6 | 13 | 20 | 27 | | THU. | 5 | 12 | 19 | 26 | | THU. | 4 | 11 | 18 | 25 | | THU. | 3 | 10 | 17 | 24 | M | THU. | 2 | 9 | 16 | 23 | 30 | THU. | 1 | 8 | 15 | 22 | 29 | THU. | | 7 | 14 | 21 | 28 |
| FRI. | 7 | 14 | 21 | 28 | | FRI. | 6 | 13 | 20 | 27 | | FRI. | 5 | 12 | 19 | 26 | | FRI. | 4 | 11 | 18 | 25 | | FRI. | 3 | 10 | 17 | 24 | M | FRI. | 2 | 9 | 16 | 23 | 30 | FRI. | 1 | 8 | 15 | 22 | 29 |

This calendar has three Tables: (1) years, (2) months, and (3) days, respectively. It covers the period from 1073 to 1410 A.D., consisting of Ordinary and the Leap years.

**HOW TO USE:**

This calendar makes it possible to ascertain the day of the week for a given year, month and date, as follows:

First find the year in the table (t.1). Then follow it downward in the same column towards the intersection with the table of the months (t.2). At this point of intersection a letter appears. At the end of the column there will be another intersection with the table of the days (t.3) where the presence of the same letter shows the corresponding day of the week.

**NOTE:** A leap year has 366 day in the A.H. (Solar) calendar, and in the relevant table it is shown by an asterisk.

**Prepared by Hussein Mehrjerdi**

# *TABLE* - III : *THE 169-YEAR A.D. CALENDAR*

## *(1843-2011 A.D.)*

**1- The yenrs**

| O.* | L.** | O. | L. | O. | L. | O. | L. | O. | L. | O. | L. | O. | L. | O. | L. | O. | L. | O. | L. | O. | L. | O. | L. | O. | L. | O. | L. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1843 | | | 1844 | | | 1845 | | 1846 | | 1847 | | | 1848 | | | 1849 | | 1850 | | 1851 | | | 1852 | | | 1853 | |
| 1854 | | 1855 | | | 1856 | | | 1857 | | 1858 | | 1859 | | | 1860 | | | 1861 | | 1862 | | 1863 | | | 1864 | | |
| 1865 | | 1866 | | 1867 | | | 1868 | | | 1869 | | 1870 | | 1871 | | | 1872 | | | 1873 | | 1874 | | 1875 | | | 1876 |
| | | 1877 | | 1878 | | 1879 | | | 1880 | | | 1881 | | 1882 | | 1883 | | | 1884 | | | 1885 | | 1886 | | 1887 | |
| | 1888 | | | 1889 | | 1890 | | 1891 | | | 1892 | | | 1893 | | 1894 | | 1895 | | | 1896 | | | 1897 | | 1898 | |
| 1899 | | 1900 | | 1901 | | 1902 | | 1903 | | | 1904 | | | 1905 | | 1906 | | 1907 | | | 1908 | | | 1909 | | 1910 | |
| 1911 | | | 1912 | | | 1913 | | 1914 | | 1915 | | | 1916 | | | 1917 | | 1918 | | 1919 | | | 1920 | | | 1921 | |
| 1922 | | 1923 | | | 1924 | | | 1925 | | 1925 | | 1927 | | | 1918 | | | 1929 | | 1930 | | 1931 | | | 1932 | | |
| 1933 | | 1934 | | 1935 | | | 1936 | | | 1937 | | 1938 | | 1939 | | | 1940 | | | 1941 | | 1942 | | 1943 | | | 1944 |
| | | 1945 | | 1946 | | 1947 | | | 1948 | | | 1949 | | 1950 | | 1951 | | | 1952 | | | 1953 | | 1954 | | 1955 | |
| | 1956 | | | 1957 | | 1958 | | 1959 | | | 1960 | | | 1961 | | 1963 | | 1963 | | | 1964 | | | 1965 | | 1966 | |
| 1967 | | | 1968 | | | 1969 | | 1970 | | 1971 | | | 1972 | | | 1973 | | 1974 | | 1975 | | | 1976 | | | 1977 | |
| 1978 | | 1979 | | | 1980 | | | 1981 | | 1982 | | 1983 | | | 1914 | | | 1985 | | 1986 | | 1987 | | | 1988 | | |
| 1989 | | 1990 | | 1991 | | | 1992 | | | 1993 | | 1994 | | 1995 | | | 1996 | | | 1997 | | 1998 | | 1999 | | | 2000 |
| | | 2001 | | 2002 | | 2003 | | | 2004 | | | 2005 | | 2006 | | 2007 | | | 2008 | | | 2009 | | 2010 | | 2011 | |

**2-The months**

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| January | H | H | U | U | S | S | E | E | I | I | N | N | M | M | H | H | U | U | S | S | E | E | I | I | N | N | M | M |
| Febrnary | E | E | I | I | N | N | M | M | H | H | U | U | S | S | E | E | I | I | N | N | M | M | H | H | U | U | S | S | E |
| March | E | I | I | N | N | M | M | H | H | U | U | S | S | E | E | I | I | N | N | M | M | H | H | U | U | S | S | E | M |
| April | M | H | H | U | U | S | S | E | E | I | I | N | N | M | M | H | H | U | U | S | S | E | E | I | I | N | N | M | U |
| May | U | S | S | E | E | I | I | N | N | M | M | H | H | U | U | S | S | E | E | I | I | N | N | M | M | H | H | U | I |
| June | I | N | N | M | M | H | H | U | U | S | S | E | E | I | I | N | N | M | M | H | H | U | U | S | S | E | E | I | M |
| July | M | H | H | U | U | S | S | E | E | I | I | N | N | M | M | H | H | U | U | S | S | E | E | I | I | N | N | M | S |
| August | S | E | E | I | I | N | N | M | M | H | H | U | U | S | S | E | E | I | I | N | N | M | M | H | H | U | U | S | H |
| September | N | M | M | H | H | U | U | S | S | E | E | I | I | N | N | M | M | H | H | U | U | S | S | E | E | I | I | N | E |
| October | H | U | U | S | S | E | E | I | I | N | N | M | M | H | H | U | U | S | S | E | E | I | I | N | N | M | M | H | I |
| November | E | I | I | N | N | M | M | H | H | U | U | S | S | E | E | I | I | N | N | M | M | H | H | U | U | S | S | E | N |
| December | N | M | M | H | H | U | U | S | S | E | E | I | I | N | N | M | M | H | H | U | U | S | S | E | E | I | I | N | M |

*O. = Ordinary years **L. = Leap years

**3- The days of the week**

| H | | | | | | U | | | | | | S | | | | | | E | | | | | | I | | | | | | N | | | | | | M | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SUN. | 1 | 8 | 15 | 22 | 29 | SUN. | | 7 | 14 | 21 | 28 | SUN. | | 6 | 13 | 20 | 27 | SUN. | | 5 | 12 | 19 | 26 | SUN. | | 4 | 11 | 18 | 25 | SUN. | 31 | 3 | 10 | 17 | 24 | SUN. | 30 | 2 | 9 | 16 | 23 |
| MON. | 2 | 9 | 16 | 23 | 30 | MON. | 1 | 8 | 15 | 22 | 29 | MON. | | 7 | 14 | 21 | 28 | MON. | | 6 | 13 | 20 | 27 | MON. | | 5 | 12 | 19 | 26 | MON. | | 4 | 11 | 18 | 25 | MON. | 31 | 3 | 10 | 17 | 24 |
| TUE. | 3 | 10 | 17 | 24 | 31 | TUE. | 2 | 9 | 16 | 23 | 30 | TUE. | 1 | 8 | 15 | 22 | 29 | TUE. | | 7 | 14 | 21 | 28 | TUE. | | 6 | 13 | 20 | 27 | TUE. | | 5 | 12 | 19 | 26 | TUE. | | 4 | 11 | 18 | 25 |
| WED. | 4 | 11 | 18 | 25 | | WED. | 3 | 10 | 17 | 24 | 31 | WED. | 2 | 9 | 16 | 23 | 30 | WED. | 1 | 8 | 15 | 22 | 29 | WED. | | 7 | 14 | 21 | 28 | WED. | | 6 | 13 | 20 | 27 | WED. | | 5 | 12 | 19 | 26 |
| THU. | 5 | 12 | 19 | 26 | | THU. | 4 | 11 | 18 | 25 | | THU. | 3 | 10 | 17 | 24 | 31 | THU. | 2 | 9 | 16 | 23 | 30 | THU. | 1 | 8 | 15 | 22 | 29 | THU. | | 7 | 14 | 21 | 28 | THU. | | 6 | 13 | 20 | 27 |
| FRI. | 6 | 13 | 20 | 27 | | FRI. | 5 | 12 | 19 | 26 | | FRI. | 4 | 11 | 18 | 25 | | FRI. | 3 | 10 | 17 | 24 | 31 | FRI. | 2 | 9 | 16 | 23 | 30 | FRI. | 1 | 8 | 15 | 22 | 29 | FRI. | | 7 | 14 | 21 | 28 |
| SAT. | 7 | 14 | 21 | 28 | | SAT. | 6 | 13 | 20 | 27 | | SAT. | 5 | 12 | 19 | 26 | | SAT. | 4 | 11 | 18 | 25 | | SAT. | 3 | 10 | 17 | 24 | 31 | SAT. | 2 | 9 | 16 | 23 | 30 | SAT. | 1 | 8 | 15 | 22 | 29 |

This calendar has three Tables: (1) years, (2) months, and (3) days, respectively. It covers the period from 1843 to 2011 A.D., consisting of Ordinary and the Leap years.

**HOW TO USE:**

This calendar makes it possible to ascertain the day of the week for a given year, month and date, as follows:

First find the year in the table (t.1). Then follow it downward in the same column towards the intersection with the table of the months (t.2). At this point of intersection a letter appears. At the end of the column there will be another intersection with the table of the days (t.3) where the presence of the same letter shows the corresponding day of the week.

**NOTE:** A leap year is 366 days long and occurs every four years in A.D. Calendar.

**Prepared by Hussein Mehrjerdi**

**Example (1):** What day of the week is 20 Azar 1379 A.H. (Solar) ?

From the 333-year A.H. (Solar) Table's vertical columns the year 1379 A.H. (Solar) can be pinpointed. Proceeding downwards of this column, we find it intersecting the relevant month in the next section of this Table. There we will find the month of Azar, 1379 on the horizontal line, which also shows the letter "E".

Then we come to the last Table (t.3), showing the letters and the numbers for days in its vertical columns. It is notable that the year 1379 is a leap-year distinguished by an asterisk. Thus, we find that 20 Azar 1379 A.H. (Solar) is a Sunday.

**Example (2):** What day of the week is 14 April 2001?

We can trace from the 169-year A.D. Calendar Table's vertical columns the year 2001 (A.D.). Going down the column we come across the horizontal line of the next section where the month of April appears and where the relevant letter "H", too, appears. This letter can be found in the third section of this Table, where the fourteenth April (14) indicates a Saturday. We also note from the position of the year in the vertical column of the first section that it is an ordinary year, and not a leap-year.

**ANOTHER METHOD OF TRACING THE DAY OF THE WEEK**

In the Table-IV months of the A.H. (Solar) and A.D. Calendar years are given in the upper portion. Every month of each year has been given a specific number, which changes from year to year. The fixed numbers are related to the first day of the year in the respective calendars shown separately in the Table mentioned above.

Once the first day of the year is known it will be possible to ascertain the fixed number of each month of the year from the Table. The fixed numbers of the months of the A.H. (Solar) and A.D. Calendar years, if added to the given number of the relevant day of the week and then the resultant sum is divided by seven, the balance or residual figure will correspond to the actual day of the week. It is notable that astronomers have given the following numbers to the days of the week:

Saturday (0), Sunday (1), Monday (2), Tuesday (3), Wednesday (4), Thursday (5), and Friday (6).

Thus, if the above-mentioned residual number is zero, the relevant day will be a Saturday, and so on. Furthermore, for using the Christian Calendar Table it is necessary to specify as to whether or not it is a leap-year. If it is a leap-year the months marked "*" should be used.

## *TABLE - IV*

### *SHOWING MONTHS OF A.H. (SOLAR) AND A.D. CALENDARS AND FIGURES FOR IDENTIFYING WEEK-DAYS OF ALL YEARS*

| MONTHS OF THE – CALENDAR | | January | May | August | February | June | September | April |
|---|---|---|---|---|---|---|---|---|
| | A.D. | October | October* | May* | March | March* | December | July |
| | | April* | - | - | November | November* | June* | september* |
| | | July* | - | - | August* | - | - | December* |
| | A.H | Farvardin | Shahrivar | Tir | Ordibehesht | Mehr | Mordad | Khordad |
| | | Esfand | Azar | - | Day | - | Bahman | Aban |
| FIRST DAY OF THE YEAR | | | | | | | | |
| SUNDAY(1) | | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| MONDAY(2) | | 1 | 2 | 3 | 4 | 5 | 6 | 0 |
| TUESDAY(3) | | 2 | 3 | 4 | 5 | 6 | 0 | 1 |
| WEDNESDAY(4) | | 3 | 4 | 5 | 6 | 0 | 1 | 2 |
| THURSDAY(5) | | 4 | 5 | 6 | 0 | 1 | 2 | 3 |
| FRIDAY(6) | | 5 | 6 | 0 | 1 | 2 | 3 | 4 |
| SATURDAY(0) | | 6 | 0 | 1 | 2 | 3 | 4 | 5 |

**Based on Table-IX, P. 259, "Taghveem wa Taghvemm Negari dar Tarikh" (Naba'i, A., 1366)**

**HOW TO USE THE TABLES?**

Here are a few more examples:

**Example (1):** What day of the week is 12 September, 2000 A.D?

First January, 2000 A.D., the first day of the year, fell on a Saturday with its fixed number "O", which leads further to the fixed numbers of the months of that year, as well. Since 2000 A.D. is a leap-year, it is traceable in the column of the Table meant for leap-years in which the Christian months are also shown. From the column pertaining to the month of September with an asterisk (for leap-year) if we proceed downwards to the intersection of the vertical line with the horizontal line at "O"(zero), we will find the number 5, The number 5 represents the fixed number for September, 2000 (A.D.). Now, if we add this 5 to 12 (i.e. the twelfth of September) we get: 5 + 12 = 17, which contains the equivalent of two weeks (14 days), leaving the balance of 3 days. The number 3 is indicated for Tueseday. Thus, we find that 12 September, 2000 was a Tueseday.

**Example (2):** What day of the week is 17 Esfand 1379?

First day of 1379 A.H. (Solar) was a Monday; with the fixed number 2 which leads further to the fixed numbers for the months of the year in the Table.

The column for the month of Esfand is a vertical one, downwards of which we come to the horizontal line of the year 1379. At this point of intersection a number appears which represents that for the month of Esfand, 1379. Now the number one is added to 17 to give the sum of 18, which contains the equivalent of two weeks (14 days) leaving a balance of 4 days. This number 4 indicates a Wednesday. So, 17 Esfand, 1379 A.H. (Solar) will be a Wednesday.

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