O1 (40 points)

Solution:

(1) (20 points) See figure 1. P = Mars. Stars = α Aql, α Cep, ε Cas, α Ari. (anticlockwise)

4 points for each. Inside the small circle = 4 points. Between the small and big circle = 2 points.

(2) (5 points): See figure 1.

1 point for each. 5 points for all. Between the curve = 1 point.

(3)(10 points): From west to east: Ophiuchus (Oph), Serpens (Ser), Aquila (Aql), Aquarius (Aqr), Pisces (Psc), Cetus (Cet), Taurus (Tau), Eridanus (Eri), Orion (Ori).

2 point for each. 10 points for 5 or more.

(4)(5 points): 18.33° .

5 points for 16° ~ 21°, 3 points for 13° ~ 15° and 22° ~ 24°, 1 point for 10° ~ 12° and 25° ~ 27°.

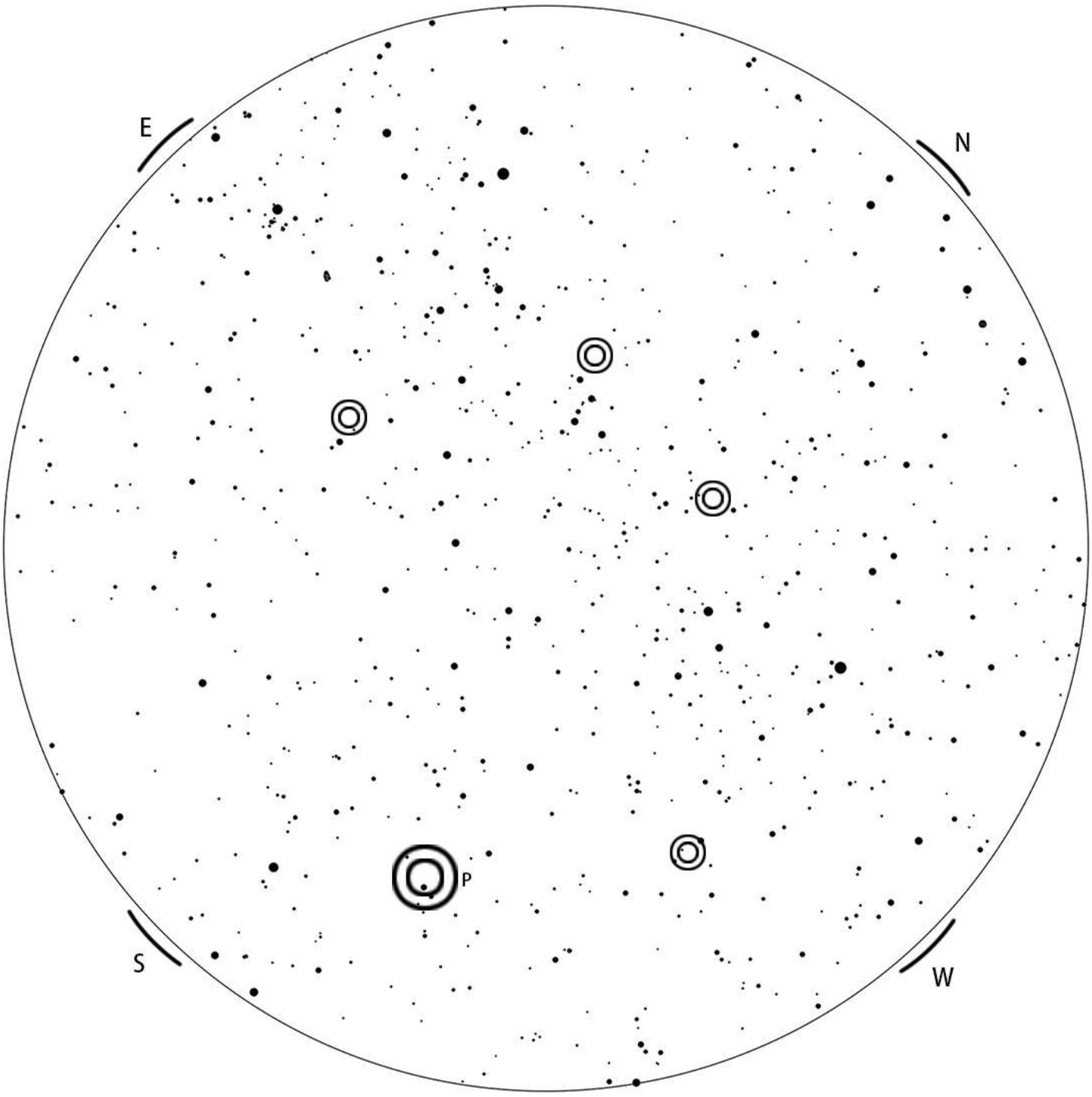


Figure 1

O2 (20 points)

Solution:

July 7.

20 points for July 5 ~ July 9, 12 points for July 2 ~ July 4 and July 10 ~ July 12, 6 points for June 29 ~ July 1 and July 13 ~ July 15.

O3 (20 points)

Solution:

23:00

20 points for 22:30 ~ 23:30, 12 points for 21:30 ~ 22:29 and 23:31 – 0:30, 6 points for 20:30 ~ 21:29 and 0:31 – 1:30.

O4 (20 points):

Solution:

M1 - Taurus (Tau), M104 - Virgo(Vir) or Corvus(Crv), M27 –Vulpecula (Vul), M42 (M43 is also acceptable) - Orion (Ori).

2.5 points for each Messier catalogue number, 2.5 points for each constellation name.