Sol: O1 (15 pt)

Each correct answer is worth 3 pts.

Object	Number	Object	Number
Jupiter		β Her / Antilicus	
Saturn		α Oph / Rasalhague	
Mars		ϵ Peg / Enif	3
α And / Alpheratz		α Per / Mirfak	1
α Aql / Altair		α Sco / Antares	2
α Boo / Arcturus	4	α Ser / Unukalhai	
α CrB / Alphecca		ϵ Sgr / Kaus Australis	
β Dra / Rastaban		β UMi / Kochab	5

Sol: O2 (15 pt)

One method is to aim the telescope at an object, with easily recognizable markings (such as a building) and scroll through several (n) fields of view using only a single axis, while recording the difference between angles ($\Delta\alpha$) marked on the axis.
The final formula is:

$$FOV = \frac{\Delta\alpha}{n}$$

Full Markings will be given for the range values of $FOV = 0.6 - 1.2°$, but only if accompanied with a working method.

Sol: O3 (6 pt)

$F = f \cdot \frac{AFOV}{FOV}$
Full markings will be given for the range f = **940-1875mm**, but only if calculated using a correct formula and a value of FOV from previous question.

Sol: O4 (14 pt)

One method is to follow the line with a telescope to the end of the building and remember the point. After that students could use rulers to measure x and y coordinate differences at an arm's length and calculate the angle.
Full markings will be given for the range **39.5-47.5°**

Sol: O5 (9 pt)

Naming each lense type:
1. (C) Gregorian (3 pt) 2. (A) Newtonian (3 pt) 3. (H) Cassegrain (3 pt)

Sol: O6 (21 pt)

Filling missing Equatorial constellations:
3. Aql (Aquila) (2 pt)
7. Tau (Taurus) (2 pt)
8. Eri (Eridanus) (2 pt)
9. Ori (Orion) (2pt)
12. Hya (Hydra) (2pt)
13. Sex (Sextans) (2 pt)
14. Leo (Leo) (2pt)

Ecliptic constellations are following:
Aqr (Aquarius) (1 pt)
Leo (Leo) (1 pt)
Oph (Ophiuchus) (2 pt)
Psc (Pisces) (1 pt)
Vir (Virgo) (1 pt)
Tau (Taurus) (1 pt)

Sol: O7 (20 pt)

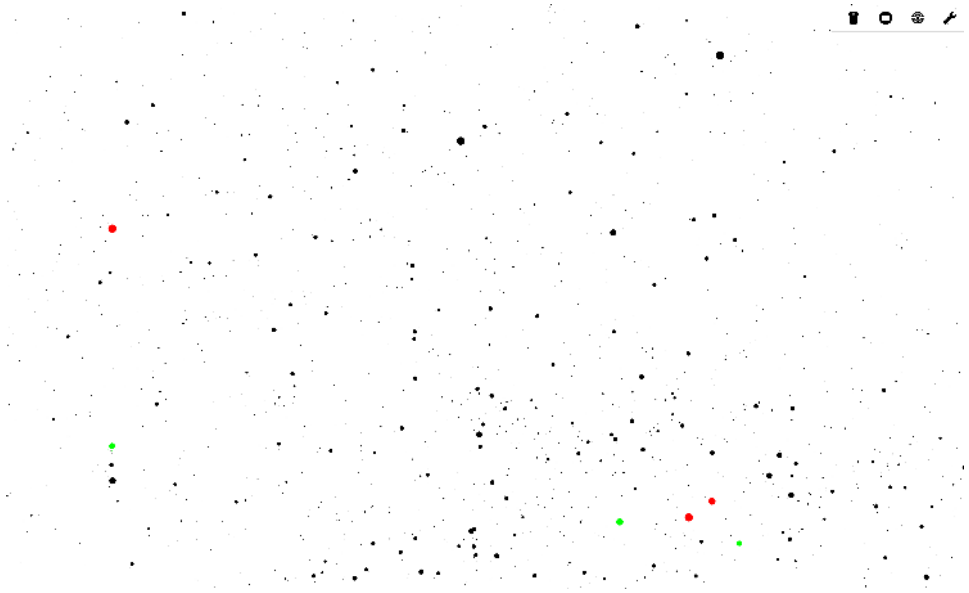
I. M81 (2.5 pt). UMa (Ursa Major) (1.5 pt)
II. M101 (2.5 pt). UMa (Ursa Major) (1.5 pt)
III. M27 (2.5 pt). Vul Vulpecua (1.5 pt)
IV. M42 (2.5 pt). Ori (Orion) (1.5 pt) ,
V. M73 (2.5pt). Aqr (Aquatius) (1.5 pt)

Sol: O8 (30 pt)

For the each correct answer student gets (5pt)



Corrections into a flawed sheet:



Sol: O9 (5 pt)

Time difference between initial and final figures are 6H 20M.