

# Star Party 2014

## Theoretical Round : Observational Astronomy

### MCQ – Correct Responses

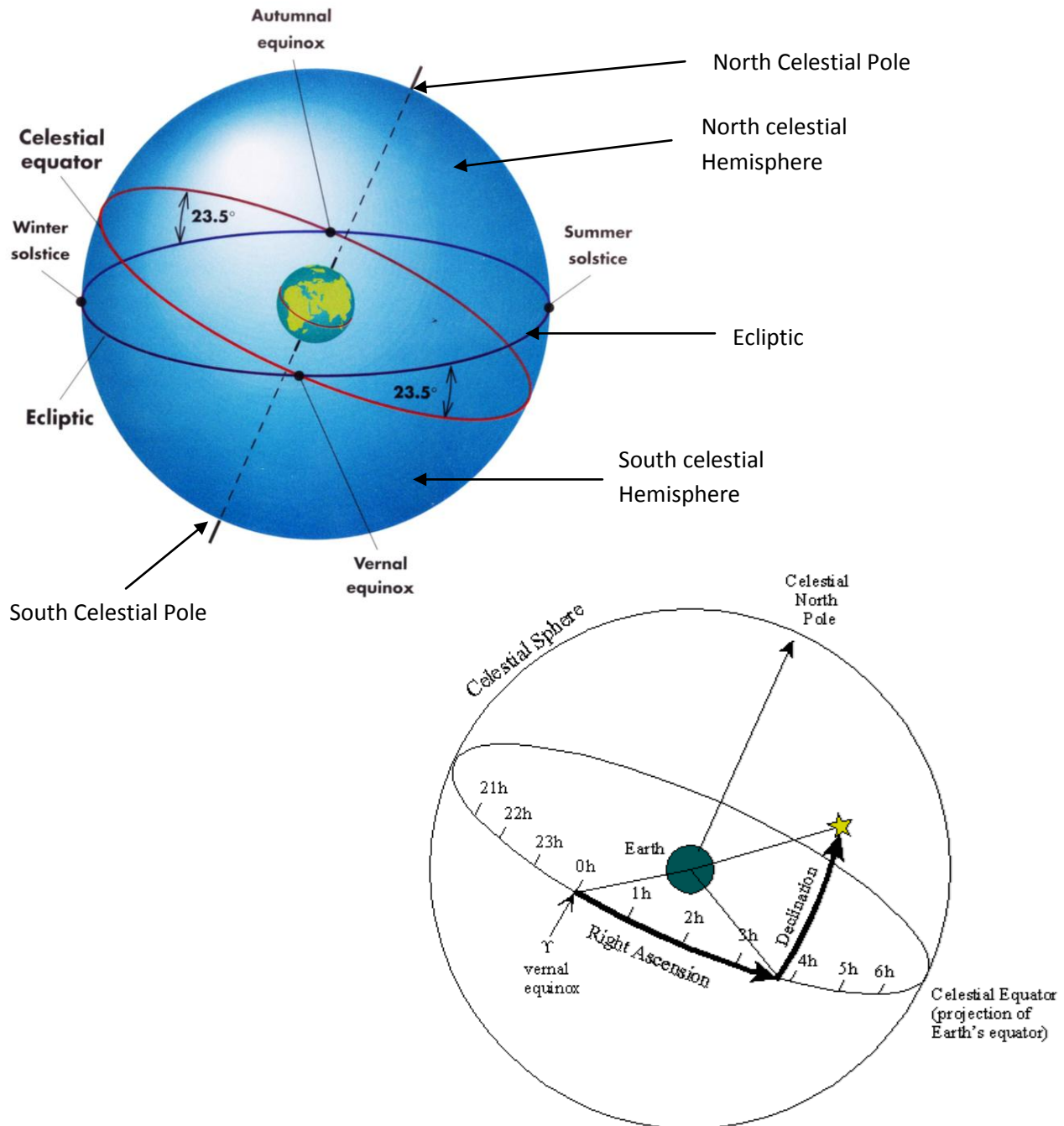
Question Number	Answer
01	1
02	4
03	3
04	3
05	1
06	1
07	4
08	2
09	3
10	3
11	3
12	4
13	3
14	2
15	1
16	2
17	2
18	4
19	1
20	3
21	3
22	2
23	4
24	4
25	2
26	1
27	2
28	2
29	4
30	1

.....  
Signature of Academic Committee  
Official



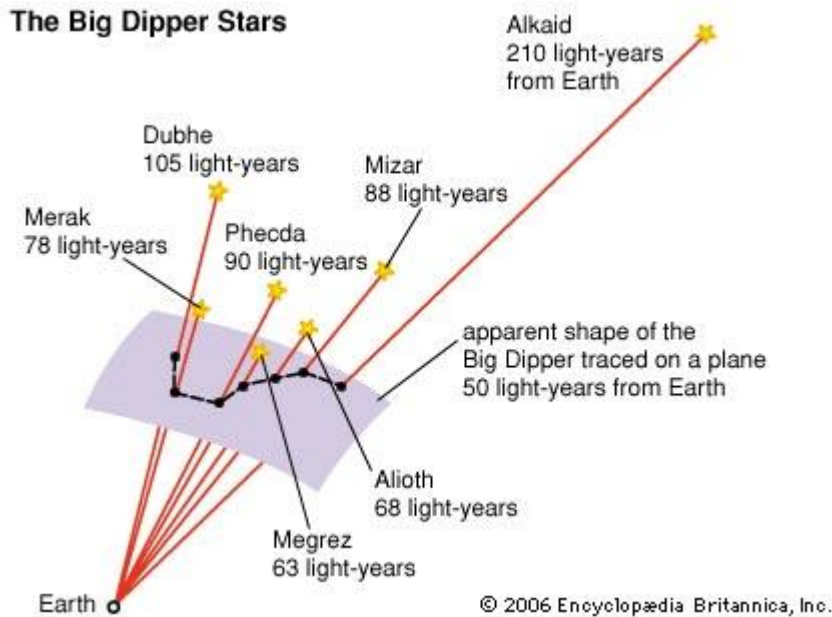
## Part 2

### Question 1 – Celestial sphere



- All the above parts and information on Celestial Sphere should be inserted in one diagram.
- Angle between CE and Ecliptic should be indicated correctly (23.5 degrees)
- **Vernal** and **Autumnal Equinoxes, Summer** and **winter solstices, NCP,SCP, NCH,SCH, RA axis, Declination axis** should be correctly labeled
- For the Correct diagram = 10 marks  
For the correct Labeling = 1 x 10 = 10 marks  
Total marks for Que (1) = (10+10) =20 marks

## Question 2 – Distortion of constellations



Stars that belong to a constellation are not located from the same distance from the earth and all of them are not fixed on the plane of Celestial Sphere. According to the concept of Celestial sphere, we can only imagine that all the stars are projected on imaginary plane on the celestial sphere for building the constellation patterns. But truly they are located from different distances from the earth.

Stars of Big dipper (except “Dubhe” & “Alkaid” are belong to the common moving cluster called “Big dipper cluster”, which is located ~ 70 LY away from Earth. But the stars Dubhe” & “Alkaid are not members of Ursa major cluster and they are located away but along the line of sight. As they are belong to the same cluster, they can move as a single unit along galactic plane.

As we know that the Earth is influenced with the gravity of both Sun and Moon. Therefore its orbital plane is inclined 23.5 degrees to the plane of solar system (Inclination of equator to the orbit is 23.5 degrees). Due to this alignment, Earth’s axis is influenced with Precession. (Precession period ~ 25000 years). Due to the precession the pattern of the constellation can be changed slightly. (As the two stars, Dubhe” & “Alkaid are located away from the Ursa Major cluster so parallax effect due to the precession is caused for the distortion of the stellar pattern. It is only one factor.

Another factor for the distortion of constellation patterns is the orbit of solar system around the Milky way center. Relative distances between the orbital parths of Ursa Major cluster and earth also cause for the incident.

Therefore combination of all incidents are caused for the distortion of constellation

- Or any acceptable answer
- 20 marks

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