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IV Semester M.Sc. Degree Examination, September/October - 2022

PHYSICS

Astrophysics and Cosmology

(CBCS Scheme 2020-21)

Paper : PHY401

Time : 3 Hours

Maximum Marks : 70

Instructions: Answer all questions.

1. a) What are constellations. Explain their significance in night sky observations. (4)
- b) With a neat schematic diagram explain the coordinates of "Equatorial coordinate system" and Mark the coordinates for vernal equinox, summer solstice, autumnal equinox and winter solstice. (11)

(OR)

2. a) Explain different types of Optical telescopes, their mounts and Characteristics with schematic ray diagrams. (11)
- b) List any two relative advantages and disadvantages of refractor and reflector telescopes. (4)

3. What is the basis for the spectral classification of stars? Give an account of spectral and luminosity classification of stars with examples. (15)

(OR)

4. What are binary stars? Give an account of their types and characteristics with examples. (15)
5. Give an account of the historical models proposed by astronomers to explain the morphology of the Milky way galaxy. (15)

(OR)

6. What do you mean by "cosmic background radiation". Explain how it was detected by the COBE satellite. (15)

[P.T.O.]





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62131

(5×5=25)

7. Answer any FIVE of the following:

- a) In a triple star system, the apparent magnitudes of the three stars are 1, 2 and 0. Calculate the total magnitude of the triple star system.
- b) Star with an absolute magnitude of 5 is observed to have an apparent magnitude of 15. Calculate the distance of star in parsecs and kilometers and light year distance units.
- c) What are Cepheid variables. Discuss their period-luminosity relation.
- d) Give an account of the physical characteristics of terrestrial and Jovian planets.
- e) Write a note on Newtonian cosmology.
- f) State and explain Hubble's law. Comment on the age of the Universe.

