



Reg. No:

Date:26-10-19

ST. JOSEPH'S COLLEGE (AUTONOMOUS), BANGALORE-27
M.Sc. Physics-III SEMESTER
SEMESTER EXAMINATION: OCTOBER 2019
PH9518- ASTROPHYSICS SOFTCORE

Time: 90 mins

Total Mark: 35

Answer any **FIVE** questions. Each question carries **SEVEN** marks

[5X7=35]

1. Explain Olbers paradox. What are the assumptions involved in this paradox? What is the solution?
2. Why do stars twinkle? How does it put a limit on the observational capabilities of terrestrial telescopes? What observational techniques are adopted to overcome this limit in optical observations? Explain.
3. Differentiate between Luminosity, flux and magnitude of a star. Explain Pogson's magnitude scale. What are the parameters that could affect the apparent magnitude of a star?
4.
 - a. Why do we use telescopes to carry out observations in astronomy?
 - b. A 25mm Plossl eyepiece of apparent field of view of 50 degrees is used in conjunction with a telescope of 1000 mm focal length. What is the magnification produced by this combination? If the aperture is 100mm, what will be the F/D ratio of the telescope? What will be the field of view of the telescope? What will be its angular resolution when the observation is carried out at 5000 angstrom wavelength?
5. Obtain an expression for the Kelvin-Helmholtz time scale. Estimate the Kelvin-Helmholtz time scale for the sun. Does this time scale agree with the age of moon rocks? How did astronomers sort out this problem?
6. Mention at least three different ways in which polarized emission of electromagnetic waves takes place with suitable examples. How will you distinguish between the production mechanisms from the observations carried out?
7. An astronomical object generates periodic signals in X-rays. Explain how you will estimate the size of the object emitting this radiation using the principle of causality.

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