

ST. JOSEPH'S COLLEGE (AUTONOMOUS), BANGALORE-27
M.Sc. - III SEMESTER
MID SEMESTER TEST – AUGUST 2016
PHOE 9416 : ASTROPHYSICS

Time: 1.5 hours

Maximum Marks: 35

This paper contains 1 part and 1 printed page.

PART – A

Answer any 7 questions. Each question carries 5 marks.

1. Light year is a unit used to measure distances in astronomical scale. It is the distance travelled by light in one year. Express light year in units of kilometers. (5)
2. Describe the method of stellar parallax which is used to measure the distances to stars from the earth. (5)
3. a) How is the colour of a star related to its temperature?
 b) Suppose there are two stars with the same temperature one appearing brighter than the other. What could be the possible reason for their difference in brightnesses? (2.5 + 2.5)
4. Explain the terms
 a) Emission lines
 b) Absorption lines
 c) Planetary nebulae (1.5+1.5+2)
5. Draw a typical H-R diagram. In the diagram, show the main sequence, red giants and white dwarfs. (5)
6. Distinguish between emission nebulae and reflection nebulae. (5)
7. Describe the life cycle of a star from the time of formation of a protostar till it settles in the main sequence. (5)
8. Following table gives the u' , g' , r' , i' , z' magnitudes for a set of stars. Calculate the $u'-g'$, $g'-r'$, $r'-i'$ and $i'-z'$ colour indices and report the colour of each star. (5)

Star	u'	g'	r'	i'	z'
1	12.582	11.583	10.996	10.702	10.555
2	16.302	15.201	14.691	14.469	14.377
3	11.247	10.351	10.091	10.012	10.005
4	12.853	11.784	11.527	11.478	11.49
5	14.497	12.268	11.467	11.16	10.994

9. Describe the effect of total mass of a star on its evolution from the main sequence to become a white dwarf or a neutron star. (5)