

(32)

SARDAR PATEL UNIVERSITY
Fifth Semester B.Sc. EXAMINATION

Monday, 25th November-2013

Time: 10:30 am to 1:30 pm

PHYSICS – US05CPHY06**Astronomy and Astrophysics**

N.B: Figures on the right indicate maximum marks.

Total Marks: 70

- Q-1. Answer the following multiple choice questions by choosing correct option [10]**
- 1 Stellar parallax is a measure of star's _____.
 (a) Amplitude (b) Velocity (c) Distance (d) Magnitude
 - 2 The reflecting telescope uses _____ as an objective.
 (a) lens (b) eyepiece (c) primary mirror (d) secondary mirror
 - 3 Mesosphere ranges from _____ to _____ km above sea level.
 (a) 15 to 25 (b) 1 to 8 (c) 50 to 90 (d) 8 to 15
 - 4 Phenomena like Spicules and plages are observed in the _____.
 (a) Photosphere (b) Chromosphere (c) Corona (d) Outer atmosphere of the sun
 - 5 The line originated in photosphere is _____.
 (a) Fraunhofer lines (b) Balmer line of hydrogen (c) H and K line of Ca II
 (d) Einstein lines
 - 6 In an interacting binary system the Roche lobes associated with phenomenon of _____.
 (a) Mass transfer (b) Stellar luminosity
 (c) Stellar magnetic field (d) none of these
 - 7 Which of following binary star identify on the basis of their absorption lines?
 (a) Eclipsing (b) Visual (c) Spectroscopic (d) None of these
 - 8 Solar magnetic field cycle has approximate period of _____ years.
 (a) 5.5 (b) 100 (c) 22 (d) 11
 - 9 The energy difference between the two levels of hyperfine structure of hydrogen atom is _____ eV.
 (a) 5.9×10^{-6} (b) 9.5×10^{-6} (c) 9.5×10^{-9} (d) 5.9×10^{-9}
 - 10 Magnetic field in the galaxy was proposed by Enrico Fermi to explain the confinement of _____.
 (a) cosmic rays (b) alpha rays (c) beta rays (d) gamma rays

Conti...

Q-2. Give short answers to the following questions. (Attempt any Ten) [20]

- 1 What is diffracted image of a star?
- 2 State relative advantages and disadvantages of refractive telescope and reflective telescope.
- 3 What is radiometric magnitude?
- 4 Define following.
(a) Photospheric granulation (b) Spicules (c) Faculae (d) plages
- 5 Notify different layer of the sun with the help of diagram.
- 6 Give difference between Active and eruptive prominences.
- 7 Write note on optical double star and binary star.
- 8 Draw neat sketch of the H-R diagram with proper notation.
- 9 Write note on "Cygni"
- 10 What are cosmic rays?
- 11 List out different parts of galaxy.
- 12 What is differential galactic rotation?

Q-3. (a) Explain difference between slit spectrograph and slit less spectrograph. [06]

(b) Explain photographic photometry. [04]

OR

Q-3 (a) Write a short note on Hubble space telescope. [06]

(b) Discuss the types of reflecting telescope. [04]

Q-4 (a) Write a detailed note on "Solar Wind". [05]

(b) Write a detail note on "The solar magnetic field" [05]

OR

Q-4 (a) Write a detail note on 11 year sunspot cycle. [05]

(b) Write a detail note on "The sun". [05]

Q-5 (a) What is binary star? Discuss mass transfer in close binary system. [05]

(b) Explain luminosity effect on stellar spectra. [05]

OR

Q-5 (a) Derive mass-luminosity relation. [05]

(b) Give detail classification of binary star. [05]

Q-6 Describe the formation of 21cm radio line of neutral hydrogen. [10]
What information about the velocity and density structures of galactic gas has been obtained from 21cm line observation?
What assumptions were made for these observations?

OR

Q-6 What is galaxy? Enlist the main parts of galaxy and write a note [10]
on general structure of galaxy.