

(Pages : 4)

M – 1479

Reg. No. :

Name :

Fifth Semester B.Sc. Degree Examination, December 2021

First Degree Programme under CBCSS

PHYSICS

Open Course

PY 1551.2 – ASTRONOMY AND ASTROPHYSICS

(2018 and 2019 Admission)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Very short answer. Answer **all** questions. (Each carries 1 mark) :

1. Define ecliptic in celestial sphere.
2. What is the brightness ratio between two stars whose apparent magnitude differs by one?
3. Which element is most abundant in sun?
4. Which planets are called terrestrial planets?
5. Who proposed elliptical orbits of planets around the sun?
6. What is Sun's corona?
7. Define luminosity of a star.
8. What is meant by a constellation?

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9. By which process does the sun produce its energy?
10. What is the ultimate speed limit based on the special theory of relativity?

(10 × 1 = 10 Marks)

SECTION – B

Short answer. Answer **any eight** questions. (Each carries **2** marks) :

11. What are the factors that affect the brightness of a star?
12. What is a solar wind?
13. Explain Copernicus theory of Solar system.
14. How does the distance from the Sun of a planet affect its orbital speed?
15. How do you relate colour of a star and its surface temperature?
16. What are sun spots?
17. What conditions are required for a lunar eclipse?
18. What is a white dwarf?
19. Why does Saturn have a ring system?
20. Compare the atmosphere of Venus and Mars to that of earth.
21. What information is needed to plot a star in H-R diagram?
22. Write a short note on size and surface temperature of sun.
23. State and explain Kepler's third law of planetary motion.

24. Write down any four celestial objects with negative apparent magnitude.
25. Write a short note on moons of Mercury, Venus and Mars.
26. What are dwarf planets?

(8 × 2 = 16 Marks)

SECTION – C

Answer **any six** questions. (Each question carries **4** marks) :

27. Explain Ptolemaic model of solar system.
28. What is meant by precession of earth axis and how does it affect celestial coordinate system.
29. State and explain Universal law of Gravity.
30. Write a short note on Sun's internal structure and atmosphere.
31. Explain different regions in Hertzsprung - Russell diagram of stars.
32. Write a note on Milky Way galaxy.
33. Explain solar eclipse with diagram.
34. Explain different spectral types of stars.
35. Classify Galaxies based on their shape.
36. Define a planet as per International Astronomical Union.
37. Explain the terms equinox and solstice.
38. Why do we have seasons on earth?

(6 × 4 = 24 Marks)

SECTION – D

Answer **any two** questions. (Each question carries **15** marks) :

39. Explain celestial coordinate system with declination and right ascension.
40. Explain Nebula hypothesis and the formation of solar system.
41. Explain the evolutionary stages of a sun like star in detail.
42. Explain the contributions of Galileo, Tycho Brahe and Einstein in the field of Astronomy.
43. Explain Satellites, asteroid belt, Kuiper belt, Comets and Meteorites in Solar system.
44. Discuss supernova, neutron stars and black holes.

(2 × 15 = 30 Marks)