

Reg. No. :

Name :

Sixth Semester B.Sc. Degree Examination, March 2020

First Degree Programme under CBCSS

Physics

Elective Course

PY 1661.2 — SPACE SCIENCE

(2013 Admission onwards)

Time : 3 Hours

Max. Marks : 80

PART – A

Answer **all** questions. Each question carries **1** mark.

1. What is parsec?
2. Explain Sa, Sb and Sc classification of spiral galaxies.
3. List out in order, the stages in the life cycle of a one solar mass star.
4. What is Chandrasekhar limit?
5. What is corona?
6. What is a sun spot?
7. Write down the empirical expression for Barometric law.

8. What is meant by the plasma frequency with reference to ionosphere?
9. What is K_p index?
10. What is plasmapause?

(10 × 1 = 10 Marks)

PART – B

Answer **any eight** questions. Each question carries **2** marks.

11. Explain Hubble's law.
12. What are superclusters?
13. Write a note on pulsars.
14. Write and explain the Schwarzschild radius.
15. What is photon diffusion time?
16. Write a note on the atmospheric layers of sun.
17. What is a solar flare?
18. How are earth's atmosphere classified?
19. What is meant by scale height of atmosphere? Write down its empirical form and discuss its variation.
20. What is the effect of ionization layer on the scale height?
21. What is plasmasphere?
22. Explain what is meant by 'ring current' with reference to the Van Allen model of radiation belt.

(8 × 2 = 16 Marks)

PART – C

Answer **any six** questions. Each question carries **4** marks.

23. Write a note on quasars.
24. Write a note on neutron stars.
25. Starting from the basic definition of photon diffusion time (τ), derive its relationship with the core temperature (T_c) and temperature $T(r)$.
26. Derive the expression for the gravitational potential energy of a star assuming constant density model.
27. Write a note on disturbed solar winds.
28. Explain the temperature profile of Mesosphere and Thermosphere.
29. Draw and explain the profile of ionization in ionosphere.
30. Write a note on the variation of earth's magnetic field.
31. Explain the Dungey's model of open magnetosphere.

(6 × 4 = 24 Marks)

PART – D

Answer **any two** questions. Each question carries **15** marks.

32. (a) Write a note on galaxy types
(b) Draw and explain the H-R diagram.
33. Show that the life time of a star is inversely proportional to the square of its mass.
34. (a) Explain the origin of solar wind
(b) Draw and explain the variation of temperature with altitude above earth.
35. Explain the structure of earth's magnetosphere.

(2 × 15 = 30 Marks)