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Reg. No. : .....

Name : .....

Sixth Semester B.Sc. Degree Examination, April 2023

First Degree Programme Under CBCSS

Physics

Elective Course

PY 1661.2 : SPACE SCIENCE

(2018 Admission onwards)

Time : 3 Hours Max. Marks : 80

SECTION – A

Answer **all** questions. **Each** carry **1** mark.

1. What is Cosmology?
2. The estimated mass of galaxy is _____.
3. Expand Quasars.
4. 1.4 M_0 is known as _____.
5. The dance like motion of photons is called _____.
6. Which particles composes solar cosmic rays?
7. What is the average air pressure at the surface of Earth?
8. What is the strength of Earth's magnetic field?
9. What causes of magnetosphere?
10. Explain Geocorona.

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B

Answer **any eight** questions of **2** marks each.

11. How will you express mass, length and time in Cosmology?
12. Differentiate Population I and Population II stars.
13. What are spiral galaxies? Give an example.
14. Define Holmberg radius.
15. What is the importance of Hubble's law?
16. What are neutron stars?
17. Explain solar Wind.
18. Explain coronal holes.
19. What do you mean by exosphere?
20. Differentiate galactic and solar cosmic rays.
21. What is meant by Sun strom?
22. With neat figure, illustrate the magnetic field lines of Earth.

(8 × 2 = 16 Marks)

SECTION – C

Answer **any six** questions, not exceeding a paragraph. **Each** question carries **4** marks.

23. Using HR diagram, discuss different group of stars.
24. Briefly discuss the structure of Magnetosphere.
25. An absorption feature of calcium usually has a wavelength of 3934 Å. But it is observed in a galaxy to have a wavelength of 4002 Å. What is the redshift?
26. What are black holes? Explain the basis Physics of Black holes.

27. Briefly discuss the origin of solar wind.

28. Find the photon diffusion time of Sun (in years), if the total luminosity of sun is 3.9×10^{26} watt and total radiant energy is 1.4×10^{39}J, and $T_c = 15 \times 10^6$K.

29. Discuss linear star model. What is the relationship between core temperature and varying temperature?

30. Derive the equation for gravitational potential energy of a star.

31. A Galaxy NGC123 has velocity away from us of 1,320km/s and Hubble constant 70km/s/Mpc. How far away is the galaxy according to Hubble's law? What happens to velocity, if distance is doubled?

(6 × 4 = 24 Marks)

SECTION – D

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

32. What are Galaxy? What are its types? Explain types of Galaxy using Hubble's 'tuning fork' – type classification.

33. (a) What are sunspots? What are its Properties?

    (b) Explain the features of solar activity.

34. (a) How will you classify the Earth's atmosphere based on temperature?

    (b) Discuss the temperature distribution in troposphere.

35. What is the relation between solar wind and magnetic field? Discuss the Chapman–Ferraro closed magnetosphere.

(2 × 15 = 30 Marks)
