OCTOBER 2011

INTRODUCTION TO THE COSMOS

Time : Three hours Maximum : 100 marks

PART A — (8 × 5 = 40 marks)

Answer any EIGHT questions.

1. Write any three trigonometric functions and draw their graphs.

2. If sin(A) = 4/5 and sin(B) = 5/13, Find sin(A – B).

3. State Newton's law of Gravitation. How the gravity in the Earth varies with respect to altitude?

4. Write notes on satellites and their type.

5. Give an account of the early models of the universe.

6. What are sideral time and standard time?

7. Write notes on the Indian calendars.

8. List the different units of distance in astronomy and explain.

9. State and explain the Kepler's laws of planetary motion.

10. Explain the Doppler effect.

PART B — (4 × 15 = 60 marks)

Answer any FOUR questions.

11. State and prove the Pythagorean theorem.

12. Explain the lenses, orientation of images and telescopes in detail with suitable diagrams.

13. Explain the concepts and advantages of the following in detail : Radio Astronomy and X – ray astronomy.

14. Describe the

(a) terrestrial latitudes and longitudes and

(b) celestial coordinates with diagrams.

15. Write notes on the following coordinate systems : horizontal system, equatorial system, meridian system and ecliptic system.

16. Explain the atomic structure and spectra. Also write notes on Kirchoff's laws.

17. Describe the different types of Lunar and Solar eclipses with suitable diagrams.

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SOLAR SYSTEM STUDIES

Time : Three hours Maximum : 100 marks

PART A — (8 × 5 = 40 marks)

Answer any EIGHT questions.

1. Distinguish between terrestrial planets and jovian planets.
2. What are solar neutrinos? Give its importance.
3. Explain the solar eruptions.
4. Draw different atmospheres of the Earth and explain.
5. Give an account of the first planet of our solar system.
6. What are Phobos and Deimos?
7. Explain why the planet Pluto is not considered as a planet?
8. List down some artificial and natural satellites and explain.
9. Write notes on Kuiper belt.
10. Give an account of Oort cloud.

PART B — (4 × 15 = 60 marks)

Answer any FOUR questions.

11. Explain the production of energy inside the Sun and the transmission of it in detail.
12. Draw the structure of the Sun and different layers. Describe the properties of each layer.
13. Describe the origin of Moon. Also explain the surface of the Moon.
14. Compare the properties of the planets Mars and Venus in detail.
15. Write an essay on the planet Jupiter and its satellites.
16. Describe the properties of Saturn and its ring system with suitable diagram.
17. Explain the origin of comets, structure and physical properties of them.