

INTRODUCTION TO THE COSMOS

Time : Three hours

Maximum : 100 marks

PART A — (8 × 5 = 40 marks)

Answer any EIGHT questions.

1. Derive the formula for length of a circular arc.
2. Write notes on conic sections.
3. State and explain the Newton's laws of motion and Gravitation.
4. Write a note on natural and artificial satellites? Give examples.
5. Draw the latitudes and longitudes on Earth and explain.
6. What are celestial coordinates?
7. Write notes on constellations.

8. Explain the Parallax method of determining the distances.
9. State and explain the Kepler's laws of planetary motion.
10. What are occultations? Give an example for it.
14. Describe the celestial sphere, diurnal motion and transits of celestial objects.
15. Write notes on the following coordinate systems : horizontal system, equatorial system, meridian system and ecliptic system.

PART B — (4 × 15 = 60 marks)

Answer any FOUR questions.

11. (a) Show that each trigonometric function of an angle is equal to the corresponding co-function of its complement.
(b) Find the value of $\sin(75^\circ)$.
 12. Explain :
(a) Electromagnetic spectrum and
(b) Radio Astronomy with proper diagrams.
 13. Explain the following in detail : Infrared astronomy, UV astronomy and X-ray astronomy.
 16. Explain the: (a) different units of distances in astronomy, (b) Kirchoff's laws in spectroscopy.
 17. Describe the Lunar and Solar eclipses with suitable diagrams. Also mention the different types of solar eclipses.
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SOLAR SYSTEM STUDIES

Time : Three hours

Maximum : 100 marks

PART A — (8 × 5 = 40 marks)

Answer any EIGHT questions.

1. What are terrestrial planets and jovian planets?
2. Write notes on solar neutrinos.
3. Explain the solar cycle.
4. Write notes on the tides.
5. Give an account of Phobos and Deimos.
6. Explain about the atmosphere of Jupiter.
7. Which planet is not considered as a planet? Why?
8. Distinguish between artificial and natural satellites. Give examples.
9. Write a note on Oort cloud.
10. Compare the asteroids and meteoroids.

PART B — (4 × 15 = 60 marks)

Answer any FOUR questions.

11. Explain the formation of the Sun and the Planets in detail.
12. Draw the structure of the Sun and different layers. Describe the properties of each layer.
13. Explain the origin of moon and its topography.
14. Explain the internal structure and atmospheres of the Earth.
15. Describe the properties of the planets Mercury and Venus and compare them.
16. Write an essay on the planet Saturn.
17. Explain the internal structure and atmosphere of Uranus and Neptune.

