

INTRODUCTION TO COSMOS

(For those who joined in July 2009)

Time : Three hours

Maximum : 100 marks

PART A — (8 × 5 = 40 marks)

Answer any EIGHT questions.

1. How do you find the length of a circular arc and the area of a circular sector?
2. Show that each trigonometric function is equal to the corresponding co-function of its complement.
3. State and explain Newton's laws of motion.
4. Write down the Kepler's laws of planetary motions and explain.
5. Write a note on Bohr atom model.
6. What are latitudes and longitudes? Give their values for madurai.
7. Give an account of constellations.

Dip in Astronomy & Astrophysics

Page 2

8. Explain the different units of distances in astronomy.
9. How the distance to stars can be measured?
10. What do you mean by sidereal time and universal time? How the local time is measured?

PART B — (4 × 15 = 60 marks)

Answer any FOUR questions.

11. (a) If $\sin A = \frac{4}{5}$ and $\sin B = \frac{5}{13}$, Find $\sin(A - B)$
(b) Prove the Pythagorean theorem.
12. Explain in detail the following along with the importance.
 - (a) X-ray astronomy
 - (b) Radio astronomy
 - (c) UV astronomy.
13. (a) Explain the natural and artificial satellites in orbits.
(b) Give an account of isotopes with examples.
14. Describe the celestial sphere, diurnal motion and transits of celestial objects.

15. Write in detail about the different celestial coordinate systems.
 16. Explain the atomic structure, spectra and spectral lines.
 17. Describe the occurrence of solar and lunar eclipses with diagram.
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SOLAR SYSTEM STUDIES

(For those who joined in July 2009)

Time : Three hours

Maximum : 100 marks

PART A — (8 × 5 = 40 marks)

Answer any EIGHT questions.

1. How do planets differ from stars?
2. Draw a neat sketch of the solar system and mark all the planets.
3. What do you mean by solar neutrinos? Mention their significance.
4. Write a note on the topography of Moon.
5. What are Phobos and Deimos?
6. Briefly write on the orbital parameters and origin of moon.
7. Give an account of natural and artificial satellites.
8. Discuss about the planets Uranus and Neptune.

9. (a) Why Pluto is not considered as a planet?
(b) Write a note on Oort cloud.
10. Distinguish between asteroids and meteoroids.

PART B — (4 × 15 = 60 marks)

Answer any FOUR questions.

11. Explain in detail about the inner and outer layers of the sun with diagram.
12. Explain how sunspots are formed. Also explain how they account for solar activities and solar cycle.
13. Describe the internal structure and atmospheres of the Earth.
14. Compare the different properties of the planets Mercury, Venus and Mars.
15. Explain in detail about the planet Jupiter. Why life is not possible in the other planets?
16. Write an essay on the planet Saturn.
17. Explain the origin, structure and properties of comets.

