ASTROPHYSICS

Time : Three Hours   Maximum : 75 Marks

SECTION-A (20 Marks)
Answer ALL questions
ALL questions carry EQUAL marks   (10x2 = 20)

1   Define absolute luminosity.
2   What is meant by ecliptic system?
3   What are comets?
4   Define solar constant.
5   Write short note on free transitions.
6   Give the equation of hydrostatic equilibrium.
7   What is meant by nuclear time scale?
8   State Virial theorem.
9   Write a carbon - nitrogen cycle.
10   What is meant by neutron capture process?

SECTION - B (25 Marks)
Answer ALL Questions
ALL Questions Cany EQUAL Marks (5 x 5 = 25)

11 a   Write note on cluster and secular parallax method of determining stellar distances.
                              OR
    b   Explain briefly the local equatorial system.

12 a   Deduce the big-bang theory of the universe.
                              OR
    b   Explain the atmosphere of the planets.

13 a   What are free-free transitions? Explain.
                              OR
    b   . State and explain Russell - Vogt theorem.

14 a   Explain about ages of star clusters.
                              OR
    b   Deduce Schoenberg - Chandrasekhar limit of an isothermal core.

15 a   Explain about first generation stars.
                              OR
    b   Explain P-P chain.

SECTION - C (30 Marks)
Answer any THREE Questions
ALL Questions Carry EQUAL Marks (3 x 1 0 = 30)

16   Explain the various magnitude systems used by astronomers.

17   Describe with a neat diagram, the construction and working of radio telescope.

18   Explain Eddington's standard model and obtain Eddington's mass-luminosity.

19   Write an essay about star formation. Obtain Jean's criterion for self - gravitation of an isothermal gas cloud.

20   Derive an expression for rate of nuclear reactions.