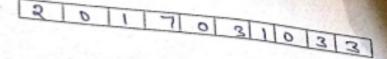
BAS 06

Roll. No.



B. Tech. I ODD SEMESTER MAJOR EXAMINATION-2017-2018 Space Science

Time: 03Hrs.

Max. Marks: 50

Note: Attempt all questions. Each question carries equal marks.

Q.1 Attempt any four parts of the following:

 (4×2.5)

- (a) Draw neat and clean sketches of reflecting type of telescopes. Discuss its advantages over
- (b) Describe the construction and function of Charge Coupled Device (CCD). Highlight its importance in imaging of distant celestial objects.
- (c) Write nuclear reactions inside Sun. How were the solar neutrinos detected?
- (d) Explain the construction and function of X-rays telescopes. Why are the X-rays collected at small glancing angles?
- (e) If the kinetic energy of an asteroid falling towards Earth exceeds its gravitational energy, show that its orbit will be necessarily unbounded.
- (f) The force acting on a planet is given by the following equation-

$$f = -\frac{l^2 u^2}{m} \left(\frac{d^2 u}{d\theta^2} + u \right)$$

Here, the terms have their usual meanings. If $r = \frac{p}{(1+\epsilon\cos\theta)}$; then show that the force obeys the inverse square law. (and p are constants)

Q.2 Attempt any two parts of the following:

 (2×5)

- (a) Draw neat and clean sketch of our galaxy Milkyway and explain its morphology. Show the position of our solar system in it.
- (b) Draw Hubble's tuning fork diagram and explain morphological evolution of galaxies.

(c) Why do "Pulsars" emit radiation? Explain with the help of neat and clean diagram. Q.3 Attempt any two parts of the following: (a) Classify dwarf stars on the basis of Chandrasekhar limit and explain their equilibrium. (2×5) (b) Draw neat and clean Hurtzsprung-Russel (HR) diagram and explain the life cycle of star with mass 1.8 M_O in it. (c) Account reasons for the existence of black hole. Q.4 Attempt any two parts of the following: (a) Write notes on dark matter and dark energy? Give evidence in favor of their existence. (2×5) (b) Define the terms "Big-Bang" and "Big-Crunch" and describe the related evolution of the Universe. (c) Starting from the Friedmann's equation, obtain the condition for flat model of the Universe and explain it. Q.5 Attempt any two parts of the following: (2×5) (a) Describe Hubble's law of expanding Universe. How does it indicate for Big-Bang in remote past of the Universe? (b) Explain different stages of evolution of the Universe with the help of neat and clean diagram. (c) Comment on term "Cosmic Shower".