E 7522 (Pages : 3) Reg. No.....

Name.....

B.Sc. DEGREE (C.B.C.S.S.) EXAMINATION, MARCH 2014

Sixth Semester

Choice based Core Course—ASTRONOMY AND ASTROPHYSICS

(For B.Sc. Physics Model – I and B.Sc. Physics Model – II)

Time : Three Hours Maximum Weight : 25

Section A

This section contains 4 bunches of four questions.
Answer **all** *questions.*
Each bunch carries a weight of 1.

BUNCH I

Choose the correct answer :

1. In the case of star with core mass 1.4 Mo (Solar Mass), its final stage is called :
   (a) Neutron star. (b) white dwarf.
   (c) black hole. (d) red giant.
2. Meteors are also called :
   (a) variable stars. (b) binary stars.
   (c) shooting stars. (d) none of the above.
3. Present age of the Universe is estimated to be equal to :
   (a) 35 million years. (b) 120 billion years.
   (c) 14 billion years. (d) Not estimated.
4. The invisible dark matter in the universe spread to an extent of :
   (a) 10 – 20%. (b) 20 – 40%.
   (c) 60 – 70%. (d) 80 – 90%.

BUNCH II

Fill in the blanks :

5. The nearest star from the earth is ————.
6. Light from the sun takes ———— minutes to reach earth.
7. Corona is the extensive halo seen around the sun at the time of ————.
8. ———— is the founder of "Big Bang theory" describing the origin of universe.

Turn over

BUNCH III

Match the following :—

9. White dwarfs — red shift.
10. Quasars — event horizon.
11. Pulsars — degeneracy pressure.
12. Black holes — neutron star.

BUNCH IV

State True *or* False :

13. The solar day is longer than the sidereal day.
14. Sun spots are maintained by strong magnetic fields.
15. Conduction plays an important role in energy transport in white dwarfs.
16. Cepheids are visible with naked eye.

$(4 \times 1 = 4)$

Section B

Answer any **five** *questions.*
Each question carries a weight of 1.

17. Define Hubble distance.
18. What do you mean by Singularity ?
19. Briefly explain Chandrasekhar limit.
20. What are Asteroids ?
21. Define Luminosity of a star.
22. What are Solar flares ?
23. Write down the nuclear chain reactions involved in CNO cycle.
24. Explain Microwave background radiation.

$(5 \times 1 = 5)$

Section C

Answer any **four** *questions.*
Each question carries a weight of 2.

25. What is Schwarzschild radius of a black hole ? Determine the Schwarzschild radius of black hole with 5 solar mass.
26. What do you mean by geocentric and heliocentric theory of the revolution ?

27. Distinguish between apparent and absolute magnitude of a star. The apparent magnitudes of Alpha centauri and Betelgeuse are – 0.10 and + 0.80 respectively. Compare the brightness of these stars.

28. What is H-R diagram? Explain its main features.

29. Calculate the surface temperature of the sun from the following data. Radius of the sun = 6.96×10^8 m, mean distance of the sun and the earth = 1.497×10^{11} m, solar constant = 1400 $Jm^{-2}\ s^{-1}$, Stefan's constant = $5.7 \times 10^{-8}\ Wm^{-2}\ K^{-4}$.

30. Briefly explain Supernova explosion.

$(4 \times 2 = 8)$

Section D

Answer any **two** *questions.*
Each question carries a weight of 4.

31. What are Galaxies ? Explain the origin and evolution of Galaxies. How are they classified ?

32. Tabulate the sequence of incidents, features and properties of the universe, since its origin from the age of zero second, based on Big Bang theory.

33. Explain the Celestial sphere. Describe the motions of earth and stars in the celestial sphere.

$(2 \times 4 = 8)$