MAHATHMA GANDHI UNIVERSITY
B.Sc. DEGREE (CBCSS) MODEL EXAMINATION
Time: **PH6B05.4U – ASTRONOMY AND ASTROPHYSICS- (for Physics)**   Max.:
3 Hours   80 Marks

Part A (Objective type): *Answer all questions.(1 mark each)*
1. The sun spots are generally ---------------in shape.
2. The brightest stars appearing to form groups are called --------------
3. Meteors are called -----------------------------
4. Present age of the Universe is estimated to be equal to -----------------------------
5. The invisible dark matter in the universe spread to an extent of -----------------------------
6. The nearest star from the earth is ------------------------
7. Light from the sun takes ---------------minutes to reach earth.
8. Corona is the extensive halo seen around the sun at the time of-----------------------
9. ------------------------is the founder of "Big Bang theory" describing the origin of universe.
10. The solid dust in the dust cloud, because of their gravitational instabilities forms into -----   (10x1=10)
------------ of diameter 1 to 5kms.

Part B (Short Answer Questions): *Answer any eight questions (2 Marks Each)*
11. Define Hubble distance.
12. What do you mean by Singularity?
13. Explain Chandrasekhar limit.
14. What are Asteriods?
15. Define Luminosity of star.
16. What are Solar flares?
17. Write down the nuclear chain reactions involved in CNO cycle.
18. Explain Microwave background radiation.
19. Briefly explain supernovae.
20. Explain secular parallax.
21. What are constellations?
22. State the aspect of sky at the equator.   (8x2=16)

Part C (Short Essays/Problems): *Answer any six questions(4 Marks Each)*
23. What is Schwarzschild radius of black hole? Determine the Schwarzschild radius of with 5 solar mass.
24. What do you mean by geocentric and heliocentric theory of the revolution?
25. Distinguish between apparent and absolute magnitude of star. The apparent magnitudes of Alpha centauri and Betelgeuse are -0.10 and +0.80 respectively. Compare the brightness of these stars.
26. What is H-R diagram? Explain its main features.
27. Calculate the surface temperature of the sun from the following data. Radius of the sun=6.96×10^8m, Mean distance of the sun and the earth=1.497×10^{11}m, solar constant=1400 $Jm^{-2}s^{-1}$, Stefan's constant=5.7×10^{-8} $Wm^{-2}K^{-4}$
28. The mass of sun is 2×10^{30} kg and its radius is 7×10^8m. Calculate the approximate gravitational red shift to light of wavelength 540 nm emitted by sun.
29. Determine the energy emitted per second from the surface of a star with temperature 8500 K and radius 10^5.
30. A certain observatory on the earth receives 600 nm light from a white dwarf whose radius is 6.4×10^6 m and mass is that of sun. Calculate the actual wavelength emitted.
31. The radius of a white dwarf is 10^5 km and solar mass is 2×10^{30} kg. Calculate the density   (6x4=24) of the star.

Part D (Essays): *Answer any two questions(15 Marks Each)*
32. What are Galaxies? Explain the origin and evolution of Galaxies. How are they classified?
33. 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.
34. Explain the Celestial sphere. Describe the motions of earth and stars in the celestial sphere.
35. Give an account on the internal structure and atmosphere of sun.   (2x15=30)