

2103000206030067
EXAMINATION FEBRUARY-MARCH 2024
BACHELOR OF SCIENCE (SIXTH SEMESTER)
ASTROPHYSICS – II-LEVEL 3

[Time: As Per Schedule]

[Max. Marks: 50]

Instructions:

1. Fill up strictly the following details on your answer book

- a. Name of the Examination : **BACHELOR OF SCIENCE (SIXTH SEMESTER)**
 - b. Name of the Subject : **ASTROPHYSICS – II LEVEL 3**
 - c. Subject Code No : **2103000206030067**
2. Sketch neat and labelled diagram wherever necessary.
 3. Figures to the right indicate full marks of the question.
 4. All questions are compulsory.
 5. Symbols used in the paper have their usual meaning.
 6. Scientific calculator may be used.

Seat No:

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Student's Signature

Q.1 Answer the following questions in brief:

10

1. What is the degenerate electron gas?
2. Define Kelvin contraction time.
3. State the factors affecting the main sequence lifetime of a stars?
4. When the stars are called White Dwarfs?
5. State the Chandrasekhar limit for supernova explosion
6. What are Pulsars?
7. What happened to the object approaches the Schwarzschild radius in Black Hole?
8. What is Cosmology?
9. State Hubble's law.
10. State Copernican principal.

- Q.2 (A) Answer any one the following questions in detail. 6**
- (1) Derive the equation of state for stellar interior.
 - (2) Discuss the process of energy generation in stars in detail.
- (B) Answer any one the following questions in brief. 4**
- (1) Draw the evolutionary track of white dwarfs on H-R diagram for different masses. Discuss the change in bolometric magnitude with the temperature for white dwarfs.
 - (2) Discuss the Solar Neutrino puzzle in brief.
- Q.3 (A) Answer any one the following questions in detail. 6**
- (1) Write a short note on Black holes.
 - (2) Derive the expression for the rate of change of rotational energy of a neutron star.
- (B) Answer any one the following questions in brief. 4**
- (1) Explain the binary pulsars in brief.
 - (2) Discuss the rotating neutron star model of Pulsars.
- Q.4 (A) Answer any one the following questions in detail. 6**
- (1) Discuss the Redshift of Quasars in detail.
 - (2) Explain the Radio properties of Quasars in detail.
- (B) Answer any one the following questions in brief. 4**
- (1) Write a short note on "Seyfert Galaxies and N Galaxies"
 - (2) Discuss in brief "How Quasars was discovered".

Q.5 (A) Answer any one the following questions in detail. **6**

(1) Write in details about the matter Density of the universe.

(2) Discuss the Cosmic Microwave Background Radiation in detail.

(B) Answer any one the following questions in brief. **4**

(1) Explain why it's important to build cosmological theories?

(2) Draw the Schematic diagram showing universality of Hubble's law and provide its explanation.
