

**2103000206030067**  
**EXAMINATION SEPTEMBER 2024 (ATKT EXAM)**  
**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) Define Kelvin contraction time.
- 2) How much is the life span of star like Sun?
- 3) What is degeneracy pressure?
- 4) State the factors affecting the main sequence lifetime of a stars?
- 5) From whom and when the first Pulsars was discovered?
- 6) What is the mass range of stable Neutron stars?
- 7) What is the full form of QuaSaRS?
- 8) How Quasars are distinct from normal stars?
- 9) What is Cosmology?
- 10) What are Sayfert?

**Q.2 (A) Answer any one the following questions in detail.**

**6**

- 1) Discuss on the White Dwarf in detail.
- 2) Derive the equation of state for stellar interior.

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

**4**

- 1) Briefly describe the Solar Neutrino puzzle.
- 2) Draw and explain the evolutionary tracks of pre-main sequence stars of different masses on the H-R diagram.

- Q.3 (A) Answer any one the following questions in detail. 6**
- 1) Write a short note on discovery of Pulsars.
  - 2) What is Schwarzschild radius in Black holes? Why this is also called event horizon? Explain how black holes were formed in detail.
- (B) Answer any one the following questions in brief. 4**
- 1) Discuss rotating Neutron star model of Pulsars in brief.
  - 2) Write a short note on Binary Pulsars.
- Q.4 (A) Answer any one the following questions in detail. 6**
- 1) Explain the Radio properties of Quasars in detail.
  - 2) Discuss the redshift 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 the Active Galactic Nuclei in brief.
- Q.5 (A) Answer any one the following questions in detail. 6**
- 1) Explain the law of Red-shift and the expansion of the universe
  - 2) Discuss the fundamental equation of Cosmology in detail.
- (B) Answer any one the following questions in brief. 4**
- 1) Discuss the CMBR in brief.
  - 2) Draw the schematic diagram model of Open, Flat and Closed Universe with explanation.

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