

RAN-2103000206030067
T.Y.B.Sc. (Semester-VI) Examination March - 2026
Astrophysics-II (New Course) Elective Paper-II
[Total Marks: 50]

સૂચના : / Instructions (1) ઉપરોક્ત દર્શાવેલ વિગતો ઉત્તરવહી પર અવશ્ય લખવી. Fill up strictly the above details on your answer book. (2) Draw neat diagrams wherever necessary. (3) Symbols used in the paper have their usual meaning. (4) Figures to the right indicate full marks of the question. (5) Scientific calculator may be used.	Seat No.: <table border="1" style="width: 100%; height: 20px; border-collapse: collapse;"> <tr> <td style="width: 15%;"></td> <td style="width: 15%;"></td> <td style="width: 15%;"></td> <td style="width: 15%;"></td> <td style="width: 15%;"></td> <td style="width: 15%;"></td> </tr> </table> Student's Signature						

N.B.: Gujarati version of a question and its option to be written first English Version of each question should follow the Gujarati Version of each question.

- Q-1. Answer the following questions in brief :—** **10**
- 1) What are Pulsars?
 - 2) Define lithium stars?
 - 3) How angular size of extraterrestrial sources is measured?
 - 4) What is Cosmology?
 - 5) State Hubble's law.
 - 6) 1 A.U. = Km.
 - 7) State the full form of OVVs.
 - 8) How much amount of energy is radiated by Sun every second?
 - 9) Which fundamental quantities are useful in understanding of the nature of any object?
 - 10) What is Cosmology?
- Q-2. A) Answer any one the following questions in detail.** **06**
- 1) Discuss the mechanical and thermal equilibrium in stars.
 - 2) Derive the equation of state for stellar interior.
- Q-2. B) Answer any one the following questions in brief.** **04**
- 1) Describe the Solar Neutrino puzzle in brief.
 - 2) 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.
- Q-3. A) Answer any one the following questions in detail.** **06**
- 1) What is Schwarzschild radius in Black holes? Why this is also called event horizon? Explain how black holes were formed in detail.

- 2) On what observational bases some objects are believed to possess a black hole?
Explain the theory of formation of black holes in detail.

B) Answer any one the following questions in brief. 04

- 1) Write a short note on Binary Pulsars and give the astrophysical importance of it.
2) Explain the discovery of Pulsar in brief.

Q-4. A) Answer any one the following questions in detail. 06

- 1) Describe the Radio properties of Quasars in detail.
2) Discuss the Redshift of Quasars in detail.

Q-4. B) Answer any one the following questions in brief. 04

- 1) Discuss in brief "How Quasars was discovered".
2) Describe the Nuclei of some Radio Galaxies.

Q-5. A) Answer any one the following questions in detail. 06

- 1) Give a brief note on the fundamental equation of Cosmology.
2) Write a short note on Cosmic Microwave Background Radiation

Q-5. B) Answer any one the following questions in brief. 04

- 1) Discuss why it's important to build cosmological theories?
2) Draw the Schematic diagram showing universality of Hubble's law and provide its explanation.
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