

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034



M.Sc. DEGREE EXAMINATION – PHYSICS

SECOND SEMESTER – APRIL 2022

PPH 2601 – ASTROPHYSICS

Date: 24-06-2022

Dept. No.

Max. : 100 Marks

Time: 09:00 AM - 12:00 NOON

PART – A

Q. No. Answer **ALL** the Questions **(10 x 2 = 20 Marks)**

- 1 What is called as right ascension in universal equatorial system?
- 2 Explain the features of Altazimuth system.
- 3 What is Pogson scale of magnitude?
- 4 Show with a diagram the coordinates of the galactic system on the celestial sphere.
- 5 Obtain energy content of a wave of wavelength 10 \AA .
- 6 Draw and explain the structure of the star at the time of leaving the main sequence
- 7 State Wein's displacement law
- 8 Give the values for solar mass and solar luminosity.
- 9 What is the chemical composition of stars?
- 10 Which coordinates are used to make permanent star charts?

PART – B

Answer any **FOUR** Questions **(4 x 7.5 = 30 Marks)**

- 11 Describe the local equatorial system of coordinates for a star.
- 12 Write a short note on the HR diagram.
- 13 Explain the distance of star is measured using trigonometric parallax?
- 14 State and explain Russell Vogt theorem.
- 15 Explain in detail, about first generation and second generation stars.
- 16 Explain how neutron capture influences stellar evolution.

PART – C

Answer any **FOUR** Questions **(4 x 12.5 = 50 Marks)**

- 17 Discuss both the spectral classification and luminosity classification of stars.
- 18 Derive the mass luminosity relation from Eddington's standard model.
- 19 How are stars formed? Arrive at the Jean's criteria for star formation.
- 20 Derive the virial theorem and apply it to an isothermal gas core.
- 21 Obtain an expression for the rate of thermonuclear reaction using Maxwell's law of distribution of velocities.
- 22 Describe the Local and Universal equatorial system of coordinates of a star.

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