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NEPWT—228—2024

FACULTY OF SCIENCE

M.Sc. (Second Year) (Third Semester) EXAMINATION

NOVEMBER/DECEMBER, 2024

PHYSICS

Paper–SPHYE-501

(Astrophysics–I)

(Tuesday, 17-12-2024) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—60

N.B. :— (*i*) *All* questions carry equal marks.

(*ii*) Question No. **1** is compulsory.

(*iii*) Solve any *three* of the remaining five questions (Question Nos. **2** to **6**).

(*iv*) Figures to the right indicate full marks.

1. Solve the following questions (each question carries **5** marks) : 15

(*a*) Explain photographic plate and photometer.

(*b*) Explain Synchrotron emission for single electron.

(*c*) Write a short note on *r* and *s* processes.

P.T.O.

2. (*a*) Explain celestial and equatorial co-ordinate system. 8

(*b*) Explain multi-wavelength astronomy in ASTROSAT telescope. 7

3. (*a*) Define luminosity. Obtain Stefan's law. 8

(*b*) Discuss emission and absorption coefficient in radiative mechanism. 7

4. (*a*) Explain population-I and population-II stars. 8

(*b*) Explain solar interior and energy transport mechanism in it. 7

5. (*a*) What are black holes ? Discuss their properties. Obtain Schwarzschild relation for it. 8

(*b*) Explain neutron star and pulsar. 7

6. Write short notes on (each question carries **5** marks) : 15

(*a*) Stellar Parallax method

(*b*) Magnetic activity in the Sun

(*c*) P-P chain reaction.