KATWA COLLEGE

DEPARTMENT OF PHYSICS

INTERNAL ASSESSMENT EXAMINATION -2023

B.Sc. (H), SEMESTER: - VI,

PAPER:- DSE - 4 (Astronomy & Astrophysics)

F.M: 10 **TIME: 1 HOUR**

❖ **Answer any four from the following questions: -** **4 x 2.5 = 10**

1. (a) What is Astronomical unit and Parsec? How are they related?
   (b) What is distance modulus? Find out the distance of the star if its distance modulus is -0.5.

2. (a) What are the astronomical coordinates of the local equatorial astronomical coordinate system? Determine the right ascension and declination of vernal equinox point.
   (b) Prove that the altitude of the north pole is equal to the latitude of the observer.

3. (a) What is circumpolar star? Under what condition a star to be circumpolar for an observer at latitude φ in the northern hemisphere.
   (b) What is observer's meridian? Show that a star attains its maximum altitude when it is on the observer's meridian.

4. (a) What is eclipsing binary stars? How would one can estimate the mass of the star under a binary star system using Kepler's law?
   (b) What is luminosity of a star? Write down the relation between the luminosity of a star with its radius and temperature.

5. (a) What is sidereal time? What is the difference between a solar day and a sidereal day?
   (b) What is equation of time? Show that local sidereal time (LST) is equal to the hour angle of the vernal equinox.

6. (a) What do you mean by light gathering power of a telescope? On which factor it depend?
   (b) What is the difference between the refracting and reflecting telescope? Why refracting telescope is not so used today in modern observatory?