(b) What are Exoplanets? How have they been discovered. Explain one method used for its discovery with the basic idea involved therein. (6)

6. (a) What is Dark matter? What is the strong evidence which points to its existence? Has it been experimentally proven and detected on Earth in some experiment? (6)

(b) What is the Hubble's Law proposed by Hubble in the year 1929. (6)

(c) For a Globular Cluster, the recessional velocity is measured to be v = 1000 km/s. What is its distance from earth? Assume the Hubble Constant: Ho = 60 Km/s/Mpc. (6)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 2850 **G**

Unique Paper Code : 2224001001

Name of the Paper : Introductory Astronomy

Name of the Course : **B.Sc. Hons. NEP GE**

Semester : I

Duration : 3 Hours Maximum Marks : 90

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt any **five** questions.
3. Question **1** is compulsory
4. **All** questions carry equal marks.
5. Use of scientific/regular calculators is permitted.

1. Attempt all of the following **six** short questions : (6×3)

   (a) What are the Apparent and Absolute magnitudes of celestial objects?

   (b) Calculate the Radiant Flux of the sun on earth. Given that the luminosity of the Sun is 3.839×10^{26} Watts and 1 AU = 1.496×10^{11} m.

   (c) The nearest star to Earth: Proxima Centauri (a member of the triple system of Alpha Centauri), has a parallax of 0.768". Find its distance in light years from Earth.

   (d) What powers the stars? Explain briefly with key points.

   (e) Explain what "Cepheids" are and how they are useful. Give an example.

   (f) Explain what is Doppler Red Shift and how is it useful in astronomy.

2. (a) Write short notes on any two wonders of the universe. (8)

   (b) Explain the Horizon system of coordinates with a neat labeled diagram. (10)

3. (a) Explain how the theory of Blackbody is used to calculate stellar surface temperatures. The brightest star Sirius is much hotter than the sun, with a peak wavelength of 290 nm. Calculate its surface temperature. (6)

   (b) State the Saha Ionization Equation and discuss how it is significant for an appropriate stellar classification. (7)

   (c) Why a short note on any of the Space Telescope operating from space? (5)

4. (a) Explain using a proper diagram what is the resolving power of a telescope. Discuss, why is it more important parameter than the magnification. (6)

   (b) What are the two popular designs of telescopes? Explain using diagrams. Which is the preferred configuration and for what specific scientific reasons. (12)

5. (a) Explain the suns internal structure with a diagram. Describe what is the Solar Corona. Why is its temperature higher than that of the Photosphere? (12)

P.T.O.