ST. JOSEPH'S COLLEGE (AUTONOMOUS), BANGALORE-27
M.Sc. Physics-III SEMESTER
SEMESTER EXAMINATION: OCTOBER 2019
PH9518- ASTROPHYSICS SOFTCORE

Time: 90 mins   **Total Mark: 35**

Answer any **FIVE** questions. Each question carries **SEVEN** marks.   [**5X7=35**]

1. Which coordinate system is used by the astronomers generally? With the help of a neat diagram, explain this coordinate system. What are the advantages of this coordinate system over the horizontal coordinate system?

2. What do you understand by the cosmological distance ladder? Explain the methods used to determine the distance to 1) a nearby star 2) a nearby galaxy and 3) a distant quasar.

3. Explain the Pogson's relation for stellar magnitudes. What are apparent and absolute magnitudes? Obtain the distance modulus equation.

4. Explain UBV filter system used in stellar photometry. What is the justification for using B-V as a measure of temperature while plotting H-R diagram?

5. The electronic signal generated in a pixel of a CCD camera obeys Poissonian statistics. How do you know this? Explain. A signal is detected at the 3 sigma level. What do you understand by this? Explain.

6. What method is adopted by radio observatory like VLA to obtain a resolution of 1" at 21 cm wavelength? Explain.

7. Obtain an expression for the Kelvin-Helmholt timescale. What will be this time scale for the Sun whose mass is about 2×10^{30}kg, Radius 6.9×10^{8}m and Luminosity is 3.8×10^{26}W