THE AMERICAN COLLEGE, MADURAI

(An Autonomous Institution Affiliated to Madurai Kamaraj University)
Re-accredited (2nd Cycle) by NAAC with Grade "A", CGPA – 3.46 on a 4-point scale

Backlog Arrear Examination, March 2021

Course Code : PGP 5430 **Time: 3 Hrs**
Course Title : Astrophysics and Cosmology **Max : 75 marks**

Part-A

Answer any Five Questions **5 X 15 = 75**

1. Describe the developments in the modern astronomy owing to the contribution of Galileo, Kepler and Newton with relevant diagrams.

2. Describe the working of UV, IR and X-ray telescopes in detail with neat sketch.

3. With a neat diagram, explain the structure of the Sun in detail. Describe the various solar activities and phenomenon's in detail.

4. With necessary diagrams, explain the various types of galaxies. Also write about our mother galaxy in detail.

5. Explain Hubble's law in detail. Also describe various theories of cosmology with neat diagram.

6. Explain the expansion of universe and also about the future of the universe.

7. i) The continuous spectrum of a star is very nearly that of a blackbody, and the peak of the curve is observed to occur at 700 nm, in the red part of the spectrum. a) Approximately what is the surface temperature of the star. b) How much energy does each square meter of the star's surface radiate each second? c) if another star is thrice as hot as the first, where is the peak of the radiation curve? d) How much energy does the second star radiate? Gn C=2.9 X 10^6nm-k ,σ=5.67 X 10^{-8}J/m^2sdeg^4.

   ii) Estimate the distance of the galaxy whose radial velocity is 2.8km/sec. Given Hubble's constant =144 Km/sec/MPC.