



Register Number:
Date:

**ST. JOSEPH'S COLLEGE, BENGALURU -27  
PHYSICS OPEN ELECTIVE– III SEMESTER  
SEMESTER EXAMINATION: OCTOBER 2022  
(Examination conducted in December 2022)  
PHOE 9420 – ASTROPHYSICS**

**Time: 1 ½ Hour**

**Max Marks: 35**

**This paper contains 2 printed pages and 3 parts**

**PART A**

**Answer ALL the questions. Each question carries 1 mark.**

**15x1=15**

1. A good comparison of the size of the nucleus to the size of the atom would be
  - a. A pea in the middle of a racetrack
  - b. Marble on the surface of the moon
  - c. A basketball in the middle of a racetrack
  - d. A football on a football field.
2. Which is the largest known star?
  - a. Canis Majoris
  - b. UY Scuti
  - c. Alpha centauri
  - d. Betelgeuse
3. Which is the hottest planet in the solar system?
  - a. Venus
  - b. Mercury
  - c. Sedna
  - d. Mars
4. Science comes from a latin word scientia which means
  - a. Wisdom
  - b. Knowledge
  - c. ideas
  - d. observation
5. The ancient man found some stars wandering and named them wanderers what are they called today?
  - a. Satellites
  - b. Planets
  - c. Asteroids
  - d. Meteors.
6. Our Solar system belongs to:
  - a. Elliptical Galaxy
  - b. Spiral galaxy
  - c. Irregular galaxy
  - d. none of these
7. A star like body with a long tail is called:
  - a. Comet
  - b. meteor
  - c. meteorite
  - d. none of these
8. A continuous spectrum is formed by \_\_\_\_\_
  - a. A hot frying pan
  - b. a glowing steel ingot in a blast furnace
  - c. The photosphere of sun
  - d. all of the above options.
9. The correct arrangement of light at different wavelengths, in order from smallest to largest wavelength, is:
  - a. Radio-infrared-visible-x rays
  - b. Infrared-ultraviolet – microwaves-visible light
  - c. Gamma rays – x rays – ultraviolet – visible light
  - d. Radio waves – visible – infrared – x rays.
10. The largest telescopes used for observation in the visible region of the spectrum are
  - a. Refracting telescopes
  - b. Radio telescopes
  - c. Reflecting telescopes
  - d. telescopes that have chromatic aberrations
11. which is the densest object in the universe?
  - a. Electron
  - b. Nucleus
  - c. dark matter
  - d. Antimatter
12. Which among these does not occur when light interacts with matter?
  - a. Superposition
  - b. Reflection
  - c. Absorption
  - d. Emission



13. The name of our Galaxy is:
  - a. Andromeda Galaxy
  - b. Milky way galaxy
  - c. Whirlpool galaxy
  - d. none of these
14. In the sci-fi movie interstellar, how does Cooper intend to get the low-on-fuel ship to Edmunds' planet?
  - a. Using fire extinguishers as thrusters
  - b. Using Gargantua's gravitational pull as slingshot
  - c. Jettisoning excess weight, like TARS
  - d. Option b and c both.
15. What is the most abundant element in the Earth's atmosphere?
  - a. Argon
  - b. Carbon dioxide
  - c. Nitrogen
  - d. Oxygen

### **PART B**

**Answer any 3 questions. Each question carries 5 marks.**

**3x5=15**

16. What are the different ways of arriving at knowledge?
17. With neat labeled diagrams explain the difference between a reflecting telescope and a refracting telescope.
18. Briefly discuss the different regions of the electromagnetic spectrum and how they were discovered.
19. Write a note on the size and distance of cosmological objects.
20. In the sci-fi movie interstellar, Cooper is drawn into a supermassive black hole and has access to higher dimensions, He tries to communicate with his daughter to change the past. Comment briefly on the logical conundrums involved in the entire climax of the movie.

### **Part C**

**This is a compulsory question. It carries 5 marks.**

26. In about 150-200 words write about your journey through the cosmos in the CBCS course.