

Register Number: Date:

# ST. JOSEPH'S COLLEGE (AUTONOMOUS), BANGALORE-27

# **CBCS OPEN ELECTIVE - IV SEMESTER**

### **SEMESTER EXAMINATION: APRIL 2022**

## (Examination conducted in July 2022)

## PHOE 4318 – WONDERS OF PHYSICS

Time- 1<sup>1</sup><sub>2</sub>hrs

#### Max Marks-35

### This paper contains TWO printed pages and <u>3</u> parts

## <u>PART – A</u>

### Answer any <u>FIFTEEN QUESTIONS</u>. Each question carries <u>ONE</u> mark. 15X1=15

1. Which among these is not a part of the atom? a. Proton b. Electron c. Neutron d. Photon 2. The size of the atom is approximately \_\_\_\_ larger than the size of the nucleus. c. 10000 times b. 1000 times d. 100000 times a. 10 times 3. The Ancient man found some stars wandering and named them wanderers. What are they called today? a. Satellites b. Planets c. Asteroids d. Meteors 4. Only 4 % of the known universe is made of a. Luminous matter b. Dark matter c. Dark energy d. Ether 5. A deduction made from the things that can be observed to the things that may never be seen is called a. Direct Deduction b. indirect Deduction c. Metaphysical deduction d. Induction 6. What is the material cause of the table? a. Wood b. Carpenter c. Hammer d. The structure of the table. 7. Which of the following is NOT a general difference between a planet and a star? a. Planets are smaller than stars b. Planets are dimmer than stars. c. All planets are made of rock and all stars are made of gas d. Planets orbit stars, while stars orbit the center of the galaxy. 8. is the process of reasoning in which the premise of an argument supports the conclusion, but does not guarantee it. b. Induction a. Deduction c. Intuition d. Conjunction 9. How long does it take for the Earth to complete one orbit around the Sun a. One month b. One day c. One year d. The time varies significantly depending on the orbit. 10. An object whose gravitational field is so strong that light cannot escape is called a. Dark matter b. neutron star c. Wormhole d. black hole 11. Nobel Laureate Francis Crick is a proponent of which theory of life's origin? a. Panspermia b. Biogenesis c. Abiogenesis d. Spontaneous generation

12. Which phenomenon led to the unde	standing of what is the composition of stars?
a. Dispersion of light	o. Quantum tunneling
c. Photoelectric effect	I. Doppler effect
13. Which region of the electromagnetic	spectrum was termed "invisible light" when it
was discovered in 1800.	
a. X rays b. infrared rays	. radio waves d. gamma rays
14. Which scientist at Mount Wilson's Observatory discovered that the universe was expanding?	
a. Max Planck b. Albert Eins	in c. Edwin Hubble d. Neil Bohr
15. The first reflecting telescope was ma	le by
a. Sir Isaac Newton b. Galil	o Galilee
c. Sir William Hershel d. J.C.	faxwell
16. Suppose you built a scale-model atom in which the nucleus is the size of a tennis	
ball. About how far would the cloud of electrons extend?	
a. A few meters	o. Several centimeters
c. To the moon	I. Several Kilometers
17. Which among these telescopes mentioned below does not have the focus behind the	
a. Cassegrain	Schmidt Cassegrain
c. refracting telescope	L Newtonian reflectors
18. Which part of the electromagnetic st	ectrum does the atmospheric gases absorb and
hence need space-based observatio	is for better results.
a. Visible light b. Radio wave	c. Microwaves d. Infrared waves
19. Which among these is not a Trans-Neptunian object?	
a. Sedna	b. Pluto
c. Ganymede	d. Charon

- 20. Which Scientist first proposed that the speed of light is measured to be the same irrespective of the observer's frame of reference?
  - a. Sir Isaac Newton b. Micheal Faraday
  - c. J.C. Maxwell d. Albert Einstein

#### PART B

#### Answer any three questions. Each question carries 5 marks.

3x5=15

- 21. Write a note on the size and distance of cosmological objects.
- 22. Explain what is induction and deduction with an example.
- 23. Write a note on the history of cosmology.
- 24. In Stephen Hawking's book 'The Grand design', Hawking argues that because there is something called the law of gravity the universe can and will create itself out of nothing. Explain the logical contradictions in this argument.
- 25. Explain the need for space-based telescopes.

#### PART C

This is a compulsory question. This question carries 5 marks. 1x5=5

26. Has the Wonders of Physics course induced a sense of wonder in you? Explain in about 150-200 words.