STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI – 600 086.
(For candidates admitted during the academic year 2019 – 2020 & thereafter)

SUBJECT CODE : 19PH/PE/ED23

M.A/M.Sc. DEGREE EXAMINATION NOVEMBER 2022
PHYSICS
THIRD SEMESTER

COURSE : ELECTIVE
PAPER : EVERYDAY PHYSICS
TIME : 3 HOURS **MAX. MARKS : 100**

SECTION - A

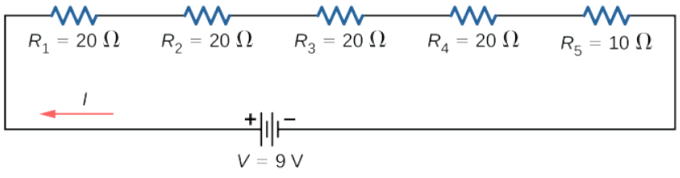
ANSWER ALL QUESTIONS: **(10x3=30)**

1. Describe the electromagnetic spectrum.
2. Find the frequency of a wave whose time period is 0.002 second.
3. State torque with an example.
4. Distinguish between interference and diffraction.
5. A potential difference across 24 Ω resistor is 12 V. What is the current through the resistor?
6. What are the basic conditions of laser action?
7. Define moment of inertia. What are its dimensions?
8. Mention the significance of resonance.
9. Enumerate the uses of direct current and alternating current.
10. The magnetic field strength in silicon is 1000 *A/m.* If the magnetic susceptibility is -0.25×10^{-5}, calculate its magnetization.

SECTION – B

ANSWER ANY FIVE QUESTIONS: **(5x5=25)**

11. Contrast the differences between Fresnel and Fraunhofer diffraction.
12. Write short notes on the properties of magnetic lines of forces.
13. Mention the characteristics of a Simple Harmonic motion and explain the term time period and frequency of SHM.
14. i) If refractive index of water is 5/9 and that of glass is 4/6. Find the refractive index of glass with respect to water. (2 marks)
    ii) Define polarization and the types of polarization. (3 marks)
15. Define LASER. Enumerate the working principle of LASER and three level LASER.
16. State and explain the three Newton's laws of motion with suitable examples.
17. i) The musical note "A" is a sound wave with a frequency of 440 Hz. The wavelength of the wave is 78.4 cm. What is the speed of the sound wave? (2 marks)
    ii) A battery with a terminal voltage of 9 V is connected to a circuit consisting of four 20Ω and one 10Ω resistors all in series. Calculate the equivalent resistance of the circuit and the current through the circuit. (3 marks)



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SECTION – C

ANSWER ANY THREE QUESTIONS: (3x15=45)

18. Discuss in detail about the broad classification of magnetic materials and write down its properties.
19. What is a spectrometer? Describe the components of a spectrometer with a neat diagram.
20. List down the salient features associated with the acoustics of a good auditorium.
21. Describe in detail the Faraday's law and Lenz's law of electromagnetic induction.
22. i) What do you mean by centrifugal and centripetal forces? Explain them with examples. (6 marks)
    ii) Enumerate the differences between a microscope and telescope. (4 marks)

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