Xll- PHYSICS -CENTUM QUESTION PAPER-2025-E/M.
SIR. CV. RAMAN COACHING CENTRE – IDAPPADI, SALEM – 637101.
Xll-PHYSICS PUBLIC MODEL CENTUM QUESTION PAPER -2025
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TOTAL MARK : 70 M ,TIME : 3 HRS SECTION – A (15 X 1 = 15M)

I.Choose the correct best answer

1. The speed of light in an isotropic medium depends on,
a) its intensity b) its wavelength c) the nature of propagation d) all

2. The materials used in Robotics are
a) Aluminium and silver b) Silver and gold c) Copper and gold d) Steel and aluminum

3. A Circular coil of radius 5 cm and 50 turns carries a current of 3 ampere. The magnetic dipole moment of the coil is nearly ….A m^2
a) 0.8 b) 0.5 c) 1.2 d) 1.0

4. In India electricity is supplied for domestic use at 220 V .It is supplied at 110 V in USA .if the resistance of a 60 W bulb for use in India is R , the resistance of a 60 W bulb for use in USA will be
a) R / 2 b) 2R c) R d) R/4

5. The charge of cathode rays particle is
a) Negative b) positive c) zero d) non zero

6. Which one of the following is a non –polar molecule ?
a) NH_3 b) HCl c) N_2O d) CO_2

7. Light transmitted by Nicol prism is,
a) partially polarised b) unpolarised c) plane polarised d) elliptically polarised

8. One tesla Is equivalent to
a) Weber b) Am c) Am^2 d) Weber $–m^{-2}$

9. A power of 11 kW is in transmitted through 220 V .The current through line wire is
a) 5 A b) 0.5 A c) 50 A d) 500 A

10. …… waves have Longest wavelength a) UV b) IR c) Micro d) Radio

11. If the relative permeability and relative permittivity of a medium are 1.0 and 2.25 respectively ,find the speed of the electromagnetic wave in this medium
a) 2 x 10^8 m/s b) 5.5 x 10^8 m/s c) 3 x 10^8 m/s d) 2 .5 x 10^8 m/s

12. When the current changes from + 2A to – 2A in 0.05s, an emf of 8 V is induced in a coil .the co-efficient of self- induction of the coil is
a) 0.2 H b) 0.4 H c) 0.8 H d) 0.1 H

13. The work function unit is
a) eV b) mm c) nm d) volt

14. A toaster operating at 240 V has a resistance of 120 ohm. Its power is
a) 400 W b) 2 W c) 240 W d) 480 W

15. Calculate the number of electrons in one coulomb of negative charge …..electrons
a) 6.25 x 10^{18} b) 0.25 x 10^{18} c) 1. 25 x 10^{18} d) 3.25 x 10^{18}

SECTION – B (6 X 2 = 12M)

Answer any six questions compulsory question no 24.

16. What is the use of collimator in a spectrometer?
17. State Joule's law of heating 18. What is meant by Hysteresis?
19. How will you define Q – factor
20. Why are e.m .waves non mechanical
21. What are the difference between Coulomb force and gravitational force ?
22. What is the height of the mirror needed for a person to see his/her image fully on the mirror?
23. An electric heater of resistance 10 ohm connected to 220 V power supply is immersed in the water of 1 kg .How long the electrical heater has to be switched on to increase its temperature from 30^0 C to 60^0 C .(specific heat capacity of water is s= 4200 J / kg / k
24. Calculate the magnetic field at the centre of a square loop which carries a current of 1.5 A ,length of each side being 50 cm

SECTION –C (6 X 3 = 18 M) Answer any six questions compulsory question no 33.

25. What is mobile communication?
26. Discuss about Nicol prism.
27. Discuss the conversation of galvanometer into an ammeter
28. Discuss the gamma emission process with example
29. Write short note on photodiode
30. Derive an expression for the torque experienced by a dipole due to a uniform electric field
31. An electron moving perpendicular to a uniform magnetic field 0.500 T undergoes circular motion of radius 2.50 mm .What is the speed of electron?
32. A Water molecule has an electric dipole moment of 6.3×10^{-30} Cm .A sample contains 10^{22} water molecule ,with all the dipole moments aligned parallel to the external electric field of magnitude 3×10^5 N C^{-1} . How much work is required to rotate all the water molecule from angle equal to 0^0 to 90^0
33. Calculate the instantaneous value at 60^0 Average value and RMS value of an alternating current whose peak value is 20 A .

SECTION – D (5 X 5 = 25 M) Answer all questions

34.a) Explain in detail the construction and working of a van de graaff generator (or)
Explain the basic elements of communication system with the necessary block diagram.

35..a) Describe the microscopic model of current and obtain general form of ohm's law
(or)
b). Briefly explain the elementary particles present in nature.

36. a) Derive the expression for the force between two parallel ,current –carrying conductors

(or)

b) Briefly explain the principle and working of electron microscope.

37. a) Explain the working of a Single –phase AC generator with necessary diagram

(or)

b) What is dispersion? Obtain the equation for dispersive power of a medium.

38. a) Explain the types of emission spectra

(or)

b) Explain the experimental determination of refractive index of the material of the prism using spectrometer.

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