www.Padasalai.Net www.CBSEtips.in

12

Reg. No.

Time : 3.00 hrs.

Half-Yearly Examination - 2022

PHYSICS

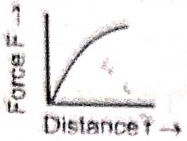
Max. Marks : 70

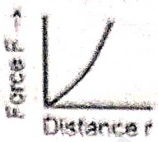
PART - I

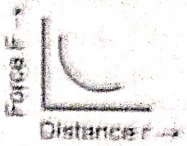
Choose the correct answer 15 x 1 = 15

1. Which of the following graphs shows the correct variation of force when the distance between two charges varies?

a) 

b) 

c) 

d) 

2. Which charge configuration produces a uniform electric field?
a) point charge b) infinite uniform line charge c) uniformly charged infinite plane d) uniformly charged spherical shell
3. The value of current in the wire if a change of 120C is flowing through a copper wire in 1 minute is
a) 1A b) 2A c) 3A d) 4A
4. The vertical component of Earth's magnetic field at a place is equal to the horizontal component. What is the value of angle of dip at this place? a) 30° b) 45° c) 60° d) 90°
5. Dimension of Resistance is
a) $ML^2 T^{-3} A^{-2}$ b) $ML^2 T^{-1} A^{-1}$ c) $ML^2 T^2 A^{-3}$ d) $ML^2 T^{-1} A^{-2}$
6. When the current changes from +2A to –2A in 0.05 s, an emf of 8V 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
7. In an AC circuit, Resonance is obtained when

a) Z = R b) $Z = WL - \left(\frac{1}{wc}\right)$ c) L = R d) None

8. The dimension of $\frac{1}{\mu_0 \varepsilon_0}$ is a) $[LT^{-1}]$ b) $[L^2T^{-2}]$ c) $[L^{-1}T]$ d) $[L^{-2}T^2]$
9. Stars twinkle due to
a) reflection b) total internal reflection c) refraction d) polarisation
10. The magnification of a telescope is given by

a) $\frac{fe}{fo}$ b) $\frac{fo}{fe}$ c) $\frac{2fe}{fo}$ d) $\frac{fo + fe}{2}$

11. The transverse nature of light is shown in.....
a) interference b) diffraction c) scattering d) polarisation
12. The threshold wavelength for a metal surface whose photoelectric work function is 3.313 eV is

a) 4125 Å b) 3750 Å c) 6000 Å d) 2062.5 Å

13. A radioactive element has N_0 number of nuclei at t = 0. The number of nuclei remaining after half of a half life (that is, at time $t = \frac{1}{2} T_{\frac{1}{2}}$)

a) $\frac{No}{2}$ b) $\frac{No}{\sqrt{2}}$ c) $\frac{No}{4}$ d) $\frac{No}{8}$

14. The output of the following circuit is 1 when the input ABC is

a) 101 b) 100 c) 110 d) 010

Kindly send me your questions and answerkeys to us : Padasalai.net@gmail.com

15. "Ski Wax" is an application of nano product in the field of
a) Medicine b) Textile c) Sports d) Automotive industry

PART - II

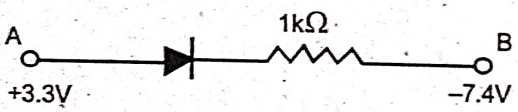
Note : Answer any six questions. Question No.22 is compulsory. **6 x 2 = 12**

16. Define : 'electric flux'.
17. Distinguish between drift velocity and mobility.
18. State Ampere's circuital law.
19. The equation for an alternating current is given by i = 77 sin 314 t. Find the peak current and frequency.
20. What is displacement current?
21. State Huggen's principle.
22. If the focal length is 150 cm for a lens, what is the power of the lens?
23. What is Bremsstarling?
24. What is isotone? Give an example.

PART - III

Note : Answer any six questions. Question No.27 is compulsory. **6 x 3 = 18**

25. Obtain the expression for capacitance for a parallel plate capacitor.
26. How the emf of two cells are compared using potentiometer?
27. A coil of a tangent galvanometer of diameter 0.24 m has 100 turns. If the horizontal component of Earth's magnetic field is 25×10^{-6} T, then calculate the current which gives a deflection of 60^0.
28. How will you induce an emf by changing the area enclosed by the coil?
29. State and prove Brewster's law.
30. List out the laws of photoelectric effect.
31. What is half-life of a radio active nucleus? Give the expression.
32. A silicon diode is connected with 1 kΩ resistor as shown. Find the value of current flowing through AB



38. Mention any two advantages and disadvantages of Robotics.

PART - IV

Note : Answer all questions. **5 x 5 = 25**

34. a) Explain in detail the construction and working of a Van-de Graaff generator.
(OR)
b) Deduce the relation for the magnetic field at a point due to an infinitely long straight conductor carrying current.
35. a) Describe the microscopic model of current and obtain general form of Ohm's law.
(OR)
b) Derive an expression for phase angle between the applied voltage and current in a series RLC circuit.
36. a) Write down Maxwell equations in integral form.
(OR)
b) Explain the Young's double slit experimental set up and obtain the equation for path difference.
37. a) Derive the mirror equation.
(OR)
b) Explain the J.J. Thomson experiment to determine the specific charge of electron.
38. a) Briefly explain the principle and working of electron microscope.
(OR)
b) Explain the construction and working of a full wave rectifier.

Kindly send me your questions and answerkeys to us : Padasalai.net@gmail.com