+ 2 Physics * First revision test (Units 1 to 5) * Year : 2012 - 13 Total marks : 75

Section : A Choose the correct answer. **(10 X 1 = 10)**

1. The work done in moving 500 μC charge between two points on an equipotential surface is
   a) 0 b) ∞ c) 500 J d) 250 J
2. Three capacitors of each 2 μF are connected in series. The effective capacitance is
   a) 0 μF b) 3 / 2 μF c) 6 μF d) 2 / 3 μF
3. In a carbon resistor, the tolerance of the silver ring is
   a) 1 % b) 2 % c) 10 % d) 5 %
4. In the case of insulators, as the temperature increases the resistivity
   a) decreases b) increases c) remains constant d) becomes zero.
5. The unit of Peltier coefficient is
   a) ampere b) kelvin c) volt d) second
6. The self inductance of a straight conductor is
   a) zero b) infinity c) very large d) very small
7. The period of revolution of a charged particle inside a cyclotron does not depend on the
   a) magnetic field b) charge of the particle c) velocity of the particle d) mass of the particle.
8. A beam of monochromatic light enters from vacuum into a medium of refractive index μ . The ratio of the wavelengths of the incident and the refracted waves is
   a) μ : 1 b) 1 : μ c) μ^2 : 1 d) 1 : μ^2
9. Electromagnetic waves are
   a) transverse b) may be transverse or longitudinal
   c) longitudinal d) neither transverse nor longitudinal
10. A light of wavelength 6000 A 0 is incident normally on a grating 0.005 m wide with 2500 lines. Then the maximum order is
   a) 3 b) 2 c) 1 d) 4

Section : B Answer any TEN questions **(10 X 3 = 30)**

11. Why the sky appears blue in colour ?
12. What is Tyndal scattering ?
13. Give the differences between ordinary and extra-ordinary rays.
14. State Fleming's right hand rule.
15. State the various methods of inducing an emf in a circuit.
16. What is Q – factor ?
17. A manganin wire of length 2 m has a diameter of 0.4 mm with a resistance of 70 ohm. Find its resistivity.
18. State Ohm's law.
19. What are superconductors ?
20. Define : Peltier coefficient.
21. Define : ampere.
22. Find the magnetic induction at a point 10 cm from a long straight wire carrying a current of 10 A.
23. What is an electric dipole ? Define the term electric dipole moment.
24. Why it is safer to be inside a car than standing under a tree during a lightning ?
25. The capacitance of a parallel capacitor is 3.186×10^{-11} F. The potential applied between the plates is 400 V. Calculate the energy of the capacitor.

Section : C Answer any THREE questions **(3 X 5 = 15)**

(Answer question number 28 compulsorily)

26. Derive an expression for the capacitance of a parallel plate capacitor with a dielectric between the plates.
27. Derive an expression for the torque on an electric dipole in a uniform electric field.
28. Two parallel wires each of length 5 m are placed at a distance of 10 cm apart in air. They carry equal currents along the same direction and experience a mutually attractive force of 3.6×10^{-4} N. Find the current through the conductors.

    (OR)

    Air core solenoid having a diameter of 4 cm and length 60 cm is wound with 4000 turns. If a current of 5 A flows in the solenoid, calculate the energy stored in the solenoid.
29. Explain the construction of a transformer and define efficiency of a transformer.
30. Derive Brewster's law.

Section : C Answer any TWO questions **(2 X 10 = 20)**

31. Explain the construction and the working of Van de Graaff generator.
32. State tangent law. Explain the construction and the working of the Tangent galvanometer.
33. Discuss with a theory the method of inducing an emf in a coil by changing the orientation of the coil with respect to the magnetic field.
34. Derive an expression for the bandwidth of interference fringes in Young's double slit experiment..

@@@@ **BE**st wishes @@@@