Home Assignment

Subject: Physics (Major)

B.Sc 2nd Semester (CBCS)

Paper: PHY-HC-2016

(Electricity & Magnetism)

Read the Instructions carefully before submission

1. **The Assignment contains 20 numbers of Multiple Choice Questions (MCQs), each having one correct answer. Out of 20 you have to attempt only 16 numbers of questions.**
2. **Please take your time and read each question carefully, because once you submit it you can't modify the answers.**
3. **Students are directed to submit the assignment by any one of the following methods**

(i) **Copy the link and past in the browser to get the assignment** https://docs.google.com/forms/d/e/1FAIpQLSd4wjJ_bqREI0OhboSgVY7ovF9O92J6KlFFymWeOcp_cgXLcQ/viewform?usp=pp_url

(ii) **Send the scan copy of the assignment to the email id:** bikashdey2012@gmail.com **mentioning their Name, Roll Code and Roll No., Registration No.**

4. **Last date of submission is 08/08/2020**

Total Marks = 16

1. The total electric flux through a closed surface having charge q is equal to
   a. $\frac{1}{\epsilon_0 q}$
   b. $\frac{\epsilon}{q}$
   c. $\frac{q}{\epsilon_0}$
   d. $\epsilon_0 q$
2. The electric field intensity $\vec{E}$ inside a uniform charged sphere varies with distance r of the observation point as
   a. $E \propto r$
   b. $E \propto \frac{1}{r}$
   c. $E \propto r^2$
   d. $E \propto \frac{1}{r^2}$

3. Two charges $+5\mu C$ and $+10\mu C$ are placed 20 cm apart. The electric field at the mid-point between the two charges is
    a. $4.5 \times 10^6 N/c$ towards $+5\mu C$.
    b. $13.5 \times 10^6 N/c$ towards $+5\mu C$.
    c. $4.5 \times 10^6 N/c$ towards $+10\mu C$.
    d. $13.5 \times 10^6 N/c$ towards $+10\mu C$.
4. The electric field between two oppositely plates having charge density σ given by
    a. $\frac{\sigma.}{\epsilon_0}$
    b. $\frac{\sigma.}{2\epsilon_0}$
    c. Zero
    d. $\frac{2\sigma.}{\epsilon_0}$
5. The potential difference between two points 2 cm apart in an electric field is $20V$,the electric field intensity between these points will be around
    a. 20 V/m
    b. 40 V/m
    c. 10 V/m
    d. 10 V/cm
6. The capacitance of a parallel plate capacitor doesn't depend upon
    a. The distance between the plates.
    b. Area of the plates.
    c. Medium between the plates
    d. Metal of the plates.
7. If three capacitors each of $300\ F$ are connected in parallel, the equivalent capacity will be
    a. 300 F
    b. 900 F
    c. 100 F
    d. 600 F
8. Which of the following substance is dielectric?
    a. Copper
    b. Mica
    c. Germanium

d. Tungsten

9. A polar molecule has
    a. Net positive charge
    b. Net negative charge
    c. Finite electric dipole moment
    d. Zero electric dipole moment.
10. Two wires carrying same current in the same direction placed 1 cm apart will experience
    a. An attractive force mutually
    b. Repulsive force
    c. No force at all
    d. None of the above.
11. The force experienced by a charged particle moving in a magnetic field is independent of
    a. Velocity of particle
    b. Charge on particle
    c. Strength of magnetic field
    d. Mass of particle.
12. The temperature at and above which a ferromagnetic material becomes paramagnetic is called
    a. Critical temperature
    b. Inversion Temperature
    c. Debye Temperature
    d. Curie Temperature
13. Lenz's law is a consequence of law of conservation of
    a. Charge
    b. Mass
    c. Energy
    d. Momentum
14. In a free space, Poisson's equation is
    a. $\nabla^2 = \frac{\epsilon_0}{\rho}$
    b. $\nabla^2 = \frac{\rho}{\epsilon_0}$
    c. $\nabla^2 = 0$
    d. $\nabla^2 = \infty$

15.Magnetic field Outside the infinite solenoid is

a. Zero
b. $\mu_0 nI$
c. $\frac{\mu_0 nI}{2}$
d. ∞

16. Dipole moment of a current loop does not depend upon

a. Current in the loop
b. Area of the loop
c. Number of turns
d. Shape of loop

17.The dielectric constant of an insulator can be

a. -1
b. 0
c. 0.3
d. 3

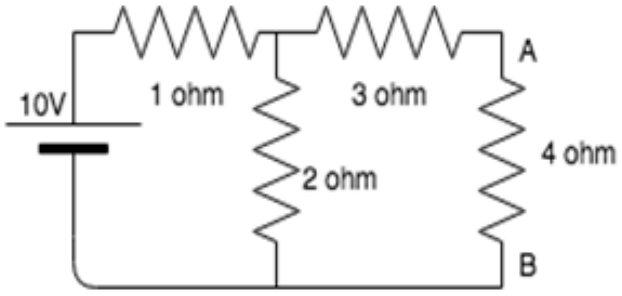
18. $\vec{\nabla} \times \vec{E} = -\frac{\partial \vec{B}}{\partial t}$ represents

a. Faraday's law
b. Ohm's law
c. Lenz's law
d. Ampere's law

19. Which of the following is also known as the dual of Norton's theorem?

a. Thevenin's theorem
b. Superposition theorem
c. Maximum power transfer theorem
d. Millman's theorem

20. Calculate the Thevenin's resistance across the terminal AB for the following circuit.



a. 4.34 Ohm
b. 3.67 Ohm
c. 3.43 Ohm
d. 2.32 Ohm

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