



Class:XII ISC

Subject: Physics (science)

TIME: 1 Hr 30 mins

M MARKS:70

General Instructions

1. There are 50 Questions.
2. ALL QUESTIONS ARE COMPULSORY
3. The marks intended for questions are given in brackets [].
4. Please fill OMR sheet with pencil.

PHYSICS PAPER - 1 (THEORY)—

Question 1. When the length of the conductor is doubled and the area of cross section remains the same then its resistance

- (a) Remains the same
- (b) Will be doubled
- (c) Will become half
- (d) Will increase by four times

ans b

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Q2. Electric potential due to an electric dipole is related to the distance r of the observation point as:

- (a) $V \propto r$
- (b) $V \propto r^{-1}$
- (c) $V \propto r^2$
- (d) $V \propto r^{-2}$

Ans. D

Q3. What will be the value of $\sin\theta$ when we use soft iron core in moving coil galvanometer (where θ is the angle between the radial magnetic field and the surface of soft iron core)

- (a) $\sin\theta=0.$
- (b) $\sin\theta=\infty$
- (c) $\sin\theta =1$
- (d) None of these.

ans .c

Q4. The SI unit of electric flux is

- (a) $\text{N C}^{-1} \text{m}^{-2}$
- (b) N C m^{-2}
- (c) $\text{N C}^{-2} \text{m}^2$
- (d) $\text{N C}^{-1} \text{m}^2$

Ans d

Q5. The Gaussian Surface

- (a) can pass through a continuous charge distribution.
- (b) cannot pass through a continuous charge distribution.
- (c) can pass through any system of discrete charges.
- (d) can pass through a continuous charge distribution as well as any system of discrete charges.

Ans a

Q6. Select the correct statements from the following :

- I. The electric field due to a charge outside the Gaussian surface contributes zero net flux through the surface.
- II. Total flux linked with a closed body, not enclosing any charge will be zero.
- III. Total electric flux, if a dipole is enclosed by a surface is zero.

- (a) I and II
- (b) II and III
- (c) I and III
- (d) I, II and III

Ans. D

Q7. Equipotentials at a great distance from the collection of charges whose total sum is not zero are approximately

- (a) spheres
- (b) planes
- (c) paraboloids
- (d) ellipsoids

Ans . a

Q8. Consider a uniform electric field in z direction. The potential is a constant

- (a) for any x for a given z
- (b) for any y for a given z
- (c) on the x-y plane for a given z
- (d) all of these

Ans. D

Q9. A parallel plate capacitor is connected to a battery as shown below:



Consider two situations:

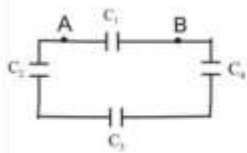
- A: Key K is kept closed and plates of capacitors are moved apart using insulating handle.
 - B: Key K is opened and plates of capacitors are moved apart using insulating handle.
- Choose the correct option(s).

- (a) In A : Q remains same but C changes.
- (b) In B : V remains same but C changes.
- (c) In A : V remains same and hence Q changes.
- (d) In B : Q remains same and hence V changes.

Ans. C and d

Q10.

Four capacitors are connected as shown below in the figure



Here $C_1=2\mu\text{F}$, $C_2=3\mu\text{F}$, $C_3=4\mu\text{F}$ and $C_4=5\mu\text{F}$. The equivalent capacitance between A and B is

- a $1.245 \mu\text{F}$
- b $4.446 \mu\text{F}$
- c $9 \mu\text{F}$
- d $3.27 \mu\text{F}$

Ans. D

Q11. A charged particle will not move with a constant velocity in a region where

- (a) $E = 0, B \neq 0$
- (b) $E \neq 0, B \neq 0$
- (c) $E \neq 0, B = 0$
- (d) $E = 0, B = 0$.

Ans c

Q12. A current carrying a circular loop of radius R is placed in x-y plane with centre at the origin. Half of the loop $x > 0$ is now bent so that it now lies in y-z plane

- (a) The magnitude of magnetic moment now diminishes
- (b) The magnetic moment does not change
- (c) The magnitude of B at $(0, 0, z)$, $z > R$ increases
- (d) The magnitude of B at $(0, 0, z)$, $z \gg R$ is unchanged

Ans a

13. The magnetic flux threading a coil changes from 12 Wb to 6 Wb in 1 second. What is the induced emf?

- (a) 3 volt
- (b) - 3 volt
- (c) 6 volt
- (d) - 6 volt

Ans d

14. According to Lenz's law there is a conversion of

- (a) momentum
- (b) collision
- (c) voltage
- (d) energy

Ans d

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15. Two coils are placed closed to each other. The mutual Inductance of the pair of coils depends upon

- (a) the rate at which currents are changing in the two coils.
- (b) relative position and orientation of two coils.
- (c) the material of the wires of the coils.
- (d) the currents in the two coils.

Ans b

16.



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