QUATERLY EXAM-2024-25

SUBJECT-PHYSICS

CLASS- XII

TIME 3HRS

T.M.-70

Q.1 Select and write the correct option from the options given in each equation. (1x6=6)

1.The Ohmic resistance is –

(a)Transistor (b)Light emitting diode

(c) Junction diode (d)Copper wire

2. To convert a galvanometer into an ammeter ,connect-

(a)Low resistance in series (b)Low resistance in parallel

(c)High resistance in series (d)high resistance in parallel

3.C.G.S. unit of magnetic field intensity is –

(a)Newton/Amp x metre (b)Gauss or oerested

(c) Newton/ metre (d)Weber.m^2

4.The phase difference between flowing current and applied voltage in alternating circuit containing pure capacitor is –

(a) 0 (b)1

(c)$\pi/2$ (d)$-\pi/2$

5.The minimum charge on a proton is –

(a)$1.6x10^{-6}$ C (b)$1.6X10^{-10}$ C

(c)$1.6 X 10^{-18}$C (d)$1.6 X 10^{-19}$C

6.The transformer is based on the principle-

(a)Self induction (b)Mutual induction

(c) Electromagnetic Waves (d)None of the above

Q.2 Fill in the blanks with appropriate word and write:- (1x6=6)

1.The substacnce which have negative magnetic tendancy are called.....substances.

2.The behavior of solenoid like as.....

3.The Voltmeter is always connected in .....in an electric circuit.

4. The frequency of a direct current is .....

5. The angle between equipotential surface and electric field lines is .....

6. No.of electrons in 1 coulomb is .....

Q.3 Write True and False- (1X5=5)

1. The average power supplied to an inductor over one complete cycle is zero.

2. The Lorentz force on a stationary charge in any magnetic field is zero.

3.The unit of electric charge is Coulomb.

4. A stationary magnet placed near a stationary conductor will induce an electric current.

5.A substance which is strongly attracted towards a magnet is called ferromagnetic.

Q.4 Match the column 'A' with Column 'B' and write the correct pair. (1x6=6)

column 'A'	Column 'B'
1. Faraday's law	(a) Induced current opposes the cause of It's production
2. Lenz's law	(b) Measured in weber
3. Magnetic flux	(c) Induced emf is proportional to the rate of change of magnetic flux
4. Transformer	(d) Electric energy
5. Capacitor store	(e)Used in increase or decrease voltage

Q.5Write answer of each question in one sentence. (1x5=5)

1.Write the value of total electric flux emanating from a unit positive charge in air.

2.Write the name of instrument that measures current in an electric circuit.

3.What is direction of magnetic dipole moment of a magnet?

4. What is the affect of temperature on drift velocity.

5.On which theory Lenz's law is based?

Q.6 Write two characteristics of electric field lines. 2

Or

Write two characteristics of equipotential surface.

Q.7 Write two differences between step – up and step-down transformer. 2

Or

Write two differences between alternating current and direct current.

Q.8 Write down second law of faraday in electromagnetic induction. 2

Or

Write down two differences between self induction and mutual induction.

Q.9 Write any two limitations of Ohm's law. 2

Or

Write Kirchhoff's voltage law.

Q.10 Write down the vector form of Biot –Savart equation. 2

Or

Why do magnetic field lines have no initial and final ends.

Q.11 Write the definition of unit charge. 2

Or

What is meant by charge quantization.

Q.12 A Solenoid of length 2 meter and 100 turns caries a current 10 A . Calculate the magnitude of the magnetic field inside the solenoid. 2

Or

A long straight wire carries a current of 30 A .Calculate the magnitude of magnetic field at a point 30 cm from the wire.

Q.13 Establish the relation between EMF, terminal voltage and internal resistance of a cell. 3

Or

Write any three differences between Resistance and Specific Resistance.

Q.14 Derive the expression for the force between two parallel current carrying conductors separated by a distance 'd'. 3

Or

Describe the force experienced by a current carrying wire placed in a uniform magnetic field.

Q.15 Describe the concept of electric flux and state Gauss's law. 3

Or

Define electric potential and how is it related to electric field.

Q.16 Write three differences between diamagnetic ,paramagnetic and ferromagnetic materials. 3

Or

Write down three elements of earth's magnetism.

Q.17 What is an A.C Generator. Draw a laballed diagram and describe the working of A.C. Dynama. 4

Or

Describe the following points an L.C.R. Circuit

(1) Electric Circuit (2)Resultant Voltage

(2) Impedance (4) Phase difference

Q.18 Deduce an expression for motional electromotive force induced across a straight conductor moving in any uniform magnetic field. 4

Or

What is self-inductance? Derive an expression for the self inductance of solenoid

Q.19 What is a capacitor ? Establish an expression for finding capacitance of the paralliel plate capacitor. 4

Or

What is an electric dipole? Establish an expression for finding electric pontial of electric dipole for axial line.

Q.20 Two point charges $q_A=6\mu C$ and $q_B=6\mu C$ are located 20 cm apart in vacum. Find the intensity of electric field at the midpoint of the line joining these two changes. 4

Or

3pf, 4pf & 5pf capacitors are connected in parallel to 120 volt battery. Find the total capacitance of the combination and charge on each capacitor.

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