

OBJECTIVE

NOTE: You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question

QUESTION NO. 1

- 1 Photocopier and inkjet printer are the application of
(A) Electricity (B) Electrostatics (C) Magnetism (D) Electromagnetism
- 2 Selenium is
(A) Insulator (B) Photoconductor (C) Conductor (D) First insulator than conductor
- 3 Siemen is the unit of
(A) Resistivity (B) Resistance (C) Conductivity (D) Conductance
- 4 The sensitivity of Galvanometer can be increased by
(A) Decreasing the area of coil (B) Decreasing the number of turns of coil
(C) Increasing the magnetic field (D) Using a fine suspension
- 5 If a charge at rest in a magnetic field then force on charges is
(A) Zero (B) Maximum (C) $q(\vec{V} \times \vec{B})$ (D) $qVB \cos \theta$
- 6 Mutual induction has a practical role in performance of the
(A) A.C. Generator (B) D.C Generator (C) Transformer (D) Radio choke
- 7 Henry is S.I unit of
(A) Current (B) Resistance (C) Flux (D) Self inductance
- 8 In three phase voltage across any two lines is about
(A) 220 V (B) 230 V (C) 400 V (D) 430 V
- 9 At high frequency, the value of reactance of the capacitor in A.C. circuit is
(A) Low (B) High (C) Zero (D) Medium
- 10 A device used to detect very weak magnetic field produced by brain is named as ?
(A) MRI (B) CAT Scans (C) Squid (D) CRO
- 11 The size of base in transistor is
(A) 10^{-9} m (B) 10^{-8} m (C) 10^{-7} m (D) 10^{-6} m
- 12 The potential barrier for germanium at room temperature is
(A) 0.3 volt (B) 0.5 volt (C) 0.7 volt (D) 0.9 volt
- 13 Photo diode can turn its current on and off in
(A) Micro-sec (B) Nano- sec (C) Pico - sec (D) Femto - sec
- 14 Joule second is the unit of
(A) Energy (B) Wien's constant (C) Boyles law (D) Plank's constant
- 15 Photons emitted in inner shell transition are
(A) Continuous X- rays (B) Discontinuous X- rays (C) Characteristic X- rays (D) Energetic X- rays
- 16 0.1 Kg mass will be equivalent to energy
(A) 5×10^8 J (B) 9×10^{15} J (C) 6×10^{16} J (D) 9×10^{16} J
- 17 S.I unit of absorbed dose is
(A) Gray (B) Roentgen (C) Curie (D) Rem

QUESTION NO. 2 Write short answers any Eight (8) questions of the following		16
1	Electric lines of force never cross .Why?	
2	Is E necessarily zero inside a charged rubber balloon if balloon is spherical? Assume that charge is distributed uniformly over the surface.	
3	Define electron volt (ev) and write its relation with joule.	
4	What is meant by EEG and ERG?	
5	If a charged particle moves in a straight line through some region of space, can to say that the magnetic field in the region is zero.	
6	What should be the orientation of a current carrying coil in a magnetic field so that torque acting upon the coil is (a) Maximum (b) Minimum ?	
7	What is Lorentz force? Write its formula.	
8	What is right hand rule to find the direction of the lines of force?	
9	Can a step-up transformer increase the power level? In a transformer, there is no transfer of charge from the primary to the secondary, How is ,than the power transferred?	
10	Is it possible to change both the area of the loop and the magnetic field passing through the loop and still not have an induced <i>emf</i> in the loop.	
11	What is back <i>emf</i> effect in motors .	
12	Name and define the factors responsible for power loss in transformer	

QUESTION NO. 3 Write short answers any Eight (8) questions of the following		16
1	What are the uses of rheostat ?	
2	Do bends in a wire affect its electrical resistance? Explain.	
3	A charge of 90 C passes through a wire in 1 hour and 15 minutes. What is the current in the wire?	
4	What is choke?	
5	Name the device that will: (a) Permit flow of direct current but oppose the flow of alternating current (b) Permit flow of alternating current but not the direct current.	
6	A circuit contains an iron-cored inductor, a switch and a D.C. source arranged in series. The switch is closed and after an interval reopened. Explain why a spark jumps across the switch contacts	
7	Define strain energy in deformed materials. Write its formula.	
8	Differentiate between intrinsic and extrinsic semiconductors.	
9	Define modulus of elasticity. Show that the units of modulus of elasticity and stress are the same.	
10	Write applications of photo diode.	
11	What is the net charge on a n-type or a p-type substance?	
12	Why ordinary silicon diodes do not emit light?	

QUESTION NO. 4 Write short answers any Six (6) questions of the following		12
1	What are the measurements on which two observers in the relative motion will always agree upon.	
2	Can pair production take place in vacuum ? Explain.	
3	What is photo cell ? Give its two applications.	
4	Define excitation potential.	
5	What is meant by a line spectrum? Explain how line spectrum can be used for identification of elements?	
6	What do we mean by the term Critical mass?	
7	What are isotopes? What do they have in common and what are their differences?	
8	Differentiate between mass defect and binding energy.	
9	Explain the term absorbed dose and define its unit gray.	

SECTION-II

Note: Attempt any Three questions from this section

8 x 3 = 24

Q.5.(A)	State and Explain the Ohm's law.	5
(B)	A particle having a charge of 20 electrons on it fall through a potential difference of 100 volts, Calculate the energy acquired by it in electron volts(ev).	3
Q.6.(A)	How energy is stored in an Inductor? Derive relation for energy stored in an Inductor.	5
(B)	A Power line 10.0 m high carries a current 200A. Find the magnetic field of the wire at the ground.	3
Q.7.(A)	What is transistor ? Derive the voltage gain equation of transistor working as an amplifier	1+4
(B)	An iron core coil of 2.0 H and 50 Ω is placed in series with a resistance of 450 Ω . An AC supply of 100 V ,50 Hz is connected across the circuit. Find the current flowing in the coil.	3
Q.8.(A)	What is meant by strain energy? Draw force extension graph for a vertically suspended wire stretched by a variable weight at the other end and by its graph derive a relation to calculate its value	1+4
(B)	What is the de-Broglie wave length of an electron whose kinetic energy is 120 ev?	3
Q.9.(A)	What are isotopes ? How isotopes are separated by mass spectrograph? Also derive its relation	5
(B)	Calculate the longest wave length of radiation for the Paschen series.	3