DGK-G1-12-18

PAPER CODE - 8471

(12th CLASS – 12018)

PHYSICS
GROUP FIRST (NEW COURSE)
ACADEMIC SESSION : 2015-17 to 2016-18

TIME: 20 MINUTES
MARKS: 17

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	If time constant in RC Circuit is small, than the capacitor is charged or discharged. (A)Slowly (B) Rapidly (C) At constant rate (D) intermittently
2	Gauss's law can only be applied to (A) A curved surface (B) A flat surface (C) A surface of any shape (D) A closed surface
3	The maximum power is delivered to a load resistance 'R' when the internal resistance of the source is (A) Zero (B) Infinite (C) Equal to 'R' (D) Equal to $\frac{R}{2}$
4	The magnetic force on an electron, travelling at 10^6 m/s parallel to the field of strength 1 Weber /m^2 is (A) 10^{-12} N (B) Zero (C) 10^3 N (D) 16×10^{-12} N
5	The sensitivity of a galvanometer can be increased by: (A)Decreasing the area of coil (B) Decreasing the number of turns (C) Increasing the diameter of suspension wire (D) Increasing the magnetic field
6	Lens's law deals with the (A) Magnitude of induced current (B) Direction of induced current (C) Direction of induced emf (D) Magnitude of induced emf
7	Transformer is used to change (A)Electrical power (B) Electrical energy (C) Magnetic field (D) Alternating voltage
8	In a resonance circuit of frequency 1000 KHz with inductor of 5mH, the capacitance will be (A) 10.1 pF (B) 8.16 pF (C) 3.3 pF (D) 5.09 pF
9	The most suitable metal for making permanent magnet is (A) Iron (B) Aluminium (C) Steel (D) Copper
10	Which component of the transistor has greater concentration of impurity? (A) Base (B) Emitter (C) Collector (D) both emitter and collector
11	$X = \overline{A \cdot B}$ is the mathematical notation for (A) NAND gate (B) NOR gate (C) OR gate (D) AND gate
12	In Compton scattering ,the value of Compton's shift is equal to Compton's wavelength, when X-rays is scattered at angle of (A) 0^o (B) 30^o (C) 60^o (D) 90^o
13	The physical quantity ,related to photon, that does not change in compton scattering is (A) Energy (B) Speed (C) Frequency (D) Wavelength
14	An electron in H-atom is excited from ground state to n = 4. How many spectral lines are possible in this case ? (A) 6 (B) 5 (C) 4 (D) 3
15	The meta-stable state is..... than normal excited state. (A) 10^{-5} times larger (B) 10^{-8} times smaller (C) 10^5 times larger (D) 10^{-3} times larger
16	The particles which do not experience strong force are called (A) baryons (B) hadrons (C) mesons (D) leptons
17	The force which is responsible for the breaking up of the radioactive element, is (A)Weak nuclear force (B) Strong nuclear force (C) Electromagnetic force (D) Gravitational force

D.Cz.P

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PHYSICS
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ACADEMIC SESSION: 2015-17 to 2016-18

TIME : 2.40 HOURS
MARKS : 68

SUBJECTIVE
SECTION-I

QUESTION NO. 2 **Write short answers any Eight (8) questions of the following** 16

1	The potential is constant throughout a given region of space. Is the electrical field zero or non-zero in region? Explain.
2	Do electrons tend to go to region of high potential or low potential? Explain.
3	Define electron field intensity. What is its unit and direction?
4	Define electric flux. Mention the factors upon which it depends.
5	Define Lorentz Force. Derive its formula.
6	What modification is required to covert a Galvanometer into Ammeter
7	What is Avometer ? Explain.
8	How can a current loop be used to determine the presence of a magnetic field in a given region of space?
9	Can a step-up transformer increase the power?
10	What happens when any meter is overloaded?
11	Name the factors which cause power loss in transformer.
12	Name the factors which affect the self induction.

QUESTION NO. 3 **Write short answers any Eight (8) questions of the following** 16

1	Define resistivity and electrolysis.
2	Explain why the terminal potential difference of a battery decreases when the current drawn from it is increased?
3	Do bends in a wire affect its electrical resistance ? Explain.
4	What is meant by A.M and F.M?
5	A sinusoidal current has rms value of 10A .What is the maximum or peak value?
6	Define choke and electromagnetic waves.
7	What is meant by Dia and Ferromagnetic substances ? Give examples for each.
8	Define stress and strain.
9	What is meant by super-conductors ?
10	What is the net charge on a n-type or a p-type substance ?
11	Why ordinary silicon diodes do not emit light ?
12	Define digital system and logic gates.

QUESTION NO. 4 **Write short answers any Six (6) questions of the following** 12

1	As a solid is heated and begins to glow, why does it first appear red?
2	Which has the lower energy quanta, Radio waves or X-rays ? Explain.
3	Why do not we observe a Compton effect with visible light ?
4	What do we mean when we say that the atom is excited?
5	State postulates of Bohr's Model of Hydrogen atom.
6	Define half life of radioactive element. How is it related with decay constant λ ?
7	What do you understand by " back ground radiation" ? State two source of the radiation.
8	What factors make fusion reaction difficult to achieve?
9	What fraction of a radioactive sample decays after two half lives have collapsed ?

SECTION-II

Note: **Attempt any Three questions from this section** 8 x 3 = 24

5.(A)	Define capacitance of a capacitor .Also derive a relation for capacitance of a parallel plate capacitor for air and dielectric as a medium.	1+3+1
(B)	The resistance of an iron wire at 0 °C is 1.0×10^4 Ω. What is the resistance at 500 °C if the temperature co-efficient of resistance of iron is $5.2 \times 10^{-3}\ K^{-1}$.	3
6.(A)	State Ampere's Law and derive the relation for field "B" of current carrying solenoid.	1+4
(B)	A square coil of side 16 cm has 200 turns and rotates in uniform magnetic field of magnitude 0.05 T. If the peak emf is 12V, what is the angular velocity of the coil?	3
7.(A)	What is modulation? Explain its two types	1+2+2
(B)	In the circuit shown in the figure below, there is negligible potential drop between B and E. Calculate (i) Base current (ii) Potential drop across R_C (iii) V_{CE}	3
8.(A)	What is de-Broglie hypothesis? How Davisson and Germer verify it ? Explain	2+3
(B)	A 1.0 m long copper wire is subjected to stretching force and its length increases by 20cm.Calculate the tensile strain and the percent elongation which the wire under goes?	3
9.(A)	What are postulates of Bohr's model of Hydrogen atom? Show that atomic radii in this atom are quantized?	2+3
(B)	If $^{233}_{92}U$ decays twice by $\propto$ – emission, what is the resulting isotope ?	3