Physics | A | L.K.No. 911 | Paper Code No. 8471

Paper II (Objective Type) | (Inter - A - 2018) | New Pattern

Time : 20 Minutes | Inter (Part - II) | Group Ist

Marks : 17 | Session (2015 - 17) to (2016 - 18)

BWP-12-G1-18

Note : Four possible choices A , B , C , D to each question are given. Which choice 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.

Q.No.1 (1)	If the distance between two charges is halved and charges are also doubled, then force between them will be : (A) Two Times (B) Four Times (C) Eight Times (D) Sixteen Times
(2)	Coulomb Per Volt is called : (A) Farad (B) Ampere (C) Joule (D) Henry
(3)	What is the resistance of a carbon resistor which has bands brown , black and brown : (A) 100 Ohm (B) 1000 Ohm (C) 10 Ohm (D) 1.0 Ohm
(4)	For a current carrying solenoid the term " n " has units as : (A) No Unit (B) m^{-1} (C) m^{-2} (D) m^{-3}
(5)	One Tesla is equal to : (A) NmA^{-1} (B) $N^{-1}mA$ (C) $NA^{-1}m^{-1}$ (D) NAm
(6)	If Motor is over - loaded, magnitude of back emf : (A) Increase (B) Decrease (C) Zero (D) Remains Constant
(7)	One Henry is equal to : (A) $VS^{-1}A$ (B) VSA^{-1} (C) $V^{-1}SA$ (D) VSA^{-1}
(8)	In three phase A.C. Generator , Phase difference between each pair of the coil is : (A) 90^{o} (B) 270^{o} (C) 120^{o} (D) 180^{o}
(9)	If the frequency of A.C. Supply is doubled then the reactance of the capacitor is : (A) Half (B) Two Times (C) Four Times (D) One Fourth
(10)	The Curi Temperature of Iron is : (A) $125^{o}C$ (B) $163^{o}C$ (C) 750 K (D) $750^{o}C$
(11)	Which one pair belongs to acceptor impurity : (A) Arsenic , Phosphorous (B) Boron , Gallium (C) Antimony , Indium (D) Arsenic , Antimony
(12)	Thickness of a base in a transistor is of the order of : (A) 10^{-3} m (B) 10^{-9} m (C) 10^{-6} m (D) 10^{-6} mm
(13)	The Boolean Equation for Exclusive OR Gate is given by : (A) $X = A \cdot B + B \cdot A$ (B) $X = A\overline{B} + \overline{A}B$ (C) $X = \overline{A} \cdot \overline{B} + A \cdot B$ (D) $X = \overline{A \cdot B + \overline{A}B}$
(14)	The factor $\frac{h}{m_0 c}$ in the Compton Equation has the dimension of : (A) Pressure (B) Length (C) Mass (D) Momentum
(15)	The Rest Mass Energy of an Electron Positron pair is : (A) 0.51 Mev (B) 1.02 Mev (C) 1.2 Mev (D) 1.00 Mev
(16)	The first orbit in the Hydrogen Atom has a radius : (A) 5.3×10^{-11} m (B) 5.3×10^{11} m (C) 3.5×10^{-11} m (D) 3.5×10^{11} m
(17)	A pair of quark and anti quark makes a : (A) Meson (B) Baryon (C) Lepton (D) Hadron

Roll No.	911 - 30000	New Pattern / Group Ist	Session (2015 - 17) to (2016 - 18)
Physics (Subjective)	Inter-A-2018	Inter (Part - II)	Time : 2 : 40 Hours Marks : 68

Note : It is compulsory to attempt any (8 - 8) parts each from Q.No.2 and Q.No.3 and attempt any (6) parts from Q. No.4 . Attempt any (03) questions from Part II . Write same Question No. and its Part No. as given in the question paper.

Make diagram where necessary. | Part - I | BwP-12-Gj-18 | 22 x 2 = 44

Q.No.2 (i) Define Electrostatics and Electric Force.
(ii) Define Xerography and Photoconductor.
(iii) Electric Lines of Force never cross, why ?
(iv) How can you identify that which plate of a capacitor is positively charged?
(v) Define Magnetic Flux and Flux Density with units.
(vi) Define Stable Galvanometer and Ohmmeter.
(vii) Why the Voltmeter should have a very high resistance?
(viii) Why does the picture on a T.V. Screen become distorted when a magnet is brought near the screen?
(ix) Define Mutual Induction and Henry.
(x) Define Induced emf and back emf of a motor.
(xi) Can a Step - Up Transformer increase the power level?
(xii) In a transformer, there is no transfer of charge from the primary to the secondary. How is then the power transferred?

Q.No.3 (i) How many electrons pass through an electric bulb in one minute if the 300 mA current is passing through it?
(ii) Explain why the terminal potential difference of a battery decreases when the current drawn from it is increased?
(iii) What is Thermister? Describe its main uses.
(iv) A circuit contains an iron - cored inductor, a switch and D.C. source arranged in series. The switch is closed and after an interval re - opened. Explain why a spark jumps across the switch contacts.
(v) Describe some advantages of a 3 - Phase A.C. Supply.
(vi) Find the Capacitance required to construct a resonance circuit of frequency 1000 kHz with an inductor of 5 mH.
(vii) Differentiate between Tensile and Shear Modes of Stress and Strain.
(viii) Show that dimensions of Stress and Young's Modulus are the same.
(ix) What is meant by Para and Ferromagnetic Substances? Give examples of each.
(x) What is the effect of Forward Biasing and Reverse Biasing of Diode on the Width of Depletion Region?
(xi) Draw the Symbol of Exclusive OR Gate and write its Truth Table.
(xii) Why is a Photo - Diode operated in Reverse Biased State?

Q.No.4 (i) State and write formula for Compton Effect.
(ii) When does light behave as a Wave ? when does it behave as a particle?
(iii) Which has the higher energy quanta ? Radio Waves or X - rays and why?
(iv) What do we mean when we say that Atom is excited?
(v) How LASER is used in medical ? Give two uses only.
(vi) What is meant by Critical Mass and Critical Volume?
(vii) What is the term dead time for GM Counter?
(viii) What do you understand by Back Ground Radiation? Explain.
(ix) What is Radioactive Tracer? Give its use in industry.

Part - II

Q.No.5 (a) What is Wheatstone Bridge? Describe its construction and how can it be used to measure the unknown resistance? (5)

(b) A point charge $q = -8.0 \times 10^{-8}$ C is placed at origin. Calculate electric field at a point 2.0 m from the origin on the z - axis. (3)

Q.No.6 (a) What do you meant by A.C. Generator and what is its working principle? By drawing its figure explain its construction. Also derive the relation for Voltage and Current Produced by it. (5)

(b) The resistance of Galvanometer is 50.0 Ω and reads full scale deflection with a current of 2.0 mA . Show by a diagram how to convert this Galvanometer into Voltmeter reading 200 V full scale. (3)

Q.No.7 (a) What is an Amplifier? Discuss action of a transistor as a voltage amplifier. Also derive formula for voltage gain. (5)

(b) A 10 mH , 20 Ω coil is connected across 240 V and $180/\pi$ Hz source. How much power does it dissipate ? (3)

Q.No.8 (a) What are N - Type and P - Type materials ? How can these be obtained ? Explain. (5)

(b) A 50 KeV photon is Compton scattered by a quasi free electron. If the scattered photon comes off at 45°, what is its Wavelength? (3)

Q.No.9 (a) What are Inner Shell Transitions? How X - rays are produced ? Give its two properties. (5)

(b) The Half Life of ^{91}Sr is 9.70 Hours. Find its Decay Constant (2)