Physics	(A)	L.K.No.1464	Paper Code No. 8472
Paper II	(Objective Type)	Inter (Ist – A – Exam – 2024)	
Time :	20 Minutes	Inter (Part – II)	Group 2nd
Marks :	17 BWP-2-24	Session (2020 – 22) to (2022 – 24)	

Note : Four choices A , B , C ,D to each question are given. Which choice is correct fill that circle in front of that Question No. on the Objective Bubble Sheet. 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)	The SI unit of Electric Flux is : (A) Nm^2C^{-1} (B) $Nm^{-2}C$ (C) Nm^2C^{-2} (D) NmC^{-2}
(2)	The Force between two point charges in the presence of air is 80 N. When a dielectric "Germanium" of dielectric constant 16 is placed between them , the force reduces to : (A) 2N (B) 5N (C) 10N (D) 32N
(3)	The Potential Difference between the head and tail of an Electric EEL can be up to : (A) 200 V (B) 500 V (C) 600 V (D) 1000 V
(4)	The relation between Current 'I' and angle of deflection 'θ' in a moving coil Galvanometer is : (A) $I \propto \theta$ (B) $I \propto \frac{1}{\theta}$ (C) $I \propto \sin\theta$ (D) $I \propto \cos\theta$
(5)	Torque on a Current Carrying coil placed in a uniform magnetic field is minimum when angle between plane of coil and magnetic field is : (A) 0^o (B) 30^o (C) 45^o (D) 90^o
(6)	When the motor is just started , the back emf is : (A) Maximum (B) Minimum (C) Almost Zero (D) Equal to Current
(7)	The Inductor Stores energy in : (A) Electric Field (B) Magnetic Field (C) Gravitational Field (D) Nuclear Field
(8)	The Slope of $q - t$ Curve at any instant of time when A.C passes through a capacitor represents : (A) Current (B) Voltage (C) Inductance (D) Capacitance
(9)	The Impedance of a parallel resonance circuit at resonance is : (A) Resistive (B) Capacitive (C) Inductive (D) Zero
(10)	Which of the following is a brittle substance : (A) Lead (B) Copper (C) Glass (D) Wrought Iron
(11)	A Photodiode can turn its current ON and OFF in : (A) Milli Seconds (B) Micro Seconds (C) Nano Seconds (D) Mega Seconds
(12)	The size of base in a transistor is of the order of : (A) 10^{-4} m (B) 10^{-6} m (C) 10^{-8} m (D) 10^{-10} m
(13)	In Photoelectric Effect , the Photoelectric Current can be increased by : (A) Increasing the Frequency of Light (B) Decreasing the Frequency of Light (C) Increasing the Intensity of Light (D) Decreasing the Intensity of Light
(14)	When a platinum wire is heated , it becomes white at about : (A) 900^oC (B) 1100^oC (C) 1300^oC (D) 1600^oC
(15)	K_α X – rays are produced due to transition of electron from : (A) K to L Shell (B) L to K Shell (C) M to K Shell (D) M to L Shell
(16)	The range of weak nuclear force is of the order of : (A) 10^{-9} m (B) 10^{-10} m (C) 10^{-17} m (D) 10^{-15} m
(17)	In Karachi Nuclear Power Plant (KANUP) , the moderator used is : (A) Graphite (B) Carbon (C) Heavy Water (D) Boron Rod

Roll No.	1464 - 20,000	Inter (Part – II)	Session (2020 –22) to (2022 – 24)
Physics (Subjective)	Inter (Ist – A – Exam – 2024)	Group 2nd	Time 2 : 40 Hours Marks : 68

Note : It is compulsory to attempt any (8 – 8) Parts each from Q.No. 2, Q.No.3 and attempt any (6) Parts from Q.No.4. Attempt any (03) Questions from Part – II .Write the Same Question Number and its Part Number as given in the Question Paper RWP-2-24

Make Diagram where necessary. | Part - I | 22 x 2 = 44

Q.No.2	(i)	Compare between Electric Forces and Gravitational Forces .
	(ii)	A Particle carrying a charge of 2e falls through a Potential Difference of 3 . 0 V . Calculate the energy acquired by it.
	(iii)	Is it true that Gauss's Law States that the total number of lines of forces crossing any closed surface in the outward direction is proportional to the net positive charge enclosed within the surface ?
	(iv)	What is Electric Polarization of Dielectrics?
	(v)	Explain Digital Multimeter.
	(vi)	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 ?
	(vii)	Two Charged Particles are projected into a region where there is a magnetic field perpendicular to their velocities . If the charges are deflected in opposite directions , what can you say about them ?
	(viii)	What is the function of Sweep Time Base Generator in Cathode Ray Oscilloscope ?
	(ix)	Show that IU = 931 MeV by using the relation $E = mc^2$.
	(x)	Define decay constant of Radioactive Element. What is its Unit?
	(xi)	Name two Processes take place at low energy and at high energy radiation.
	(xii)	Name the Particle which has high Penetrating Power . Give reason.
Q.No.3	(i)	Why some of the Electrons are free in Conductors?
	(ii)	Describe a Circuit which will give a continuously varying potential.
	(iii)	How many electrons pass through an electric bulb in one minute if the 300 mA current is passing through it?
	(iv)	In Parallel Resonant Circuits , at resonance, the branch currents I_L and I_C may each be larger than the source current I_r . Why?
	(v)	In a R – L Circuit , will the current lag or lead the voltage ? Illustrate your answer by a vector diagram .
	(vi)	Explain the conditions under which Electromagnetic Waves are produced from a source.
	(vii)	Distinguish between Forbidden Energy States and Forbidden Energy Gap.
	(viii)	How would you obtain n – type and p – type material from pure Silicon ? Illustrate it by schematic diagram .
	(ix)	What is meant by Para , Dia and Ferromagnetic Substances ? Give examples for each.
	(x)	What is Current gain of transistor? Write its relation.
	(xi)	Why a Photodiode is operated in reverse biased state ?
	(xii)	What is the biasing requirement of the junctions of a transistor for its normal operation? Explain how these requirements are met in a Common Emitter Amplifier ?
Q.No.4	(i)	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 emf in the loop?
	(ii)	What is Ideal Transformer? Also draw the symbol of Transformer.
	(iii)	Define One Henry (1H) .
	(iv)	Photon A has twice the energy of Photon B . What is the ratio of momentum of A to that of B?
	(v)	What advantages an Electron Microscope has over an Optical Microscope?
	(vi)	Calculate the de Broglie Wavelength of an electron moving at 40 ms^{-1} .
	(vii)	Explain Planck's assumption about the energy distribution curves of Black Body Radiation .
	(viii)	How can the Spectrum of Hydrogen contain so many lines when Hydrogen contains one electron?
	(ix)	Differentiate between Excitation Potential and Ionization Potential .

B

P.T.O.

A.K.No. 1464	(Part – II)	3 x 8 = 24

BWP-2-24

Q.No.5	(a)	Write a note on Construction , working and uses of Potentiometer.	(5)
	(b)	Determine the Electric Field at the position $\vec{r} = (4\hat{i} + 3\hat{j})$ m caused by a point charge $q = 5.0 \times 10^{-6}$ C placed at origin.	(3)
Q.No.6	(a)	Differentiate between Motor and Generator. Is Back Motor effect in generators in accordance with the law of Conservation of Energy ? Explain.	(5)
	(b)	A Galvanometer having an Internal Resistance $R_g = 15.0\ \Omega$ gives full scale deflection with Current $I_g = 20.0$ mA . It is to be converted into an Ammeter of range 10 . 0 A . Find the value of Shunt Resistance R_s .	(3)
Q.No.7	(a)	What is the Principle of Virtual Ground ? Apply it to find the gain of an Inverting Amplifier.	(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)	Explain Intensity Distribution diagram of Black Body Radiation .	(5)
	(b)	The length of a Steel Wire is 1 . 0 m and its cross-sectional area is $0.03 \times 10^{-4}\ m^2$. Calculate the work done in stretching the wire when a force of 100 N is applied within the elastic region. Young's Modulus of Steel is $3.0 \times 10^{11}\ Nm^{-2}$.	(3)
Q.No.9	(a)	What is Nuclear Reactor ? Describe the functions of its main parts.	(5)
	(b)	Electrons in an X-ray tube are accelerated through a Potential Difference of 3000 V. If these electrons were slowed down in a target , what will be the minimum Wavelength of X-rays produced ?	(3)