



<b>Physics</b>	(B)	<b>L.K.No. 1069</b>	<b>Paper Code No. 8473</b>
Paper II	( Objective Type )	<b>Ist - A - Exam 2023</b>	<b>Group Ist</b>
Time :	20 Minutes	Inter ( Part - II )	
Marks :	17	Session (2019 - 21) to (2021 - 23)	

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 No. Use Marker or Pen to fill the circles. Cutting or filling two or more circles will result in Zero Mark in that Question.

Bwp-12-1-23

Q.No.1	Half Life of Uranium - 239 is :
(1)	(A) 26 . 5 Minutes (B) 23 . 5 Minutes (C) 24 . 5 Minutes (D) 25 . 5 Minutes
(2)	The Number of Neutrons in ${}_{92}^{238}U$ is : (A) 92 (B) 238 (C) 146 (D) 330
(3)	For Paschen Series , the value of ' n ' starts from : (A) 2 (B) 8 (C) 6 (D) 4
(4)	1 Kg Mass will be equivalent to energy : (A) $9 \times 10^8$ J (B) $9 \times 10^{16}$ J (C) $9 \times 10^{12}$ J (D) $9 \times 10^{19}$ J
(5)	Mathematical Treatment for Electromagnetic Waves was given by : (A) Faraday (B) Maxwell (C) Hertz (D) Coulomb
(6)	In forward biasing a p - n junction Ideal, offers : (A) High Resistance (B) Infinite Resistance (C) Low Resistance (D) Medium Resistance
(7)	Which One is not a Donor Impurity here : (A) Antimony (B) Phosphorus (C) Aluminium (D) Arsenic
(8)	Which One is not Crystalline Solid : (A) Zinc (B) Copper (C) Nylon (D) Zirconia
(9)	The graph between time and A.C. Voltage is known as : (A) Parabola (B) Tangent Curve (C) Sine Curve (D) Straight Line
(10)	The Peak Value of A.C. Source is 20 A , then its rms value will be : (A) 20 A (B) 10 A (C) 14 . 1 A (D) 28 . 2 A
(11)	Inductance is measured in : (A) Ohm (B) Volts (C) Henry (D) Weber
(12)	The Mutual Inductance of Coils depends on : (A) Stiffness (B) Density (C) Nature of Material (D) Geometry
(13)	The relation between Tesla and smaller unit Gauss of Magnetic Induction is given by : (A) $1T = 10^3$ G (B) $1T = 10^6$ G (C) $1T = 10^2$ G (D) $1T = 10^4$ G
(14)	The most suitable material for making magnet is : (A) Soft Iron (B) Copper (C) Gold (D) Silver
(15)	One Coulomb per second is equal to : (A) One Volt (B) One Ampere (C) One Watt (D) One Ohm
(16)	If the distance between two point charges is halved , the Electric Intensity becomes : (A) Half (B) $\frac{1}{4}$ Times (C) 4 Times (D) Double
(17)	Relative Permittivity for air is : (A) 1 . 06 (B) 1 . 006 (C) 1 . 0006 (D) 1 . 6



Roll No.	1069 - 2 / 1000	Inter ( Part II )	Group Ist
Physics (Subjective )	Ist - A - Exam 2023	Time 2 : 40 Hours Marks : 68	Session (2019 -21) to (2021 - 23)

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 (3) 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-12-1-23

22 x 2 = 44

Q.No.2	(i)	Do Electrons tend to go to region of High Potential or of Low Potential ?
	(ii)	Is $\vec{E}$ necessarily Zero inside a charged rubber balloon if balloon is spherical ? Assume that charge is distributed uniformly over the surface .
	(iii)	How charged particle work during their flight in Inkjet printer ?
	(iv)	What is Potential Gradient ? Give its units.
	(v)	Why the Resistance of an Ammeter should be very low ?
	(vi)	If a charged particle moves in a straight line through some region of space , can you say magnetic field in this region is zero ?
	(vii)	How you express Magnetic Flux ? On what factor it depends ?
	(viii)	How we can increase the range of Voltmeter ?
	(ix)	What do we mean by the term Critical Mass ?
	(x)	What do you understand by " Background Radiation " ? State two sources of Radiation.
	(xi)	What do you mean by Quark ?
	(xii)	What is Radiography ? What is its importance ?
Q.No.3	(i)	Why does the Resistance of a conductor rise with temperature ?
	(ii)	Do bends in a wire affect its Electric Resistance ? Explain.
	(iii)	Name any four sources of Current .
	(iv)	Explain the conditions under which Electromagnetic Waves are produced from a source .
	(v)	How many times per second will an Incandescent Lamp reach maximum brilliance when connected to a 50 Hz source ?
	(vi)	What do you mean by Root Mean Square Value ( rms ) ?
	(vii)	Differentiate between Crystalline Amorphous and Polymeric Solids ?
	(viii)	What is meant by Para , Dia and Ferromagnetic Substance ? Give example of each.
	(ix)	Explain what is Curie Temperature ?
	(x)	Why a Photodiode is operated in reverse biased state ?
	(xi)	What is the Net Charge on a n - type or p - type substance ?
	(xii)	The Input of a gate are ' 1 ' and ' 0 ' . Identify the gate if its output is : (a) 0 (b) 1
Q.No.4	(i)	What does Negative Sign in Equation of Faraday's Law Indicate ?
	(ii)	Define the SI Unit of Mutual Inductance Henry.
	(iii)	Can a D.C. Motor be turned into a D.C. Generator? What changes are required to be done ?
	(iv)	Which Photon red , green or blue carries the most : (a) Energy and (b) Momentum ?
	(v)	Which has the Lower Energy Quanta Radiowaves or X - rays ?
	(vi)	From theory of Relativity, derive the expression of Momentum of Photon.
	(vii)	What is Energy of a Photon in a beam of Infrared Radiation of Wavelength 1240 nm ?
	(viii)	What do we mean when we say that the atom is excited ?
	(ix)	Differentiate between Spontaneous Emission and Induced or Stimulated Emission.

Part - II

3 x 8 = 24

Q.No.5	(a)	State and Explain Coulomb's Law.	(5)
	(b)	$1.0 \times 10^7$ Electrons pass through a conductor in 1.0 . Find the current in Ampere flowing through the conductor. Electric Charge is $1.6 \times 10^{-19}$ C .	(3)
Q.No.6	(a)	What is Motional emf ? Derive an expression for it .	(5)
	(b)	What current should pass through a Solenoid that is 0.5 m long with 10,000 turns of Copper so that it will have a magnetic field 0.4 T ?	(3)
Q.No.7	(a)	How Transistor can be used as Amplifier ? Explain with Circuit and derive expression for voltage gain.	(5)
	(b)	What is the Resonant Frequency of a Circuit which includes a coil of Inductance 2.5 H and a Capacitance $40 \mu F$ ?	(3)
Q.No.8	(a)	Describe the Wave Nature of Particle. Also discuss Davisson and Germer Experiment.	(5)
	(b)	A 1.25 cm diameter cylinder is subjected to a load of 2500 Kg. Calculate the stress on the bar in Mega Pascals.	(3)
Q.No.9	(a)	What is Spectroscopy ? Derive the expression that in Bohr's Atomic Model of Hydrogen Atom , Bohr's Orbital Energies are Quantized.	(5)
	(b)	How much energy is absorbed by a man of mass 80 Kg who receives a lethal whole body equivalent dose of 400 rem in the form of low energy Neutrons for which RBE factor is 10 ?	(3)





<b>Physics</b>	(B)	<b>L.K.No. 1070</b>	<b>Paper Code No. 8474</b>
Paper II	( Objective Type )	<b>1st - A - Exam 2023</b>	<b>Group 2nd</b>
Time :	20 Minutes	Inter ( Part - II )	
Marks :	17	Session (2019 - 21) to (2021 - 23)	

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 No. Use Marker or Pen to fill the circles. Cutting or filling two or more circles will result in Zero Mark in that Question.

BWP-12-2-23

Q.No.1	A.C Through Resistor, Voltage and Current have the phase :
(1)	(A) Out of Phase (B) Perpendicular (C) In Phase (D) Antiparallel
(2)	A pair of Quark and Anti Quark makes : (A) Baryons (B) Meson (C) Photon (D) Proton
(3)	Nuclear Fission Chain Reaction is controlled by : (A) Steel Rod (B) Graphite Rod (C) Cadmium Rod (D) Platinum Rod
(4)	Balmer Series lies in the : (A) Ultraviolet Region (B) Visible Region (C) Far Infrared Region (D) Infrared Region
(5)	The Unit of Work Function is : (A) Watt (B) eV (C) Farad (D) Photocell
(6)	Which One is Low Energy Photon : (A) X-Ray (B) Infrared Light (C) Visible Light (D) Ultraviolet Light
(7)	The Output Voltage of a Rectifier is : (A) Perfectly Direct (B) Smooth (C) Pulsating (D) Alternating
(8)	The Potential Barrier in Diode stops movement of : (A) Electron (B) Holes (C) Photon (D) Both A and B
(9)	Which of the following does not go Plastic Deformation : (A) Copper (B) Wrought Iron (C) Lead (D) Glass
(10)	The device which only allows the A.C. is : (A) Capacitor (B) Inductor (C) Generator (D) Transformer
(11)	The current flowing through the coil due to induced emf depends upon : (A) Magnetic Flux (B) Area of Coil (C) Shape of Coil (D) Resistance of Coil
(12)	If we want to make Magnetic Field stronger the value of induced current is : (A) Decreased (B) Vanish (C) Increased (D) Constant
(13)	An Ammeter is always connected in : (A) Parallel (B) Perpendicular (C) Series (D) Oblique
(14)	Current Passing through the coil of Galvanometer is : (A) $\frac{c}{BAN} \theta$ (B) $\frac{NAB}{c} \theta$ (C) $\frac{AN}{BC} \theta$ (D) $\frac{CN}{BA} \theta$
(15)	The substance having negative temperature co-efficient is : (A) Carbon (B) Gold (C) Iron (D) Tungsten
(16)	Electric Intensity due to the oppositely charged parallel plate is : (A) Zero (B) $\frac{1}{\epsilon_0}$ (C) $\frac{\sigma}{2\epsilon_0}$ (D) $\frac{\sigma}{\epsilon_0}$
(17)	The Negative of Potential Gradient is : (A) Electric Field Intensity (B) Electromotive Force (C) Electrostatic Force (D) Potential Difference





Roll No.	1070 - 20000	Inter (Part II)	Group 2nd
Physics (Subjective)	1st - A - Exam 2023	Time 2:40 Hours Marks : 68	Session (2019-21) to (2021-23)

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 (3) 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-12-2-23

22 x 2 = 44

Q.No.2	(i)	Define Potential Gradient. Give its unit.
	(ii)	What are the Photoconductors?
	(iii)	Do Electrons tend to go to region of High Potential or of Low Potential?
	(iv)	How can you identify that which plate of a capacitor is positively charged?
	(v)	If a Charged Particle moves in a straight line through some region of space, can you say that the Magnetic Field in the region is zero?
	(vi)	Suppose that a charge 'q' is moving in a uniform magnetic field with a velocity 'v'. Why is there no work done by the Magnetic Force that acts on the charge q?
	(vii)	How can a current loop be used to determine the presence of a magnetic field in a given region of space?
	(viii)	How can we increase sensitivity of a Galvanometer?
	(ix)	Why are Heavy Nuclei unstable?
	(x)	What are Isotopes? What do they have in common and what are their differences?
	(xi)	What factors make a fusion reaction difficult to achieve?
	(xii)	Explain the working of Control Rods in Nuclear Reactor.
Q.No.3	(i)	A Potential Difference is applied across the ends of a copper wire. What is the effect on drift velocity by decreasing the length and temperature of the wire?
	(ii)	Why does the Resistance of a conductor rise with temperature?
	(iii)	What is Chemical Effect of Current?
	(iv)	How many times per second will an Incandescent Lamp reach maximum brilliance when connected to a 50 Hz source?
	(v)	What is Choke? Give its uses
	(vi)	Write down the properties of Series Resonance Circuit.
	(vii)	Distinguish between Crystalline Amorphous and Polymeric Solids.
	(viii)	What is Unit Cell and Crystal Lattice?
	(ix)	Differentiate between Tensile and Compressive Modes of Stress and Strain.
	(x)	What is the Net Charge on a n-type or a p-type substance?
	(xi)	Why charge carriers are not present in the depletion region?
	(xii)	Why is Photodiode? Give some uses of Photodiode.
Q.No.4	(i)	How Induced Current can be increased?
	(ii)	Show that $\mathcal{E}$ and $\frac{\Delta\phi}{\Delta t}$ have the same units.
	(iii)	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?
	(iv)	Write Postulates of Special Theory of Relativity.
	(v)	State Stephan Boltzmann's Law and write its Mathematical Relation.
	(vi)	What are the measurements on which two observers in relative motion will always agree upon?
	(vii)	As a Solid is heated and begins to glow, why does it first appear red?
	(viii)	Describe De - Broglie's Interpretation of Bohr's Orbits.
	(ix)	Is Energy Conserved when an Atom emits a photon of light?

Part - II

3 x 8 = 24

Q.No.5	(a)	State Gauss's Law. Find out the Electric Intensity due to an Infinite Sheet of Charge.	(5)
	(b)	0.75 A Current Flows through an Iron Wire when a battery of 1.5 V is connected across its ends. The length of the wire is 5 m and its Cross Sectional Area is $2.5 \times 10^{-7} \text{ m}^2$ .	(3)
Q.No.6	(a)	What is Solenoid? Derive an expression for Magnetic Field inside the Current Carrying long Solenoid.	(5)
	(b)	The turns ratios of a step up transformer is 50. A current of 20 A is passed through its primary coil at 220 volts. Obtain the value of the Voltage and Current in the Secondary Coil assuming the transformer to be Ideal One.	(3)
Q.No.7	(a)	What is Operational Amplifier? Describe Operational Amplifier as Inverting and Non - Inverting Amplifier.	(5)
	(b)	When 10 V are applied to an A.C. Circuit, the current flowing in it is 100 mA. Find its Impedance.	(3)
Q.No.8	(a)	What is Strain Energy? Derive a relation for Strain Energy of a deformed material?	(5)
	(b)	Yellow Light of 577 nm Wavelength is incident on a Cesium Surface. The stopping voltage is found to be 0.25 V. Find the Work Function of the Cesium.	(3)
Q.No.9	(a)	Using Bohr's Second Postulate, find the value of : (i) Quantized Radii and (ii) Quantized Velocities in Hydrogen Atom.	(5)
	(b)	The Element ${}_{91}^{234}\text{Pa}$ is unstable and decays by $\beta$ - Emission. State the Nuclear Reaction and Daughter Nuclei.	(3)