Physics	(D)	L.K.No. 1463	Paper Code No. 8477
Paper II	(Objective Type)	Inter (Ist - A - Exam - 2024)	
Time :	20 Minutes	Inter (Part - II)	(Group Ist)
Marks :	17	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.	
Q.No.1 (1)	Force between two point charges 10 μC and 40 μC is 9000 N. Then distance between them is : (A) 2 cm ● (B) 20 cm (C) 20 m (D) 400 m
(2)	In case of Torque on a Current carrying coil , ' α ' is angle between : (A) $\bar{B}$ and $\bar{A}$ (B) Pole faces and Plane of Coil ● (C) $\bar{B}$ and Plane of Coil (D) None of these
(3)	A wire of resistance 9 Ohm is cut into three equal parts and these are connected in parallel. The Equivalent Resistance is : (A) 1 Ohm ● (B) 3 Ohm (C) 9 Ohm (D) 27 Ohm
(4)	By Introducing a Dielectric between the plates of a Charged Capacitor , energy stored will be : (A) Increased (B) ● Decreased (C) Remain Constant (D) Nothing Can Be Said
(5)	The restoring couple in moving coil Galvanometer is due to : (A) Current in the coil (B) Magnetic Field (C) Material of Coil (D) Twist In Wire ●
(6)	A parallel resonance circuit has resonance frequency ' f ' . If Capacitance of this circuit is increased four times , then resonance frequency becomes : (A) 2 f (B) 4 f (C) f /4 (D) f/2 ●
(7)	A Transformer consists of 500 turns in Primary and 200 turns in Secondary. When a battery of emf 9V is connected at the Primary , The Voltage obtained at Secondary is : (A) ● 3 . 6 V (B) 22 . 4 V (C) 9 V (D) Zero Volt
(8)	A steady current of 1 A in a coil of 1000 turns generates a flux of 10^{-4} Wb to pass through the loop of the coil. The energy stored in the inductor is : (A) 5 J (B) 0 . 05 J (C) ● 0 . 5 J (D) 50 J
(9)	Power factor is 1 for : (A) Pure Inductor (B) Pure Capacitor (C) ● Pure Resistor (D) Both Capacitor and Inductor
(10)	A Transistor has a base current of 1mA and emitter current 100 mA . The current gain of the transistor is : (A) 1 (B) ● 99 (C) 100 (D) 101
(11)	The phase difference between input voltage and output voltage of the Transistor Amplifier is : (A) 0^{o} (B) 90^{o} (C) ● 180^{o} (D) 120^{o}
(12)	In Hysteresis Loop, lagging of magnetism behind magnetizing current is called : (A) Saturation (B) Retentivity (C) ● Hysteresis (D) Coercivity
(13)	The momentum of a Photon of frequency ' f ' is : (A) hc / f (B) c / hf (C) f / hc (D) hf / c ●
(14)	In a Nuclear Reactor , Cadmium rods are used to : (A) Speed Up Electrons (B) Slow Down Neutrons (C) Absorb Neutrons ● (D) Produce Neutrons
(15)	In laser , the excited atom returns to its ground state from its meta stable state is about : (A) 10^{-10} s (B) 10^{-8} s (C) 10^{-5} s (D) 10^{-3} s ●
(16)	The de-Broglie wavelength of a particle of mass ' m ' moving with Kinetic energy ' E ' is : (A) $\sqrt{h/2mE}$ (B) ● $h/\sqrt{2mE}$ (C) h / 2mE (D) $\sqrt{h}$ / 2mE
(17)	Which of the following detectors can count fast and operate at low voltage : (A) Geiger Counter (B) Wilson Cloud Chamber (C) Solid State Detector ● (D) Scintillation Counter

Roll No.	1463 - 20,000	Inter (Part – II)	Session (2020 –22) to (2022 – 24)
Physics (Subjective)	Inter (Ist – A– Exam – 2024)	Group Ist	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 (3) Questions from Part – II .Write the Same Question Number and its Part Number as given in the Question Paper

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

Q.No.2	(i)	The Potential is constant throughout a given region of space. Is the Electric Field zero or non-zero in this region ? Explain.
	(ii)	Electric lines of force never cross. Why?
	(iii)	Differentiate between Electric Field and Electric Field Intensity .
	(iv)	What are the properties of Electric Field Lines?
	(v)	How can a Current Loop be used to determine the presence of a Magnetic Field in a given region of space?
	(vi)	Why the Resistance of an Ammeter should be very low?
	(vii)	What are the uses of CRO?
	(viii)	What is Lorentz Force? Give its Mathematical expression.
	(ix)	A Particle which produces more Ionization is less penetrating. Why?
	(x)	What is meant by Critical Mass?
	(xi)	Distinguish between Nuclear Fission and Nuclear Fusion.
	(xii)	What is meant by Radiography?
Q.No.3	(i)	Is the Filament Resistance lower or higher in a 500 W , 220 V light bulb than in a 100 W , 220 V bulb ?
	(ii)	A wire of Resistivity ρ is stretched to twice of its length . What will be the new Resistivity?
	(iii)	Define Tolerance . Give one example.
	(iv)	How many times per second will an Incandescent Lamp reach maximum brilliance when connected to a 50 Hz source?
	(v)	Write any three characteristics of Series Resonance Circuit.
	(vi)	What is the main reason for the world wide use of A.C ?
	(vii)	Distinguish between Crystalline and Amorphous Solids.
	(viii)	What is meant by Para , Dia and Ferromagnetic Substances? Give examples for each.
	(ix)	Define UTS and Plasticity.
	(x)	What is the Net Charge on a n – type or a p – type substance?
	(xi)	Why a Photodiode is operated in Reverse Biased State?
	(xii)	A Transistor has I_C = 10 mA and I_B = 40 µA , calculate the Current gain.
Q.No.4	(i)	What are the factors due to which induced emf can be increased ?
	(ii)	The turns Ratio of a Step up Transformer is 50 . Find the number of turns in Secondary Coil , if the number of turns in Primary Coil is 10.
	(iii)	Four Unmarked wires emerge from a Transformer. What steps would you take to determine the Turns Ratio ?
	(iv)	The life time of an electron in an excited state is about 10^{-8} s. What is its Uncertainty in energy during this time?
	(v)	As a Solid is heated and begins to glow , why does it first appear red?
	(vi)	What happens to total radiation from a black body if its absolute temperature is doubled?
	(vii)	What is NAVSTAR Navigation System?
	(viii)	Write down the Biological Effects of X-Rays.
	(ix)	Explain why Laser action could not occur without Population Inversion between Atomic levels?

P.T.O.

L.K.No.1463 | **(Part – II)** | pakcity.org | **3 x 8 = 24**

Q.No.5	(a)	What is Wheatstone Bridge? How it can be used to find the unknown resistance?	(5)
	(b)	Two Point Charges $q_1 = -1.0 \times 10^{-6}$ C and $q_2 = +4.0 \times 10^{-6}$ C, are separated by a distance of 3.0 m. Find and justify the zero – field location.	(3)
Q.No.6	(a)	Derive the expression for energy stored in an inductor in terms of Magnetic Field. Also find the Energy Density.	(5)
	(b)	A velocity selector has a Magnetic Field of 0.30 T. If a perpendicular Electric Field of 10,000 Vm^{-1} is applied, what will be the speed of the particle that will pass through the selector?	(3)
Q.No.7	(a)	Write a note on Transistor as an Amplifier. Calculate its Voltage Gain and give significance of negative sign.	(5)
	(b)	Find the value of the current flowing through a Capacitance 0.5 µF when connected to a source of 150 V at 50 Hz.	(3)
Q.No.8	(a)	What is Hysteresis Loop ? Discuss in detail.	(5)
	(b)	The life time of an electron in an excited state is about 10^{-8} s. What is its uncertainty in energy during this time?	(3)
Q.No.9	(a)	Give the postulates of BOHR'S Atomic Model. Describe Hydrogen Emission Spectrum by using BOHR'S Atomic Model.	(5)
	(b)	A 75 kg person receives a whole body radiation dose of 24 m-rad, delivered by α-particles for which RBE factor is 12. Calculate : (a) The Absorbed Energy in Joules (b) The Equivalent dose in rem.	(3)

04-04-2024

Physics	(D)	L.K.No.1464	Paper Code No. 8478
Paper II	(Objective Type)	Inter (Ist - A - Exam - 2024)	
Time :	20 Minutes	Inter (Part – II)	Group 2nd
Marks :	17	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 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) $I \propto \cos\theta$
(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 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
(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° (B) 30° (C) 45° (D) 90°
(6)	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
(7)	The Inductor Stores energy in : (A) Electric Field (B) Magnetic Field (C) Gravitational Field (D) Nuclear Field
(8)	When the motor is just started , the back emf is : (A) Maximum (B) Minimum (C) Almost Zero (D) Equal to Current
(9)	The Impedance of a parallel resonance circuit at resonance is : (A) Resistive (B) Capacitive (C) Inductive (D) Zero
(10)	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
(11)	A Photodiode can turn its current ON and OFF in : (A) Milli Seconds (B) Micro Seconds (C) Nano Seconds (D) Mega Seconds
(12)	Which of the following is a brittle substance : (A) Lead (B) Copper (C) Glass (D) Wrought Iron
(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)	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
(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)	When a platinum wire is heated , it becomes white at about : (A) $900^\circ C$ (B) $1100^\circ C$ (C) $1300^\circ C$ (D) $1600^\circ C$
(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

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 .

P.T.O.

L.K.No. 1464 | **(Part – II)** | pakcity.org | **3 x 8 = 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/π 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)

Physics	(B)	L.K.No. 1069	Paper Code No. 8473
Paper II	(Objective Type)	Ist – A – Exam 2023	Group Ist
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.

Q.No.1 (1)	Half Life of Uranium – 239 is : (A) 26 . 5 Minutes (B) 23 . 5 Minutes (C) 24 . 5 Minutes (D) 25 . 5 Minutes
(2)	The Number of Neutrons in $^{238}_{92}U$ 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) 9×10^{8} J (B) 9×10^{16} J (C) 9×10^{12} J (D) 9×10^{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) $1\,T = 10^{3}\,G$ (B) $1\,T = 10^{6}\,G$ (C) $1\,T = 10^{2}\,G$ (D) $1\,T = 10^{4}\,G$
(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) ¼ Times (C) 4 Times (D) Double
(17)	Relative Permitivity 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

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)	1.0×10^{7} Electrons pass through a conductor in 1.0 . Find the current in Ampere flowing through the conductor. Electric Charge is 1.6×10^{-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 is 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 μF ?	(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)

Physics	(B)	L.K.No. 1070	Paper Code No. 8474
Paper II	(Objective Type)	Ist – A – Exam 2023	Group 2nd
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.

Q.No.1 (1)	A.C Through Resistor, Voltage and Current have the phase : (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) Head (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) $\frac{1}{\varepsilon_0}$ (C) $\frac{\sigma}{2\varepsilon_0}$ (D) $\frac{\sigma}{\varepsilon_0}$
(17)	The Negative of Potential Gradient is : (A) Electric Field Intensity (B) Electromotive Force (C) Electrostatic Force (D) Potential Difference

Roll No.	1070 - 2.0000	Inter (Part II)	Group 2nd
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

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 $2.5 \times 10^{-7}\ m^2$.	(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 Ceslum 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 $^{234}_{91}Pa$ is unstable and decays by $\beta - Emission$. State the Nuclear Reaction and Daughter Nuclei.	(3)

Physics	(C)	L.R.No. 1307	Paper Code No. 8475
Paper II	(Objective Type)	Inter – A – 2022	(Group Ist)
Time :	20 Minutes	Inter (Part - II)	
Marks :	17	Session (2018 -20) to (2020 – 22)	

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.

Q.No.1 (1)	The heat produced by the passage of current through a resistor is : (A) I^2Rt (B) IR^2t (C) I^2R (D) IRt^2
(2)	A particle having a charge of **2e** falls through a potential difference of 3.0 Volts. The change in its K.E. is equal to : (A) 6.0 eV (B) 5.0 eV (C) 4.0 eV (D) 8.0 eV
(3)	Photocopier and Inkjet Printers are the applications of : (A) Electricity (B) Magnetism (C) Electrostatics (D) Electromagnetism
(4)	A Voltmeter is always connected in : (A) Series (B) Parallel (C) Place of Battery (D) All these
(5)	A device which converts Electrical Energy into Mechanical Energy is : (A) Transformer (B) D.C. Motor (C) A.C. Generator (D) D.C. Generator
(6)	If Magnetic Field is doubled, then the Magnetic Energy density becomes : (A) Two Times (B) Three Times (C) Half Time (D) Four Times
(7)	In Cathode Ray Oscilloscope, grid controls : (A) Temperature of Filament (B) Charge of Electrons (C) Number of Electrons (D) Energy of Electrons
(8)	Root Mean Square Value of Alternating Voltage with V_o = 100 V , is equal to : (A) 0.7 V (B) 7 V (C) 700 V (D) 70 V
(9)	In case of Silicon, the value of Potential Barrier is : (A) 0.6 V (B) 0.7 V (C) 0.1 V (D) 0.3 V
(10)	Example of a Ductile Material is : (A) Glass (B) Wood (C) Lead (D) Diamond
(11)	In RLC Series Circuit , the condition for resonance is (A) $X_L = X_C$ (B) $X_L > X_C$ (C) $X_L < X_C$ (D) $X_L = X_C + R$
(12)	In Full Wave Rectification, number of Diodes required are : (A) 3 (B) 5 (C) 1 (D) 4
(13)	Photons emitted in the inner Shell Transition are : (A) Continuous X-rays (B) Gamma Rays (C) Characteristic X-rays (D) Energetic X – rays
(14)	Absorbed Dose is defined as : (A) M x E (B) $\frac{M}{E}$ (C) $\frac{E}{M}$ (D) $\frac{E}{C}$
(15)	0.1 Kg mass will be equivalent to the energy (A) 5×10^8 Joules (B) 6×10^{19} Joules (C) 9×10^{15} Joules (D) 9×10^{19} Joules
(16)	Slow Neutrons can cause Fission in : (A) Uranium – 235 (B) Uranium – 238 (C) Plutonium – 239 (D) Thorium – 234
(17)	The Velocity at which relativistic length of a body reduces to half of its original length is : (A) $\frac{1}{2}C$ (B) $\frac{\sqrt{3}}{2}C$ (C) $\frac{3}{4}C$ (D) $\frac{1}{\sqrt{2}}C$

Roll No.	1307 - 18000	Inter (Part II)	(Group Ist)
Physics (Subjective)	Inter – A – 2022	Time 2 : 40 Hours Marks : 68	Session (2018 –20) to (2020 – 22)

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

22 x 2 = 44

Q.No.2	(i)	Show that $E = -\frac{\Delta v}{\Delta r}$
	(ii)	Define Volt and Farad.
	(iii)	Describe the Force or Forces on a positive point charge when placed between Parallel Plates : (a) With similar and equal charges (b) With opposite and equal charges
	(iv)	If a point charge **q** of mass **m** is released in a non – uniform electric field with field lines pointing in the same direction , will it make a rectillinear motion ? Explain.
	(v)	What is meant by Zeroed of Ohm – Meter ?
	(vi)	Write down the main parts of C.R.O.
	(vii)	Why does the picture of a T.V. Screen become distorted when a magnet is brought near the screen?
	(viii)	How can you use a magnetic field to separate Isotopes of a Chemical Element ?
	(ix)	Differentiate between Baryons and Mesons.
	(x)	If $^{233}_{92}U$ decays twice by $\alpha - emission$, what is the resulting Isotope ?
	(xi)	What fraction of a Radioactive Sample Decays after two half lives have elapsed ?
	(xii)	If you swallowed an $\alpha - source$ and β source , which would be more dangerous to you ? Explain why ?
Q.No.3	(i)	Is the filament resistance lower or higher in a 500 W , 220 V light bulb than in a 100 W , 220 V bulb ?
	(ii)	Differentiate between Resistance and Resistivity.
	(iii)	Write two uses of Rheostat.
	(iv)	A choke coil placed in series with an electric lamp in A.C. Circuit causes the lamp to become dim , why is it so ?
	(v)	What do you mean by Root Mean Square Value of A.C. Voltage ?
	(vi)	How does doubling the frequency affect the reactance of : (a) An Inductor (b) A Capacitor
	(vii)	Distinguish between Intrinsic and Extrinsic Semi Conductors.
	(viii)	What are Super Conductors ? Give two uses of Super Conductors.
	(ix)	What is Crystal Lattice ? What is its significance ?
	(x)	How does the motion of an electron in a n – type substance differ from the motion of holes in a P – type substance ?
	(xi)	What are Sensors ? Give two examples.
	(xii)	What is the role of Potential Barrier in a Diode ? How is it formed in a Diode ?
Q.No.4	(i)	How would you position a flat loop of wire in a changing magnetic field so that there is no emf induced in the loop ?
	(ii)	Show that $emf\ (\mathcal{E})$ and $\frac{\Delta \emptyset}{\Delta t}$ have the same units .
	(iii)	When the primary of a transformer is connected to the A.C. mains, the current in it : (a) Is very small if the secondary circuit is open , but (b) Increases when the secondary circuit is closed. Explain these facts.
	(iv)	Describe practical use of Step Up Transformer.
	(v)	Compton's Shift $(\Delta\lambda)$ in a Wave is zero. Calculate the scattering angle of photon.
	(vi)	What happens to the total radiation from a black body if its absolute temperature is doubled ?
	(vii)	When light shines on a surface , is momentum transferred to the metal surface ? Explain.
	(viii)	Calculate the energy of electron in 4^{th} orbit of Hydrogen Atom (in ev).
	(ix)	What are the advantages of Lasers over Ordinary Light ?

L.K.NO. 1307

Bahawalpur Board-2022

Part - II

Q.No.5	(a)	Define Electric Power. Derive an expression for power dissipated in a Resistor. 1 + 4 =	(5)
	(b)	Find the Electric Field Strength required to hold a suspended particle of mass 1.0×10^{-6} Kg and charge $1.0\ \mu C$ between two plates 10.0 cm apart.	(3)
Q.No.6	(a)	Explain how energy density is proportional to square of magnetic field in a current carrying inductor ?	(5)
	(b)	A coil of 0.1 m x 0.1 m and of 200 turns carrying a current of 1.0 mA is placed in a uniform magnetic field of 0.1 T. Calculate maximum torque that acts on the coil.	(3)
Q.No.7	(a)	Discuss the Parallel Resonance Circuit and also write down its properties.	(5)
	(b)	The current flowing into the base of a transistor is 100 μA. Find its Collector Current I_C, its Emitter Current I_E and the ratio $\frac{I_C}{I_E}$.	(3)
Q.No.8	(a)	What was the de-Broglie's Hypothesis ? How this hypothesis was confirmed by Davisson and Germer ?	(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)	Explain Nuclear Fusion Reaction. What are Nuclear Reactions in the sun ?	(5)
	(b)	The Wavelength of K X-ray from copper is 1.377×10^{-10} m. What is the energy difference between two levels from which this transition results ?	(3)

Physics	(A)	L.K.No. 1308	Paper Code No. 8472
Paper II	(Objective Type)	Inter – A – 2022	(Group 2nd)
Time :	20 Minutes	Inter (Part - II)	
Marks :	17	Session (2018 – 20) to (2020 – 22)	

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.

Q.No.1 (1)	The absolute potential at a point distant 20 cm from a charge of $2\,\mu C$ is : (A) 9×10^2 V (B) 9×10^3 V (C) 9×10^4 V (D) 9×10^5 V
(2)	$\frac{v}{m}$ is unit of : (A) Magnetic Field Intensity (B) Electric Field Intensity (C) Electric Force (D) Gravitational Force
(3)	Three Resistors of Resistance $2\,\Omega$, $3\,\Omega$ and $6\,\Omega$ are connected in series. Their Equivalent Resistance is : (A) $10\,\Omega$ (B) $11\,\Omega$ (C) $\frac{1}{10}\,\Omega$ (D) $\frac{1}{11}\,\Omega$
(4)	Which of the following Apparatus is used to measure Current, Voltage and Resistance : (A) Ammeter (B) Voltmeter (C) Avometer (D) Galvanometer
(5)	To convert a Galvanometer into a Voltmeter, a high resistance connected in series with Galvanometer is given by : (A) $R_h = \frac{V}{R_g} - I_g$ (B) $\frac{V}{R_g} + I_g = R_h$ (C) $R_h = \frac{V}{I_g} - R_g$ (D) $\frac{V}{I_g} + R_g = R_h$
(6)	The direction of the Induced Current is always so as to oppose the change which causes the current : (A) Faraday's Law (B) Lenz's Law (C) Ohm's Law (D) Kirchhoff's Ist Rule
(7)	In D.C. Generator, Split Rings act as : (A) Capacitor (B) Commutator (C) Inductor (D) Resistor
(8)	The basic circuit element in a D.C Circuit which controlled the current and voltage is : (A) Transformer (B) Resistor (C) Inductor (D) Transistor
(9)	The device which allows only the flow of D.C. is (A) Generator (B) Transformer (C) Inductor (D) Capacitor
(10)	A Semi Conductor will behave as an Insulator at temperature : (A) 0 K (B) 0°C (C) 10 K (D) 10°C
(11)	Which Diode works at Reverse Biasing : (A) LED (B) Photo – Voltaic Cell (C) Photodiode (D) Silicon Diode
(12)	The Voltage Gain of an Amplifier having $r_{ie} = 1\,\Omega$, $\beta = 100$, $Re = 20\,\Omega$ is : (A) 1000 (B) 2000 (C) 500 (D) 5000
(13)	The Materialization of Energy take place in the process of : (A) Photoelectric Effect (B) Compton Effect (C) Pair Production (D) Annihilation of Matter
(14)	The factor $\frac{h}{moc}$ has the unit of : (A) Kilogram (B) Second (C) Meter (D) Joule
(15)	The equation of Rydberg's Constant is : (A) $R_H = \frac{hc}{m_o}$ (B) $R_H = \frac{E_o}{hc}$ (C) $R_H = \frac{E_o}{\lambda}$ (D) $R_H = \frac{1}{hc}$
(16)	Binding Energy for deuteron nucleus is given by : (A) 2.8 MeV (B) 2.23 MeV (C) 2.28 MeV (D) 2.25 MeV
(17)	Electrons are : (A) Hadrons (B) Leptons (C) Quarks (D) Baryons

Roll No.	1308 - /8000	Inter (Part II)	(Group 2nd)
Physics (Subjective)	Inter – A – 2022	Time 2 : 40 Hours Marks : 68	Session (2018 –20) to (2020 – 22)

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

22 x 2 = 44

Q.No.2	(i)	How can you identify that which plate of a capacitor is positively charged ?
	(ii)	Electric Lines of Force never cross , why ?
	(iii)	Define Electron Volt . Give its numerical value in Joule.
	(iv)	Show that $1\frac{v}{m} = 1\frac{N}{C}$
	(v)	What is meant by Sensitivity of Galvanometer ? How can a Galvanometer be made more sensitive ?
	(vi)	What is the function of Grid in C.R.O. ?
	(vii)	How can you use a Magnetic Field to separate Isotopes of Chemical Element ?
	(viii)	Why does the picture of a T.V. Screen become distorted when a magnet is brought near the screen ?
	(ix)	Why are heavy nuclei unstable ?
	(x)	What do you understand by " Background Radiation " ? State two sources of this radiation.
	(xi)	What is the Mass Defect ?
	(xii)	Define the term Binding Energy.
Q.No.3	(i)	Is the filament resistance lower or higher in a 500 W , 220 V light bulb than in a 100 W , 220 V bulb ?
	(ii)	Distinguish between Resistivity and Conductivity.
	(iii)	What is the difference between emf and Terminal Potential Difference ?
	(iv)	What is meant by A.M. and F.M. ?
	(v)	When 10 V are applied to A.C. Circuit , the current flowing in it is 100 mA. Find its impedance.
	(vi)	What is Resonance Condition in R – L – C Series Circuit ?
	(vii)	Distinguish between Amorphous and Polymeric Solids.
	(viii)	Define Critical Temperature and Curie Temperature.
	(ix)	What is meant by Hysteresis Loss ? Explain.
	(x)	Why Ordinary Silicon Diodes do not emit light ?
	(xi)	What is the principle of Virtual Ground ? Apply it to find the gain of an inverting amplifier.
	(xii)	Write the basic characteristics of Operational Amplifier.
Q.No.4	(i)	A metal rod of 0 . 25 m is moving at a speed of 0 . 5 ms^{-1} in a direction perpendicular to a 0 . 25 T magnetic field. Find emf produced in the rod.
	(ii)	When an Electric Motor such as an Electric Drill is being used , does it also act as a generator ? If so what is the consequence of this ?
	(iii)	A suspended magnet is oscillating freely in a horizontal plane. The oscillations are strongly damped when a metal plate is placed under the magnet . Explain why does this occur ?
	(iv)	Can a step – up transformer increase the power level ? Explain with equation.
	(v)	Rest and Motion are not absolute but relative. Explain this statement with example.
	(vi)	If an object moves with speed of light , then what will be its mass ? Explain with equation.
	(vii)	Which photon , red , green or blue carries the most : (a) Energy and (b) Momentum
	(viii)	Differentiate between Normal Population and Population Inversion of Atomic Energy. State with figures.
	(ix)	Can X – ray photon be reflected , refracted , diffracted and polarized just like any other wave ? Explain.

Part - II

Q.No.5	(a)	State Ohm's Law and derive its expression. Discuss why filament of a lighted bulb is non – Ohmic by graph. Also give any two examples of Non – Ohmic Devices.	(5)
	(b)	A particle carrying a charge of **2e** falls through a potential difference of **3 . 0 V**, calculate the energy acquired by it.	(3)
Q.No.6	(a)	Derive an expression for energy stored in an inductor.	(5)
	(b)	A coil of 0 . 1 m x 0 . 1 m and of 200 turns carrying a current of 1 . 0 mA is placed in a uniform magnetic field of 0 . 1 T, calculate the maximum torque that acts on the coil.	(3)
Q.No.7	(a)	How can we use a Transistor as an 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)	What is Energy Band Theory? Distinguish Conductors , Insulators and Semi Conductors on the basis of Band Theory.	(5)
	(b)	X – rays of Wavelength 22 pm are scattered from a Carbon Target. The scattered radiation being viewed at 85^{o} to incident beam. What is Compton Shift ?	(3)
Q.No.9	(a)	State Bohr's Model of the Hydrogen Atom. Give de – Broglie interpretation of Bohr's Orbit. Also derive a relation for emission spectrum of Hydrogen.	(5)
	(b)	If $^{233}_{92}U$ decays twice by α - emission, what is the resulting isotope ?	(3)

Physics	(D)	L.K.No. 1307	Paper Code No. 8477

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.

Q.No.1 (1)	The Gradient of the Scalar Field is always be a : (A) Scalar Quantity (B) Vector Quantity (C) Variable Quantity (D) Fixed Quantity
(2)	Work done by Magnetic Force on a charge particle while moving through Magnetic Field is : (A) qvB (B) vB/q (C) $\frac{q}{vB}$ (D) Zero
(3)	Which one of the following is used to determine internal resistance of a cell : (A) Potentiometer (B) Wheat Stone Bridge (C) Ammeter (D) Voltmeter
(4)	On removing the dielectric from a charged capacitor , its energy : (A) Increases (B) Remains Unchanged (C) Decreases (D) None of these
(5)	The Ratio of Magnetic Force (Fm) and Electric Force (Fe) acting on a charge moving undeflected through the field is : (A) E / B (B) B / E (C) 1 (D) $\frac{E}{vB}$
(6)	The emf induced in 1 mH inductance in which current changes from 5A to 3A in 1ms is : (A) 2×10^{-6} V (B) 8×10^{-6} V (C) 2 V (D) 8 V
(7)	The Inductance of Coil is proportional to : (A) Its shape (B) The number of turns (C) The Resistance of Coil (D) The Square of the number of turns
(8)	In an A.C. Circuit , a Resistance R is connected in Series with an inductance L if phase angle between voltage and current be 45°, the value of inductive reactance will be : (A) 2 R (B) R (C) $\frac{R}{2}$ (D) $\frac{R}{4}$
(9)	An A.C. varies as a function of : (A) Time (B) Current (C) Voltage (D) Displacement
(10)	In Common Emitter Transistor Amplifier the Input Signal and Output Signal are always : (A) Have the same Magnitude (B) Have Same Phase (C) Out of the Phase by 180° (D) Negative
(11)	The value of Input Resistance of OP – Amplifier is of the order of : (A) Few Ohms (B) Milli Ohms (C) Kilo Ohms (D) Mega Ohms
(12)	Very weak magnetic field produced by brain can be detected by : (A) MRI (B) Metallic Needle (C) Squids (D) Cat Scanner
(13)	Who gave the idea of Matter Waves : (A) de – Broglie (B) Einstein (C) Huygen (D) Max - planck
(14)	Dead Time of G.M. Counter is approximately : (A) 10^{-6} s (B) 10^{-5} s (C) 10^{-4} s (D) 10^{-3} s
(15)	In order to increase the stopping potential of ejected photoelectrons , there should be an increase in : (A) Intensity of Radiation (B) Wavelength of Radiation (C) Frequency of Radiation (D) Both Wavelength of Radiation and Intensity of Radiation
(16)	Leptons are particles do not experience : (A) Strong Nuclear Force (B) Weak Nuclear Force (C) Electric Force (D) Magnetic Force
(17)	Which of the following is the energy required (in ev) for ionizing an excited Hydrogen atom : (A) 13.6 ev (B) 10.2 ev (C) More than 13.6 ev (D) 3.4 ev or less than it

Roll No.	1307 - 22000	Session (2017–19) to (2020–22)	Inter (Part – II)
Physics (Subjective)	Inter – A – 2021	Time 2 : 40 Hours Marks : 68	Group Ist

Q.No.2
(i) If a point charge q of mass m is released in a non – uniform electric field with field lines pointing in the same direction, will it make a rectilinear motion?
(ii) Do Electrons tend to go to region of High Potential or of Low Potential?
(iii) Show that $\frac{V}{m}$ is equal to $\frac{N}{C}$
(iv) A particle carrying a charge of 5e falls through a potential difference of 2 V. Calculate the energy acquired by it.
(v) How can you use a magnetic field to separate isotopes of chemical element?
(vi) Is it possible to orient a current loop in a uniform magnetic field such that the loop will not tend to rotate? Explain.
(vii) Define Magnetic Flux Density and write its unit.
(viii) What is CRO? Write two uses of CRO.
(ix) How would you position a flat loop of wire in a changing magnetic field so that there is no emf induced in the loop?
(x) 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?
(xi) State Faraday's Law of Electromagnetic induction and write its mathematical expression.
(xii) Define Self Inductance and also define its unit.

Q.No.3
(i) What are Non – Ohmic Substance? Give two examples.
(ii) A Voltmeter cannot read the exact emf of the cell, Why?
(iii) Why does the resistance of a conductor rise with temperature?
(iv) What is Impedance?
(v) A Sinusoidal has rms value of 10 A. What is the maximum value?
(vi) How does doubling the frequency affect the reactance of : (a) An Inductor (b) A Capacitor
(vii) Distinguish between Ductile and Brittle Substances.
(viii) Energy Dissipated per cycle is more for steel as compared to iron, why?
(ix) What are Super Conductors?
(x) Give four applications of a photodiode.
(xi) Define Open Loop gain of Operational Amplifier.
(xii) Why Ordinary Silicon Diode does not emit light?

Q.No.4
(i) A Beam of Red Light and a Beam of Blue Light have exactly the same energy. Which Beam contains the greater number of photons?
(ii) Why don't we observe a Compton Effect with Visible Light?
(iii) What are Black Body Radiations and how can you get a Black Body?
(iv) Bohr's Theory of Hydrogen atom is based upon several assumptions. Do any of these assumptions contradict classical physics?
(v) What are the advantages of Laser Over Ordinary Light?
(vi) Describe the principle of Operation of a Solid State Detector of ionizing radiation in terms of generation and detection of charge carriers.
(vii) Discuss the advantages and disadvantages of fission power from the point of safety, pollution and resources.
(viii) Differentiate between Baryons and Mesons.
(ix) Define Absorbed Dose D and write down its unit.

Part - II

Q.No.5 (a) State Gauss's Law. Using the concept of Gaussian Surface, derive the formula of 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 5.0 m and cross sectional area is $2.5 \times 10^{-7}\ m^2$. Compute Resistivity of Iron. (3)

Q.No.6 (a) What is an Alternating Current Generator? Describe its principle, construction and working. Also derive an expression for induced emf and induced current. (5)

(b) You are asked to design a Solenoid that will give a magnetic field of 0.10 T, yet the current must not exceed 10.0 A. Find the number of turns per unit length that the Solenoid should have. (3)

Q.No.7 (a) What is Rectification? Explain Full Wave Rectification with circuit Diagrams. (5)

(b) An Iron core coil of 2.0 H and 50 Ω is placed in series with a resistance of 450 Ω. An A.C. supply of 100 V, 50 Hz is connected across the circuit. Find :
(i) The Current Flowing in the Coil (ii) Phase angle between the Current and Voltage. (3)

Q.No.8 (a) Describe the construction and working of a Solid State Detector. What are its merits over other Detectors? (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) Derive the relation for the Quantized Radii of Hydrogen Atom on the Basis of Bohr's Model of Hydrogen Atom. (5)

(b) An Electron is placed in a box about the size of an atom 1.0×10^{-10} m. What is the velocity of the Electron? (3)

Physics	(D)	L.K.No. 1308	Paper Code No. 8478
Paper II			

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.

Q.No.1 (1)	Electric Flux does not depend upon : (A) Charge Enclosed (B) Medium (C) Medium and Charge Enclosed (D) Shape of Closed Surface
(2)	One Tesla in terms of other units i – e IT = ? : (A) $1\ NA^{-1}m^{-1}$ (B) $1\ Nm\ A^{-1}$ (C) $1\ NA^{-1}m^{-2}$ (D) $1\ NA^{-1}m^{2}$
(3)	Kirchhoff's Second Rule is based on the Law of Conservation of : (A) Mass (B) Momentum (C) Energy (D) Charge
(4)	Electric Intensity at a point close to an infinite sheet of charge is given by : (A) $\frac{\sigma}{2\epsilon_o}$ (B) $\frac{2\sigma}{\epsilon_o}$ (C) $\frac{\epsilon_o}{\sigma}$ (D) $\frac{\sigma}{\epsilon_o}$
(5)	An Electric Circuit in CRO that provides voltage to x plates is called : (A) Tweet (B) Sweep (C) Sleep (D) Cheap
(6)	The sum of positive and negative peak values of an A.C. Cycle is called : (A) Instantaneous Value (B) Peak Value (C) P – P Value (D) rms Value
(7)	Assembly of Coil and Cylinder is called : (A) Generator (B) Solenoid (C) Router (D) Armature
(8)	One Henry is equal to : (A) VsA^{-1} (B) $Vs^{-1}A^{-1}$ (C) VsA^{-1} (D) VsA
(9)	In Free Space , the speed of Electromagnetic Waves is : (A) $332\ ms^{-1}$ (B) $3 \times 10^{8}\ ms^{-1}$ (C) $1.1 \times 10^{3}\ ms^{-1}$ (D) $2.6 \times 10^{4}\ ms^{-1}$
(10)	Number of Diodes used in Full Wave (bridge) rectifier circuit are : (A) 4 (B) 3 (C) 2 (D) 1
(11)	The value of Potential Barrier for Silicon at room temperature is : (A) 0.3 V (B) 0.5 V (C) 0.7 V (D) 0.9 V
(12)	A Semi Conductor will behave as an insulator at temperature : (A) 0 K (B) $0^{o}C$ (C) 10 K (D) $10^{o}C$
(13)	Momentum of a Photon is given by : (A) $\frac{hf}{\lambda}$ (B) $\frac{h\lambda}{C}$ (C) $\frac{f\lambda}{C}$ (D) $\frac{hf}{C}$
(14)	In a Nuclear Transmutation when Thorium is transformed into Protactinium, the emitted particle is : (A) A Beta Particle (B) A Neutron (C) A Proton (D) An Alpha Particle
(15)	The energy required to completely remove an electron from the first Bohr Orbit is called : (A) Excitation Energy (B) Ionization Energy (C) Potential Energy (D) Kinetic Energy
(16)	A photon of Radio Wave has an energy of the order of : (A) 10^{-16} eV (B) 10^{-10} eV (C) 1 eV (D) 1 KeV
(17)	The temperature of the core of the sun is about : (A) 5 $M^{o}C$ (B) 10 $M^{o}C$ (C) 20 $M^{o}C$ (D) 40 $M^{o}C$

Roll No.	1308 - 21000	Session (2017 –19) to (2020 – 22)	Inter (Part – II)
Physics (Subjective)	Inter – A – 2021	Time 2 : 40 Hours	22 x 2 = 44

Make Diagram where necessary.

Part - I

Q.No.2
(i) Differentiate between Volt and Electron Volt.
(ii) Give two similarities and dissimilarities between Electric and Gravitational Forces.
(iii) Prove that : 1 Ohm x 1 Farad = 1 Second
(iv) Do Electrons tend to go to region of High Potential or of Low Potential ?
(v) Why does the Picture on a T.V. Screen become distorted when a magnet is brought near the screen ?
(vi) Describe the change in the Magnetic Field inside a Solenoid carrying a steady current I , if the length of the Solenoid is doubled but the number of turns remains the same.
(vii) What is the function of Grid in Cathode Ray Oscilloscope ?
(viii) State Ampere's Law and write it in Mathematical Form.
(ix) A Square Loop of wire is moving through a uniform magnetic field. The normal to the loop is oriented parallel to the magnetic field. Is a emf induced in the loop ?
(x) Show that $\mathcal{E}$ and $\frac{\Delta \emptyset}{\Delta t}$ have the same units.
(xi) Describe working principle and use of A.C. Generator.
(xii) Define Mutual Inductance and write its SI Unit.

Q.No.3
(i) Define Tolerance. Give an example.
(ii) Describe a circuit which will give a continuously varying potential.
(iii) Do bends in a wire affect its Electrical Resistance, explain ?
(iv) What is meant by Inductive Reactance and Capacitive Reactance ?
(v) How does doubling the frequency affect the reactance of : (a) An Inductor (b) A Capacitor
(vi) In RL Circuit, will the current Lag or Lead the Voltage ? Illustrate your answer by a Vector Diagram.
(vii) Distinguish between Ductile and Brittle Substances.
(viii) What is meant by Para and Ferromagnetic Substances ? Give examples for each.
(ix) Distinguish between Intrinsic and Extrinsic Semi Conductors.
(x) What is Light Emitting Diode?
(xi) Why is the Base Current in a Transistor very small?
(xii) Why Charge carriers are not present in the Depletion Region?

Q.No.4
(i) The life time of an electron in an excited state is 10^{-8} s .What is its uncertainty in energy during this time ?
(ii) Which Photon red, green or blue carries the most energy and momentum?
(iii) Which has the Lower Energy Quanta Radiowaves or X – rays ?
(iv) Find the Speed of the Electron in the First Bohr Orbit.
(v) What are the advantages of Laser Over Ordinary Light ?
(vi) Define Half Life and write its formula.
(vii) Write name of basic forces of nature.
(viii) Why are Heavy Nuclei unstable ?
(ix) A particle which produces more ionization is less penetrating why ?

Part - II

Q.No.5 (a) Describe the Millikan's method to determine charge on an Electron. (5)
(b) The Resistance of an Iron Wire at 0°C is $1 \times 10^{4}\ \Omega$. What is the Resistance at 500°C if the temperature coefficient of resistance of iron is $5.2 \times 10^{-3}\ K^{-1}$? (3)

Q.No.6 (a) Derive the Expression for Force on moving electric charge in a uniform magnetic field. Also determine its direction. (5)
(b) Like any field, the Earth's Magnetic Field stores energy. Find the Magnetic Energy stored in a space, where strength of Earth's field is 7×10^{-5} T, if the space occupies an area of $10 \times 10^{8}\ m^{2}$ and has a height of 750 m ? (3)

Q.No.7 (a) Discuss the behaviour of an Inductor in an A.C. Circuit and write expression for the Inductive Reactance. (5)
(b) The Current Flowing into the base of a Transistor is 100 μA. Find its Collector Current I_C, its Emitter Current I_E and the Ratio $\frac{I_C}{I_E}$ if the value of current gain β is 100. (3)

Q.No.8 (a) Define and explain Nuclear Fission. (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) State and explain Photo Electric Effect. Write down its experimental results. Also explain it on the basis of Quantum Theory. (5)
(b) What are the Energies in eV of Quanta of Wave-Lengths λ = 400, 500 and 700 nm ? (3)

Physics	(A)	L.K.No. 1312	Paper Code No. 8472
Paper II	(Objective Type)	Inter -A- 2019	(New Pattern)
Time :	20 Minutes	Inter (Part II)	Group 2nd
Marks :	17	Session (2015 -17) to (2017 - 19)	

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.

Q.No.1 (1)	Photocopier and Inkjet Printer are the applications of : (A) Magnetism (B) Electricity (C) Electrostatics (D) Electronics
(2)	Electroretinography is used for the diagnosis of abnormality in the : (A) Eyes (B) Ears (C) Throat (D) Heart
(3)	If Fourth Band is missing on Carbon Resistor. its Tolerance is : (A) ± 5 % (B) ± 20 % (C) ± 10 % (D) ± 30 %
(4)	The Magnetic Flux Density is measured in : (A) Weber (B) Weber / m^2 (C) Tesla / m^2 (D) Nm
(5)	Shunt Resistance is : (A) High Resistance (B) Zero Resistance (C) Infinite Resistance (D) Low Resistance
(6)	If the Motor is overloaded, then magnitude of back emf : (A) Increases (B) Decreases (C) Remains same (D) Becomes zero
(7)	Transformer is an Electrical Device used to change : (A) *Alternating Current* (B) *Direct Current* (C) *Alternating emf* (D) Voltage
(8)	During each cycle of A.C. Voltage reaches a peak value : (A) Once (B) Twice (C) Thrice (D) Four Times
(9)	Phase Difference between V and I of an A.C. through Resistor is : (A) Zero Degree (B) 90^o (C) 180^o (D) 270^o
(10)	The Young's Modulus of Mercury is : (A) $70 \times 10^9 Nm^{-2}$ (B) $15 \times 10^9 Nm^{-2}$ (C) Zero (D) $91 \times 10^9 Nm^{-2}$
(11)	The thickness of Base in Transistor is of the order of : (A) $10^{-6}\ cm$ (B) $10^{-6}\ m$ (C) $10^6\ m$ (D) $10^{-6}\ mm$
(12)	A Sensor of Light is : (A) Transistor (B) LED (C) Diode (D) LDR
(13)	The most refined form of Matter by de-Broglie is : (A) Smoke (B) Fog (C) Light (D) Protons
(14)	The existence of Positron was predicted by : (A) G.P. Thomson (B) Dirac (C) Germer (D) Newton
(15)	Balmer Series lies in the region of Electromagnetic : (A) Infrared (B) Far Infrared (C) Ultraviolet (D) Visible
(16)	The number of Neutrons present in the Nucleus is given by : (A) N = A - Z (B) N = A + Z (C) N = Z - A (D) N = A x Z
(17)	The S.I. Unit of Decay Constant is : (A) Second (B) Meter (C) $(Second)^{-1}$ (D) $(Meter)^{-1}$

Roll No.	1312 - / 8000	Session (2015 -17) to (2017 - 19)	Inter (Part - II
Physics (Subjective)	Inter - A -2019	Time 2:40 Hours Marks : 68	(New Pattern) / Group II

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 | | 22 x 2 = 44

No.2 (i) Define Electric Force and Electric Flux.
(ii) Define Capacitor and Farad.
(iii) Electric Lines of Force never cross, why?
(iv) Do electrons tend to go to region of high potential or of low potential?
(v) Why the Resistance of an Ammeter should be very low?
(vi) Why does the picture on a T.V. Screen become distorted when a magnet is brought near the screen?
(vii) Define Magnetic Flux and Flux Density.
(viii) Give the name of components of C.R.O.
(ix) Define Induced Current and Induced e.m.f.
(x) Define Mutual Induction and Mutual Inductance.
(xi) When an Electric Motor, such as an electric drill, is being used does, it also act as a generator? If so what is the consequence of this?
(xii) Does the induced emf in a circuit depend on the resistance of the circuit? Does the induced current depend on the resistance of the circuit?

.No.3 (i) What is Wheatstone Bridge ? How can it be used to determine the unknown resistance ?
(ii) Is the filament resistance lower or higher in a **500 W, 220 V light bulb than in a 100 W, 220 V** bulb?
(iii) State and explain Kirchhoff's Second Rule.
(iv) In a R – L Series Circuit, will the current lag or lead the voltage? Illustrate your answer by a Vector Diagram.
(v) What is meant by Modulation and Types of Modulation?
(vi) Define and explain Impedance of a Circuit.
(vii) Define Young's Modulus and Bulk Modulus.
(viii) What are Crystalline Solids ? Give few examples of Crystalline Solids.
(ix) What are Conductors and Super Conductors?
(x) Why Ordinary Silicon Diodes do not emit light?
(xi) Why charge carriers are not present in the depletion region?
(xii) Write briefly about Operational Amplifier.

.No.4 (i) If an Electron and a Proton have the same deBroglie Wavelength, which particle has greater speed?
(ii) What happens to total radiation from a black body if its absolute temperature is doubled ?
(iii) Define Compton Effect. Write the formula of Compton Shift for scattering angle θ.
(iv) How can the Spectrum of Hydrogen contain so many lines when Hydrogen contains one electron ?
(v) Write down two postulates of Bohr's Theory.
(vi) Why are Heavy Nuclei unstable?
(vii) What factors make a fusion reaction difficult to achieve?
(viii) Briefly explain what is meant by Quenching?
(ix) Define Mass Defect and Binding Energy.

Part - II

.No.5 (a) Derive an Expression for Charge on an Electron by Millikan's Oil Drop Method. What did Millikan conclude from this experiment ? (5)

(b) A Rectangular Bar of Iron is **2.0 cm** by **2.0 cm** in Cross – Section and **40 cm** long. Calculate its Resistance if the Resistivity of Iron is $11 \times 10^{-8} \Omega m$. (3)

.No.6 (a) Derive an Expression for Energy stored in an Inductor in terms of Magnetic Field. (5)

(b) A Power Line **10 m** high carries a current **200 A**. Find the Magnetic Field of the Wire at the ground. (3)

.No.7 (a) What is Transistor ? How it is used as an Amplifier ? Explain it with diagram. (5)

(b) Find the value of Current Flowing through a Capacitance **0.5 μF**, when connected to a source of **150 V** at **50 Hz**. (3)

.No.8 (a) State and explain Photoelectric Effect on the basis of Einstein's Quantum Theory. Also derive Einstein Photoelectric Equation. (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)

.No.9 (a) Explain the Principle, Construction and working of G.M. Counter. (5)

(b) Calculate the Longest Wavelength of Radiation for the Paschen Series. (3)

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)

Bahawalpur Board-2018

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) 90^0 (B) 270^0 (C) 120^0 (D) 180^0
(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) 125^0C (B) 163^0C (C) 750 K (D) 750^0C
(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 | Bahawalpur Board-2018 | 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)

Physics | A | L.K.No. 912 | Paper Code No. 8472

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

Time : 20 Minutes | Inter (Part - II) | Group 2nd

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

Bahawalpur Board-2018

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)	Electric Flux is expressed as : (A) $\phi_e = \vec{E} \times \vec{A}$ (B) $\phi_e = \vec{E} \cdot \vec{Q}$ (C) $\phi_e = \vec{E} \cdot \vec{A}$ (D) $\phi_e = EA^2$
(2)	The force between two charges is 28 N. If Paraffin Wax of relative permitivity 2·8 is introduced between the charges as medium, then the force reduces to : (A) 25 N (B) 20 N (C) 15 N (D) 10 N
(3)	What is the colour code for 52 MΩ ± 5% resistance : (A) Red Green Blue Gold (B) Green Red Blue Gold (C) Yellow Red Blue Gold (D) Green Red Violet Gold
(4)	If length of Solenoid is doubled but N same, $\vec{B}$ inside the Solenoid becomes : (A) Half (B) Double (C) One Fourth (D) Four Times
(5)	Which one has the Least Resistance : (A) Galvanometer (B) Ammeter (C) Voltmeter (D) Ohm Meter
(6)	A 50 mH coil carries a current of 2 Amp. The energy stored in its magnetic field is : (A) 0·05 J (B) 0·1 J (C) 10 J (D) 50 J
(7)	The Practical Illustration of the Phenomenon of mutual induction is in the device of : (A) Transformer (B) A.C. Generator (C) D.C. Generator (D) Ammeter
(8)	The device which allows only the flow of D.C. is : (A) Capacitor (B) Transformer (C) Inductor (D) Generator
(9)	The inductive reactance of a coil is directly proportional to : (A) Inductance (B) Resistance (C) Frequency of A.C. (D) Both Frequency of A.C. and Inductance
(10)	Glass and High Carbon Steel are examples of : (A) Ductile Substances (B) Brittle Substances (C) Soft Substances (D) Hard Substances
(11)	The Resistance between the Inverting (–) and Non - Inverting (+) inputs is called Input Resistance and is of the order of : (A) Ohms (B) Kilo Ohms (C) Thousands Ohms (D) Mega Ohms
(12)	For Automatic Switching of Street Light, the Op - Amplifier is used as : (A) Inverter (B) Convertor (C) Comparator (D) Rectifier
(13)	The maximum K.E. of Photoelectron depends upon : (A) Intensity of Incident Light (B) Frequency of Incident Light (C) Metal (D) Temp. of Metal
(14)	The materialization of energy takes place in the process of : (A) Photoelectric Effect (B) Compton Effect (C) Pair Production (D) Annihilation of Matter
(15)	The Rest Mass of X - ray photon is : (A) 9.1×10^{-31} Kg (B) 1.67×10^{-27} Kg (C) 1.6×10^{-19} Kg (D) Zero
(16)	In Liquid Metal Fast Breeder reactor, the type of Uranium used is : (A) $^{235}_{92}U$ (B) $^{238}_{92}U$ (C) $^{234}_{92}U$ (D) $^{239}_{92}U$
(17)	If we have N_o number of atoms of any Radioactive Element, then after four half lives, the number of atoms left behind is : (A) $\frac{1}{4} N_o$ (B) $\frac{1}{8} N_o$ (C) $\frac{1}{16} N_o$ (D) $\frac{1}{2} N_o$

Roll No.	912 - 9000	New Pattern / Group 2nd	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** Bahawalpur Board-2018 22 x 2 = 44

Q.No.2 (i) Write four characteristics of Electric Field Lines.

(ii) Differentiate between Electric Potential Energy and Electric Potential Difference.

(iii) How can you identify that which plate of a capacitor is positively charged?

(iv) Show that $1\ Vm^{-1} = 1\ NC^{-1}$.

(v) What do you know about Sensitivity of Galvanometer?

(vi) What is the function of Grid in CRO?

(vii) How can you use a Magnetic Field to separate Isotopes of Chemical Element?

(viii) Why the Resistance of an Ammeter should be very low?

(ix) What is the Back Motor Effect in Generators?

(x) Distinguish between A.C. Generator and Transformer.

(xi) Show that $\mathcal{E}$ and $\frac{\Delta\phi}{\Delta t}$ have the same units.

(xii) Can a D.C. Motor be turned into D.C. Generator? What changes are required to be done?

Q.No.3 (i) Is the filament resistance lower or higher in a 500 W, 220 V light bulb than in a 100 W, 220 V bulb?

(ii) Why does the Resistance of a Conductor rise with temperature?

(iii) State Ohm's Law and Basic Principle of Electroplating.

(iv) How does doubling the frequency affect the reactance of : (a) An Inductor (b) A capacitor

(v) What is meant by A.M. and F.M.?

(vi) Define Choke and Impedance.

(vii) What is meant by Para and Ferromagnetic Substances? Give examples for each.

(viii) Define Stress and Strain.

(ix) What is meant by Super Conductor?

(x) What is OR Gate?

(xi) Why is Base Current in a Transistor is very small?

(xii) Define Digital System and Logic Gates.

Q.No.4 (i) If the speed of light were infinite, what would the equations of special theory of Relativity reduce to?

(ii) Photon A has twice the energy of Photon B. What is the ratio of the Momentum of A to that of B?

(iii) When does light behave as a Wave? When does it behave as a particle?

(iv) Is energy conserved when an atom emits a photon of light?

(v) What are the advantages of Laser over Ordinary Light?

(vi) Why are Heavy Nuclei unstable?

(vii) How can Radioactivity help in the treatment of Cancer?

(viii) What are Leptons? Give examples of Leptons?

(ix) What do we mean by the term " Critical Mass "?

Part - II

Q.No.5 (a) What is Wheatstone Bridge? Give its principle, construction and working. How it is used to find the unknown low resistance? (5)

(b) A proton placed in a uniform electric field of $5000\ NC^{-1}$ directed to right is allowed to go through a distance of 10.0 cm. Calculate Potential difference between two points work done and velocity. (3)

Q.No.6 (a) Derive an expression for Force acting on moving charge particle in uniform magnetic field. Hence define Tesla. (5)

(b) The back emf in a motor is 120 V when the motor is turning at 1680 rev per min. What is the back emf when the motor turns 3360 rev per min? (3)

Q.No.7 (a) Explain the working of Series Resonance Circuit. Write down its any four properties. (5)

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

Q.No.8 (a) What are Intrinsic and Extrinsic Semi Conductors? Describe the formation of N-type and P-type Semi Conductors. (5)

(b) A Sodium Surface is illuminated with a light of Wavelength 300 nm. The work function of Sodium Metal is 2.46 ev. (a) Find the maximum K.E. of Ejected Electron. (b) Determine the Cut Off Wavelength for Sodium. (3)

Q.No.9 (a) Describe the Principle, Construction and Working of a Wilson Cloud Chamber. (5)

(b) A tungsten target is struck by electrons that have been accelerated from rest through 40 kV potential difference. Find the shortest Wavelength of the Bremsstrahlung Radiation emitted. (3)