ZIAUDDIN UNIVERSITY
EXAMINATION BOARD

RESOURCES FOR

"HSC-II PHYSICS"

ZUEB EXAMINATIONS 2021

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PREFACE:

The ZUEB examination board acknowledges the serious problems encountered by the schools and colleges in smooth execution of the teaching and learning processes due to sudden and prolonged school closures during the covid-19 spread. The board also recognizes the health, psychological and financial issues encountered by students due to the spread of covid-19.

Considering all these problems and issues the ZUEB Board has developed these resources based on the condensed syllabus 2021 to facilitate students in learning the content through quality resource materials.

The schools and students could download these materials from www.zueb.pk to prepare their students for the high quality and standardized ZUEB examinations 2021.

The materials consist of examination syllabus with specific students learning outcomes per topic, Multiple Choice Questions (MCQs) to assess different thinking levels, Constructed Response Questions (CRQs) with possible answers, Extended Response Questions (ERQs) with possible answers and learning materials.

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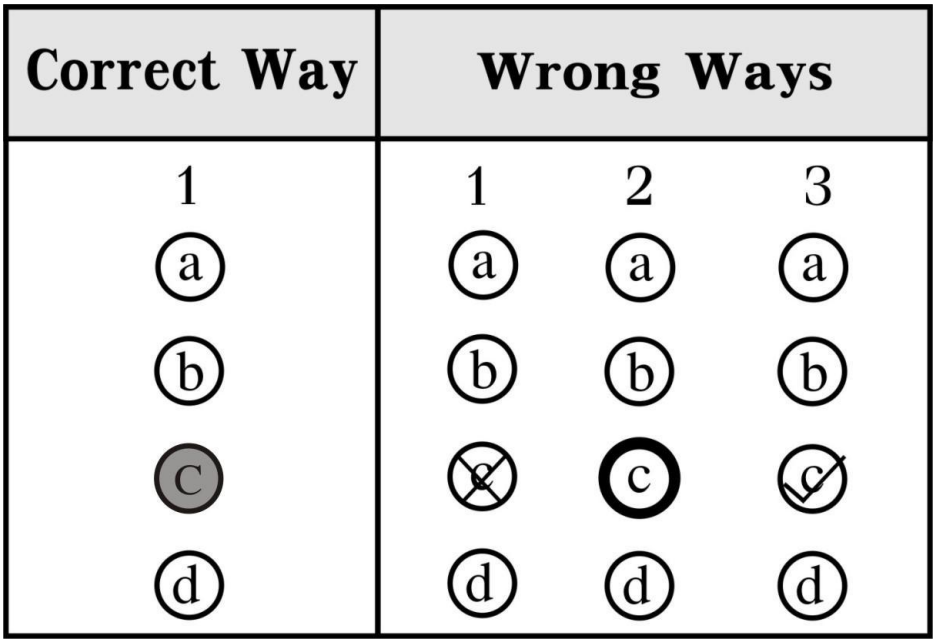
1: Multiple Choice Questions:

The Multiple-Choice Questions with a stem, correct answer and 3 distractors or plausible wrong answers format is designed to assess the content and thinking of students from; R (Remembering); U(Understanding) and A (Applying, Analyzing, Evaluating, Creating). The questions are also classified into three difficulty levels accordingly; D(DIFFICULT), M (MODERATE), E (EASY)

HOW TO ATTEMPT AN MCQ:

MCQ:

- **EACH MCQ HAS FOUR OPTIONS, A, B, C AND D. SELECT ONE OPTION AS THE BEST ANSWER AND FILL IN THE CIRCLE OF THAT OPTION, FOLLOWING THE INSTRUCTIONS GIVEN BY THE INVIGILATOR.**
- **USE BLACK PEN/PENCIL TO FILL IN THE CIRCLE.**



S#	MCQ'S MATERIAL (CHAPTER -11)	KEY
1	If the volume of a given mass of a gas is doubled without changing its temperature, the pressure of the gas is: **a) <u>Reduced to ½ of the initial value</u>** b)The same as the initial value c) Reduced to ¼ of the initial value d) Double of the initial value	**a) <u>Reduced to ½ of the initial value</u>**
2	Boyle's law is an example of: a)Latent heat process **b) <u>Isothermal process</u>** c) Adiabatic process d) Mechanical process	**<u>b) Isothermal process</u>**

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3	The volume of a given gas at constant pressure becomes zero at: a) 273K b) 273°C c) -273K **d) <u>-273°C</u>**	**<u>d) -273°C</u>**
4	Absolute Zero is considered as that temperature at which: a) All liquids become gasses **b) <u>All gases become liquids</u>** c) Water freezes d) None of them	**b) <u>All gases become liquids</u>**
5	According to Charles' Law: a)PV = Constant **b) <u>V / T = Constant</u>** c) VT = Constant d)P / V = Constant	**b) <u>V / T = Constant</u>**
6	Real gas molecules do not strictly obey gas law at: **a) <u>High pressure and low temperature</u>** b)Loss pressure and high temperature c) Low pressure and high temperature d) None of the above	**a) <u>High pressure and low temperature</u>**
7	The graph of pressure and volume of certain mass of a gas at constant temperature is a: a)Parabola **b) <u>Hyperbola</u>** c) Straight line d) None of these	**b) <u>Hyperbola</u>**
8	The S.I. unit of heat is: **a) <u>Joule</u>** b)Calorie c) Centigrade d)Fahrenheit	**a) <u>Joule</u>**
9	The average internal energy of an ideal gas is called: a)Pressure b) Volume **c) <u>Temperature</u>** d) Heat	**c) <u>Temperature</u>**

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10	The sum of the total energy of motion of all the particles measures the a) Temperature b) Specific heat **c) <u>Quantity of heat</u>** d)None of these	**c) <u>Quantity of heat</u>**
11	Heat energy cannot be measured in: a)Joule **b) <u>Kelvin</u>** c) BTU d**)** Calories	**b) <u>Kelvin</u>**
12	Heat is produced by: a) By rubbing b) By friction c) By Mechanical **d) <u>All of these</u>**	**d) <u>All of these</u>**
13	Something which flows from a hot body to a cold body is known as: a) Specific heat **b) <u>Heat</u>** c) Internal energy d) Temperature	**b) <u>Heat</u>**
14	A bimetallic thermostat works on the principle of : a) Linear expansion b) Bulk expansion **c) <u>Differential liner expansion</u>** d) All of these	**c) <u>Differential liner expansion</u>**
15	The two object are in thermal equilibrium when they have the same: a)Kinetic energy **b) <u>Temperature</u>** c) Thermal energy d) Potential energy	**b) <u>Temperature</u>**
16	A bimetallic strip can be used to make a: **a) <u>Thermometer</u>** b) Barometer c) Ammeter d) Voltmeter	**a) <u>Thermometer</u>**

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S#	MCQ'S MATERIAL (CHAPTER -12)	KEY	CL	DL
17	A device which maintains the temperature is: a) Thermometer **b) Thermostat** c) Calorie meter d) None of these	**b) Thermostat**		
18	Bimetallic strip work on the principle that different materials have: a) Equal coefficient of linear expansion b) Equal coefficient of volume expansion **c) Different coefficient of linear expansion** d) None of these	**c) Different coefficient of linear expansion**		
19	Thermostat is a device used to keep the: **a) Temperature constant** b) Entropy constant c) Heat constant d) Pressure constant	**a) Temperature constant**		
20	Coulomb's law for the force between electric charges most a) m K b) m / K **c) K^{-1}** d) K	c) **Newton's Law of**		
21	When a glass rod is rubbed with silk the glass rod is positively charge because: a) Electrons are transferred from silk to glass b) Protons are transferred from silk to glass **c) Electrons are transferred from glass to silk** d) No transfer of electrons or protons has taken place	**c) Electrons are transferred from glass to silk**		
22	The unit of electric charge is the : a) Electron volt b) **Coulomb** c) Newton /sq. meter d) None of these	b) **Coulomb**		
23	The minimum electrical charge possible in isolated from is: a) **1.6×10^{-19} C** b) 1×10^{-12} C c) 1×10^{-6} C d) One Coulomb	a) **1.6×10^{-19} C**		
	The unit of co-efficient of thermal expansion is: a) m K b) m / K **c) K^{-1}** d) K	**c) K^{-1}**		

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24	closed resembles. a) The law of conservation of energy b) Newton's second law of motion c) **Newton's Law of gravitation** d) the law of conservation of mass	**gravitation**		
25	Two charges q_1 and q_2 are repel each other if a) $q_1\ q_2 = 0$ b) $q_1\ q_2 < 0$ c) $\boldsymbol{q_1\ q_2 > 0}$ d) None	c) $\boldsymbol{q_1\ q_2 > 0}$		
26	If an electrostatic force between two electron at a distance is "F" Newton, the electrostatic force between two protons at the same distance is a**)** Zero b) F/2 c) **F** d) 2F	c) **F**		
27	If the distance between two pint charges is halved then the electrostatic force between them become a) Halved b) **Four times** c) Twice d) Remain same	b) **Four times**		
28	Two positive point charges repel with a force of 4×10^{-4} N when placed at distance of 1m:.If the distance between them is increased by 2m, the force of repulsion will be : a) **1×10^{-4} N** b) 8×10^{-4} N c) 2×10^{-4} N d) 4×10^{-4} N	a) **1×10^{-4} N**		
29	Two unequal point charges repel each other with a force of 100M Dyne when they are 15 inch apart. Find the force which	c) **900MDyne**		

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	each exertion the other when they are 5 inch apart a) 100MDyne b) 400MDyne c) **900MDyne** d) 1000MDyne			
30	Number of electron contained in one coulomb of charge are: a) **6.25×10^{18}electrons** b) 2×10^{-19} electrons c) 2×10^{19} electrons d) 9×10^{18} electrons	a) **6.25×10^{18}electrons**		
31	The concept of the electric lines of force was introduced by a famous scientist called: a) Newton b) Einstein c) Coulomb d) **Faraday**	d) **Faraday**		
32	The direction of the electric field intensity is: a) Away from all negative charges b) Toward all negative charges c) The same as the direction of an electric force d) **Dependent on the nature of a charge placed at the point in question**	d) **Dependent on the nature of a charge placed at the point in question**		
33	Which of the following cannot be the unit of electric intensity: a) N/ Coulomb b) Volt/ meter c) Joule/ Coul-metre d) **Joule/Coulomb**	d) **Joule/Coulomb**		
34	Which of the following is not a scalar quantity? a) Potential b) Electromotive force c) Electric flux d) **Electric intensity**	d) **Electric intensity**		
35	Two point charges each of 10 μ**c** are placed 10cm apart in air, what is the electric field intensity at the midpoint on the line	c) **Zero**		

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	joining the two like charges of same magnitude is a) $9\times10^{9}\,N$ b) 1 c) **Zero** d) None			
36	The force per unit charge is known as: a) Electric flux b) **Electric field intensity** c) Electric potential d) Electric current	b) **Electric field intensity**		
37	The magnitude of the electric field intensive does not depend upon: a) the distance from charged particle b) the nature of medium c) the magnitude of the charge d) **the nature of charge**	d) **the nature of charge**		
38	The quantity **- ΔV/Δr** represents: a) Gauss's law b) Electric flux c) Potential difference d) **Electric intensity**	d) **Electric intensity**		
39	This is not a scalar quantity: a) Electromotive force b) Electric flux c) Electric Potential d) **Electric intensity**	d) **Electric intensity**		
40	The scalar product of electric intensity (E) and vector areas (ΔA) is called : a) **Electric flux**	a) **Electric flux**		

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	b) Electric force c) electric potential d) electric flux density			
41	The electric flux through a surface will be minimum, when the angel between E and ΔA is: a) **90^o** b) Zero c) 45^o d) 60^o	a) **90^o**		
42	The flux through a surface is maximum when the angle between E and Δ A is: a) **0^o** b) 90^o c) 180^o d) 45^o	a) **0^o**		
43	Electric flux through the surface of a sphere which contains a charge at its center depends : a) The radius of the sphere b) The surface area of the sphere c) **The amount of charge inside the sphere** d) The amount of charge outside the	c) **The amount of charge inside the sphere**		
44	The electric flux through a closed surface depends on the: a) **Magnitude of the charge enclosed by the surface** b) Position of the charge enclosed by the surface c) The shape of the surface d) None of the above option	a) **Magnitude of the charge enclosed by the surface**		
45	The flux through a closed surface which does not contain any charge is: a) Infinite	c) **Zero**		

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	b) Positive c) **Zero** d) Unity			
46	If a closed surface contains two equal and opposite charges, the net electric flux form the surface will be: a) 2σ b) $1/2\sigma$ c) $2q/\sigma$ d) **Zero**	d) **Zero**		
47	Coulomb per square meter is a unit of: a) Permittivity constant of a medium b) Dipole moment c) **Surface density of charge** d) Linear density of charge	c) **Surface density of charge**		
48	The magnitude of Electric Intensity between two oppositely charged plates is: a) $\frac{2\sigma}{\varepsilon_o}$ b) $\frac{\sigma}{2\varepsilon_o}$ c) $\frac{\sigma}{3\varepsilon_o}$ d) $\frac{\sigma}{\varepsilon_o}$	d) $\frac{\sigma}{\varepsilon_o}$		
49	The electric field intensity between two similarly charged plate is: a) σ/ε_o b) $\sigma/2\varepsilon_o$ c) **Zero** d) $\mathbf{2\sigma/\varepsilon_o}$	c) **Zero**		
	Electric intensity at a point inside a charged hollow sphere is: a) **Zero** b) Infinite c) Positive	a) **Zero**		

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50	d) Negative One joule per coulomb is called: a) Farad b) Gauss c) Ampere d) **Volt**	d) **Volt**		
51	The quantity$\Delta V/\Delta S$ is called: a) Electric Potential b) Electric field intensity c) **Potential gradient** d) Electric induction	c) **Potential gradient**		
52	The change in potential energy of a unit charge between two points in an electrical field is called: a) Intensity b) Permittivity c) **Potential difference** d) Flux	c) **Potential difference**		
53	The relation between electric field intensity 'E' and electric potential 'V' is: a) E = V r b) **V = E r** c) r = E V d) E V = 1/r	b) **V = E r**		
54	The earth surface is assumed to be at: a) Infinite potential b) **Zero potential** c) Negative potential d) None	b) **Zero potential**		
55	On equipotential surface, work done in moving a charged particle is: a) Positive b) Negative c) **Zero** d) Infinity	c) **Zero**		
56	For a capacitor, the charge per unit volt is called: a) Potential b) Electric flux	c) **Capacitance**		

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	c) **Capacitance** d) Current			
57	The capacitance of parallel plate capacitor doesn't depend upon: a) Area of plates b) Distance b/w the plates c) Medium b/w the plates d) **Nature of metals used as plates**	d) **Nature of metals used as plates**		
58	If the area of the plates of a parallel plates capacitor is doubled, the capacitance: a) is half b) remains unchanged c) is increased four times d) **is double**	d) **is double**		
59	The separation between the plates of a parallel palate capacitor whose original capacitance was C is doubled, the capacitance is now: a) ¼ C b) **½ C** c) 2 C d) 4 C	b) **½ C**		
60	With the introduction of a dielectric between the plates of a capacitor, its capacitance: a) **Increases** b) Decreases c) Remains the same d) Becomes zero	a) **Increases**		
61	The introduction of a dielectric between the oppositely charged plates causes the intensity: a) To increase b) **To decrease** c) To remain constant d) To increase and decrease	b) **To decrease**		
62	Slab of certain dielectric is placed between two oppositely charge metal plates. Choose the correct answer from the following? a) The intensity of electric filed between the plates increases.	**b) The intensity of electric filed between the plates**		

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	b) The intensity of electric filed between the plates decreases. c) The intensity of electric filed between the plates does not change.	**decreases.**		
63	If a dielectric slab is introduced between the plates of a parallel plate capacitor, kept at a constant potentials, the charge on the capacitor: a) Decreases b) **Increases** c) Remains unchanged d) Becomes zero	b) **Increases**		
64	Dielectric constant for air is: a) **1.0** b) 1.05 c) 0.8 d) Infinite	a) **1.0**		
65	A dielectric k = 2 is inserted between the plates of a 20μF capacitor. Its capacitance will become: a) 10μ F b) 18μ F c) 22μ F d) **40μ F**	d) **40μ F**		
66	If two capacitors of 5μF and 7μF are connected in parallel, their equivalent capacitance will be: a) 0.12 μF b) **12 μF** c) 0.34 μF d) 2.9 μF	b) **12 μF**		
67	When two identical capacitor are connected in parallel the net capacitance will be: a) **Doubled** b) Unchanged c) Halved	a) **Doubled**		

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	d) Zero	D) **1.33 µF**		
68	If 4 µF and 2 µF capacitors are connected in series, the equivalent capacitance is: a) 0.76 µ F b) 6 µ F c) 2 µ F d) **1.33 µF**	b) **2 µF**		
69	Two capacitors of 3 u F and 6 u F are connected in series. Their equivalent capacitance is: a) 19µ F b) **2 µF** c) 1/2 µF d) 3µF	a) **Less than the value of minimum capacitance**		
70	When three capacitors are joined in series, the total capacitance is: a) **Less than the value of minimum capacitance** b) Equal to the sum of the capacitances c) Greater than the value of maximum capacitance	a) **½ C V ^{2}**		
71	Which of the following is a representation of electrostatic potential energy of a capacitor? a) **½ C V ^{2}** b) ½ C ^{2} V c) C V d) ½ $(CV)^2$	d) **be doubled**		
72	A dielectric, having $\in_r = 2$ is inserted between the plates of a 20 micro F capacitor, its capacitance will be: a) Remains same b) be halved c) becomes zero d) **be doubled**	b) **Remain the same**		
	If separation between the plates and the area of the plates of a parallel plates capacitor are doubled, then the capacity will: a) Become fourfold b) **Remain the same** c) Become doubled			

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73	d) Becomes ¼			

S#	MCQ'S MATERIAL (CHAPTER -13)	KEY	CL	DL
74	The rate of transfer of charges through a circuit is called. a) Resistance b) **Current** c) Potential difference d) all of these	b) **Current**		
75	Electrical conductor contains. a) Only free electrons b) Only bound electrons c) Resistance d) **All of these**.	d) **All of these**.		
76	Charge carrier in Metallic conductors are the electron of: a) **Valence Shells** b) All shells c) Excited States d) Inner shells	a) **Valence Shells**		
77	The current which flows from high potential to low potential is called: a) Pulsating current b) Direct current c) Alternating current d) **Conventional current**	d) **Conventional current**		
78	Free electrons in an electric field: a) Move from higher potential to lower potential b) Remain stationary c) **Move from lower potential to higher potential** d) Rotate in a circle	c) **Move from lower potential to higher potential**		
79	A wire of length L and resistance R is cut into four equal pieces. Resistance of each piece would be:	d) **R / 4**		

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	a) R b) R / 2 c) 2 R d) **R / 4**			
80	If a wire of a uniform area of cross section is cut into two equal parts, the resistivity of each part would be: (a) Doubled (b) Halved (c) **Same** (d) None of these	(c) **Same**		
81	A copper wire having resistivity ρ is stretched in such a way that its diameter reduces to half of that of the original wire. The new resistivity will be: a) halved b) doubled c) **the same** d) four-fold	c) **the same**		
82	A wire of a uniform cross-section area is cut into three equal segments. The resistivity 'ρ'of each segment will be: a) 1 / 3 ρ b) **Same as that of the whole wire** c) 2 / 3 ρ d) Three times as that of the whole wire	b) **Same as that of the whole wire**		
83	Resistance of a wire does not depend on the: a) Area b) Temperature c) Length d) **Electric current**	d) **Electric current**		
84	The source which maintains the steady current in electrical circuits is called: (a) Electric motor (b) **E.M.F** (c) Generator (d) Thermocouple	(b) **E.M.F**		
85	The e.m.f of a source in the presence of internal resistance is: (a) I R	(c) **I R + I**		

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	(b) I r (c) **I R + I r** (d) I R – I r	**r**		
86	E.M.F. of a source in the absence of internal resistance is: (a) **I R** (b) I R + I r (c) I r (d) I R – I r	(a) **I R**		
86	Loss of Voltage in Electrical circuits is given by: (a) I R (b) **I r** (c) I R + I r (d) I R – I r	(b) **I r**		
88	The terminal potential difference of a battery is equal to its e.m.f when its internal resistance is: (a) **Zero** (b) Very high (c) Very low (d) None of these	(a) **Zero**		
89	A battery of e.m.f (E) has an internal resistance (r). If a current (I) is drawn from it, then its terminal potential drop (v) is given by: (a) **V = E - I r** (b) V = E + I r (c) V = I R (d) V = E r	(a) **V = E - I r**		

S#	MCQ'S MATERIAL (CHAPTER -14)	KEY	CL	DL
90	Non-inductive coil in a resistance box is used to minimize: a) Eddy current b) Heat loss c) Mutual inductance d**) self inductance**	d**) self inductance**		
91	The path of neutron moving normal to the magnetic field is: (a) **A straight path** (b) A circular path (c) An oval path (d) A sinusoidal path	(a) **A straight path**		
	When a charged particle enters a uniform magnetic field perpendicularly, its path is	(b) **Circular**		

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	(a) Spiral (b) **Circular** (c) Parabolic (d) Straight line			
92	If an electron and a proton enter into a magnetic field perpendicularly with the same momentum (a) The electron will be deflected more (b) The proton will be deflected more. (c) They will not be deflected at all. (d) **Both particles will be deflected equally**	(d) **Both particles will be deflected equally**		
93	Which of the two charged particles of same masses will deflect more in the same magnetic field: (a) **Slow moving** (b) Fast moving (c) Both (d) None of these	(a) **Slow moving**		
94	A steady current passing through a conductor produces (a) Electric filed only (b) **Magnetic field only** (c) Both electric and magnetic (d) None of these	(b) **Magnetic field only**		
95	Upon which of the following magnetic field inside the solenoid does not depend. (a) Permeability b) Current (c)Turns per length (d) **Diameter of solenoid**	(d) **Diameter of solenoid**		
96	Net electric filed in a current carrying conductor is: (a) The difference of electric fields of protons and electron. (b) **Zero** (c) The sum of electric fields of protons and electrons (d) Negative	(b) **Zero**		
97	The magnetic field of induction within the core of toroid for the given value of current	(d) **Directly proportion**		

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	(a) Directly proportional to the square of the radius of turns. (b) Directly proportional to the radius of turns. (c) Inversely proportional to the number of turns (d) **Directly proportional to the number of turns**.	**al to the number of turns**.		
98	Two free parallel wires carrying current in the opposite direction: a) Do not affect each other b) Attract each other c) **Repel each other** d) None of these	c) **Repel each other**		
99	The path of neutron, moving perpendicularly through a uniform magnetic field is: a) **a straight line** b) circular c) oval d) sinusoidal	a) **a straight line**		
100	When the north pole of a bar magnet approaches the face of a closed coil the face becomes; (a) South pole (b) North and then south pole (c)**North pole** (d) No effect is observed.	(c)**North pole**		
101	The direction of induced current is given by: (a) Ampere's Law (b) Faraday's Law (c) **Lenz's Law** (d) Snell's Law	(c) **Lenz's Law**		
103	The maximum resistance in an A.C. circuit is offered by: (a) Capacitor (b) Solenoid (c) **Electromagnet** (d) Electric bulb	(c) **Electromagnet**		
104	The Current produced by moving the loop of wire across the magnetic field is called:	(d) **Induced current**		

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	(a) Direct current (b) Steady current (c) Pulsating current (d) **Induced current**			
105	Non-Inductive wiring is used to minimize: (a) Conductance (b) Resistance (c) Mutual Inductance (d) **Self Inductance**	(d) **Self Inductance**		
106	Henry is equivalent to: (a) **Weber / Ampere** (b) Weber / m^2 (c) Weber/ ampere meter d) Weber x meter	(a) **Weber / Ampere**		
107	S.I. Unit of induction is (a) Tesla (b) **Henry** (c) Watt (d) Weber	(b) **Henry**		
108	Weber per ampere is known as: (a) Mutual inductance (b) Self-inductance (c) Induced e.m.f. (d) **A & B are correct**	(d) **A & B are correct**		
109	The phenomenon of producing emf in the coil itself due to varying current is called: a) Mutual Induction (b) **Self Induction** (c) Motional e.m.f. (d)Electromagnetic induction	(b) **Self Induction**		
110	Which of the following law is satisfied by the Lenz's law: (a) **Law of conservation of energy** (b) Law of conservation of charge (c) Faraday Law of induction (d) None of these	(a) **Law of conservation of energy**		
111	The current which flows in the coil to oppose the dragging force on the coil is called:	(c) **Induced current**		

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	(a) Direct current (b) Pulsating current (c) **Induced current** (d) Steady current.			
112	When the coil is moved towards the magnetic poles then: (a) Light will appear (b) Heat will produce (c) No effect. (d**) emf will induce in the coil**.	(d**) emf will induce in the coil**.		
113	Cause of self-inductance is: (a) Change in current in the same coil (b) Change in flux in the same coil. (c) Both A and B are wrong (d) **Both A and B are correct.**	(d) **Both A and B are correct.**		
114	If the number of turns in a coil in doubled, its self-inductance will be: a) **Doubled** b) Halved c) The same d) Four-fold	a) **Doubled**		
115	A transformer is used to change: a) Capacitance b) Frequency c)**Voltage** d) Power	c)**Voltage**		
116	Transformers are used in circuits containing a) DC alone b) **AC alone** c) both AC. and DC d) non-inductive winding	b) **AC alone**		
117	Transformer works on (a) Ohm's Law (b) Self induction (c)**Mutual Induction** (d) Gauss's Law	(c)**Mutual Induction**		
118	In a conventional transformer: a) The current moves from primary to the secondary windings	b) **EMF is induced in the secondary**		

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	without any change b) **EMF is induced in the secondary by the changing magnetic flux.** c) The heat is transferred from primary to secondary d) None of the above	**by the changing magnetic flux.**		
119	The core of a transformer is made of soft iron because: (a) Iron is cheaper than copper (b) **Iron is a good magnetic substance** (c) Iron is a good conductor of current (d) Iron has high melting point.	(b) **Iron is a good magnetic substance**		
120	The core of transformer is used to link the primary coil to the secondary coil. What type of link is this? (a) Thermal, (b) Electrostatic (c) **Magnetic** (d) Mechanical.	(c) **Magnetic**		
121	The practical application of the phenomenon of mutual inductance is: a) A.C. generator b**) Transformer** c) Rectifier d) Dynamo	b**) Transformer**		
122	In step down transformer: (a) $N_s > N_p$ (b) $\mathbf{N_s < N_p}$ (c) $N_s = N_p$ (d) $N_s = N_p$	(b) $\mathbf{N_s < N_p}$		
123	In step up transformer: (a) $I_s > I_p$ (b**)** $\mathbf{I_s < I_p}$ (c) $I_s = I_p$ (d) All of these	(b**)** $\mathbf{I_s < I_p}$		

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S#	MCQ'S MATERIAL (CHAPTER -15)	KEY	CL	DL
123	A moving coil galvanometer is converted into an ammeter by connecting to it: (a) Low resistance in series (b) High resistances in series (c) High resistance in parallel (d) **Low resistance in parallel**	(d) **Low resistance in parallel**		
124	The sensitivity of a galvanometer can be increased by increasing: (a) Magnetic field (b) Area of coil (c) Number of turns (d) **All of them:**	(d) **All of them:**		
125	I = C / B N A θ to increase the sensitivity of a galvanometer, we must decrease the value of: (a) θ (b) N (c) B (d) **C**	(d) **C**		

S#	MCQ'S MATERIAL (CHAPTER -19)	KEY	CL	DL
147	Laser produces a) An electron beam b) A neutron beam c) **A coherent beam of light** d) none of these	c) **A coherent beam of light**		
148	Ruby is a crystal of: (a) $CaCO_3$ with impurity of Cl ions (b) NaCl with impurity of Ca ions (c) **Al_2O_3 with impurity of Cr ions** (d) None of the above	(c) **Al_2O_3 with impurity of Cr ions**		
149	The process of collecting excited electrons from unstable state into stable state is called: (a) Induced absorption (b) Emitted absorption (c) **Population Inversion** (d) De excitation	(c) **Population Inversion**		
150	The most stable state of ruby is: (a) **Meta State** (b) Ground state	(a) **Meta State**		

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	(c) Excited state (d) Higher state			
151	An atom can usually remains in an ordinary excited state for: (a) 10^{8} second (b) **10^{-8} second** (c) 10^{3} second (d) 10^{-3} second	(b) **10^{-8} second**		
152	Usually the life of an electron in metastable is of the order of (a) 10^{8} second (b) **10^{-3} second** (c) 10^{3} second (d) 10^{-8} second	(b) **10^{-3} second**		
153	The life time of an electron in the metastable state: (a) **Is more than any ordinary excited stable** (b) Less than any ordinary excited state (c) Equal to any ordinary excited state (d) Half-life of the element used	(a) **Is more than any ordinary excited stable**		
154	In radioactive decay law, $N = N_o e^{-\lambda t}$, λ represents: (a) Wave length (b) Half-life (c) **Decay constant** d) Mass Radioactive Sample	(c) **Decay constant**		
155	Decay process in radioactive nuclei takes place: (a)Conditionally (b) Linearly (c) **Exponentially** (d) Smoothly.	(c) **Exponentially**		
156	The rate of decay of a radioactive substance: (a) Increases with increasing time (b) **Decreases exponentially with the increasing time** (c) remains constant with increasing time (d) None of these	(b) **Decreases exponentially with the increasing time**		

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157	Activity of Radioactive nuclei is given by: (a) N / N_o (b) N_o / N (c) λ / N (d) **λN**	(d) **λN**		
158	The rate of decrease of decay in parent nuclei is directly proportional to the: (a) Activity. (b) Half-life (c) Relative activity (d) **No of parent nuclei** The time in which half of parent nuclear decay is called: (a) Life time (b) Time of decay. (c) Decay interval (d) **Half life**	(d) **No of parent nuclei** (d) **Half life**		
159	Half-life of radioactive elements is given by: (a) **0.693 / λ** (b) 0.693 c) 0.693λ (d) λ/ 0.	(a) **0.693 / λ**		
160	The half – life of radium is 1600 years. After 6400 years, the sample of the surviving radium would be its a) 1 / 4 b) 1 / 8 c) **1 / 16** d) 1 / 2	c) **1 / 16**		
161	The energy equivalent to the mass reduced in the formation of a nucleus is called: (a) Nuclear energy (b) **Binding energy**	(b) **Binding energy**		

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	(c) Fusion energy (d) Potential energy			
162	One atomic mass unit is equal to: a) 1.6×10^{-19} J b) 9.1×10^{-27} kg c) **931×10^{6} eV** d) 9×10^{9} eV	c) **931×10^{6} eV**		
163	The process of the splitting of a heavy nucleus into smaller fragments is called: (a) Fusion (b) **Fission** (c) Pair production (d) Annihilation of matter	(b) **Fission**		
164	In nuclear fission, $_{92}U^{235}$ is bombarded by: (a) Low energy neutron (b) **Slow Neutron.** (c) High energy neutron (d) Fast neutron.	(b) **Slow Neutron.**		
165	A material consisting of the fissionable isotopes of Uranium is called the: (a) Reaction fuel. (b) **Nuclear fuel**. (c) Atom bomb fuel (d) Atomic fuel.	(b) **Nuclear fuel**.		
166	Critical mass of fissionable isotope of Uranium is: (a) 7.2% (b) **0.72%**	(b) **0.72%**		

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	(c) 0.072% (d) 72 %			
167	Breeder Reactor is used to convert: (a) $_{92}U^{235}$ into $_{56}Ba^{144}$ and $_{36}Kr^{89}$ (b) $_{92}U^{238}$ into $_{56}Ba^{144}$ and $_{36}Kr^{89}$ (c) **$_{92}U^{238}$ into $_{94}Pu^{239}$** (d) $_{92}U^{235}$ into $_{94}U^{238}$	(c) **$_{92}U^{238}$ into $_{94}Pu^{239}$**		
168	The process of converting non-fissionable uranium into fissionable is called. (a) Disintegration. (b) **Breeding** (c) None of these (d) Decay process	(b) **Breeding**		
169	LMFBR is the abbreviation of: (a) **Liquid metal fast breeder reactor** (b) Lithium metal fission breeder reaction (c) Lithium metal of fission and bomb radiation. (d) None of these	(a) **Liquid metal fast breeder reactor**		

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