



ZIAUDDIN UNIVERSITY

EXAMINATION BOARD

EXAMINATION MATERIAL OF ZUEB 2021-2022

GRADE: **XII**

SUBJECT: **PHYSICS**

SECTION # A

MULTIPLE CHOICE QUESTIONS

CHP # 11:

HEAT

- The K.E of the molecules of an ideal gas at absolute zero temperature will be:
a) Infinite b) **Zero** c) Very high d) Below Zero
- Choose the correct Statement:
a) The product of P and T is constant if the volume is constant
b) The ratio of P and V is constant if the temperature is constant
c) **The product of P and V is constant if the temperature is constant**
d) The product of V and T is constant if the pressure kept constant
- The internal energy of a system depends on:
a) Pressure b) Volume c) **Temperature** d) Entropy
- The process during which no external work is performed as:
a) Isothermal b) **Isochoric** c) Isobaric d) Adiabatic
- The temperature on Fahrenheit scale corresponding the Absolute Zero is:
a) 32°F b) -180°F c) **-460°F** d) 212°F
- According to Charles' Law:
a) PV = constant b) **V/T = constant** c) VT = constant d) P/V = constant
- The temperature at which centigrade scale is equal to Fahrenheit scale:
a) 0° b) -32° c) **-40°** d) -273°
- According to the Second Law of Thermodynamics 100 percent conversion of heat energy into work is:
a) Possible
b) Not possible
c) **Possible when conditions are ideal**
d) Possible when conditions are not ideal
- Which of the following statements is true:
a) Heat can be converted completely into work
b) Work can be converted completely into heat
c) **Both work and heat are inter-convertible**
d) Neither heat nor work is inter-convertible
- In an Adiabatic expansion the internal energy of the gas:
a) remains the same b) **decreases** c) increases d) becomes zero
- In Isobaric process the work done is equal to:
a) $C_V/n\Delta T$ b) $C_P/n\Delta T$ c) $R\Delta T/n$ d) **$nR\Delta T$**

12. The internal energy is an Isothermal process:
 a) Increase b) decrease c) becomes zero d) **remains the same**

CHP # 12: ELECTROSTATICS

- When three capacitors are joined in series, the total capacitance:
 a) **Less than the value of the minimum capacitance**
 b) Equal to the sum of the capacitance
 c) Greater than the maximum capacitance
 d) None of the above
- The Electric Intensity between two similar charged plates is:
 a) $\frac{\sigma}{\epsilon_0}$ b) $\frac{\sigma}{2\epsilon_0}$ c) Zero d) $\frac{2\sigma}{\epsilon_0}$
- If two capacitors of $5\mu\text{F}$ and $7\mu\text{F}$ are connected in parallel, their equivalent capacitance will be:
 a) $0.12\mu\text{F}$ b) **$12\mu\text{F}$** c) $0.34\mu\text{F}$ d) $2.9\mu\text{F}$
- The quantity $\frac{\Delta V}{\Delta S}$ is called:
 a) Electric potential c) **Electric Field Intensity**
 b) Potential Gradient d) Electric Induction
- The unit of electric intensity is:
 a) N C/m b) V m c) N C d) **V/m**
- The Electric flux through a surface will be minimum, when the angle between E and A is:
 a) **90°** b) 0° c) 45° d) 60°
- Electron volt is a unit of:
 a) **Energy** b) Force c) Potential Difference d) Current
- One joule per coulomb is called:
 a) Ampere b) **Volt** c) Farad d) Tesla
- The concept of the electric lines of force was introduced by a famous scientist called:
 a) Newton b) Einstein c) Coulomb d) **Faraday**
- The number of electrons in one coulomb charge is:
 a) 6×10^{20} b) 1.6×10^{18} c) **6.25×10^{18}** d) 9.1×10^{19}
- Which of the following cannot be a scalar quantity?
 a) Electrical Potential b) EMF c) Electric Flux d) **Electric Intensity**
- The capacitance of a parallel plate capacitor does not depend on the:
 a) area of the plates
 b) **nature of the plates**
 c) distance between the plates
 d) medium between the plates

CHP # 13: CURRENT ELECTRICITY

- If the wire of a uniform area of cross section is cut into two equal parts, the resistivity of each part will be:
 a) Halved b) Doubled c) **Remain the same** d) NOTA
- Kilowatt hour is unit of:
 a) Power b) Conductivity c) **Electrical energy** d) Receptivity

3. Total potential difference across the combination of three cells becomes maximum when:
 - a) **All the three cells are connected in series.**
 - b) All the three cells are connected in parallel.
 - c) Two cells are connected in series and the third cell in series with the combination.
 - d) Two cells are connected in series and the third cell in series with the combination.
4. All electrical appliances are connected in parallel to each other between the main line and the neutral wire to get:
 - a) same current
 - b) same potential difference
 - c) **different current and same potential differences**
 - d) none of the above
5. 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 above
6. The rate of transfer of charge through a circuit is called:
 - a) Resistance
 - b) **Current**
 - c) Potential difference
 - d) Energy
7. One-Kilo-Watt-Hour is equal to
 - a) $3.6 \times 10^5 \text{ J}$
 - b) **$36 \times 10^5 \text{ J}$**
 - c) $36 \times 10^6 \text{ J}$
 - d) $3.6 \times 10^4 \text{ J}$
8. Ohm's law is obeyed in:
 - a) electron tube
 - b) semiconductor
 - c) **metallic conductor**
 - d) all of above
9. The power dissipated in a resistance is given by:
 - a) IV
 - b) V^2/R
 - c) I^2R
 - d) **All of these**
10. The commercial unit of electrical energy is:
 - a) joule
 - b) kilowatt
 - c) **kilowatt hour**
 - d) mega watt
11. The resistance of 2Ω , 5Ω , 7Ω and 9Ω are connected in parallel. If the potential difference across the 5Ω resistance is 5V , the potential difference across 9Ω resistance will be:
 - a) 9 V
 - b) **5 V**
 - c) 2.5 V
 - d) 1.5 V
12. In a house circuit all the electrical appliances are connected in parallel with the phase and the neutral to get:
 - a) same current, and different potential difference
 - b) different current but same potential difference
 - c) **different current and different potential differences**
 - d) same current and same potential differences

CHP # 14: MAGNETISM AND ELECTROMAGNETISM

1. The maximum magnetic force will act on a current carrying conductor in a magnetic field when it is placed:
 - a) At 60° to field
 - b) **Perpendicular to the field**
 - c) Parallel to the field
 - d) At an angle of 45° to the field
2. One Tesla is equal to:
 - a) **1 weber/meter^2**
 - b) weber/meter^2
 - c) $2 \text{ weber}^2/\text{meter}^2$
 - d) Newton/ampere
3. The motional e.m.f. induced in a coil is independent of:
 - (a) Change of flux
 - (b) **Number of turns**
 - (c) Time
 - (d) Resistance
4. The practical application of phenomenon of mutual inductance is:
 - a) A.C generator
 - b) **transformer**
 - c) rectifier
 - d) dynamo

5. A steady current passing through a conductor produces:
 - a) An electric field only
 - b) **A magnetic field only**
 - c) Both electric and magnetic fields
 - d) Neither electric nor magnetic field
6. If a straight conductor of length 'L' carrying a current 'I' is placed parallel to a magnetic field 'B'; the force experienced by the conductor is:
 - a) BIL
 - b) BIL cos θ
 - c) **Zero**
 - d) Infinite
7. When a charged particle enters a uniform magnetic field perpendicularly, its path is:
 - a) Spiral
 - b) **Circular**
 - c) Parabolic
 - d) Straight line
8. The deflecting torque on a current carrying coil placed in a magnetic field is maximum when the angle between magnetic field and the plane of the coil is:
 - a) **zero°**
 - b) 90°
 - c) 60°
 - d) 45°
9. Transformer works on:
 - a) Ohms Law
 - b) Self induction
 - c) **Mutual induction**
 - d) Gauss's law
10. A transformer is used to change:
 - a) Capacitance
 - b) Frequency
 - c) **Voltage**
 - d) Power
11. In step-down transformer:
 - a) $N_s > N_p$
 - b) **$N_s < N_p$**
 - c) $N_s = N_p$
 - d) None of these
12. The path of a neutron moving normal to a magnetic field is a/an:
 - a) **Straight line**
 - b) Circular
 - c) Oval
 - d) Sinusoidal
13. SI unit of induction is:
 - a) Tesla
 - b) **Henry**
 - c) Watt
 - d) Weber
14. A charged particle moving in the magnetic field B experiences a resultant force:
 - a) Proportional to the kinetic energy
 - b) In the direction of the field
 - c) **In the direction perpendicular to its motion and field**
 - d) None of these
15. The direction of induced current is given by
 - a) Ohm's law
 - b) **Lenz's law**
 - c) Coulomb's law
 - d) Ampere's law

CHP # 15: ELECTRICAL MEASURING INSTRUMENT

1. A moving coil galvanometer can be converted into an ammeter by connecting a:
 - a) Low resistance in series
 - b) **Low resistance in parallel**
 - c) High resistance in series
 - d) High resistance in parallel
2. The unit of least count on a galvanometer scale represents:
 - a) **Division**
 - b) Ohm
 - c) Volt
 - d) Henry
3. The working principle of a post office box is:
 - a) **Wheatstone Bridge**
 - b) Potentiometer
 - c) Telegraph Line
 - d) None of these
4. To increase the accuracy of a potentiometer _____.
 - a) **A uniform wire of a large length should be used.**
 - b) A uniform wire of a small length should be used.
 - c) Non uniform wire should be used.
 - d) None of these
5. In a Wheatstone Bridge circuit we balance:
 - a) Resistance
 - b) **Current**
 - c) Voltage
 - d) All of these

6. $I = (C/BNA) \theta$ hence to increase the sensitivity of a galvanometer, we must decrease the value of:
 - a) θ
 - b) N
 - c) B
 - d) **C**
7. A device which converts electrical energy to mechanical energy is called:
 - a) Transformer
 - b) capacitor
 - c) galvanometer
 - d) **Electric motor**
8. 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
9. A single device containing ammeter, voltmeter and ohmmeter is called:
 - a) VTVM
 - b) CRO
 - c) Potentiometer
 - d) **Multimeter**
10. If the length of the wire of potentiometer is increased the accuracy in the determination of null point:
 - a) **Increases**
 - b) remains the same
 - c) Decreases
 - d) becomes zero

CHP # 16: ELECTROMAGNETIC WAVES AND ELECTRONICS

1. Which of the following are not electromagnetic waves
 - a) Light waves
 - b) X-rays
 - c) Heat waves
 - d) **Sound waves**
2. If ϵ_0 is the permittivity and μ_0 is the permeability of free space, then the velocity of electromagnetic waves in free space is given by:
 - a) $\epsilon_0 \mu_0$
 - b) ϵ_0 / μ_0
 - c) $\epsilon_0 - \mu_0$
 - d) $\frac{1}{\sqrt{\epsilon_0 \mu_0}}$
3. Which waves are emitted from antenna?
 - a) Stationary waves
 - b) Longitudinal waves
 - c) **Transverse waves**
 - d) Sound waves
4. Near absolute zero temperature extrinsic semi-conductors behave like:
 - a) Conductors
 - b) Metals
 - c) Insulators
 - d) None of these
5. Germanium and silicon are the materials used as
 - a) Conductors
 - b) Semi-conductors
 - c) **Insulators**
 - d) None of these
6. The outer most orbit of each atom in silicon contains
 - a) Four electrons
 - b) **Two electrons**
 - c) Eight electrons
 - d) No electrons
7. Which of the following is donor impurity?
 - a) **Arsenic**
 - b) Indium
 - c) Germanium
 - d) Carbon
8. The charge carries in P-type substances are
 - a) **Protons**
 - b) Electrons
 - c) Holes
 - d) Negative ions
9. The charge carries in N-type materials are
 - a) Electrons
 - b) Holes
 - c) **Protons**
 - d) Positive ions
10. P-type materials are obtained by adding germanium with:
 - a) **Tetravalent impurity atoms**
 - b) Trivalent impurity atoms
 - c) Pentavalent impurity atoms
 - d) None of these
11. N-type materials are obtained by doping intrinsic germanium with
 - a) Trivalent impurity atoms
 - b) **Pentavalent impurity atoms**
 - c) Tetravalent impurity atoms
 - d) None of these
12. Hole is equivalent to:
 - a) A neutral particle
 - b) **A positive charge**
 - c) A negative charge
 - d) An electron

CHP # 17:**ADVENT OF MODERN PHYSICS**

1. According to special theory of relativity, which of the following quantities change with increase in velocity.
a) Mass b) Length c) Time d) **All of the above**
2. The wavelength of de-Broglie wave become smaller when
a) Mass of particle is small b) Mass of particle is large
c) Velocity of particle is small d) **Mass and velocity of particle is large**
3. When an electron and a positron are annihilated, then the number of gamma ray photos produced is:
a) One b) **Two** c) Three d) Four
4. According to special theory of relativity, which of the following quantities change with increase in velocity.
a) Mass b) Length c) Time d) **All of the above**
5. Space and time in special theory of relativity are:
a) Absolute quantities
b) **Relative quantities**
c) Selection quantities
d) None of the above
6. Einstein's theory of relativity suggests that
a) The laws of physics are the same in all inertial frames of reference
b) The speed of light in free space is universal constant
c) The speed of light is independent of the speed of the observer
d) **All of the above**
7. In which of the following Newton's law of motion are valid
a) Non-inertial frame of reference
b) Accelerated frame of reference
c) **Inertial frame of reference**
d) All of the above
8. A non-inertial frame of reference is the one
a) **Which moves with some acceleration**
b) Which is always at rest on earth
c) Which moves with uniform velocity
d) All of the above
9. An inertial frame of reference is the one
a) Which has zero acceleration
b) Which is at rest
c) Which moves with uniform velocity on earth
d) **All of the above**
10. The relativistic kinetic energy of a particle is
a) $E = \frac{1}{2} mv^2$ b) $E = m_0 c^2$ c) $E = mc^2$ d) **$E = (m - m_0) c^2$**
11. In photoelectric effect the kinetic energy of the electron is directly proportional to the _____ of the incident light:
a) Wavelength b) **Frequency** c) Intensity d) None of these
12. Which of the following will be a good absorber of heat radiation?
a) A light-blue shirt b) A polished plate
c) A white sweater d) **A black jacket**

CHP # 18:**THE ATOMIC SPECTRA**

1. Electron in hydrogen atom jumps from any higher orbit to 1st orbit (lowest energy level). The set of lines emitted is called
 - a) **Lyman series**
 - b) Balmer series
 - c) Paschen series
 - d) Brackett series
2. X-rays exhibit the phenomenon of:
 - a) **Diffraction**
 - b) Interference
 - c) Polarization
 - d) All of the above
3. The spectral lines of hydrogen atom in the visible region were studied by
 - a) Lyman
 - b) **Balmer**
 - c) Paschen
 - d) Brackett
4. The series of lines in the ultraviolet region of the hydrogen spectrum are called
 - a) Balmer series
 - b) Brackett series
 - c) Paschen series
 - d) **Lyman series**
5. Rutherford concluded that the nucleus, which is the central part of the atom, is
 - a) **Positively charged**
 - b) Negatively charged
 - c) Electrically neutral
 - d) None of these
6. Electron in hydrogen atom jumps from any higher orbit to 1st orbit (lowest energy level). The set of lines emitted is called:
 - a) **Lyman series**
 - b) Balmer series
 - c) Paschen series
 - d) Brackett series
7. The Balmer series is obtained when an electron in hydrogen atom jumps from higher orbit to an orbit where n is equal to
 - a) 1
 - b) **2**
 - c) 3
 - d) 4
8. When an electron is excited from lower to a higher orbit, it will
 - a) Emit energy
 - b) **Absorb energy**
 - c) Absorb as well as emit energy
 - d) None of these
9. If an electron in an atom makes transition from higher to a lower orbit, it will.
 - a) **Emit energy**
 - b) Absorb energy
 - c) Neither emit nor absorb energy
 - d) Absorb as well as emit energy
10. The radius of the second orbit in hydrogen atom is
 - a) **Greater than the first orbit**
 - b) Equal to the first orbit
 - c) Less than the first orbit
 - d) None of these
11. Which of the following transition in hydrogen atom emits the photon of high frequency:
 - a) $n = 1$ to $n = 2$
 - b) **$n = 2$ to $n = 1$**
 - c) $n = 2$ to $n = 6$
 - d) $n = 6$ to $n = 2$

CHP # 19:**THE ATOMIC NUCLEUS**

1. The mass number of a nucleus is the total number of
 - a) Neutrons in the nucleus
 - b) Protons in the nucleus
 - c) Nucleons in the nucleus
 - d) None of these
2. Alpha particle is similar to
 - a) Helium atom
 - b) Helium neutron
 - c) **Helium nucleus**
 - d) None of these
3. The mass number of a nucleus is the total number of
 - a) Neutrons in the nucleus
 - b) Protons in the nucleus
 - c) **Nucleons in the nucleus**
 - d) None of these
4. Protons and neutrons in the nucleus are together called
 - a) Mesons
 - b) Phonons
 - c) Photons
 - d) **Nucleons**

5. Which of the following was discovered by Chadwick in 1932?
a) Electron b) **Neutron** c) Proton d) Atom
6. Who determined the charge on the electron?
a) J.J. Thomson b) Ampere c) Chadwick d) **Milikan**
7. Controlled fission chain reaction is maintained in:
a) Galaxies b) The sun c) Cyclotron d) **Nuclear reactors**
8. The source of energy in the sun and stars is mainly due to
a) Chemical reaction b) **Nuclear fusion**
c) Nuclear fission d) None of these

CHP # 20:

NUCLEAR RADIATIONS

1. In treating a localized cancerous tumor a narrow beam of:
a) Alpha rays from cobalt. b) Beta rays from cobalt.
c) **Gamma rays from cobalt.** d) Laser from cobalt.
2. A Geiger Muller counter contains:
a) **Argon and Alcohol** b) alcohol only
c) ions d) super cooled water vapors
3. If a small quantity of radioactive iodine $_{53}^{131}\text{I}$ is taken in food most of it is deposited in:
a) Kidneys b) Brain c) **Thyroid glands** d) All glands