

MODELPAPER CLASS-XII (PHYSICS)

SECTION – A

Time Allowed: 25 Minutes

Marks: 17

ATTEMPT ALL QUESTIONS:

-1- Internal energy of ideal gas depends on:

- | | |
|---------------------|------------------|
| a) Only pressure | b) Only volume |
| c) Only temperature | d) None of these |

-2- If the door of refrigerator is kept open, then which of the following is true?

- | | |
|--------------------------------------|------------------------------------|
| a) Room is cooled | b) Room is heated |
| c) Room is neither cooled nor heated | d) Room is either cooled or heated |

-3- If a bimetallic strip is heated it will:

- | | |
|--|---|
| a) Bend towards the metal with lower thermal expansion coefficient | b) Bend towards the metal with higher thermal expansion coefficient |
| c) Not bend at all | d) None of these |

-4- A charged conductor has charge on its:

- | | |
|------------------|------------------|
| a) Outer surface | b) Inner surface |
| c) Middle point | d) Surrounding |

-5- Two plates are 2cm apart. A potential difference of 10 V is applied between them, the electric field between the plates is:

- | | |
|-----------|------------|
| a) 20 N/c | b) 500 N/c |
| c) 5 N/c | d) 250 N/c |

-6- Coulomb's law is applicable to:

- | | |
|-----------------|---------------------|
| a) Point charge | b) Spherical charge |
| c) Like charge | d) All of these |

-7- Electric lines of forces:

- | | |
|---------------------|---------------------|
| a) Continuous lines | b) Form closed path |
| c) Imaginary lines | d) Scalar quantity |

-8- A wire has a resistance R, What will be its resistance, if it is stretched to double its length?

- a) R
- b) 2R
- c) R/2
- d) 4R

-9- 10 identical wires each having resistance of 1Ω are joined in parallel combination has a resistance of:

- a) 1Ω
- b) 0.1Ω
- c) 10Ω
- d) 0.01Ω

-10- When cells are connected series:

- a) The e.m.f increases
- b) The current capacity increase
- c) The potential difference decreases
- d) Current capacity decrease

-11- In a step-up transformer the number of turns is:

- a) Primary are less
- b) Primary are more
- c) Primary & secondary are equal
- d) Primary are infinite

-12- The core of any transformer is laminated so as to:

- a) Reduce the energy loss due to eddy current.
- b) Make it light weight
- c) Make it robust and strong.
- d) Increase the secondary voltage.

-13- web/m^2 is equal to:

- a) Volt
- b) Henry
- c) Tesla
- d) All of these

-14- Electric conduction in a semi-conductor takes place due to:

- a) Electron only
- b) Holes only
- c) Both electrons and holes
- d) Neither electrons nor holes

-15- Modulation is used to:

- a) Reduce the bandwidth used
- b) Separate the transmission of different uses.
- c) Ensure that intelligence may be transmitted to long distance.
- d) Allow use of practical antenna

-16- Dual nature of radiation is shown by:

- a) Diffraction & reflection
- b) Refraction & diffraction
- c) Photoelectric effect alone
- d) Photoelectric effect & diffraction

-17- De-Broglie hypothesis treated electron as:

- a) Particles
- b) Waves
- c) Both of these
- d) None of these

SECTION- "B"

(Chapter 11 to 15)

Q.02 Attempt any (07) of the following: All parts carry equal marks

Marks "21"

1. Distinguished between heat and temperature?
2. Why molar heat capacity at constant pressure greater than molar heat capacity at constant volume?
3. A 100W bulb operated continuously from 45 minutes connected with battery 120V. How much energy consumed in KWh.
4. Using the formula $\vec{F} = q(\vec{V} \times \vec{B})$, define Tesla.
5. At what point electric field is zero but electric potential not zero? (explain with example)
6. An-alpha particle displaced through potential difference of 100V, calculate gain in Kinetic energy in eV.
7. Four capacitors each $2\mu\text{f}$ connected in series find equivalent capacitance.
8. A 960C of charge passing through cross-section wire in 1sec, calculate number of electrons pass through it.
9. Why do we connect Ammeter in series in a circuit?
10. Electric lines of force never cross? Why.

SECTION- "C"

(Chapter 16 to 20)

Attempt any (07) of the following: All parts carry equal marks

Marks "21"

1. What is P.N Junction Semi-conductor diode?
2. A 100 KeV photon strike with carbon block in Compton scattering process. Calculate
3. Wave length of photon.
4. What is pair production and annihilation of matter?
5. What is radioactivity, explain β -decay process?
6. Differentiate between nuclear fission and nuclear fusion process
7. Different between half wave and full wave rectification for semi-conductor diode?
8. Define excitation and ionization potential of hydrogen atom.
9. What do we mean by mass Defect and Binding energy for a nucleus?
10. What is postulate of special theory of relativity? Explain mass variation and time dilation. What is wavelength of the radiation that is emitted when hydrogen atom undergoes a transition from the state $n=2$ to $n=1$.

SECTION- "D"

Note Attempt any (02) of the following: All parts carry equal marks

Marks "26"

- 1.**
 - (a)** What is ohm's law? Calculate resistivity of resistance.
 - (b)** A $40\ \Omega$ resistor is to be wound from platinum wire 0.1mm in diameter. How much wire is needed?
 - (c)** Define 1 ohm.

- 2.**
 - (a)** What is photoelectric effect? Explain on the basis of quantum theory of light.
 - (b)** Sodium surface is shined with light of wave length $3 \times 10^{-7} \text{m}$. If the work function of Na = 2.46eV find K.E of the photoelectrons.
 - (c)** Explain, why is Compton Effect not observable with visible light?

- 3.**
 - (a)** What is Bohr's postulate, calculate Bohr's radius of hydrogen atom?
 - (b)** Calculate energy of electron in nth for hydrogen atom.