PHYSICS 2025

Max. Marks: 60 **Time: 3 Hour**

SECTION "A" MULTIPLE CHOICE QUESTIONS (MCQs)

Marks: 12

NOTE: (i) Attempt all the Questions of this Section.

(ii) Do not copy down the part questions. Write only the answer against the proper number of the Question and its part according to the question Paper.

(iii) Each question carries 1 Marks

1. Choose the correct Answer for each from the given options:

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i. The oscillatory motion is damped due to the presence of
*Linear Motion *Restoring farce
*Frictional force ✓ *Mechanical force
ii. The two factors affecting the speed of sound in air are:
*Air's humidity and volume *Air's temperature and mass
*Air's volume and mass
*Air's temperature and the humidity ✓
iii. The type of electromagnetic wave used in security scanners at night is:
*Infrared✓ *Microwave *Radio wave *X-Rays
iv. The power of the lens of focal length 1 cm will be:
*0.01 *1 D *10 D *100 D✓
v. If two capacitors each of 4μF capacitance connected in series their equivalent capacitance will be:
* $^1/_4$ μF * $^1/_2$ μF *2μF✓ *4μF
vi. A wire has a resistance of 5Ω and 2A current passes through it then the voltage across the wire ends will be:
*10 V✓ *20 V *30 V *40 V
vii. A device which coverts mechanical energy into electrical energy is called:
*Motor *Transformer
*AC Generator ✓ *Battery
viii. An example of digital electronic device is:
*Speedometer *Barometer
*Laptop✓ *Ordinary air thermometer
ix. This is not a component of CHIS:
*Data *Furniture✓ *People *Software
x. The number of neutron(s) in Deuterium is/are:
*0 *1✓ *2 *3
xi. The nuclear radiation which has the highest penetrating ability is:
*Alpha *Beta *Gamma✓ *X-ray
xii. These cannot carry electric charge:
*Electromagnetic waves✓ *Transverse warm
*longitudinal waves *Water waves

SECTION "B" (Short Answer Question) Marks: 24

NOTE: Answer any EIGHT (8) questions from this section.
Each question carries 3 (Three) Marks.

2. Define frequency of a wave. Derive relationship between wave speed, wave length and frequency.
3. Write down any three differences between musical sound and noise.

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4. State briefly three methods for forming charges on a body.
5. Define electromotive force. Write its formula, S.I unit and CGS unit.
6. Draw diagrams of 'AND' gate and 'NOR' gate showing output of two inputs.
7. Define atoms. Describe its two parts.
8. The speed of sound in air at $0°C$ *is* $331m/s$. Find the speed of sound in air at the temperature of $54°C$.
9. Calculate the frequency of ultraviolet light with the wave length of $193nm$ commonly used in laser eye surgery procedure.
10. A concave lens whose focal length is $10cm$. An object is placed 15cm away from it. Determine the position of image.
11. Calculate the potential difference of 150J of work done on a $75C$ charge.
12. If a current of $0.25A$ passes through a bulb for 20 minutes. How much electric charge will pass through the circuit during this time?
13. A $1.5m$ long wire carrying a current of 5A is placed at right angle in a magnetic field of strength 0.04T. Calculate the force exerted on the wire.

Section C (Detailed –Answer Question) (24)

NOTE: Attempt any FOUR (4) questions from this Section.
Each question tries (Six) 6 marks.

14. Define Simple Harmonic Motion (SHM). Illustrate simple harmonic motion in ball and bowl system with diagram.
15. Short sightedness (Myopia) and Long sightedness (Hyperopia) are two common vision defects. Explain their causes and how can they be corrected? Also draw diagrams.
16. What is a Transformer? On what principle does it operate on? Describe its four practical applications in every-day life.
17. If an electron enters in a uniform magnetic field perpendicularly, explain with diagram the effects on the path of electron.
18. What is meant by flow of information? Explain how light signals are transmitted through optical fibre?
19. Define nuclear fission and nuclear fusion reactions. Explain fission chain reaction in U – 235.