

NOTE: Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink. Cutting or filling two or more circles will result in zero mark in that question.

Q1.

12

1. What happens to the intensity of brightness of the lamps connected in series as more and more lamps are added?
(A) Increases (B) Decreases (C) Remains the same (D) Cannot be predicted
2. One micro farad is equal to:
(A) $1 \times 10^{-3}F$ (B) $1 \times 10^{-6}F$ (C) $1 \times 10^{-9}F$ (D) $1 \times 10^{-12}F$
3. The SI unit of power of lens is:
(A) Hertz (B) Volt (C) Diopter (D) Decibel
4. The speed of light in water is approximately:
(A) $3.0 \times 10^8ms^{-1}$ (B) $2.3 \times 10^8ms^{-1}$ (C) $2.0 \times 10^8ms^{-1}$ (D) $2.5 \times 10^8ms^{-1}$
5. Speed of sound in air at $0^\circ C$ is:
(A) $386ms^{-1}$ (B) $376ms^{-1}$ (C) $231 ms^{-1}$ (D) $331 ms^{-1}$
6. Waves transfer:
(A) Energy (B) Frequency (C) Wavelength (D) Velocity
7. Release of energy by the sun is due to:
(A) Nuclear fission (B) Nuclear fusion (C) Burning of gases (D) Chemical reaction
8. From which we can get information almost about everything:
(A) Books (B) Teacher (C) Computer (D) Internet
9. The output of a two-input NOR gate is '1' when:
(A) $A = 1, B = 0$ (B) $A = 0, B = 1$ (C) $A = 0, B = 0$ (D) $A = 1, B = 1$
10. Cathode-ray oscilloscope consists of _____ parts.
(A) 2 (B) 3 (C) 4 (D) 5
11. The step-up transformer:
(A) Increases the input current (B) Increases the input voltage
(C) has more turns in the primary coil (D) Has less turns in the secondary coil
12. The SI unit of emf is:
(A) NC^{-1} (B) NC (C) JC (D) JC^{-1}

Roll No.(in Figures): (in Words):

Maximum Marks: 48 **SUBJECTIVE TYPE** Time Allowed :1.45 Hours

(PART- I)

Q2. Write short answers to any Five (5) questions. (5×2=10)

- (i) If the length of a simple pendulum is doubled, what will be the change in its time period?
- (ii) Define restoring force.
- (iii) Define diffraction of waves.
- (iv) What is meant by SONAR?
- (v) What is the difference between the loudness and the intensity of sound?
- (vi) State Faraday's law of electromagnetic induction.
- (vii) What is meant by A.C. generator?
- (viii) Define the term mutual induction.

Q3. Write short answers to any FIVE (5) questions. (5×2=10)

- (i) What is the difference between principal focus and focal length?
- (ii) What is the difference between converging lens and diverging lens?
- (iii) Write two uses of compound microscope.
- (iv) What is meant by procedures in (CBIS)?
- (v) What is computer?
- (vi) What is the difference between magnetic disk and hard disk?
- (vii) Define penetrating power.
- (viii) Define nuclear fusion.

Q4. Write short answers to any FIVE (5) questions. (5×2=10)

- (i) If $V = 50V$ and $C = 100\mu F$, then $Q = ?$
- (ii) Write any two characteristics of parallel combination of capacitors.
- (iii) What do you know about electrostatic air cleaner?
- (iv) Define electromotive force and write its unit.
- (v) Convert 1000 watt hour energy into Joules unit.
- (vi) Write the importance of fuse in house hold electric circuit.
- (vii) What is the difference between ADC and DAC?
- (viii) How can you compare the logic operation $X = A \cdot B$ with usual operation of multiplication?

(PART - II)

Note: Attempt any TWO questions. (2×9=18)

- Q5. (a) State the laws of reflection of light. Also explain the types of reflection.** 4
- (b) The time period of simple pendulum is 2s. What will be its length on the earth? What will be its length on the moon if $g_m = g_e/6$ where $g_e = 10ms^{-2}$.** 5
- Q6. (a) Describe briefly the hazards of household electricity.** 4
- (b) The force of repulsion between two identical charges is 0.8N, when the charges are 0.1m apart. Find the value of each charge.** 5
- Q7. (a) What are the three universal logic gates? Give their symbols.** 4
- (b) Cobalt-60 is a radioactive element with half-life of 5.25 years. What fraction of the original sample will be left after 26 years?** 5

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Q1.

12

1. The temperature at the center of the sun is nearly _____ million Kelvin.
(A) 20 (B) 30 (C) 40 (D) 50
2. How many metal rods in radio station transmission antenna are?
(A) 8 (B) 6 (C) 4 (D) 2
3. Equation of AND operation is:
(A) $X = A + B$ (B) $X = A \cdot B$ (C) $X = \overline{A}$ (D) $X = \overline{A \cdot B}$
4. The screen of CRO consists of material called:
(A) Zinc (B) Iron (C) Phosphorus (D) Sodium
5. Lenz's law is a manifestation of the law of:
(A) Mass conservation (B) Energy conservation
(C) Momentum conservation (D) Charge conservation
6. The electric meter installed in our houses measures the consumption of electric energy in the units of:
(A) Watt (B) Watt hour (C) Mega watt hour (D) Kilo watt hour
7. If we put $L = 1\text{m}$ and $A = 1\text{m}^2$ in $R = \frac{\rho L}{A}$ then:
(A) $R > \rho$ (B) $R < \rho$ (C) $R = \rho$ (D) $R \neq \rho$
8. A strong field lies in Farady cage:
(A) Gravitational (B) Electric (C) Magnetic (D) Geometric
9. Light rays are reflected in a plane mirror, causing us to see image:
(A) Larger (B) Smaller (C) Inverted (D) Erect
10. Optical fibers work on the principle of:
(A) Reflection (B) Refraction
(C) Diffraction (D) Total internal refelction
11. Which form of energy is sound?
(A) Electrical (B) Mechanical (C) Thermal (D) Chemical
12. The part of a wave, where the particles of medium are highest from the mean position is called:
(A) Crest (B) Trough (C) Wavefront (D) Wavelength

Roll No.(in Figures): (in Words):

Maximum Marks: 48 **SUBJECTIVE TYPE** Time Allowed :1.45 Hours

(PART- I)

Q2. Write short answers to any Five (5) questions. (5×2=10)

- (i) Define longitudinal waves.
- (ii) If the time period of simple pendulum is 1.99s, then find the frequency of the pendulum.
- (iii) What is meant by transverse waves?
- (iv) Define the loudness of sound.
- (v) What is meant by echo of sound?
- (vi) State Fleming's left hand rule.
- (vii) Define A.C. generator.
- (viii) What do you mean by electromagnet?

Q3. Write short answers to any FIVE (5) questions. (5×2=10)

- (i) State laws of reflection of light.
- (ii) Define total internal reflection.
- (iii) What is bronchoscope?
- (iv) Enlist the components of computer based information system.
- (v) What do you mean by word processing?
- (vi) Write two advantages of e-mail.
- (vii) Write the names of isotopes of hydrogen.
- (viii) Who discovered radioactivity?

Q4. Write short answers to any FIVE (5) questions. (5×2=10)

- (i) How can we identify conductor or insulator with the help of electroscope?
- (ii) What is the effect of distance on Coulomb force?
- (iii) Define fixed capacitor and give its examples.
- (iv) What is the difference between cell and battery?
- (v) Write the SI unit of potential difference and define it.
- (vi) Differentiate between direct current and alternating current.
- (vii) What is mean by fluorescent screen?
- (viii) Differentiate between ADC (analogue to digital converter) and DAC (digital to analogue converter).

(PART - II)

Note: Attempt any TWO questions. (2×9=18)

Q5. (a) Describe the nearsightedness and farsightedness of vision. 4

(b) A sound wave has a frequency of 2kHz and wavelength 35cm. How long will it take to travel 1.5km? 5

Q6. (a) Explain in detail any two safety measures that should be taken in connection with house hold circuit. 4

(b) Two bodies are oppositely charged with $500\mu\text{C}$ and $100\mu\text{C}$ charge. Find the force between the two charges if the distance between them in air is 0.5m. 5

Q7. (a) Considering oscilloscope, describe the working of the electron gun with control grid. 4

(b) The activity of a sample of radioactive bismuth decreases to one-eighth of its original activity in 15 days. Calculate the half-life of the sample. 5