

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 in the answer book. Cutting or filling two or more circles will result in zero mark in that question.

- 1.1** A positive electric charge
 Ⓐ Attracts other positive charge
 Ⓑ Repels other positive charge
 Ⓒ Attracts a neutral charge Ⓓ Repels a neutral charge
- 2** In case of simple pendulum which component of weight acts as restoring force:
 Ⓐ $mg \sin \theta$ Ⓑ $mg \cos \theta$
 Ⓒ $mg \sec \theta$ Ⓓ $mg \csc \theta$
- 3** AND gate can be formed by using two
 Ⓐ NOT gates Ⓑ OR gates
 Ⓒ NAND gates Ⓓ NOR gates
- 4** Which is an example of longitudinal waves
 Ⓐ Sound waves Ⓑ Light waves
 Ⓒ Radio waves Ⓓ Water waves
- 5** The brain of any computer system is
 Ⓐ Monitor Ⓑ CPU
 Ⓒ Memory Ⓓ Control unit
- 6** Farsightedness can be corrected by using
 Ⓐ Diverging mirror Ⓑ Converging mirror
 Ⓒ Diverging lens Ⓓ Converging lens
- 7** Which of the following quantity is not changed during refraction of light
 Ⓐ Its direction Ⓑ Its speed
 Ⓒ Its wavelength Ⓓ Its frequency
- 8** What is the power rating of lamp connected to 12 V source when it carries 2.5 A current
 Ⓐ 4.6 W Ⓑ 14.5 W
 Ⓒ 30 W Ⓓ 60 W
- 9** The direction of induced emf in a circuit is in accordance with conservation of
 Ⓐ Mass Ⓑ Charge
 Ⓒ Momentum Ⓓ Energy
- 10** We can see sound waves by using
 Ⓐ Microscope Ⓑ Telescope
 Ⓒ Oscilloscope Ⓓ Stethoscope
- 11** Wave transfers
 Ⓐ Energy Ⓑ Frequency
 Ⓒ Wavelength Ⓓ Velocity
- 12** Which among the following radiations has more penetrating power
 Ⓐ A beta particle Ⓑ A gamma ray
 Ⓒ An alpha particle
 Ⓓ All have the same penetrating ability

PART – I**Q.2 Write short answers to any FIVE (5) questions: 10**

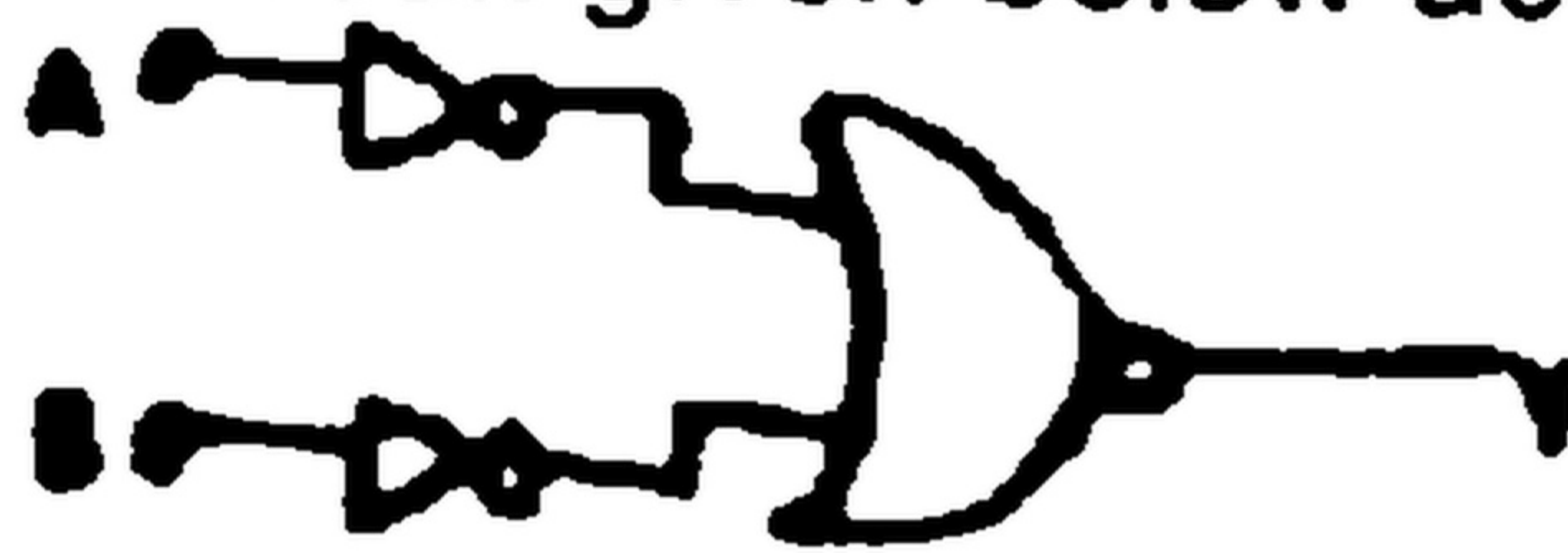
- i** Define simple harmonic motion.
- ii** How damping progressively reduces the amplitude of oscillation?
- iii** What is the difference between cell and battery?
- iv** State Coulomb's law.
- v** Define electric potential and write its unit.
- vi** Two capacitors of capacitance $6\ \mu\text{F}$ and $12\ \mu\text{F}$ are connected in parallel with a 12 volt battery. Find their equivalent capacitance.
- vii** Why do the electric current cannot pass through insulator?
- viii** Define specific resistance and write its unit.

Q.3 Write short answers to any FIVE (5) questions: 10

- i** What is meant by intensity of sound? Write its unit.
- ii** Write the audible frequency range of bats and rats.
- iii** What is meant by echo? Write its one use.
- iv** What is the relation between information technology and telecommunication?
- v** What do you know about INTELSAT and SATCOM?
- vi** What is difference between hardware and software?
- vii** How can we find the need of phosphate fertilizer for a plant?
- viii** How can we monitor the thyroid gland in the human body?

Q.4 Write short answers to any FIVE (5) questions: 10

- i** State the laws of refraction of light.
- ii** Describe the types of reflection with diagram.
- iii** How the focal length is related to the radius of curvature?
- iv** What does magnetic field lines show? Explain.
- v** Differentiate between step-up and step-down transformer.
- vi** State the principle of an A.C. generator.
- vii** Define thermionic emission.
- viii** Show that the circuit given below acts as AND gate.

**PART - II****Note: Attempt any TWO questions.****Q.5(a)** Write down the characteristics of series combination of resistors with circuit diagram.**(b)** A simple pendulum completes one vibration in two seconds. Calculate its length when $g = 10\ \text{ms}^{-2}$.**Q.6(a)** Write name of any four parts of computer based information system and explain them.**(b)** Carbon-14 has a half of 5730 years. How long will it take for the quantity of carbon-14 in a sample to drop to one-eighth of the total quantity?**Q.7(a)** Define nuclear fusion and explain it.**(b)** A sound wave has a frequency of 2 KHz and wavelength of 35 cm. How long will it take to travel 1.5 km?