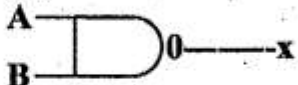


NOTE: Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink. Cutting or filling two or more circles will result in zero mark in that question.

Q1. 12

1. Which of the following devices can be used to produce both transverse and longitudinal waves?
(A) a string (B) a ripple tank (C) a helical spring (D) a tuning fork
2. Which is an example of a longitudinal waves?
(A) sound waves (B) light waves (C) radio waves (D) water waves
3. The index of refraction depends on:
(A) the focal length (B) the speed of light (C) the image distance (D) the object distance
4. The refractive index of medium is:
(A) $n = cv$ (B) $v = cn$ (C) $c = \frac{v}{n}$ (D) $n = \frac{c}{v}$
5. Electric field lines:
(A) always cross each other (B) never cross each other
(C) cross each other in the region of strong field
(D) cross each other in the region of weak field
6. What is the voltage across a 6Ω resistor when 3 A of current passes through it?
(A) 2 V (B) 9 V (C) 18 V (D) 36 V
7. If we double both the current and the voltage in a circuit while keeping its resistance constant, the power:
(A) remains unchanged (B) halves (C) doubles (D) quadruples
8. The direction of induced e.m.f in a circuit is in accordance with conservation of:
(A) mass (B) charge (C) momentum (D) energy
9. The process by which electrons are emitted by a hot metal surface is known as:
(A) boiling (B) evaporation (C) conduction (D) thermionic emission
10. The logical operation performed by this gate is:
(A) AND (B) NOR (C) NAND (D) OR

11. The brain of any computer system is:
(A) monitor (B) memory (C) control unit (D) CPU
12. Which among the following in radiations has more penetrating power?
(A) a beta particle (B) a gamma ray
(C) an alpha particle (D) all have the same penetrating ability

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

Maximum Marks: 48

**SUBJECTIVE TYPE
(PART - I)**

Time Allowed :1.45 Hours

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

- (i) Define transverse waves.
- (ii) Describe the use of ripple tank.
- (iii) Differentiate between crest and trough of transverse waves.
- (iv) What do you mean by intensity of sound?
- (v) Write two uses of ultrasound.
- (vi) Write the function of D.C motor.
- (vii) State Lenz's law.
- (viii) Describe the construction of Transformer.

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

- (i) Under what conditions a converging lens forms a virtual image?
- (ii) An object and its image in a concave mirror are of the same height, yet inverted, when the object is 20 cm from the mirror. What is the focal length of the mirror?
- (iii) Define power of a lens and write its unit.
- (iv) Differentiate between the primary memory and the secondary memory?
- (v) What is meant by compact disc?
- (vi) What is meant by photo phone?
- (vii) How can the scientist estimate died tree age by C - 14?
- (viii) What is meant by cosmic radiation?

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

- (i) How the capacitance of a capacitor can be increased?
- (ii) Write two characteristics of charges.
- (iii) Define electric potential and write down its formula.
- (iv) What is the difference between D.C and A.C?
- (v) Write colour code for Live wire and Neutral wire.
- (vi) Two resistors $R_1 = 6k\Omega$, $R_2 = 12k\Omega$ are connected in parallel. Find equivalent resistance of the parallel combination.
- (vii) What is difference between (A.D.C) and (D.A.C)?
- (viii) Give symbol and truth table of OR Gate.

(PART - II)**Note: Attempt any TWO questions.****(2×9=18)**

- Q5. (a) What is meant by total internal reflection? Explain it with diagram: 4
- (b) A pendulum of length 0.99m is taken to the Moon by an astronaut. The period of the pendulum is 4.9s. What is the value of "g" on the surface of the Moon? 5
- Q6. (a) Explain the characteristic of resistors in series combination. 4
- (b) Three capacitors with capacitances of $3.0\mu F$, $4.0\mu F$ and $5.0\mu F$ are arranged in series combination to a battery of 6 V where $1\mu F = 10^{-6} F$. Find the total capacitance of the series combination. 5
- Q7. (a) Write down some benefits of using digital electronics over analogue electronics. Explain. 4
- (b) Half life of a radioactive element is 10 minutes. If the initial count rate is 368 counts per minute, Find the time by which, count rate reaches 23 counts per minute. 5

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. The output of a two-input NOR gate is 1 when:
(A) A is 1 and B is 0 (B) A is 0 and B is 1 (C) Both A and B are 0 (D) Both A and B are 1
2. From which of the following we can get information almost about every thing?
(A) Book (B) Teacher (C) Computer (D) Internet
3. Half life of ${}_{84}^{194}\text{Po}$:
(A) 0.8 Seconds (B) 0.9 Seconds (C) 0.7 Seconds (D) 0.6 Seconds
4. In a vacuum electromagnetic waves have the same:
(A) Speed (B) Frequency (C) Amplitude (D) Wavelength
5. Speed of sound at 25°C in wood:
(A) 4700 m/s (B) 6040 m/s (C) 6420 m/s (D) 2000 m/s
6. Speed of light in air:
(A) 2.0×10^8 m/s (B) 3.0×10^8 m/s (C) 2.3×10^8 m/s (D) 4.0×10^8 m/s
7. Refractive index of Diamond:
(A) 2.21 (B) 1.66 (C) 2.42 (D) 1.52
8. The unit of volt:
(A) J/C (B) C/J (C) Nm^{-1} (D) Nm
9. Cross sectional area of the wire:
(A) $\frac{\pi d^2}{2}$ (B) $\frac{\pi^2 d^2}{4}$ (C) $\frac{\pi^2 d}{4}$ (D) $\frac{\pi d^2}{4}$
10. Specific resistance of copper:
(A) $1.7 \times 10^{-8} \Omega\text{m}$ (B) $1.69 \times 10^{-8} \Omega\text{m}$ (C) $2.75 \times 10^{-8} \Omega\text{m}$ (D) $5.25 \times 10^{-8} \Omega\text{m}$
11. The direction of induced e.m.f in a circuit is in accordance with conservation of:
(A) Mass (B) Charge (C) Momentum (D) Energy
12. Boolean expression of NOR Gate:
(A) $X = \overline{A + B}$ (B) $X = A + B$ (C) $X = \overline{A \cdot B}$ (D) $X = A \cdot B$

Dera Ghazi Khan Board 2019 (Second Group)

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

Maximum Marks: 48

SUBJECTIVE TYPE (PART- I)

Time Allowed :1.45 Hours

Q2. Write short answers to any Five (5) questions.

(5×2=10)

- (i) Prove that $v = f\lambda$.
- (ii) What is relation between frequency and time period?
- (iii) Write four names of examples of electro magnetic wave.
- (iv) If $v = 340 \text{ ms}^{-1}$ and $\lambda = 0.5 \text{ m}$ then $f = ?$
- (v) What is meant by noise? Write its sources.
- (vi) Define term "Mutual Induction".
- (vii) Which are two factors that affect induced e.m.f?
- (viii) What is the difference between step up and step down transformer?

Q3. Write short answers to any FIVE (5) questions.

(5×2=10)

- (i) State the laws of reflection of light.
- (ii) What is difference between concave mirror and convex mirror?
- (iii) Define resolving power of an instrument.
- (iv) How can you define the term ICT?
- (v) What is meant by photo phone?
- (vi) What do you mean by flow of information?
- (vii) Define atomic mass number.
- (viii) What is meant by nuclear transmutation?

Q4. Write short answers to any FIVE (5) questions.

(5×2=10)

- (i) Define Coulomb's Law of Electrostatic and write its mathematical form also.
- (ii) Write difference between Electric field and Electric field intensity.
- (iii) Write any two uses of capacitors.
- (iv) Why does the current easily flow in a conductor?
- (v) Define 'Kilo watt hour'.

(vi) What is the advantage of connecting the equipments in parallel circuits instead of series circuits?

(vii) Define 'Thermionic Emission' also name one factor which enhances this process.

(viii) Write the truth table of 'AND' operation.

(PART - II)

Note: Attempt any TWO questions.

(2×9=18)

Q5. (a) What is meant by Refraction of light? Explain the laws of refraction.

4

(b) A wave moves on a slinky with frequency of 4 Hz and wave length of 0.4 m. What is the speed of the wave?

5

Q6. (a) Explain the combination of resistors in series with the help of circuit diagram.

4

(b) The force of repulsion between two identical positive charges is 0.8 N. When the charges are 0.1 m apart. Find the value of each charge.

5

Q7. (a) What happens, when a narrow beam of electrons is passed through? (i) a uniform electric field (ii) a uniform magnetic field. What do these result indicate about the charge on electron?

4

(b) Ashes from a campfire deep in a cave show carbon-14 activity of only one eight activity of fresh wood. How long ago was that campfire made?

5