Q1. 12

1. If x=A.B then x will be one when:

   (A) A=0 and B=0   (B) A=1 and B=1   (C) A=0 and B=1   (D) A=1 and B=0

2. Radio waves are:

   (A) Infrared   (B) X-Ray   (C) Electromagnetic   (D) Mechanical

3. E-mail stands for:

   (A) Extra mail   (B) External mail   (C) Electronic mail   (D) Emergency mail

4. The temperature at centre of Sun is:

   (A) 20MK   (B) 2MK   (C) 24MK   (D) 25MK

5. Time period of simple pendulum of 1m long is:

   (A) 1.99s   (B) 2.11s   (C) 1.89s   (D) 1.88s

6. One bel is equal to:

   (A) 5dB   (B) 10dB   (C) 60dB   (D) 20dB

7. Frequency of tuning fork depends upon:

   (A) Length   (B) Mass   (C) Force   (D) Amplitude

8. Refractive index of water is:

   (A) 1.00   (B) 1.66   (C) 1.33   (D) 2.42

9. How much energy (million Joule) has a thunder of light?

   (A) 1000   (B) 10,000   (C) 100   (D) 100000

10. Potential of neutral wire is:

    (A) 1V   (B) 5V   (C) 0V   (D) 10V

11. Law of Electromagnetic induction was given by:

    (A) Faraday   (B) Hennery   (C) Volta   (D) G. Bell

12. MRI helps in diagnose the disorder of:

    (A) Brain   (B) Eye   (C) Ear   (D) Kidney

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 transverse waves and longitudinal waves.

(ii) Define restoring force.

(iii) What is the difference between music and noise?

(iv) Define Pitch and Quality.

(v) Define intensity of sound and write its SI unit.

(vi) State the difference between regular and irregular reflection.

(vii) Define critical angle.

(viii) State Snell's law and write its formula.

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

(i) Define capacitor and write the names of its types.

(ii) Define potential difference and write its unit.

(iii) Describe the importance of fuse and electric circuit.

(iv) State Joule's law.

(v) Define electric current and write its unit.

(vi) Describe the working principle of D.C motor?

(vii) What is basic difference between generator and motor?

(viii) What is magnetic resonance imaging?

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

(i) Define thermionic emission.

(ii) Give truth table of AND gate.

(iii) Write two uses of computer.

(iv) Differentiate between RAM and ROM.

(v) Define data.

(vi) What is meant by isotopes? Write the names of isotopes of hydrogen.

(vii) What is the difference between atomic number and atomic mass?

(viii) Define the half life of a radioactive element.

(PART - II)

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

Q5. (a) Define wave motion. Explain the types of mechanical waves in detail. 4

(b) A convex lens of focal length 6cm is to be used to form a virtual image three times of the size of object. Where must the lens be placed? 5

Q6. (a) Write a note on parallel combination of resistors. 4

(b) A capacitor holds 0.03 coulombs of charge when fully charged by a 6 volt battery. How much voltage would be required for it to hold 2 coulombs of charge? 5

Q7. (a) What are AND gate and OR gate? Explain them with a simple circuit and draw their logical symbols and truth tables. 4

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

Q1.   **12**

1. Number of input terminals in NOT gate is:

   (A) 3   (B) 1   (C) 4   (D) 2

2. 1024 kilobyte is equal to:

   (A) 1-MB   (B) 1-GB   (C) 1-TB   (D) 1-PB

3. When C.D. is made of soft elastic material then it is called:

   (A) Hard disk   (B) Floppy Disk   (C) Compound Disk   (D) Metallic Disk

4. Half life of iodine I^{131}_{53} is:

   (A) 10.5 days   (B) 8.07 days   (C) 12.5 days   (D) 16.9 days

5. If the length of a pendulum on earth is one meter, then its time period will be:

   (A) 2sec   (B) 10sec   (C) 6sec   (D) 1sec

6. Sound level of rustling of leaves is:

   (A) 20dB   (B) 10dB   (C) 30db   (D) 60db

7. At 25°C speed of sound in wood:

   (A) 2500 msec^{-1} (B) 2000 msec^{-1} (C) 3000 msec^{-1} (D) 4000 msec^{-1}

8. Refractive index of ethyl alcohol is:

   (A) 1.46   (B) 1.45   (C) 1.40   (D) 1.36

9. Which thing is used as a dielectric in meca capacitor?

   (A) Mica   (B) Plastic   (C) Aluminum   (D) Paper

10. Specific resistance of copper is:

    (A) 1.99   (B) 1.69   (C) 1.50   (D) 1.20

11. Who presented the laws of electro magnetic induction and electrolysis?

    (A) Ohm   (B) Newton   (C) Coulomb   (D) Faraday

12. Which device is prepared by the principle of electromagnetism?

    (A) T.V   (B) Electric motor (C) C.D's   (D) Mobile phone

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 simple pendulum. Write the formula of its time period.

(ii)   Define transverse wave and give and example.

(iii)   In which medium sound waves move faster, solid or liquid and why?

(iv)   What is meant by ultrasound?

(v)   On what factors does loudness of sound depend?

(vi)   State laws of reflection.

(vii)   Differentiate between concave and convex lens.

(viii)   Define critical angle.

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

(i)   What is SI unit of capacitance? Define it.

(ii)   Write down two characteristics of electric field lines.

(iii)   Define electric current and write its unit.

(iv)   What is meant by non-ohmic conductor?

(v)   Differentiate between e.m.f and potential difference.

(vi)   Define mutual induction.

(vii)   What is transformer and on what principle it works?

(viii)   Describe Lenz's Law.

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

(i)   Give two reasons to support the evidence that cathode rays are negatively charged.

(ii)   What is meant by digital electronic? Also give its one example.

(iii)   How many essential parts a communication system contains? Write their names.

(iv)   What is the difference between web browsing and e-mail?

(v)   Differentiate between hard disc and compact disc.

(vi)   What is difference between natural and artificial radioactivity?

(vii)   Describe two uses of radio isotopes in research.

(viii)   Write the penetrating power of alpha particle and gamma ray photon.

(PART - II)

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

Q5. (a) Write down important features of S.H.M and explain it with ball and bowl system.   4

(b) A convex mirror is used to reflect light from an object placed 66cm in front of the mirror. The focal length of mirror is 46cm. Find the location of image.   5

Q6. (a) Find equivalent resistance of a parallel circuit of resistances.   4

(b) The capacitance of a capacitor is 100pF, if the potential difference between its plates is 50V then find the quantity of charge stored on each plate.   5

Q7. (a) What are three universal logic gates? Give their symbols and truth tables.   4

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