Q1.   **12**

1. The equivalent resistance of two resistors of 6kΩ and 4kΩ are connected in series across a 10V battery:

   (A) 10kΩ   (B) 2kΩ   (C) $\frac{12}{5}$kΩ   (D) $\frac{5}{12}$kΩ

2. A device which convert mechanical energy into electrical energy:

   (A) transformer   (B) D.C motor   (C) A.C. Generator   (D) Electroscope

3. The mathematical notation for AND operation is:

   (A) X = A + B   (B) X = $\overline{A + B}$ (C) X = A.B   (D) X = $\overline{A.B}$

4. From which of the following we can get information almost about everything?

   (A) book   (B) teacher   (C) computer   (D) internet

5. In computer terminology information means:

   (A) Any data   (B) Raw data   (C) Processed data   (D) Large data

6. One of the isotopes of Uranium is $^{238}U_{92}$. The number of neutron in this isotope is:

   (A) 92   (B) 146   (C) 238   (D) 330

7. If the length of simple pendulum is doubled its time period will be:

   (A) $\sqrt{2}\ T$ (B) $\frac{T}{\sqrt{2}}$ (C) 2T   (D) $\frac{T}{2}$

8. Which is an example of longitudinal wave?

   (A) Light wave   (B) Radio wave   (C) Sound wave   (D) Water wave

9. The image formed by convex mirror is:

   (A) real and erect   (B) real and inverted   (C) virtual and erect   (D) virtual and inverted

10. Which of the following is not changed during refraction of light?

    (A) direction   (B) speed   (C) frequency   (D) wave length

11. One Farad is equal to:

    (A) 10^{-6} μF   (B) 10^{6} μF   (C) 10^{-3} μF   (D) 10^{6} μF

12. What is the power rating of a lamp connected to a 12V source when it carries 2.5 A?

    (A) 4.8W   (B) 14.5W   (C) 30W   (D) 60W

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 restoring force in mass spring system.

  (ii)   Define diffraction of wave.

  (iii)   What is the difference between frequency and pitch?

  (iv)   Define "Echo"

  (v)   How we can reduce the noise pollution.

  (vi)   What is difference between D.C and A.C?

  (vii)   Define e.m.f. of the source.

  (viii)   Define kilowatt hours.

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

  (i)   State, laws of reflection of light.

  (ii)   Write two uses of optical fibre.

  (iii)   Write down the definition and units of Power of lens.

  (iv)   What is the use of Electroscope?

  (v)   Define Farad.

  (vi)   What is photo phone?

  (vii)   What is difference between Data and information?

  (viii)   How are light signals sent through optical fibre?

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

  (i)   Define mutual induction.

  (ii)   What is transformer? On which principle it works?

  (iii)   What is AND gate? write its symbol.

  (iv)   Write names of two parts of cathod ray oscilloscope.

  (v)   What are logic states?

  (vi)   What is meant by nuclear transmutation?

  (vii)   Describe $\propto$ decay.

  (viii)   Define fission reaction.

(PART - II)

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

Q5. (a) What is damped oscillation? Explain how damping progressively reduces the amplitude of oscillation.   4

   (b) A concave lens has focal length of 15cm. At what distance should the object from the lens be placed so that it forms an image at 10cm from the lens? Also find magnification of the lens.   5

Q6. (a) Describe the parallel combination of capacitors. Also explain three characteristics of this combination.   4

   (b) If 0.5 C charge passes through a wire in 10 s than what will be the value of current flowing through wire?   5

Q7. (a) What is internet? Internet is useful source of knowledge and information. Explain.   4

   (b) What are common radiation hazards? Briefly describe the precautions that are taken against them.   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.

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Q1.

1. The speed of light in glass is:

   (A) $2 \times 10^8 ms^{-1}$ (B) $2 \times 10^{-8} ms^{-1}$ (C) $3 \times 10^8 ms^{-1}$ (D) $3 \times 10^{-8} ms^{-1}$

2. If the medium between two charges is air, them the value of K in SI system will be:

   (A) $9 \times 10^{-9} Nm^2 C^{-2}$ (B) $9 \times 10^{-8} Nm^2 C^{-2}$ (C) $9 \times 10^8 Nm^2 C^{-2}$ (D) $9 \times 10^9 Nm^2 C^{-2}$

3. SI unit of potential difference is:

   (A) Ampere   (B) Volt   (C) Farad   (D) Pascal

4. SI unit resistance is:

   (A) Farad   (B) Volt   (C) ohm   (D) watt

5. A temporary magnet which causes to flow current through a coil is:

   (A) Magnetic field   (B) Electric intensity   (C) Magnet   (D) Electromagnet

6. The components of cathode ray oscilloscope are:

   (A) 2   (B) 3   (C) 4   (D) 6

7. What does the term E-mail stand for?

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

8. Graham bell made a simple telephone in:

   (A) 1867   (B) 1870   (C) 1886   (D) 1876

9. Number of neutrons in tritium H_1^3 is:

   (A) 2   (B) 3   (C) 4   (D) 5

10. Formula of Hooke's law is:

    (A) $F = kx^2$ (B) $F = -kx$ (C) $K = \frac{x}{F}$ (D) $x = -Fk$

11. The critical angle of water is:

    (A) 48.8°   (B) 49.5°   (C) 45°   (D) 46°

12. The speed of sound in air at O °C is:

    (A) $331 ms^{-1}$ (B) $346 ms^{-1}$ (C) $327 ms^{-1}$ (D) $386 ms^{-1}$

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)   Define two basic types of waves.

(ii)   Differentiate between vibration and frequency.

(iii)   Differentiate between ultra sound and infra sound.

(iv)   Differentiate between musical sound and noise.

(v)   What is range of sound intensity which human ear responds.

(vi)   State Joule's law.

(vii)   Define electric power and write its equation.

(viii)   Write the two smaller units of current.

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

(i)   State difference between concave mirror and covex mirror.

(ii)   What is meant by focal length of spherical mirror?

(iii)   Write uses of compound microscope.

(iv)   What is meant by electric current? Write its formula.

(v)   Write two uses of capacitor.

(vi)   What is meant by information?

(vii)   What is photo phone?

(viii)   What is difference between hard-ware and soft-ware?

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

(i)   What is meant by mutual induction?

(ii)   What is meant by armature?

(iii)   Write the uses of logic gates.

(iv)   What is the function of grid in electron gun?

(v)   Define 'NOT' operation.

(vi)   What is meant by Hard disk?

(vii)   What is meant by tracers?

(viii)   Write two common hazards of radiation.

(PART - II)

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

Q5. (a) What are damped oscillation? How damping progressively reduces the amplitude of oscillation?   4

(b) An object 10 cm high is placed at a distance of 20 cm from a concave lens of focal length 15 cm. Calculate the position and size of the image.   5

Q6. (a) How would you define potential difference between two points? Define its unit.   4

(b) A 100 watt lamp bulb and a 4 kW water heater are connected to a 250V supply. Calculate   5
(i) The current which flows in each appliance   (ii) The resistance of each appliance when in use

Q7. (a) What is electronic mail? Write its three advantages.   4

(b) Define Nuclear Fusion. Also explain in detail.   5