Q1.   **12**

1. To measure the value of current flowing in a circuit which device is used:

   (A) Galvanometer   (B) Ammeter   (C) Voltmeter   (D) None of these

2. The brain of any computer system is:

   (A) Monitor   (B) Memory card   (C) Floppy disc   (D) C.P.U

3. To correct the defect of vision farsightedness which types of lens is used:

   (A) Converging   (B) Diverging   (C) Both (A) and (B)   (D) None of these

4. The process by which electrons are emitted by a hot metal surface is know:

   (A) Boiling   (B) Evaporation   (C) Thermionic emission   (D) Conduction

5. When U – 92 ejects a beta particle how many protons will be in the remaining nucleus?

   (A) 93   (B) 89   (C) 91   (D) 90

6. If the mass of the bob of the pendulum is increased by a factor of 3, the time period of the pendulum's motion will be:

   (A) Incresed by factor of two   (B) Remain unchanged

   (C) Decreased by factor of two   (D) Decreased by factor of four

7. The combined resistance of two identical resistors connected in series is 8 Ohm. Their combined resistance in parallel arrangement will be:

   (A) 4Ω (B) 2Ω (C) 8Ω (D) 12Ω

8. We can distinguish between a shrill and grave sound by its:

   (A) Loudness   (B) Amplitude   (C) Area   (D) Pitch

9. The turn ratio of a transformer is 10, it means:

   (A) $I_s = 10 I_p$ (B) $N_s = \dfrac{N_p}{10}$ (C) $V_s = \dfrac{V_p}{10}$ (D) $N_s = 10 N_p$

10. SI unit of capacitance of a capacitor is:

    (A) V   (B) A   (C) F   (D) N

11. To get virtual image from a convex lens the object is kept:

    (A) On F   (B) Between F and 2F   (C) Between O and F   (D) Beyond 2F

12. Typical value of the voltage and current used for thermionic emission from tungsten filament is:

    (A) 6 V and 0.3 A   (B) 12V and 0.3 A   (C) 12V and 3A   (D) 6V and 3A

Q2. Write short answers to any Five (5) questions. $(5\times2=10)$

   (i)   Write down two characteristics of simple harmonic motion.

   (ii)   Prove that: $v = f\lambda$

   (iii)   What do you know about Ripple Tank?

   (iv)   What is tuning fork?

   (v)   Write two uses of ultrasound in medical field.

   (vi)   State Lenz's Law.

   (vii) What is difference between step up and step down transformer?

   (viii) What is the function of relay?

Q3. Write short answers to any FIVE (5) questions. $(5\times2=10)$

   (i)   Define power of lens and write its unit.

   (ii)   Draw the ray diagram of refracting telescope.

   (iii)   How can you define optical fibre?

   (iv)   What is meant by compact disc?

   (v)   Define telecommunication.

   (vi)   Define piracy and floppy disc.

   (vii) What do you mean by background radiations?

   (viii) Write down two uses of radio isotopes.

Q4. Write short answers to any FIVE (5) questions. $(5\times2=10)$

   (i)   Describe the construction of electroscope.

   (ii)   Differentiate between ohmic and non-ohmic material.

   (iii)   Define the SI unit of capacitance of a capacitor.

   (iv)   What is the difference between conductors and insulators?

   (v)   Define specific resistance of a substance. Also write its SI unit.

   (vi)   For which purpose circuit breaker is used in circuits?

   (vii) Describe the function of deflecting plates in cathode ray oscilloscope.

   (viii) Describe the uses of cathode ray oscilloscope.

(PART - II)

Note: Attempt any TWO questions. $(2\times9=18)$

Q5. (a) State the reflection of light and explain laws of reflection.   4

    (b) A doctor counts 72 heart beats in one minute. Calculate the frequency and period of the heart beats.   5

Q6. (a) Explain parallel combination of resistors with the help of circuit diagram.   4

    (b) Two point charges $q_1 = 10\mu C$ and $q_2 = 5\mu C$ are placed at a distance of 150cm. What will be the Coulomb's force between them? Also find the direction of the force.   5

Q7. (a) What is electron gun? Explain the process of thermionic emission.   4

    (b) Half-life of a radioactive elements is 10 minutes. If the initial count rate is 368 counts per minute, find the time by which count rate reaches 23 count per minute?   5

Q1.   **12**

1. Power of hair dryer:

    (A) 5000 watts   (B) 1500 watts   (C) 1000 watts   (D) 800 watts

2. The brian of any computer system is:

    (A) Monitor   (B) Memory   (C) C.P.U   (D) Control unit

3. Speed of light in glass:

    (A) 2.0×10^8 m/s   (B) 3.0×10^8 m/s   (C) 2.0×10^6 m/s   (D) 3.0×10^6 m/s

4. Boolean expression of AND operation:

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

5. Half-life of isotope of cobalt $_{27}^{60}Co$:

    (A) 30 years   (B) 20 years   (C) 15 years   (D) 10 years

6. The formula for the time period of a simple pendulum:

    (A) $T = 2\pi\sqrt{\dfrac{g}{\ell}}$ (B) $T = 2\pi\sqrt{\dfrac{\ell}{g}}$ (C) $T = 2\pi\sqrt{\dfrac{m}{k}}$ (D) $T = 2\pi\sqrt{\dfrac{k}{m}}$

7. Specific resistance of iron:

    (A) $9.8 \times 10^{-8}\Omega m$ (B) $100 \times 10^{-8}\Omega m$ (C) $10.6 \times 10^{-8}\Omega m$ (D) $5.25 \times 10^{-8}\Omega m$

8. Speed of sound in steel at 25°C:

    (A) 3880 m/s   (B) 5950 m/s   (C) 6040 m/s   (D) 5960 m/s

9. The direction of induced e.m.f in a circuit is in accordance with conservation of:

    (A) Mass   (B) Charge   (C) Momentum   (D) Energy

10. Capacitance is defined as:

    (A) V C   (B) $\dfrac{Q}{V}$ (C) Q V   (D) $\dfrac{V}{Q}$

11. Index of refraction of ice:

    (A) 1.00   (B) 1.33   (C) 1.31   (D) 1.36

12. The process by which electrons are emitted by a hot metal surface is known as:

    (A) Boiling   (B) Evaporation   (C) Conduction   (D) Thermionic emmission

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 the refraction of wave.

    (ii)   What is meant by compression?

    (iii)   Define mechanical waves and write name of its types.

    (iv)   Differentiate between noise and musical sound.

    (v)   What is silent whistle? Write its frequency limits.

    (vi)   Define Right Hand rule.

    (vii)   Can a transformer work on direct current?

    (viii)   Define electromagnetic induction.

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

    (i)   Define refractive index.

    (ii)   Write the types of endoscope.

    (iii)   Differentiate between pole and optical centre.

    (iv)   Name at least four browsers being used now-a-days.

    (v)   Define word processing.

    (vi)   Write the storage capacity of Compact Disc (CD) and DVD.

    (vii)   What do you mean by nuclear transmutation?

    (viii)   Write the difference between fission reaction and fusion reaction.

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

    (i)   How does electrostatic induction differ from charging by friction?

    (ii)   Write any two uses of capacitor.

    (iii)   Define SI unit of capacitance.

    (iv)   What is the difference between conductors and insulators?

    (v)   Differentiate between Ohmic and Non-Ohmic materials.

    (vi)   How many watt-hours are in 1000 Joules?

    (vii)   Describe the uses of cathode ray oscilloscope.

    (viii)   Write the truth table of NAND gate.

(PART - II)

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

Q5. (a)   Explain the refraction through convex lens by making ray diagram.   4

    (b)   If at Anarkali Bazaar Lahore, intensity level of sound is 80 dB, what will be the intensity of sound there?   5

Q6. (a)   What is meant by series combination of resistors? Write down its three characteristics.   4

    (b)   The charge of how many negatively charged particles would be equal to 100μC. Assume charge on one negative is 1.6×10^{-19}C.   5

Q7. (a)   Draw the circuit diagrams of AND operation and OR operation and also write the truth table of both these operations.   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