

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.

12

Q1.

1. **The half life of lead is:**
(A) 8.07 hours (B) 10.6 hours (C) 10.25 hours (D) 12.25 hours
2. **What does the term e-mail stand for?**
(A) electronic mail (B) emergency mail (C) extra mail (D) external mail
3. **The transformer works on the principle of _____.**
(A) mutual induction (B) D.C. motor (C) A.C. generator (D) self induction
4. **The rate of flow of charges is called:**
(A) current (B) volt (C) ohm (D) coulomb
5. **Image formed by a camera is:**
(A) real, inverted and diminished (B) virtual, upright and diminished
(C) virtual, upright and magnified (D) real, inverted and magnified
6. _____ is an example of a longitudinal wave.
(A) sound wave (B) light wave (C) radio wave (D) water wave
7. **If the mass of the bob of a pendulum is increased by a factor of 3, the period of the pendulum's motion will:**
(A) be increased by a factor of 2 (B) remain the same
(C) be decreased by a factor of 2 (D) be decreased by a factor of 4
8. **If a ray of light in glass is incident on an air surface at an angle greater than the critical angle, the ray will:**
(A) refract only (B) reflect only
(C) partially refract and partially reflex (D) diffract only
9. **The coulomb's law is valid for the charges which are:**
(A) moving and point charges (B) moving and non-point charges
(C) stationary and point charges (D) stationary and large sized charges
10. **Unit of resistance is:**
(A) joule (B) volt (C) ohm (D) farad
11. **The screen of a cathode ray tube is made up of material, called:**
(A) glass (B) phosphorus (C) iron (D) zinc
12. **Telephone was invented in:**
(A) 1676 (B) 1776 (C) 1876 (D) 1976

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) Write two features of simple harmonic motion.
- (ii) What is meant by compression?
- (iii) What is meant by noise pollution?
- (iv) What do you know about SONAR?
- (v) Define echo.
- (vi) What is meant by conventional current?
- (vii) Define resistance.
- (viii) What are insulators? Give examples.

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

- (i) State the laws of refraction.
- (ii) What is the unit of power of lens? Define it.
- (iii) Differentiate between convex lens and concave lens.
- (iv) Define electrostatic induction.
- (v) Describe the method of identifying conductors and insulators.
- (vi) Explain word processing.
- (vii) Write two advantages of electronic mail.
- (viii) Define telecommunication.

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

- (i) What is meant by solenoid?
- (ii) Define the strength of magnetic field.
- (iii) What is an electron gun?
- (iv) Define digital electronic.
- (v) What is meant by thermionic emission?
- (vi) Define radio active elements.
- (vii) What is meant by half life?
- (viii) What is meant by nuclear transmutation?

(PART - II)

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

Q5. (a) What is ripple tank. Explain the reflection of water waves with the help of ripple tank. 4

(b) Find the focal length of a mirror that forms an image 5.66 cm behind the mirror of an object placed at 34.4 cm in front of the mirror. Is the mirror concave or convex? 5

Q6. (a) Discuss the main features of parallel combination of resistors. 4

(b) Two capacitors of capacitances $6\mu\text{F}$ and $12\mu\text{F}$ are connected in parallel with a 12 V battery. Find the equivalent capacitance of the combination. Find the charge and the potential difference across each capacitor. 5

Q7. (a) Write comprehensive note on computer. 4

(b) Write the safety measures from radiations. 5

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- Q1. 12
1. **AND gate can be formed by using two:**
(A) NOT gates (B) OR gates (C) NOR gates (D) NAND gates
 2. **Electric power (P) is equal to:**
(A) PV (B) IV^2 (C) I^2R (D) IR^2
 3. **The basic operations performed by a computer are:**
(A) arithmetic operations (B) non-arithmetic operations
(C) logical operations (D) both A & C
 4. **The turn ratios of transformer is 10. It means:**
(A) $I_s = 10 I_p$ (B) $N_s = \frac{N_p}{10}$ (C) $N_s = 10N_p$ (D) $V_s = \frac{V_p}{10}$
 5. **What does the term e-mail stand for?**
(A) emergency mail (B) electronic mail (C) extra mail (D) external mail
 6. **Release of energy by the sun is due to:**
(A) nuclear fission (B) nuclear fusion (C) burning of gases (D) chemical reaction
 7. **If we double both the current and voltage in a circuit while keeping its resistance constant, the power:**
(A) remain unchanged (B) halves (C) doubles (D) quadruples
 8. **Refractive index of air is:**
(A) 1.00 (B) 1.31 (C) 1.33 (D) 1.36
 9. **How does sound travel from its source to your ear?**
(A) by changes in air pressure (B) by vibrations in wires or strings
(C) by electromagnetic waves (D) by infrared waves
 10. **The relationship between v , f and λ of a wave is:**
(A) $vf = \lambda$ (B) $f\lambda = v$ (C) $v\lambda = f$ (D) $v = \frac{\lambda}{f}$
 11. **If a ray of light in glass is incident on an air surface at an angle greater than the critical angle the ray will:**
(A) refract only (B) reflect only
(C) partially refract and partially reflect (D) diffract only
 12. **Five joules of work is needed to shift 10 C of charge from one place to another the potential difference between places is:**
(A) 0.5 V (B) 2 V (C) 5 V (D) 10 V

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 diffraction of wave.
- (ii) Define time period.
- (iii) State two uses of ultra sound.
- (iv) Define intensity of sound.
- (v) What is meant by "reverberation"?
- (vi) Define conventional current.
- (vii) State Ohm's law.
- (viii) Define specific resistance.

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

- (i) What is meant by near point and far point?
- (ii) What is meant by total internal reflection?
- (iii) Write two uses of lenses.
- (iv) What is meant by electric field?
- (v) Define volt.
- (vi) Write two uses of flash drive.
- (vii) Write two advantages of e-mail.
- (viii) What is floppy disk?

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

- (i) What is meant by transformer?
- (ii) State the Lenz's law.
- (iii) What is meant by fluorescent screen?
- (iv) Write two uses of cathode ray oscilloscope.
- (v) Define OR-operation and write its Boolean equation.
- (vi) Define fission reaction.
- (vii) Define nuclear transmutations.
- (viii) Write two uses of radio isotopes.

(PART - II)

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

Q5. (a) Derive the relationship between velocity, frequency and wave length of wave. Write a formula relating velocity of a wave to its time period and wave length. 4

(b) A ray of light enters from air into glass, the angle of incident is 30°. If the refractive index of glass is 1.52 then find the angle of refraction 'r'. 5

Q6. (a) What is the difference between conductor and insulator? Also give examples. 4

(b) The force of repulsion between two identical positive charges is 0.8N, when the charges are 0.1m apart. Find the value of each charge. 5

Q7. (a) Explain the phenomena of transmission of light signals through optical fibre. 4

(b) The activity of a sample of a radio active bismuth decreased to one-eighth of its original activity in 15 days. Calculate the half life ($T_{\frac{1}{2}}$) of the sample. 5