

Physics (New)

10th (Fresh/Reappear)

- ۱۔ ہر سوال کے سامنے چار دائرے دیئے گئے ہیں، صرف صحیح جواب والا دائرہ بھر دیں۔
- ۲۔ دائروں کو شیڈ (بھرنے) کے لیے نیلے یا کالے رنگ کا مادہ استعمال کریں۔
- ۳۔ جواب میں ایک سے زائد دائرے بھرنے سے جواب غلط تصور ہوگا۔

Time: 20 Minutes

SECTION-A

Marks: 12

Q1: Choose the correct option i.e, A,B,C or D?

- The function of control grid in electron gun is to.
☐ Emit electrons ☒ Control intensity of electrons
☐ Focus electrons ☐ Accelerate electrons
- The physical parts of a computer are called:
☒ Hardware ☐ System software
☐ Application software ☐ Transmission
- The half-life of a substance is 8 days. How much of the substance will remain un-decayed after three half lives if the original amount is 40g.
☐ 20g ☐ 10g ☒ 5g ☐ 2.5g
- Radioactive nuclide ${}_{80}X^{223}$ decay to ${}_{82}Y^{219}$. The type of particle being emitted is:
☒ Alpha ☐ Beta
☐ Gamma ☐ Both alpha and beta
- After refraction through 5 convex lens, a ray of light incident parallel to principal axis will pass through
☒ Focal point ☐ Optical center
☐ Vertical axis ☐ Horizontal axis
- The capacitance of a capacitor depends on:
☐ Charge stored by it ☐ Voltage applied
☐ Both charge and voltage ☒ Size of its plates
- Two identical bulbs are connected in series. The addition of a third such bulb to this combination will:
☐ Increase current ☒ Decrease current
☐ Increase brightness ☐ Not affect current
- A current carrying conductor placed in a magnetic field will experience maximum force when placed:
☐ Parallel to the field ☐ Anti parallel to the field
☒ Perpendicular to the field ☐ Inclined at 45° to field

9. The time period of simple pendulum is 2 s. If its length is increased four times its original length, the new time period will be:
☐ 2s ☒ 4s ☐ 8s ☐ 16s
10. The speed of a wave of frequency 50 Hz and wavelength 2m is:
☐ 25ms⁻¹ ☐ 50ms⁻¹ ☒ 100ms⁻¹ ☐ 553ms⁻¹
11. If the intensity of a sound is 100 times the intensity of faintest audible sound, its intensity level in dB is:
☐ 0 ☐ 10 ☒ 20 ☐ 30
12. An object is placed at a distance of 15 cm from a concave mirror of focal length 5 cm. The image is formed at a distance of
☐ 5 cm ☒ 7.5 cm ☐ 10 cm ☐ 15 cm



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Note: Time allowed for Section-B & Section-C is 2:40 hours.

SECTION-B

Marks: 32

Q2: Attempt any EIGHT parts. Each part carries FOUR marks.

- Define the terms intensity, pitch, loudness and quality of sound.
- Calculate the speed of sound at a temperature of 30° C.
- What is reflection of light? State the two laws of reflection of light with the help of an illustrative diagram.
- State Coulomb's law. Express it mathematically. What happens to the Coulomb force F , if you double the distance between the two point charges?
- Describe the effect of the following on the electrical resistance of a conductor: (a) Length (b) Cross sectional area
- 5x10J of energy is used by a boiler in 10 minutes to boil water. Calculate the applied voltage across it if the current through it is 5 A.
- List four factors that affect the magnitude of induced emf through a coil of wire.
- Draw the truth table and circuit symbol for AND gate. Also write its Boolean equation.
- Differentiate between hardware and software with two examples of each.
- Describe alpha radiation in terms of its
 (a) Nature (b) Charge (c) Relative penetration ability. Why does a nucleus emit alpha particles?
- Explain nuclear fission with an example. What is the source of large amount of energy released during nuclear fission?

SECTION-C

Marks: 21

Note: Attempt any THREE questions. All questions carry equal marks.

Q3: (a) Prove mathematically that the motion of a simple pendulum of length L is simple harmonic motion when displaced through a small angle from its mean position.

(b) Calculate the time period of a simple pendulum of length 0.5 m on earth's surface.

Q4: (a) Define total internal reflection and critical angle. State the two conditions for total internal reflection to take place.

(b) Light is incident from one medium of refractive index 1 at an angle of incidence 45° on a second medium. If the refractive index of the second medium is 2.5 , calculate the angle of refraction.

Q5: (a) Derive the formula for the equivalent capacitance of two capacitors of capacitances C_1 and C_2 connected in series across a battery of voltage V .

(b) Two capacitors of $6\mu\text{F}$ and $12\mu\text{F}$ are connected in series across a 30V battery. Calculate the:

(i) Equivalent capacitance of the combination

(ii) Charge stored on each capacitor

Q6: (a) Define the following:

(i) Transformer (ii) Mutual induction

(iii) Coefficient of mutual induction and its unit.

(b) Describe the use of transformer for efficient transmission of electricity over long distance.