ZIAUDDIN UNIVERSITY
EXAMINATION BOARD

Total Time 3 hours
Total Marks: 75

Class: X **MODEL PAPER EXAMINATION 2026**
Time Allowed: 20 minutes **SUBJECT: PHYSICS**
Q1: **(SECTION "A")** **Marks: 11**

Note: Attempt **ALL** questions from section 'A'. Each question carries **ONE** mark.

1. The human eye functions similarly to:
   A. Camera B. Projector C. Telescope D. Microscope
2. Electromagnetic waves carry:
   A. Wavelength B. Frequency C. Charge D. Energy
3. In a concave mirror, the image size depends upon:
   A. Size of the object B. Position of the object C. Area covered by the object D. The shape of the object
4. The result obtained after processing input data on a computer is known as:
   A. Data B. Information C. Computer D. Mouse
5. Ohms law does not apply to:
   A. Semi-conductors B. D.C. circuit C. Small resistors D. High current
6. The capacitance of capacitors increases when they are connected in:
   A. Parallel B. Series C. Both D. None of them
7. A type of disturbance that moves through a medium due to the periodic motion of particle motion of particles around their mean positions is called:
   A. Time period B. Resonance C. Frequency D. Wave motion
8. Ultrasound has multiple applications in medicine and industry. Which of the following uses ultrasound?
   A. Absorption B. Prenatal scanning C. Dispersion D. Measuring humidity of air
9. If the area of the plates in a parallel plate capacitor is doubled, the capacitance will:
   A. Remain uncharged B. Half C. Double D. Increased two times
10. A shunt converts a galvanometer into:
    A. A voltmeter B. An ammeter C. A wattmeter D. A calorimeter
11. The purpose of connecting a battery in an electric circuit is:
    A. To maintain resistance across the conductor
    B. To vary resistance across the conductor
    C. To maintain a constant potential difference across the conductor
    D. To maintain a varying potential difference across the conductor

(Practical Based Assessment) **Marks: 16**

Q2: Attempt **ALL** questions.

1. A student is studying sound waves produced by a tuning fork. The time period of the fork is measured as 0.005 seconds, and the speed of sound in air is known to be 340 m/s.
   a. Calculate the **frequency** of the wave using $f = \frac{1}{T}$. (1 mark)
   b. Use the frequency to calculate the **wavelength** of the sound wave using $v = f\lambda$. (2 marks)
   c. State what happens to wavelength if the frequency increases while the speed stays constant. (3 marks)

2. Maria sees a rainbow after it rains and wonders how it's formed. Her teacher explains that sunlight interacts with water droplets in the air.
   a. Describe how light behaves when it enters, reflects within, and exits a water droplet. (3 marks)
   b. What two processes are responsible for the separation of white light into different colors? (2 marks)

3. Rayan uses a gold-leaf electroscope to test how different charged objects affect the leaves. He charges a rod and brings it close to the electroscope.
   a. What happens to the leaves when a positively charged rod is brought near a positively charged electroscope? (1 mark)
   b. What happens when a negatively charged object is brought near it? (1 mark)
   c. Based on these observations, explain the principle: "Like charges repel, unlike charges attract." (3 marks)

END OF SECTION A

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Total Time 3 hours

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Time: 2 hours 40 minutes **SUBJECT: PHYSICS (SECTION "B" AND SECTION "C")** **Total Marks 48**

SECTION "B" (SHORT ANSWER QUESTIONS) **24 Marks**

Note: Attempt any **EIGHT** questions from this section.

Q3. Compare and contrast musical sound and noise in terms of their characteristics and examples.
Q4. Explain why a potential difference is necessary for the flow of electric current in a circuit.
Q5. Identify various electrical devices that use capacitors and describe the role of capacitors in these devices.
Q6. List different types of information storage devices and elaborate on their specific uses.
Q7. Discuss the function of a transformer in an alternating current (AC) circuit and its practical significance.
Q8. Describe the effect of a magnetic field on a current-carrying coil.
Q9. A convex lens has a focal length of 18 cm. An object 5 cm tall is placed 12 cm away from the lens. Calculate the position, nature, and height of the image.
Q10. A specimen forms an image 11.5 cm behind a concave mirror with a focal length of 13.5 cm. Determine the distance of the specimen from the mirror.
Q11. The potential difference between two points is 100 V, and moving an unknown charge between them requires 500 J of work. Calculate the charge.
Q12. The half-life of radium is 1600 years. If the initial mass is 60 g, determine the remaining mass after 4800 years.
Q13. When the current in a pocket calculator is 0.0002 A, determine the total charge that flows through the circuit in one minute.

SECTION "C" (DETAILED ANSWER QUESTIONS) **24 Marks**

Note: Attempt any **FOUR** questions from this section. Your answer should not exceed 20 - 30 lines.

Q14. Define simple harmonic motion and explain the conditions required for a body to exhibit it.
Q15. Explain the concept of "logic" in digital electronics with an example. Also, identify the components that implement logic in digital circuits.
Q16. Why are sound waves classified as mechanical waves? Provide a detailed explanation.
Q17. State Ohm's Law and discuss its limitations in practical applications.
Q18. What are damped oscillations? Explain how damping causes a gradual reduction in the amplitude of oscillations.
Q19. What are nuclear reactions? Explain the different types of nuclear reactions with examples and equations.

END OF PAPER