

AJK BISE Intermediate-I Examination
Physics Model Paper (Subjective Part) 25% SLO-based

Time allowed: 2.35 hours

Total Marks: 68

Note: Answer any fourteen parts from Section 'B' and attempt any two questions from Section 'C' on the separately provided answer book.

SECTION-B (Marks 42)

- Q.2 Attempt any **FOURTEEN** parts. All parts carry equal marks. (14×3 = 42)
1. If an equation is dimensionally correct, is that equation a right equation?
 2. Differentiate between precision and accuracy.
 3. Why a particle experiencing only one force cannot be in equilibrium?
 4. Can a scalar product of two vectors be negative? Support your answer with example.
 5. Can the velocity of a body reverse the direction when acceleration is constant? If you think so, give an example.
 6. What you think of an Impulse? Relate it with force and write its units.
 7. Differentiate between conservative and non-conservative fields and give examples.
 8. A man rowing boat upstream is at rest with respect to shore, is he doing work?
 9. A body will be weightless when the elevator falls down just like a free falling body. Explain.
 10. Why is the acceleration of a body moving uniformly in a circle, directed towards the center of the circle?
 11. Why does smoke rise faster in a chimney on a windy day?
 12. Two boats moving in parallel paths close to one another risk colliding why?
 13. Give two applications in which resonance plays an important role.
 14. Differentiate free and forced oscillations with examples.
 15. Why does the speed of sound wave in a gas changes with temperature?
 16. Write the conditions for constructive and destructive interference. Draw resultant wave pattern of two interfering waves neatly.
 17. Write any three differences between interference and diffraction.
 18. How would you justify that light waves are transverse?
 19. Write any three limitations of first law of thermodynamics.
 20. Is it possible to construct heat engine which is free from thermal pollution? Draw block diagram of heat engine.

SECTION-C

Note: Attempt any two questions. All questions carry equal marks. (2×13 = 26)

- Q.3 (a). Derive a relation for Bernoulli's equation. (6)
- (b). A body of mass 2kg is dropped from a rest position 5m above the ground. What is its velocity at height of 3m above the ground? (4)
- (c). An aero plane while travelling horizontally, dropped a bomb when it was exactly above the target, the bomb missed the target. Explain. (3)
- Q.4 (a). Using 1st law of thermodynamics explain (i) isothermal and (ii) adiabatic Processes with their PV-diagrams. (6)
- (b). A pendulum clock keeps perfect time at a location where the acceleration due to gravity is exactly 9.8 m/s^2 . When the clock is moved to a higher altitude, it loses 80 seconds per day. Find the value of 'g' at this new location. (4)
- (c). How the artificial gravity is achieved in space stations? Explain. (3)
- Q.5 (a). Derive general formulae for the conditions of destructive and constructive Interference through Young's double slit experiment. (6)
- (b). What are the wavelengths of a television station which transmits vision on 500 Mhz and sound on 505 MHz respectively? Take speed of electromagnetic wave as $3 \times 10^8 \text{ m/s}$. (4)
- (c). Explain how does the scalar product of two vectors obey commutative property but the vector product does not? (3)

Note: SLO based questions must taken from Chapters 2, 3, 4, and 10.

PHYSICS Intermediate-I (Model Paper)

SECTION-A (Marks 17)

Time allowed: 25 Minutes

Section-A is compulsory. All parts of this section are to be answered on this page and handed over to the Center Superintendent. Deleting/ overwriting is not allowed. Do not use lead pencil.

Q.1 Fill the relevant bubble for each part. Each part carries one mark.

1. What is, in radians the smaller measure between the arms (hours & minutes) of watch at 3:00pm?
A. 2π B. π C. $\pi/2$ D. $\pi/3$
2. How many significant figures does $(1.362 + 25.2)$ have?
A. 2 B. 3 C. 4 D. 7
3. Angle at which magnitudes of scalar product and vector product of two vectors, are equal is:
A. 90° B. 60° C. 45° D. 30°
4. Which of the following instrument works on the principle of moments?
A. Measuring Cylinder B. Spring Balance
C. Physical Balance D. Vernier Calipers
5. For a typical rocket, how much mass of rocket is in the form of fuel:
A. 50 % B. 60 % C. 80 % D. 100 %
6. Motion of a projectile is:
A. 1-dimensional B. 2-dimensional C. 3-dimensional
D. 4-dimensional
7. What is the ratio of dimensions of K.E and power?
A. 1:1 B. 1: [T] C. [T] :1 D. [T]: [T]
8. If the earth suddenly stops rotating, the value of 'g' at equator would:
A. increases B. decreases C. become zero
D. remains unchanged
9. SI unit of angular momentum is:
A. $\text{kgm}^{-3}\text{s}^{-1}$ B. $\text{kgm}^{-2}\text{s}^{-1}$ C. $\text{kgm}^2\text{s}^{-1}$ D. kgms^{-1}
10. Venturi meter is a device used to measure the:
A. mass of fluid B. viscosity of fluid
C. speed of fluid D. density of fluid
11. The total energy of horizontal mass spring system is independent of:
A. mass of the body B. spring constant
C. amplitude D. nature of material of spring
12. Heating and cooking of food evenly by microwave oven is an example of:
A. simple harmonic motion B. resonance

