

BOARD OF INTERMEDIATE EDUCATION

JUNIOR INTER PHYSICS

MODEL PAPER (ENGLISH VERSION)

TIME: 3 HOURS

MAX.MARKS: 60

SECTION – A

I. i) Very Short Answer Type questions.

ii) Answer ALL questions.

ii) Each question carries TWO marks.

10 × 2 = 20

1. What is the contribution of S.Chandra Sekhar to Physics?
2. Distinguish between accuracy and precision.
3. When two right angled vectors of magnitude 25 units and $25\sqrt{3}$ units combine, what is the magnitude of their resultant?
4. Why does a car with a flattened tyre stop sooner than the one with inflated tyres?
5. What is magnus effect?
6. Give the expression for the excess pressure in an air bubble inside a liquid.
7. Why gaps are left between rails on a railway track?
8. What is Greenhouse effect? Explain Global warming.
9. Define mean free path.
10. What is the expression between pressure and kinetic energy of a gas molecule?

SECTION – B

II. i) Short Answer Type questions.

ii) Answer any SIX questions.

ii) Each question carries FOUR marks.

6 × 4 = 24

11. Derive the equation $x = v_0t + \frac{1}{2}at^2$ using graphical method where the terms have usual meaning.
12. Show that the trajectory of an object thrown at certain angle with the horizontal is a parabola.
13. Define the terms momentum and impulse. State and explain the law of conservation of linear momentum.
14. Distinguish between centre of mass and centre of gravity.
15. Define angular velocity (ω). Derive $V = r\omega$.
16. What is a geostationary satellite? State its uses.
17. Explain conduction, convection and radiation with examples.
18. Describe the behaviour of a wire under gradually increasing load.

SECTION – C

III. i) Long Answer Type questions.

ii) Answer any TWO questions.

ii) Each question carries EIGHT marks.

$2 \times 8 = 16$

19. (a) State the law of conservation of energy and prove it in the case of a freely falling body. (6 Marks)
- (b) A machine gun fires 360 bullets per minute and each bullet travels with a velocity of 600 ms^{-1} . If the mass of each bullet is 5 gm, find power of the machine gun. (2 Marks)
20. Show that the motion of a simple pendulum is simple harmonic and hence derive an equation for its time period. What is seconds pendulum?
21. Explain reversible and irreversible processes. Describe the working of carnot engine. Obtain an expression for its efficiency.