Board of Intermediate Education (TS)

Junior Inter Physics (2021)

Model Paper (English Version)

Time: 3 Hrs.   **Maximum Marks: 60**

SECTION - A

Note: i) All are Very Short Answer Type questions.

    ii) Answer ALL the questions.

    iii) 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. $\vec{A} = \hat{i} + \hat{j}$. What is the angle between the vector and X–axis?

4. Why does a heavy rifle not recoil as strongly as a light rifle using the same cartridges and velocity?

5. Define coefficient of viscosity. What are its units?

6. Why are liquid drops and soap bubbles spherical?

7. What is regelation? Write one of its application.

8. Write the equation for mean free path.

9. State Boyle's law and Charles' law.

10. Define Latent Heat. Write its units.

SECTION - B

Note: i) All are Short Answer Type questions .

    ii) Answer any SIX of the following questions.

    iii) Each question carries FOUR marks.   **6 × 4 = 24**

11. By using parallelogram law of vectors, derive an expression for the magnitude and direction of the resultant vector.

12. Mention the methods used to decrease the friction.

13. Distinguish between Centre of mass and Centre of gravity.

14. Define angular acceleration and torque. Establish the relation between angular acceleration and torque.

15. What is a Geostationary satellite? State its uses.

16. Describe the behavior of a wire under gradually increasing load.

17. State and explain Newton's law of cooling.

18. A ball is thrown vertically upwards with a velocity of 20 m/s from the top of a multistorey building. The height of the point from where the ball is thrown is 25.0 m from the ground. How high will the ball rise from the ground? (g = 10 m/s)

19. A parachutist flying in an aeroplane jumps when it is at a height of 3 km above the ground. He opens his parachute when he is about 1 km above ground. Describe his motion.

20. Explain the advantages and disadvantages of friction.

21. Pendulum clocks generally go fast in winter and slow in summer. Why?

22. Define the first and second law of thermodynamics.

SECTION - C

Note: i) All are Long Answer Type questions.

   ii) Answer any TWO of the following questions.

   iii) Each question carries EIGHT marks.   **2 × 8 = 16**

23. State and prove the law of conservation of energy in case of a freely falling body. An elevator can carry a maximum load of 1800 kg (elevator + passengers) is moving up with a constant speed of 2 m/s. The frictional force opposing the motion is 4000 N. Determine the minimum power delivered by the motor to the elevator in watts.

24. Show that the motion of a simple pendulum is simple harmonic and hence derive an equation for its time period. What is a seconds pendulum?

25. Define two principal specific heats of a gas. Which is greater and why? Derive a relation between the two specific heat capacities of gas on the basis of first law of thermodynamics.

26. Develop the notions of work and kinetic energy and show that it leads to the work-energy theorem. State the conditions under which a force does no work.

Please click for Answers

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