Physics Model Paper

Intermediate First Year

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

SECTION - A

Answer all questions. Each question carries 2 marks. All are very short answer type questions.10 × 2 = 20

1. What would be the change in acceleration due to gravity (g) at the surface, if the radius of the earth decreases by 2% , keeping the mass of the earth constant?
2. Define co-efficient of viscosity. What are its units and dimensions?
3. What are the fundamental forces in Nature?
4. Why do we have different units for the same physical quantity?
5. When does a real gas behaves like an Ideal Gas?
6. What is the angle between the vector and x-axis?
7. If the polar ice caps of the earth were to melt, what would the effect of the length of the day be?
8. Can a room be cooled by leaving the door of an electric refrigerator open?
9. What is Greenhouse Effect? Explain Global Warming.
10. State the examples of nearly perfectly elastic and plastic bodies.

SECTION - B

Answer Any six questions. Each question carries 4 marks. All are short answer type questions. 6 × 4 = 24

11. What is Orbital velocity? Obtain an expression for it.
12. What is Venturimeter? Explain how it is used.
13. Show that the trajectory of an object thrown at certain angle with the horizontal is a parabola.
14. Mention the methods used to decrease friction.
15. Derive an expression for the height attained by a freely falling body after 'n' number of rebounds from the floor.
16. State And Prove Parallel Axes Theorem.
17. Derive the expression for the kinetic energy and potential energy of simple harmonic oscillator.
18. In what way is the anomalous behavior of water advantageous to aquatic animals?

SECTION - C

Answer any 2 of the following. Each question carries 8 marks. All are long answer type questions.

2 × 8 = 16

19. Define angle of friction and angle of repose. Show that angle of friction is equal to angle of repos for a rough inclined plane.

    A block of mass 4 kg is resting on a rough horizontal plane and is about to move when a horizontal force of 30 N is applied on it. If g = 10ms-2 find the total contact force exerted by the plane on the block.

20. State the law of conservation of energy and verify in the case of a freely falling body. What are the conditions under which the law of conservation of energy is applicable?

21. Explain reversible and Irreversible Processes. Describe the working of a Carnot engine. Obtain the expression for efficiency.