Code Number: **A**

Time: 3 hrs.

Mock Test Paper for Class-XII

Max. Marks: 60

PHYSICS

Roll No.

GENERAL INSTRUCTIONS

Read the following instructions carefully and follow them:

1.   The Question paper consists of section **A, B,** and **C**

2.   Answer all the questions of **Section A**. Answer ANY **SIX** questions out of **eight** in **Section B** and answer **ANY TWO** questions out of **three** "in **Section C**.

3.   In **Section A**, questions from Sl. Nos. **1** to **10** are of '**very short answer type**'. Each question carries **TWO** marks. Every answer may be limited to **5** lines. Answer all the questions at one place in the same order.

4.   In **Section B**, questions from Sl. Nos. **11** to **18** are of '**short answer type**'. Each question carries **FOUR** marks. Every answer may be limited to **20** lines. Answer any **SIX** questions out of 8 questions..

5.   In **Section C**, questions from Sl. Nos. **19** to **21** are of '**long answer type**'. Each question carries **EIGHT** marks. Every answer may be limited to **60** lines. Answer any **TWO** questions out of 3 questions.

6.   Draw labelled diagrams, wherever necessary for questions in **Sections B** and **C**.

SECTION - A

I. **Answer ALL questions.**   **10 x 2 = 20**

1. What is the contribution of S. Chandrasekhar to Physics?

2. Why do we have different units for the same physical quantity?

3. If $\vec{P} = 2\hat{i} + 4\hat{j} + 14\hat{k}$ and $\vec{Q} = 4\hat{i} + 4\hat{j} + 10\hat{k}$, find the magnitude of $\vec{P} + \vec{Q}$.

4. If a bomb at rest explodes into two pieces, the pieces must travel in opposite directions. Explain.

5. Give the expression for the excess pressure in an air bubble inside the liquid.

6. What are waterproofing agents and water wetting agents? What do they do?

7. Does a body radiate heat at 0 K? Does it radiate heat at 0°C?

8. What is latent heat of vaporization?

9. The absolute temperature of a gas is increased 3 times. What will be the increase in rms velocity of the gas molecule?

10. When does a real gas behave like an ideal gas?

SECTION - B

II. **Answer any SIX questions.**   **6 x 4 = 24**

11. A ball is dropped from the roof of a tall building and simultaneously another ball is thrown horizontally with some velocity from the same roof. Which ball lands first ? Explain your answer.

12. If $|\vec{a} + \vec{b}| = |\vec{a} - \vec{b}|$ prove that the angle between $\vec{a}$ and $\vec{b}$ is 90°

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

14. Define vector product. Explain the properties of a vector product with two examples.

15. What is orbital velocity? Obtain an expression for it.

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

17. Explain conduction, convection and radiation with examples.

18. Mention the methods used to decrease friction.

SECTION - C

III. **Answer any TWO questions.**   **2 x 8 = 16**

19. Develop the notions of work and kinetic energy and show that it leads to work-energy theorem.

    A machine gun fires 360 bullets per minute and each bullet ravels with a velocity of 600 ms⁻¹. If the mass of each bullet is 5 gm, find the power of the machine gun.

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 the efficiency.

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