119

I

Total No. of Questions : **21**
Total No. of Printed Pages : **2**

Regd. No.

Part - III
PHYSICS - PAPER - I
(English Version)

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

SECTION - A

Note : (i) Answer *all* questions. **10x2=20**

(ii) Each question carries *two marks.*

(iii) *All* are very short answer type questions.

1. What is the discovery of C.V. Raman ?

2. How can systematic errors be minimised or eliminated ?

3. $\vec{A} = \hat{i} + \hat{j}$, what is the angle between vector and X-axis ?

4. A horse has to pull harder during the start of the motion than latter. Explain.

5. Define average pressure. Is it a scalar or a vector ?

6. Why liquid drops and bubbles are spherical ?

7. Why gaps are left between rails on a railway track ?

8. Find the increase in the temperature of aluminium rod if its length is to be increased by 1% (α for aluminium $= 25 \times 10^{-6}/°C$).

9. Define mean free path.

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

SECTION - B

Note : (i) Answer *any six* of the following. **6x4=24**

(ii) Each question carries *four marks.*

(iii) *All* are short answer type questions.

11. A car travels the first third of a distance with a speed of 10 kmph, the second third at 20 kmph and the last third at 60 kmph. What is its mean speed over the entire distance ?

12. State Parallelogram law of vectors. Derive an expression for the magnitude and direction of the resultant vector.

13. Mention the methods used to decrease friction.

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

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

16. What is a geostationary satellite ? State its uses.

17. Define strain and explain the types of strain.

18. In what way is the anomalous behaviour of water advantageous to aquatic animals ?

SECTION - C

Note : (i) Answer *any two* questions. **2x8=16**

(ii) Each question carries *eight marks.*

(iii) *All* are long answer type questions.

19. What are collisions ? Explain the possible types of collisions. Develop the theory of one dimensional elastic collision.

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.