

C-1-A

Roll No.....

Total No. of Questions : 26]

[Total No. of Printed Pages : 4

XIARKD21

5801-A

PHYSICS

Time : 2.30 Hours]

[Maximum Marks : 70

Section-A

(Very Very Short Answer Type Questions)

1 each

1. Evaluate :

$$\int \frac{1}{\sqrt{x}} . dx$$

2. Define two dimensional motion.
3. On what principle a rocket works ?
4. What is a Joule ?
5. What is a Rigid Body ?

Section-B

(Very Short Answer Type Questions)

2 each

6. Can a body be said to be at rest as well as in motion at the same time ?
Explain.

7. What do you mean by order of Magnitude ? Explain.
8. Define work and energy. What are their units in S.I. system ?
9. Define stream line flow and turbulent flow.
10. What are transverse and longitudinal wave motion ?

Section-C

(Short Answer Type Questions)

3 each

11. Differentiate e^{ax} by ab-initio method.
12. What are the limitations of dimensional analysis ?
13. A stone weighing 3 kg and tied to a string is being rotated in a horizontal circle of 120 cm with a velocity of 500 m/s. Find the total force which tries to break the string.
14. State and explain the law of conservation of linear momentum.
15. State and explain Zeroth Law of Thermodynamics.
16. What are reversible and irreversible processes ? Give *one* example of each.
17. What is the kinetic interpretation of Temperature ?
18. What do you understand by "mean free path" ?

19. Find the amount of work done by a labourer who carries 10 bricks of 1 kg each to the roof of a house 5 metres high by climbing a ladder.
20. Explain how acceleration due to gravity varies with altitude.
21. State Kepler's laws of planetary motion.
22. What do you mean by the terms wavelength frequency and amplitude of a wave motion ?

Section-D

(Value Based Questions)

4

23. A vector has both magnitude and direction. Does that mean anything that has magnitude and direction is necessarily a vector ? The rotation of a body can be specified by the direction of axis of rotation and the angle of rotation about the axis. Does that make any rotation a vector.

Section-E

(Long Answer Type Questions)

5 each

24. Define Capillarity. Derive an expression for the rise of liquid in a capillary tube of uniform diameter.

Or

Define Terminal Velocity. Derive an expression for it.

25. Define centre of mass. Calculate the centre of mass of a system of two particles.

Or

What is the physical significance of moment of inertia ? On what factors the moment of inertia depends ?

26. Distinguish between periodic and oscillatory motion. Give *two* examples in each case.

Or

What is a Progressive Wave ? Derive an expression which represents progressive wave.