

**C-1-C**

Roll No.....

Total No. of Questions : 26]

[Total No. of Printed Pages : 4

**XIARKD21**

**5801-C**

**PHYSICS**

Time : 2.30 Hours]

[Maximum Marks : 70

**Section-A**

(Very Very Short Answer Type Questions)

1 each

1. Evaluate :

$$\int x^3 dx$$

2. What is meant by "Point object in Physics" ?

3. What do you mean by an isolated system ?

4. How many watts are in one horse power ?

5. Is a Torque scalar or vector quantity ?

**Section-B**

(Very Short Answer Type Questions)

2 each

6. What is the difference between angstrom unit and astronomical unit (A.U.) ?

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**C-1-C**

Turn Over

7. Define average velocity and instantaneous velocity.
8. Define Kinetic energy and potential energy.
9. Define elasticity and elastic limit.
10. Define Simple Harmonic Motion. What are the two basic characteristics of S.H.M.

### Section-C

#### (Short Answer Type Questions)

3 each

11. Differentiate  $\sin x$  by ab-initio method.
12. Check the correctness of the relation  $F = \frac{mu^2}{r}$  using 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 ? <http://www.jkboseonline.com>

**Section-D**

**(Value Based Questions)**

4

23. A vector has 60th 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 makes 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.

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