

Paper: PhysicsTotal Marks: 17Month Test: February

Obt. Marks: _____

Theme/Unit: First HalfGrand Total: 85

Objective: _____

Signature: _____

Time: _____

Roll No: _____

class: 11th

Section: _____

**Q. No. 1: Encircle the correct option:****/17**

1. One Pico stands for:

a. 10^{-15}

c. 10^{-9}

b. 10^{-12}

d. 10^{-6}

2. Which pair has same dimension.

a. Work, torque

c. Energy, torque

b. Work, energy

d. All

3. Maximum number of components of a vector may be:

a. One

c. Three

b. Two

d. Infinite

4. The cross product $\hat{i} \times \hat{j}$ is equal to:

a. Zero

c. $-\hat{k}$

b. One

d. \hat{k}

5. The magnitude of $\hat{i} \cdot (\hat{j} \times \hat{k})$

a. 0

c. -1

b. 1

d. \hat{i}

6. Maximum number of rectangular components are:

a. One

c. Three

b. Two

d. Infinite

7. Area under velocity time graph represent:

a. Force

c. Distance

b. Displacement

d. Acceleration

8. Inertia of an object is quantitative measure of its:

a. Volume

c. Mass

b. Density

d. Temperature

9. When a body moves in a straight line then its displacement coincides with:

a. Distance

c. Acceleration

b. Force

d. None

10. The dimension of force is:

a. ML^2T^{-2}

c. ML^2T^2

b. MLT^{-2}

d. $ML^{-2}T^{-2}$

11. The rate of change of momentum is equal to:

a. Force

c. Velocity

b. Impulse

d. None

12. Work done will be maximum if the angle b/w the force and displacement is:

a. 45° b. 90°

- c. 180° d. 0°
13. Slope of work time graph is equal to:
 a. Displacement c. Energy
 b. Acceleration d. Power
14. The tides raise the water in the sea roughly in a day.
 a. Once c. Four
 b. Twice d. Eight
15. Which of the following is not conservative force:
 a. Friction c. Gravitational
 b. Electric d. Elastic
16. Who discovered the inverse square law for gravity?
 a. Einstein c. Newton's
 b. Galileo d. Plank
17. The planet nearest to the earth is:
 a. Venus d. Sun

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|-------------------------------|--|------------------------|
| Paper: <u>Physics</u> |  | Total Marks: <u>68</u> |
| Month Test: <u>Annual</u> | | Obt. Marks: _____ |
| Theme/Unit: <u>First Half</u> | | Grand Total: <u>85</u> |
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- b. Mercury
 c. Uranus

Part – I

Q. No. 2: Answer the following Questions:

/44

- 1) Define significant figure.
- 2) Write the dimension of pressure and density.
- 3) Write the radian and steradian.
- 4) Write five scalar quantities.
- 5) Define torque and write its unit.
- 6) Can the magnitude of a vector have a negative value?
- 7) Find the angle b/w two vectors $A=5\hat{i} + \hat{j}$ and $B=2\hat{i} + 4\hat{j}$.
- 8) Difference between force and impulse.
- 9) Can the velocity of an object reverse direction when acceleration is constant, if so give example?
- 10) Difference between uniform and variable velocity?

- 11) Write the relation of work energy principle?
- 12) How we can prove work done in close path is zero?
- 13) How we can derive $V_{\text{esc}} = \sqrt{2gR}$
- 14) Write geothermal energy and also this process.
- 15) A boy uses a catapult to throw a stone which accidentally smashes a green house window. Write the change of energy.
- 16) Calculate the work done in Kilo Joules in lifting a mass of 10kg (at steady velocity) through a vertical height of 10m.
- 17) Difference between spin and angular momentum.
- 18) What is critical velocity And also write its relation.
- 19) Describe what should be the minimum velocity for a satellite to orbit close to the earth around it.
- 20) When mud flies off the tyre of a moving bicycle. In what direction does it flies? Explain.
- 21) State the countinuity equation.
- 22) Explain the difference between laminar and turbulent flow.

Part - II

Q. 3: (a). Show that the famous Einstein equation $E = mc^2$ is dimensionally constant. /4

(b). Prove and Explain $w = \vec{F} \cdot \vec{d}$ and write its characteristics terms of dot product product. /4

Q. 4: (a). Two blocks of masses 2kg and 0.50kg are attached at the two ends of a compressed spring. The elastic potential energy stored in the spring is 10J. Find the velocities of the blocks if the spring delivers its energy to the blocks when releases. /4

(b). How we can derive absolute potential energy. /4

Q. 5: (a). What is the least speed at which an aeroplane can execute a vertical loop of 1km radius so that there will be no tendency for the pilot to fall down at highest point. /4

(b). Explain Bernoulli's Equation. /4