

Winmeen Tnpsc Group 1 & 2 Study Materials

Tnpsc Group 2 Complete Syllabus : <https://goo.gl/fNSnMN>

Tnpsc Group 2 Previous Questions : <https://goo.gl/PYqsd7>

Tnpsc Group 2 Model Questions : <https://goo.gl/xQvyTk>

10. Motion - 2

1. What is datum?

We take a point on the ground and we measure all distances with respect to this point which we call the datum.

2. What is frame of reference?

The three imaginary lines representing the three axes together with the datum is called the frame of reference.

3. What is state of motion?

A body is said to be in the state of motion, when it changes its position with respect to a datum over time.

4. What are the parameter for motion?

- A datum and a frame of reference
- The position of the object in relation to the datum or frame of reference
- Time

5. What are the types of motion?

- Linear motion – where the object moves along a straight line.

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- Circular motion – where the object moves along a circular path.
- Oscillatory motion – where an object describes a repetitive to and fro movement retracing its original path in the opposite direction.
- Random motion – where the motion of the object does not fall in any of the above categories.

6. What is distance?

It is the length of the actual path followed by an object or body while moving from one point to another.

7. What is displacement?

It is the shortest distance between two points and is a vector quantity where direction is an essential feature.

8. Differentiate between distance and displacement?

- Distance: It is the length of the actual path followed by an object or body, while moving from one point to another.
- Displacement: It is the shortest distance between two points.
- Distance: It is a scalar quantity (having only magnitude).
- Displacement It is a vector quantity (having magnitude and direction)

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- Distance: It is measured in metres in the SI system. It is measured in metres in a particular direction in the SI system.
- Displacement It is not a unique quantity and is always path dependent.
- Distance: It is only dependent on the starting point and the ending point and is independent of the path followed. It is unique to a given pair of points.
- Displacement: It can either be equal to or greater than displacement.
- Distance: It is either equal to or lesser than the distance. Distance in any direction would be a positive quantity, since direction is inconsequential.
- Displacement: It can be a negative quantity. If displacement in one direction is assumed to be positive then the displacement in the opposite direction would be a negative quantity

9. What is speed?

Speed is the rate of change of distance with respect to time or the distance travelled per unit time. The SI unit of speed is metres per second. It is a scalar quantity

10. What is velocity?

Velocity is the rate of change of displacement with respect to time. It is the displacement per unit time. The SI unit of velocity is metres per second. It is a vector quantity and therefore, the direction must always be specified along with the magnitude and the units.

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11. What is acceleration?

Acceleration is the rate of change of velocity with respect to time or it is the rate of change of velocity in unit time. It is a vector quantity. The SI unit of acceleration is m/s per second, also written as m/s² or ms⁻².

12. What is uniform speed?

Uniform speed/ velocity means that the speed/velocity remains constant over time. In the world around us, we notice that the speed of objects keeps changing from time to time. In such a case the distance/displacement – time graphs would not be a straight line.

13. What is slope of line?

The value DE/AD is called the slope of the line.

14. What are the three equation of motion?

$$v = u + at$$

$$s = ut + \frac{1}{2} at^2$$

$$v^2 - u^2 = 2as$$

15. What is circular motion?

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The movement of an object in a circular path is called circular motion.

16. What is centripetal acceleration?

Uniform circular motion is a special case, where the speed of an object remains constant but the direction keeps on changing.

17. What is centripetal force?

The force that keeps the body going around in circular motion is called the Centripetal force. The Centripetal force acts perpendicular to the velocity and is always directed radially inwards towards the centre of the circle.

