Agar NEET 2026 ka paper pahle ki Trha easy aya to It will be like this

Yakeen NEET 2.0 (2026)

Physics by Saleem Sir

KPP-19

Motion in One Dimension

Read the assertion and reason carefully to mark the correct option out of the options given below:

(1) If both assertion and reason are true and the reason is the correct explanation of the assertion.
(2) If both assertion and reason are true but reason is not the correct explanation of the assertion.
(3) If assertion is true but reason is false.
(4) If the assertion and reason both are false.
(5) If assertion is false but reason is true.

1. **Assertion:** A body can have acceleration even if its velocity is zero at a given instant of time.
Reason: A body is momentarily at rest when it reverses its direction of motion.

2. **Assertion:** Two balls of different masses are thrown vertically upward with same speed. They will pass through their point of projection in the downward direction with the same speed.
Reason: The maximum height and downward velocity attained at the point of projection are independent of the mass of the ball.

3. **Assertion:** A body falling freely may do so with constant velocity.
Reason: The body falls freely, when acceleration of a body is equal to acceleration due to gravity.

4. **Assertion:** The average velocity of the object over an interval of time is either smaller than or equal to the average speed of the object over the same interval.
Reason: Velocity is a vector quantity and speed is a scalar quantity. **[AIIMS 2010]**

5. **Assertion:** An object can have constant speed but variable velocity.
Reason: Speed is a scalar but velocity is a vector quantity.

6. **Assertion:** The speedometer of an automobile measure the average speed of the automobile.
Reason: Average velocity is equal to total displacement per total time taken.

7. **Assertion:** The position-time graph of a uniform motion in one dimension of a body can have negative slope.
Reason: When the speed of body decreases with time, the position-time graph of the moving body has negative slope.

8. **Assertion:** A positive acceleration of a body can be associated with a 'slowing down' of the body.
Reason: Acceleration is a vector quantity.

9. **Assertion:** A negative acceleration of a body can be associated with a 'speeding up' of the body.
Reason: Increase in speed of a moving body is independent of its direction of motion.

10. **Assertion:** The average and instantaneous velocities have same value in a uniform motion.
Reason: In uniform motion, the velocity of an object increases uniformly.

11. **Assertion:** Rocket in flight is not an illustration of projectile.
Reason: Rocket takes flight due to combustion of fuel and does not move under the gravity effect alone.

12. **Assertion:** The position-time graph of a body moving uniformly is a straight line parallel to positionaxis.
Reason: The slope of position-time graph in a uniform motion gives the velocity of an object.

13. **Assertion:** Position-time graph of a stationary object is a straight line parallel to time axis.
Reason: For a stationary object, position does not change with time.

(A/R ques i will discuss) (Rest Aap khud karo)

14. **Assertion:** The slope of displacement-time graph of a body moving with high velocity is steeper than the slope of displacement-time graph of a body with low velocity.
Reason: Slope of displacement-time graph = Velocity of the body.

15. **Assertion:** Distance-time graph of the motion of a body having uniformly accelerated motion is a straight line inclined to the time axis.
Reason: Distance travelled by a body having uniformly accelerated motion is directly proportional to the square of the time taken.

16. **Assertion:** A body having non-zero acceleration can have a constant velocity.
Reason: Acceleration is the rate of change of velocity.

17. **Assertion:** A body, whatever its motion is always at rest in a frame of reference which is fixed to the body itself.
Reason: The relative velocity of a body with respect to itself is zero.

18. **Assertion:** Displacement of a body may be zero when - distance travelled by it is not zero.
Reason: The displacement is the longest distance between initial and final position.

19. **Assertion:** The equation of motion can be applied only if acceleration is along the direction of velocity and is constant.
Reason: If the acceleration of a body is constant then its motion is known as uniform motion.

20. **Assertion:** A bus moving due north takes a turn and starts moving towards east with same speed. There will be no change in the velocity of bus.
Reason: Velocity is a vector-quantity.

21. **Assertion:** The relative velocity between any two bodies moving in opposite direction is equal to sum of the velocities of two bodies.
Reason: Sometimes relative velocity between two bodies is equal to difference in velocities of the two.

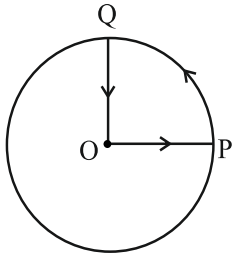
22. **Assertion:** Displacement of a body is vector sum of the area under velocity-time graph.
Reason: Displacement is a vector quantity.

23. **Assertion:** Velocity-time graph for an object in uniform motion along a straight path is a straight line parallel to the time axis.
Reason: In uniform motion of an object velocity increases as the square of time elapsed.

24. **Assertion:** A body may be accelerated even when it is moving uniformly.
Reason: When direction of motion of the body is changing then body may have acceleration.

25. A cyclist starts from the centre O of a circular park of radius one kilometre, reaches the edge P of the park, then cycles along the circumference and returns to the centre along QO as shown in the figure. If the round trip takes ten minutes, the net displacement and average speed of the cyclist (in metre and kilometre per hour) is

[KCET 2006]



(1) 0, 1 (2) $\frac{\pi+4}{2}, 0$

(3) $21.4, \frac{\pi+4}{2}$ (4) Zero

26. The three initial and final position of a man on the x-axis are given as
(i) (–8m,7m) (ii) (7m, –3m) and
(iii) (–7m, 3m)
Which pair gives the negative displacement

[DUMET 2009]

(1) (i) (2) (ii)
(3) (iii) (4) (i) and (iii)

27. A graph is drawn between velocity and time for the motion of a partice. The area under the curve between the time intervals t_1, and t_2 gives

[Kerala PMT 2010, 11]

(1) Momentum of the particle
(2) Displacement of the particle
(3) Acceleration of the particle
(4) Change in velocity of the partice
(5) Force on the particle

28. A wheel of radius 1 m rolls forward half a revolution on a horizontal ground. The magnitude of the displacement of the point of the wheel initially in contact with the ground is

[BCECE 2005]

(1) 2π (2) $\sqrt{2}\pi$
(3) $\sqrt{\pi^2+4}$ (4) π

29. The position vector of a particle is determined by the expression $\vec{r}-=3t^2\hat{i}+4t^2\hat{j}+7\hat{k}$
The distance traversed in first 10 sec is

[DPMT 2002]

(1) 500 m (2) 300 m
(3) 150 m (4) 100 m

30. An automobile travelling with a speed of 60 km/h, can brake to stop within a distance of 20 m. If the car is going twice as fast, i.e., 120 km/h, the stopping distance will be

[AIEEE 2004]

(1) 20 m (2) 40 m
(3) 60 m (4) 80 m

31. Stopping distance of a moving vehicle is directly proportional to

[Kerala PMT 2010]

(1) Square of the initial velocity
(2) Square of the initial acceleration
(3) The initial velocity
(4) The initial acceleration
(5) Mass of the vehicle

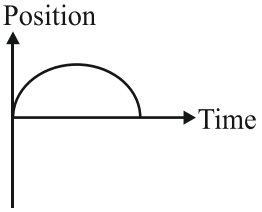
32. The initial and final position vectors for a particle are respectively $(-3.0\text{m})\hat{i}+(2.0\text{m})\hat{j}+(8.0\text{m})\hat{k}$ and $(9.0\text{m})\hat{i}+(2.0\text{m})\hat{j}+(-8.0\text{m})\hat{k}$. The displacement of the particle is

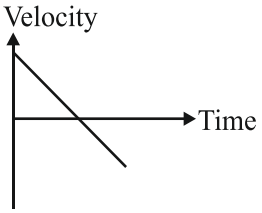
[MP PET 2010]

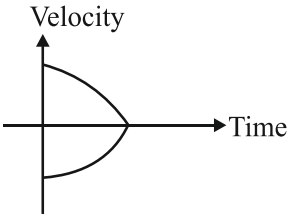
(1) $(6.0\text{m})\hat{i}+(4.0\text{m})\hat{j}+(16.0\text{m})\hat{k}$
(2) $(6.0\text{m})\hat{i}$
(3) $(12.0\text{m})\hat{i}-(16.0\text{m})\hat{k}$
(4) $(12.0\text{m})\hat{i}$

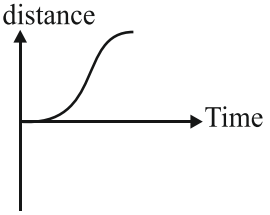
33. All the graphs below are intended to represent the same motion. One of them does it incorrectly. Pick it up.

[JEE (Main) 2018]

(1)


(2)


(3)


(4)


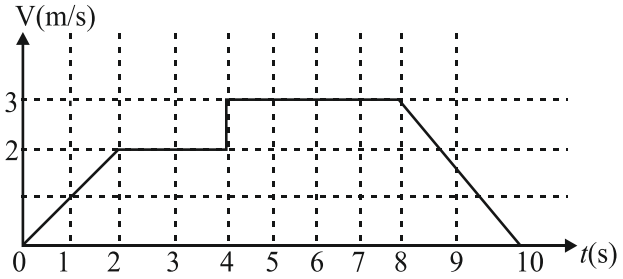
34. A toy car with charge q moves on a frictionless horizontal plane surface under the influence of a uniform electric field $\vec{E}$. Due to the force $q\vec{E}$, its velocity increases from 0 to 6 m/s in one second duration. At that instant the direction of the field is reversed. The car continues to move for two more seconds under the influence of this field. The average velocity and the average speed of the toy car between 0 to 3 seconds are respectively

[NEET 2018]

(1) 2 m/s, 4 m/s
(2) 1 m/s, 3 m/s
(3) 1 m/s, 3.5 m/s
(4) 1.5 m/s, 3 m/s

35. A partide starts from origin at time $t = 0$ and moves along the positive x-axis. The graph of velocity with respect to time is shown in figure. What is the position of the particle at time $t = 5$s.

[JEE (Main) 2019]



(1) 6m (2) 9m
(3) 3m (4) 16m

36. A body is moving along a straight line path with constant velocity. At an instant of time the distance travelled by it is S and its displacement is D, then

[J & K CET 2008]

(1) $D < S$ (2) $D > S$
(3) $D = S$ (4) $D \leq S$

37. The displacement-time graph for two particles A and B are straight lines inclined at angles of 30° and 60° with the time axis. The ratio of velocities of $V_A : V_B$ is:

[CPMT 1990; MP PET 1999, 2001; Pb. PET 2003]

(1) 1 : 2 (2) $1:\sqrt{3}$
(3) $\sqrt{3}:1$ (4) 1 : 3

38. The numerical ratio of displacement to the distance covered is always

[BHU 2004]

(1) Less than one
(2) Equal to one
(3) Equal to or less than one
(4) Equal to or greater than one

39. The ratio of the numerical values of the average velocity and average speed of a body is always

[MP PET 2002]

(1) Unity
(2) Unity or less
(3) Unity or more
(4) Less than unity

40. Which of the following is a one dimensional motion

[BHU 2000; CBSE PMT 2001]

(1) Landing of an aircraft
(2) Earth revolving around the sun
(3) Motion of wheels of moving train
(4) Train running on a straight track

41. A 150 m long train is moving with a uniform velocity of 45 km/h. The time taken by the train to cross a bridge of length 850 m is

[CBSE PMT 2001; Similar BHU 2004]

(1) 56 sec (2) 68 sec
(3) 80 sec (4) 92 sec

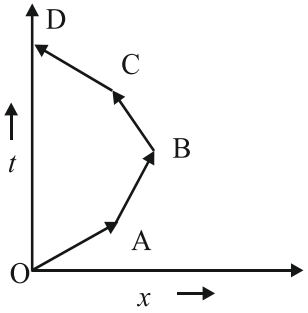
42. A particle is constrained to move on a straight line path. It returns to the starting point after 10 sec. The total distance covered by the particle during this time is 30 m. Which of the following statements about the motion of the particle is false

[CBSE PMT 2000; AFMC 2001]

(1) Displacement of the particle is zero
(2) Average speed of the particle is 3 m/s
(3) Displacement of the particle is 30 m
(4) Both (1) and (2)

43. Which of the following options is correct for the object having a straight line motion represented by the following graph

[DCE 2004]



(1) The object moves with constantly increasing velocity from O to A and then it moves with constant velocity.
(2) Velocity of the object increases uniformly
(3) Average velocity is zero
(4) The graph shown is impossible

44. A person travels along a straight road for the first half time with a velocity v_1 and the next half time with a velocity v_2. The mean velocity V of the man is:

[RPET 1999; Similar RPET 1996; BHU 2002; MP PET 2009]

(1) $\frac{2}{V}=\frac{1}{v_1}+\frac{1}{v_2}$ (2) $V=\frac{v_1+v_2}{2}$

(3) $V=\sqrt{v_1 v_2}$ (4) $V=\sqrt{\frac{v_1}{v_2}}$

45. A particle moves along a semicircle of radius 10 m in 5 seconds. The average velocity of the particle is

[Kerala (Engg.) 2001]

(1) 2π ms^{-1} (2) 4π ms^{-1}

(3) 2 ms^{-1} (4) 4 ms^{-1}

46. A man walks on a straight road from his home to a market 2.5 km away with a speed of 5 km/h. Finding the market closed, he instantly turns and walks back home with a speed of 7.5 km/h. The average speed of the man over the interval of time 0 to 40 min. is equal to

[AMU (Med.) 2002]

(1) 5 km/h (2) $\frac{25}{4}$ km/h

(3) $\frac{30}{4}$ km/h (4) $\frac{45}{8}$ km/h

47. A particle moves for 20 seconds with velocity 3 m/s and then velocity 4 m/s for another 20 seconds and finally moves with velocity 5 m/s for next 20 seconds. What is the average velocity of the particle

[MH CET 2004]

(1) 3 m/s (2) 4 m/s

(3) 5 m/s (4) Zero

48. A train has a speed of 60 km/h for the first one hour and 40 km/h for the next half hour. Its average speed in km/h is

[JIPMER 1999]

(1) 50

(2) 53.33

(3) 48

(4) 70

49. A cat moves from X to Y with a uniform speed v_u, an returns to X with a uniform speed v_d. The average speed for this round trip is

[Similar MP PMT 2001; CBSE PMT 2007]

(1) $\frac{2v_d v_u}{v_d+v_u}$ (2) $\sqrt{v_u v_d}$

(3) $\frac{v_d v_u}{v_d+v_u}$ (4) $\frac{v_u+v_d}{2}$

50. One car moving on a straight road covers one third of the distance with 20 km/hr and the rest with 60 km/hr. The average speed is:

[MP PMTT 1999; CPMT 2002; Kerala PET 2010]

(1) 40 km/hr (2) 80 km/hr

(3) $46\frac{2}{3}$ km/hr (4) 36 km/hr

51. A bullet emerges from a barrel of length 1.2 m with a speed of 640 ms^{-1}. Assuming constant acceleration, the approximate time that it spends in the barrel after the gun is fired is:

[WB-JEE 2008]

(1) 4 ms (2) 40 ms

(3) 400 μs (4) 1 s

52. Two boys are standing at the ends A and B of a ground where AB = a. The boy at B starts running in a direction perpendicular to AB with velocity v_1. The boy at A starts running simultaneously with velocity v and catches the other boy in a time t, where t is:

[CBSE PMT 2005]

(1) $a/\sqrt{v^2+v_1^2}$ (2) $\sqrt{a^2/\left(v^2-v_1^2\right)}$

(3) $a/\left(v-v_1\right)$ (4) $a/\left(v+v_1\right)$

53. A car starts from rest and accelerates uniformly to a speed of 180 kmh^{-1} in 10 seconds. The distance covered by the car in this time interval is:

[Kerala PMT 2009]

(1) 500 m (2) 250 m

(3) 100 m (4) 200 m

(5) 150 m

54. The initial velocity of a particle is u (at $t = 0$) and the acceleration f is given by at. Which of the following relation is valid.

[CPMT 1981; BHU 1995]

(1) $v = u + at^2$ (2) $v = u + a\frac{t^2}{2}$

(3) $v = u + at$ (4) $v = u$

55. What determines the nature of the path followed by the particle.

[AFMC 2005]

(1) Speed (2) Velocity

(3) Acceleration (4) Both (2) and (3)

56. A body of mass 10 kg is moving with a constant velocity of 10 m/s. When a constant force acts for 4 seconds on it, it moves with a velocity 2 m/sec in the opposite direction. The acceleration produced in it is:

[MP PET 1997]

(1) 3 m/sec^2 (2) –3 m/sec^2

(3) 0.3 m/sec^2 (4) –0.3 m/sec^2

57. A car moving with a speed of 40 km/h can be stopped by applying brakes after at least 2m. If the same car is moving with a speed of 80 km/h, what is the minimum stopping distance.

[CBSE PMT 1998, 99; AFMC 2000; JIPMER 2001, 02; Similar AIEEE 2003, 04]

(1) 8 m (2) 2 m

(3) 4 m (4) 6 m

58. A ball is hung by a string from the ceiling of a car moving on a straight and smooth road. If the string is inclined towards the front side of the car making a small constant angle with the vertical, then the car is moving with.

[Kerala PET 2012]

(1) Constant velocity

(2) Constant acceleration

(3) Constant retardation

(4) Increasing acceleration

(5) Decreasing retardation

59. Speed of two identical cars are u and $4u$ at a specific instant. The ratio of the respective distances in which the two cars are stopped from that instant is:

[AIEEE 2002]

(1) 1 : 1 (2) 1 : 4

(3) 1 : 8 (4) 1 : 16

60. A body moves from rest with a constant acceleration of 5 m/s^2. Its instantaneous speed (in m/s) at the end of 10 sec is:

[Similar EAMCET 1982; SCRA 1994]

(1) 50 (2) 5

(3) 2 (4) 0.5

61. If a car at rest accelerates uniformly to a speed of 144 km/h in 20 s. Then it covers a distance of

[CBSE PMT 1997]

(1) 20 m

(2) 400 m

(3) 1440 m

(4) 2880 m

62. A truck and a car are moving with equal velocity. On applying the brakes both will stop after certain distance, then

[CPMT 1997]

(1) Truck will cover less distance before rest

(2) Car will cover less distance before rest

(3) Both will cover equal distance

(4) None

63. If a train travelling at 72 kmph is to be brought to rest in a distance of 200 metres, then its retardation should be:

[Similar EAMCET 1979; SCRA 1998; MP PMT 2004]

(1) 20 ms^{-2} (2) 10 ms^{-2}

(3) 2 ms^{-2} (4) 1 ms^{-2}

64. Two cars A and B at rest at same point initially. If A starts with uniform velocity of 40 m/sec and B starts in the same direction with constant acceleration of 4 m/s^2, then B will catch A after how much time

[RPET 1999]

(1) 10 sec (2) 20 sec

(3) 30 sec (4) 35 sec

65. Acceleration of a particle changes when

[RPMT 2000]

(1) Direction of velocity changes

(2) Magnitude of velocity changes

(3) Both of above

(4) Speed changes

66. The average velocity of a body moving with uniform acceleration travelling a distance of 3.06 m is 0.34 ms^{-1}. If the change in velocity of the body is 0.18 ms^{-1} during this time, its uniform acceleration is:

[EAMCET (Med.) 2000]

(1) 0.01 ms^{-2} (2) 0.02 ms^{-2}
(3) 0.03 ms^{-2} (4) 0.04 ms^{-2}

67. A bullet moving with a velocity of 200 cm/s penetrates a wooden block and comes to rest after traversing 4 cm inside it. What velocity is needed for travelling distance of 9 cm in same block.

(1) 100 cm/s (2) 136.2 cm/s
(3) 300 cm/s (4) 250 cm/s

68. The position of a particle moving along the x-axis at certain times is given below:

t(s)	0	1	2	3
x(m)	–2	0	6	16

Which of the following describes the motion correctly

[AMU (Engg.) 2001]

(1) Uniform, accelerated
(2) Uniform, decelerated
(3) Non-uniform, accelerated
(4) There is not enough data for generalization

69. Consider the acceleration, velocity and displacement of a tennis ball as it falls to the ground and bounces back, Directions of which of these changes in the process.

[AMU (Engg.) 2001]

(1) Velocity only
(2) Displacement and velocity
(3) Acceleration, velocity and displacement
(4) Displacement and acceleration

70. A body is moving with uniform acceleration describes 40 m in the first 5 sec and 65 m in next 5 sec . Its initial velocity will be:

[Pb. PET 2003]

(1) 4 m/s (2) 2.5 m/s
(3) 5.5 m/s (4) 11 m/s

71. The velocity of a bullet is reduced from 200 m/s to 100 m/s while travelling through a wooden block of thickness 10 cm. The retardation, assuming it to be uniform, will be:

[AIIMS 2001; RPMT 2006]

(1) 10×10^4 m/s^2 (2) 12×10^4 m/s^2
(3) 13.5×10^4 m/s^2 (4) 15×10^4 m/s^2

72. A body of 5 kg is moving with a velocity of 20 m/s. If a force of 100 N is applied on it for 10 s in the same direction as its velocity, what will now be the velocity of the body

[MP PMT 2000; RPET 2001]

(1) 200 m/s (2) 220 m/s
(3) 240 m/s (4) 260 m/s

73. The path of a particle moving under the influence of a force fixed in magnitude and direction is:

[MP PET 2002]

(1) Straight line (2) Circle
(3) Parabola (4) Ellipse

74. A body A moves with a uniform acceleration a and zero initial velocity. Another body B, starts from the same point moves in the same direction with a constant velocity v. The two bodies meet after a time t. The value of t is:

[MP PET 2003]

(1) $\frac{2v}{a}$ (2) $\frac{v}{a}$
(3) $\frac{v}{2a}$ (4) $\sqrt{\frac{v}{2a}}$

75. An object accelerates from rest to a velocity 27.5 m/s in 10 sec then find the distance covered by the object in next 10 sec.

[BCECE 2004]

(1) 550 m (2) 137.5 m
(3) 412.5 m (4) 275 m

76. A body moves with initial velocity 10 ms^{-1}. If it covers a distance of 20 m in 2 s, then acceleration of the body is:

[Odisha JEE 2011]

(1) Zero (2) 10 ms^{-2}
(3) 5 ms^{-2} (4) 2 ms^{-2}

77. A person throws balls into air vertically upward in regular intervals of time of one second. The next ball is thrown when the velocity of the ball thrown earlier becomes zero. The height to which the balls rise is ... (Assume, $g = 10\ ms^{-2}$)

[KCET 2012]

(1) 5 m
(2) 10 m
(3) 7.5 m
(4) 20 m

78. If a particle moves with an acceleration, then which of the following can remain constant

[J & K CET 2012]

(1) Both speed and velocity
(2) Neither speed nor velocity
(3) Only the velocity
(4) Only the speed

79. A boggy of uniformly moving train is suddenly detached from train and stops after covering some distance. The distance covered by the boggy and distance covered by the train in the same time has relation

[RPET 1997]

(1) Both will be equal
(2) First will be half of second
(3) First will be 1/4 of second
(4) No definite ratio

80. A body travels for 15 sec starting from rest with constant acceleration. If it travels distances S_1, S_2 and S_3 in the first five seconds, second five seconds and next five seconds respectively the relation between S_1, S_2 and S_3 is:

[AMU (Engg.) 2000]

(1) $S_1 = S_2 = S_3$
(2) $5S_1 = 3S_2 = S_3$
(3) $S_1 = \frac{1}{3}S_2 = \frac{1}{5}S_3$
(4) $S_1 = \frac{1}{5}S_2 = \frac{1}{3}S_3$

Answer Key

1. (1)	17. (1)	33. (4)	49. (1)	65. (3)
2. (1)	18. (3)	34. (2)	50. (4)	66. (2)
3. (5)	19. (4)	35. (2)	51. (1)	67. (3)
4. (1)	20. (5)	36. (3)	52. (2)	68. (3)
5. (1)	21. (2)	37. (4)	53. (2)	69. (2)
6. (5)	22. (1)	38. (3)	54. (2)	70. (3)
7. (3)	23. (3)	39. (2)	55. (4)	71. (4)
8. (2)	24. (5)	40. (4)	56. (2)	72. (2)
9. (2)	25. (4)	41. (3)	57. (1)	73. (1)
10. (3)	26. (2)	42. (3)	58. (3)	74. (1)
11. (4)	27. (2)	43. (3)	59. (4)	75. (3)
12. (5)	28. (3)	44. (2)	60. (1)	76. (1)
13. (1)	29. (1)	45. (4)	61. (2)	77. (1)
14. (1)	30. (4)	46. (4)	62. (3)	78. (4)
15. (5)	31. (1)	47. (2)	63. (4)	79. (2)
16. (5)	32. (3)	48. (2)	64. (2)	80. (2)

PW Web/App - https://smart.link/7wwosivoicgd4

Library- https://smart.link/sdfez8ejd80if