1. Which of the following statements is correct? (a) both speed and velocity are same (b) speed is a scalar and velocity is a vector
   (c) speed is a vector and velocity is scalar (d) none of these

2. What is the slope of the body when it moves with uniform velocity?
   (a) positive (b) zero (c) negative (d) may be positive or negative
3. What does area velocity time graph give?
   (a) distance (b) acceleration (c) displacement (d) none of the above
4. If a body starts from rest, what can be said about the acceleration of body?

   (a)Positively accelerated (b) Negative accelerated (c) Uniform accelerated (d) None of the above
5. What does slope of position time graph give?
   (a)speed (b) acceleration (c) uniform speed (d) Both (a) and (c) depending upon the type of graph.
6. When a body moves uniformly along the circle, then:-
   (a) its velocity changes but speed remains the same
   (b) its speed changes but velocity remains the same
   (c)both speed and velocity changes
   (d) both speed and velocity remains same
7. Which of the following statements is correct?
   (a)speed distance are scalar, velocity and displacement are vector
   (b) speed distance are vector, velocity and displacement are vector
   (c) speed and velocity are scalar, distance and velocity are vector
   (d) speed and velocity are vector, distance and displacement are scalar
8. What does the slope of velocity – time graph give?
   (a) Distance (b) displacement (c) Acceleration (d) Change in velocity

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9. The displacement of the body can be-
   (a) Positive (b) negative (c) Zero (d) All of these.
10. Which of the following gives both direction and magnitude-
   (a) scalar (b) vector (c) Both (d) None.

11. If a moving body comes to rest, then its acceleration is-
   (a) Positive (b) negative (c) Zero (d) All of these depending upon initial velocity.
12. Differentiate between distance and displacement?
13. Derive mathematically the first equation of motion V=u + at?
14. Calculate the acceleration of a body which starts from rest and travels 87.5m 5sec?
15. Define uniform velocity and uniform acceleration?
16. Derive the second equation of motion S= u t +1/2at^2 graphically?
17. A car moving with a certain velocity comes to a halt if the retardation was 5m/s$^{2.}$,find the initial velocity of the car?
18. Two cars A and B are moving along in a straight line. Car A is moving at a speed of 80KMph while car B is moving at a speed 50KMph in the same direction, find the magnitude and direction of
   (a)the relative velocity of car A with respect to B
   (b) The relative velocity of car B with respect to A.
19. A ball starts from rest and rolls down 16m down an inclined plane in 4 s.
   (a)What is the acceleration of the ball?
   (b) What is the velocity of the ball at the bottom of the incline?

20. A car travels at a speed of 40km/hr for two hour and then at 60km/hr for three hours. What is the average speed of the car during the entire journey?
21. Derive the second equation of motion, s = ut + ½ at ^{2} numerically?
22. Calculate the acceleration and distance of the body moving with 5m/s2 which comes to rest after traveling for 6sec?
23. A body is dropped from a height of 320m. The acceleration due to the gravity is 10m/s2?

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24. (a)How long does it take to reach the ground? (b) What is the velocity with which it will strike the ground?
25. 10. Derive third equation of motion $v2 - u2 = 2as$ numerically?
26. A boy throws a stone upward with a velocity of 60m/s.
    (a) How long will it take to reach the maximum height (g = -10m/s2)?
    (b) What is the maximum height reached by the ball?
    (c) How long will it take to reach the ground? [3]
27. A body is moving with a velocity of 12m/s and it comes to rest in 18m, what was the acceleration?
28. A body starts from rest and moves with a uniform acceleration of 4m/s2 until it travels a distance of 800m, find the find velocity
29. The driver of a car traveling along a straight road with a speed of 72KM ph observes a signboard which give the speed limit to be 54KM ph. The signboard is 70m ahead when the driver applies the brakes0 calculate the acceleration of the car which will cause the car to pass the signboard at the stated speed limit?
30. Differentiate between scalars and vectors?
31. The displacement x of a particle in meters along the x- axis with time 't' in seconds according to the equation- X= 20m +(12*m/s*) t
    (a) draw a graph if x versus t for t = 0 and t =5 sec
    (b) What is the displacement come out of the particles initially?
    (c) What is slope of the graph obtained?
32. . Draw the graph for uniform retardation –(a) position – time graph (b) velocity – time (c) Acceleration- time
33. Derive the third equation of motion- v2-u2 = 2as graphically?
34. A car moves 100 m due east and then 25 m due west, (a) What is the distance covered by the car? (b) What is its displacement?
35. A person walks along the sides of a square field. Each side is 100 m long. What is the maximum magnitude of displacement of the person in any time interval?

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36. In the hare-tortoise race, the hare ran for 2 min at a speed of 7.5 km/h, slept for 56 min and again ran for 2 min at a speed of 7.5 km/h. Find the average speed of the hare in the race.
37. A bus takes 8 hours to cover a distance of 320 km. What is the average speed of the bus?
38. The maximum speed of a train is 80 km/h. It takes 10 hours to cover a distance of 400 km. Find the ratio of its maximum speed to its average speed.
39. An object moves through 10 m in 2 minutes and next 10 m in 3 minutes. Calculate its average speed.
40. A car moves through 20 km at a speed of 40 km/h, and the next 20 km at a speed of 60 km/h. Calculate its average speed.
41. A boy leaves his house at 9.30 a.m. for his school. The school is 2 km away and classes start at 10.00 a.m. If he walks at a speed of 3 km/h for the first kilometre, at what speed should he walk the second kilometre to reach just in time?
42. A bicycle increases its velocity from 10 km/h to 15 km/h in 6 seconds. Calculate its acceleration.
43. An object moves along a straight line with an acceleration of 2 m/s2. If its initial speed is 10 m/s, what will be its speed 5 s later?
44. An object dropped from a cliff falls with a constant acceleration of 10 m/s2. Find its speed 2 s after it was dropped.
45. A bullet hits a wall with a velocity of 20 m/s and penetrates it up to a distance of 5 cm. Find the deceleration of the bullet in the wall.
46. A train starts from a station and moves with a constant acceleration for 2 minutes. If it covers a distance of 400 m in this period, find the acceleration.
47. A ship moving with a constant acceleration of 36 km/h2 in a fixed direction speeds up from 12 km/h to 18 km/h. Find the distance traversed by the ship in this period.
48. A particle starts from a point with a velocity of +6.0 m/s and moves with an acceleration of -2.0 m/s2. Show that after 6 s the particle will be at the starting point.

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49. A bicycle moves with a constant velocity of 5 km/h for 10 minutes and then decelerates at the rate 1 km/h2, till it stops. Find the total distance covered by the bicycle.
50. An object is moving along a straight line with a uniform speed of 10 m/s. Plot a graph showing distance versus time from t = 0 to t = 10 s.
51. A particle moves along a straight line with a uniform velocity of 5.0 m/s. Plot a distance-time graph for the period t = 0 to t = 5 s.
52. The driver of a car travelling at 36 km/h applies the brakes to decelerate uniformly. The car stops in 10 s. Plot the speed-time graph for this period. Find the distance travelled by the car during this period by calculating the area under the graph.
53. A particle moves along a straight line with a constant acceleration a = +0.5 m/s 2 At t = 0 it is at x = 0, and its velocity is v = 0. Plot the velocity-time and position-time graphs for the period t = 0 to t = 5 s.
54. What is the distance traveled by an object in nth sec.
55. What is represented by the area under acceleration time graph?
56. The magnitude of a vector is always scalar. True or false.
57. Write the formula of maximum height in the projectile motion.
58. Give the dimensions formulae of work, energy and density.
59. What is the ratio of the distance traveled by a body falling freely from rest in the first, second and third second of it's falling.
60. A ball thrown vertically upwards with the speed of 19.6 m/s from the top of the tower returns to the earth in 6 sec. Find the height of the tower.
61. Prove that $S=ut+1/2at^2$
62. Find the value of instantaneous acceleration.
63. What are the angle of projection of a projectile projected with velocity 30 m/s, so that horizontal range is 45m and take g = 10 m/sec ^{2} .
64. Write the expression for the centripetal acceleration. A motor car traveling at 30 m/s on a circular road of radius 500 m. it is increasing its speed at the rate of 2 m/s ^{2}. What is the acceleration?
65. Express the formula of height and range in the projectile. Prove that the angle in the

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projection is 45^0 in the maximum range it got.

66. A train travelling at 5 m/s speed up to 10 m/s in 4 sec. Find the acceleration of train. ($1.25 m/s^2$)
67. A car start from rest and acquire a velocity of 54 km/h in 2 sec. Find (i) the acceleration (ii) distance travelled by cat assume motion of car is uniform. ($1/8 m/s^2$, 900m)
68. A car traveling at 54 km/h is slow down to 36 km/h in 10 sec. Find the retardation of car. ($0.5 m/s^2$)
69. A train starts from rest and accelerate uniformly at the rate of $5 m/s^2$ for 5 sec. Calculate the velocity of train in 5 sec. (25m/s)
70. A train accelerate from 36 km/h to 54 km/h in 10 sec. Find (i) acceleration (ii) The distance travelled by car (0.5m/s , 125m)
71. A body starts from rest accelerate uniformly at the rate of $5m/s^2$ for 10 sec. Find the distance travel by the body?(250m)
72. A car is travelling with a speed of 36 km/h . The driver applied the breaks and retards the car uniformly. The car is stopped in 5 sec. Find (i) The acceleration of car and (ii) Distance before it stops after Appling breaks?($2m/s^2$,25m)
73. A bullet moving with 10m/s hit the wooden plank. The bullets stops when penetrates 2 cm deep. Calculate the retardation of bullet.($2500m/s^2$)
74. A stone thrown vertically upwards with a speed of 5 m/s. How much heigh the stone goes before back to the earth? A=$-9.8m/s^2$ (1.28m)
75. A ball thrown vertically upwards with a velocity of 10 m/s. Calculate the height attain by ball and time taken by it to reach the highest point if the acceleration of ball is – 10 m/s^2 during its motion? (5m, 1 sec)

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