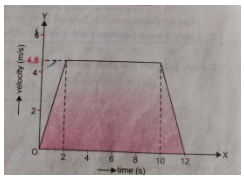
Ninth std full numerical test

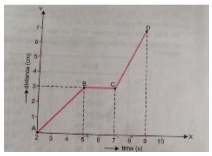
1. A cyclist travels a distance of 4 km from p to Q and then moves a distance of 3 km at right angle to PQ. Find his resultant displacement. (5 km)
2. The concentration of a salt solution in terms of mass percentage is 20% and the mass of the solution is 550gm, determine the mass of solute present in the solution. (110gm)
3. A stone is dropped from the roof of a building. It takes 4 seconds to reach the ground. Find the height of the building. (78.4m)
4. A bus decreases its speed from 80 km/h to 50 km/h in 4 seconds. Find the acceleration of the bus. (-2.8 m/s^2)
5. A ball thrown vertically upwards rises to a height of 20m. calculate
   a) The velocity with which the ball is thrown upwards and
   b) The time taken by the ball to reach the highest point? (20m/s, 2 sec)
6. A car of mass 1800kg moving with a speed of 10m/s is brought to rest after a covering a distance of 50m, calculate the force acting on the car. (-1800N)
7. From a rifle of mass 4kg a bullet of mass 50 gm is fired horizontally with a velocity of 40 m/s. calculate the recoil velocity of the rifle. (-0.5 m/s)
8. A solid weighs 100gm in air and 75 gm in water and 70gm in oil. Calculate the relative density of oil. (0.9)
9. A boy watches dusshera celebrations from a distance and see the effigy of Ravana burn into flames and hears the explosion after 2 sec. how far is he from the effigy if the speed of sound of sound in air was 335m/s. (670m)
10. In a factory 4 bulbs of 100 W each and 5 fans of 110 W each operate for 12 hours daily. Calculate the units of electricity consumed. Also find the total expenditure if 1unit costs rs 2.50. (28.5 Rs)
11. A bullet of mass 20 gm is fired from a gun of mass 8 kg with a velocity of 400m/s. find out the recoil velocity of the gun. (1m/s)
12. A stone is dropped from the top of a tower 500m high into a pond of water at the base of the tower. When is the splash heard at the top? g=10m/s^2. Speed of sound is 340m/s. (11.47s)
13. An engine is approaching a hill at constant speed. When it is at a distance of 0.9 km, it blows a whistle. Whose echo is heard by the driver after 5 s. if the speed of sound is 340m/s. calculate the speed of the engine. (20m/s).
14. The speed of sound in water is 1500meters per second. How far away from an under- sea rock should a deep- sea diver be so that he can hear his own echo? (75m)
15. A particle is moving in a circle of diameter 5m. calculate the distance and displacement after three rounds? (47.14m,0)
16. If velocity is 5m/s and force is 30N then find power? (150W)

17.  the velocity time group is given here. Find the acceleration of

    a) First 2 seconds

    b) Between 2 and 10th second

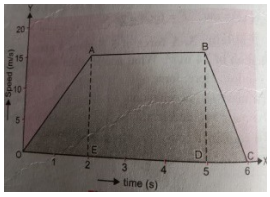
    c) During the last two second . (2.25m/s,0,-2.25m/s)

18.  a distance time is given below

    a) Calculate the speed of the body from 1. A to B 2. B to C 3. C to D (3/5m/s,0,2 m/s)

19. An athlete completes one round of a circular track of diameter 200 m in 40s. What will be the distance covered and the displacement at the end of 2 minutes 20 seconds? (2200m, 200m)

20. A force of 5 N gives a mass m1 an acceleration of 8m/s2, and a mass of m2, an acceleration of 24 m/s2. What acceleration would it give if bot the masses are tied together? (6m/s^2)

21.  the speed time graph of a car is given here. The car is 1000kg.

    a) What is the distance travelled by he car in the first two second?

    b) What is the breaking force applied at the end of 5 seconds to bring the car to stop within one second? (15m, -1500N)

22. A girl of mass 40 kg jumps with a horizontal velocity of 5m/s onto a stationary cart with frictionless wheels. The mass of the cart is 3 kg. what is her velocity as the cart starts moving? (4.6m/s)

23. Two hockey players of opposite teams, collide and entangled. The mass of an object is 60 kg moving with a velocity of 5 m/s, while the other has mass of 55 kg moving with a velocity 6m/s. in which direction and what velocity will they move after that become entangled? (0.26 m/s, to the second player)

24. An object 20 N weight is moving upward to a height of 5m in 20 seconds. What is it power? (5W)

25. The car A of mass 1500kg travelling at 25m/s collides with another car B of mass 1000kg travelling at 15m/s in the same direction. After collision the velocity of car A becomes 20m/s. calculate the velocity of car B after collision. (22.5m/s)

26. Suppose a planet exists whose mass and radius both are half those of earth, calculate the acceleration due to gravity on the surface of the planet. ($19.6 m/s^2$)
27. Mass of the object is 10kg. what is the weight? (98N)
28. The mass of an empty bucket of capacity 10 lit is 1 kg. find its mass when completely filled with a liquid of relative density of 0.8. ($1m^3$=1000l) (9Kg)
29. A bottle weighs 30 gm when empty, 53.4 gm when filled with liquid and 48 gm when filled with water. calculate the density of the liquid. ($1300 kg/m^3$)
30. An electric bulb of 60 W works for 6 hours per day, a fan 100 W for 8 hours per day in the month of July. Calculate the total amount of unit consumed. (35.96 units)
31. The wave length of the vibrations produced on the surface of water is 2cm. if the wave velocity is 16m/s, calculate a) the number of waves produced in 1 sec b) time required to produce 1 wave. (800Hz,0.00125s)
32. A stone is dropped into a well 45 m deep. The sound of the splash is heard 3.13 s after the stone is dropped . find the speed of sound in air. $g=10 m/s^2$ (346.15m/s)
33. A man fires a gun towards a hill and hears its echo after 5 seconds. He then moves 340 towards the hill and fires his gun again. This time he hears the echo after 3 seconds. Calculate the speed 0f sound. (340m/s)
34. An engine is approaching a hill at constant speed. When it is at a distance of 0.9km , it blows a whistle , whose echo is heard by the driver after 5seconds. If the speed of sound is 340m/s , calculate the speed of the engine. 3
35. A stone is dropped from a height of a tower of 500m high into a pond of water at the base of the tower , when is the splash heard at the top? $G=10 m/s^2$ speed of sound =340 mm/s