



Name _____ Class _____ Roll no. _____ Date _____ Marks _____ / 39

1 Key words**[4]**

Fill in the blanks with words from the box. Two words in the box are not needed. Each blank carries 0.5 mark.

acceleration displacement distance motion reference point relative velocity
retardation scalar speed vector

An object that changes its position compared with its surroundings is in _____. The fixed point, line or place with which we compare the position of an object is called the _____. A quantity with magnitude only is a _____ quantity, and a quantity with both magnitude and direction is a _____ quantity. The shortest straight-line distance from the start to the end, in a particular direction, is the _____. The velocity of a body compared with another moving body is its _____. The rate of change of velocity is called _____, and the rate of decrease of velocity is called _____.

2 Match the columns**[3]**

Match each item in Column A with its formula or answer in Column B. Write the letter in the box. One item in Column B is not needed. Each match carries 0.5 mark.

Column A**Column B**

1. relative velocity, bodies moving in the same direction
2. relative velocity, bodies moving in opposite directions
3. acceleration
4. average velocity, when the velocity changes steadily
5. SI unit of acceleration
6. 1 km/h

- | | |
|----------------------|-------------------------|
| <input type="text"/> | a. $v = s \times t$ |
| <input type="text"/> | b. $(u + v)/2$ |
| <input type="text"/> | c. m/s^2 |
| <input type="text"/> | d. $v_{AB} = v_A - v_B$ |
| <input type="text"/> | e. 5/18 m/s |
| <input type="text"/> | f. $a = (v - u)/t$ |
| | g. $v_{AB} = v_A + v_B$ |

3 Multiple choice**[5]**

Choose the correct option for each of the following questions.

- i. What is the condition of an object called if it doesn't change its position with respect to the reference point or its surroundings? **[1]**
- | | |
|-----------|-------------|
| a. motion | b. velocity |
| c. rest | d. speed |



- c. Why does our bus seem to go slowly when another bus overtakes it in the same direction? [2]

- d. In which condition is the average velocity of a body calculated? Write the formulas to calculate it. [2]

6 Long answers [8]

Write long answers to the following questions.

- a. What is acceleration? Write its formula and SI unit. What is retardation? Give an example. [4]

- b. Write the formulas for the relative velocity of two bodies moving in the same direction and in opposite directions, with an example of each. [4]

7 Numerical problems [6]

Solve the following problems. Show your working.

- a. A bus covers 4.2 km in 7 minutes along a straight road. Calculate its average velocity in m/s. [2]

Answer:



- b. The brakes are applied to a car moving with uniform velocity. It has a retardation of 2 m/s^2 and stops after 4 seconds. Calculate its initial velocity. [2]

Answer: _____

- c. Two motorcycles move at 50 km/h and 60 km/h. Calculate their relative velocity when they move in the same direction, and when they move in opposite directions. [2]

Answer:

8 Think [2]

Think, then answer.

Some air forces refuel planes in flight: the tanker trails a hose, and the other plane flies up behind and plugs in, both at more than 500 km/h. Why must the two planes fly at the same velocity?

9 Activity: How fast do we come to school? (Activity 6.1) (not marked)

Find the distance from your home to school and how long the journey takes, for yourself and two friends, and work out each average velocity.

Name	Distance from home to school (m)	Time taken (s)	Average velocity (m/s)

