Chapter End Test

Date : _____ Duration: 40 Min. Max. Marks : 25	Science **Topic :** Motion and Matter in Our Surroundings	Class IX

General instruction:
1. This question paper consists of two sections.
2. Section A consists of 15 marks and Section B consists 10 marks.
3. The answer of MCQs has to done in separate OMR sheet.
4. Subjective section has 6 questions of 1, 2 & 3 marks.
5. Subjective questions have to be answered separately in answer sheets.
5. All questions are compulsory.

Section – A

1. ms^{-2} is the unit of

(a) Velocity (b) Acceleration

(c) Distance (d) Displacement

2. Which of the following factors will be responsible for increase in rate of evaporation of water?

(a) Increase in surface area of water (b) Increase in temperature of water

(c) Decrease in wind speed (d) Both (a) and (b)

3. The boiling points of liquid A, B and C are 27°C, 20°C and 100°C respectively. Which one of the following correctly shows their boiling points in Kelvin scale?

(a) 373 K, 293 K, 300 K (b) 300 K, 293 K, 373 K

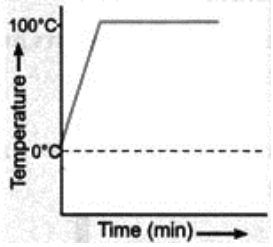
(c) 293 K, 300 K, 373 K (d) 373 K, 300 K, 293 K

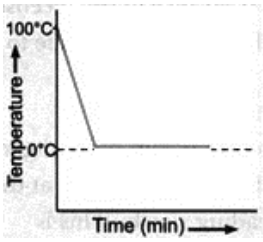
4. Given below are 3 different substances arranged in the decreasing order of 'Forces of attraction' between their particles. Which one of the following represents a correct arrangement?

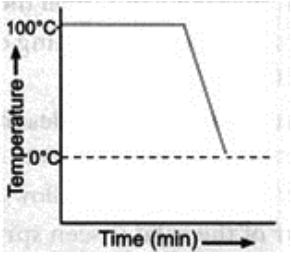
(a) Water, air, salt (b) Air, salt, oil

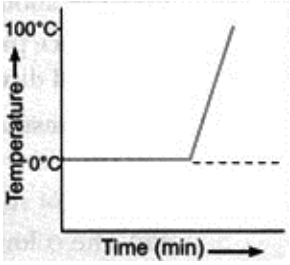
(c) Oxygen, water, salt (d) Salt, water, air

5. Sunil heats a beaker containing ice and water. He measures the temperature of the content of the beaker as a function of time. Which of the following would correctly represent the result? Justify your choice.

(a) 

(b) 

(c) 

(d) 

6. Which of the following properties not shown by a fluid?

(a) It has mass (b) It has definite shape

(c) It can flow (d) It can be perceived by our senses

7. Which of the following will sublime?

(a) Camphor (b) Salt

(c) Ammonium chloride (d) Both (a) and (c)

8. Find the average speed of a bicycle if it completes two round of a circular track of radius 140m, twice, in 5min 52 sec

(a) 10m/s (b) 5m/s

(c) 2m/s (d) 4m/s

9. Uniform circular motion of an object is

(a) Non-accelerated motion (b) Accelerated motion

(c) Uniform motion (d) None of these

10. A body is thrown vertically upward with velocity u, the greatest height h to which it will rise is

(a) $u^2/2g$ (b) u/g

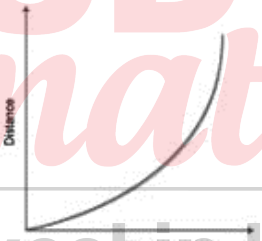
(c) u^2/g (d) $u/2g$

11. A car accelerates at the rate of $2ms^{-2}$ on a straight road. How much is the increase in its velocity in 4s?

(a) $6ms^{-1}$ (b) $8ms^{-1}$

(c) $4ms^{-1}$ (d) $2.66\ ms^{-1}$

12. The given graph represents a body moving with



(a) Uniform motion (b) Non-accelerated motion

(c) Accelerated motion (d) None of these

13. What will be change in level of water when 5 g of sugar is mixed properly in 100 mL of water?

(a) 105 mL (b) 0 mL

(c) 103.5 mL (d) 100 mL

14. A train is moving with a velocity of 108km/h. What is its velocity in ms^{-1}.

(a) $30\ ms^{-1}$ (b) $25\ ms^{-1}$

(c) $20\ ms^{-1}$ (d) $35\ ms^{-1}$

15. When an object undergoes acceleration?

(a) There is always an increase in its velocity

(b) There is always an increase in its speed

(c) A force always acts on it

(d) All of the above.

Section – B

1. Convert the following temperatures: **[1]**

(i) 489 K to °C (ii) 24°C to K

2. Define acceleration. Give its SI unit. **[1]**

3. Differentiate between distance and displacement. (any two points). **[1]**

4. A train travels 40 km at a uniform speed of 30 km/hr. Its average speed after traveling another 40 km is 45 km/hr for the whole journey. It's speed in the second half of the journey is? **[2]**

5. A gas jar containing air is placed upside down on a gas jar containing bromine vapors. It is observed after sometimes, the gas jar containing air also becomes completely reddish brown. **[2]**

(a) Explain why this happens. (b) Name the process involved.

6. Derive position-time relation for the motion of an object. **[3]**

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Hints / Solutions to Chapter End Test

Date : _____ Duration: 40 Min. Max. Marks : 25	Science **Topic :** Motion and Matter in Our Surroundings	Class IX

Section – A

1.	(b)	**2.**	(d)	**3.**	(b)	**4.**	(d)
5.	(d)	**6.**	(b)	**7.**	(d)	**8.**	(a)
9.	(b)	**10.**	(a)	**11.**	(b)	**12.**	(c)
13.	(b)	**14.**	(a)	**15.**	(c)		

Section – B

1. (i) 489 K –273 = 216°C (TK -273 = TC)

(ii) 24 + 273 = 297 K (TK = TC + 273)

2. The rate of change of velocity is called acceleration. It is a vector quantity.

It's SI unit is ms^{-2}.

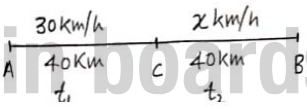
3.

Distance	***Displacement***
• Total length of the path covered during a motion is called distance. • It is a scalar quantity.	• The shortest distance between initial and final point of journey is called displacement. • It is a vector quantity.

4. Given: AC = 40 km, BC = 40 km

Speed between A to = 30 km/h

Average speed = 45 km/h



To find: Speed between B to C, x = ?

Solution: time taken from A to C $= t_1 = \frac{40}{30} = \frac{4}{3}$ hr.

Time taken from C to B = $= t_2 = \frac{40}{x}$ hr.

Average speed = $\frac{\text{Total Distance}}{\text{Total Time}}$

$\Rightarrow \quad 45 = \frac{80}{\frac{4x+120}{3x}}$

$\Rightarrow \quad 45 = \frac{80 \times 3x}{4x+120}$

$\Rightarrow \quad 45(4x + 120) = 240x$

$\Rightarrow \quad 180x + 5400 = 240x$

$\Rightarrow \quad 5400 = 240x - 180x$

$\Rightarrow \quad 5400 = 60x$

$\therefore \quad x = \frac{5400}{60}$

$\therefore \quad x = 90$ km/h

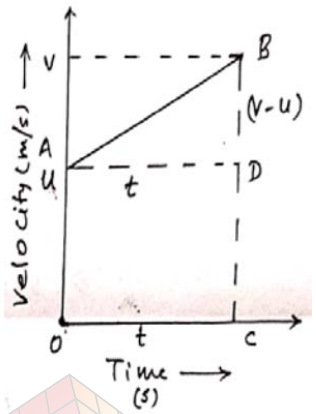
$\therefore$ Speed in the second half of journey is 90 km/h.

5. (a) The particles of reddish brown Bromine vapors and air move freely in all directions because of low force of attraction between their particles. So, air particles from upper jar moves downwards towards Bromine jar and Bromine vapours from lower jar moves upwards towards air jar. This continuous till a uniform mixture of air and Bromine vapors is obtained. That's the reason, the gas jar containing air becomes completely reddish brown.

(b) This process is called diffusion.

6. Let an object is moving with a velocity u. after time t the velocity of object changes to v. acceleration caused is a and distance traveled by the object during this time be S.

Displacement/Distance = Area under v-t graph.



$\therefore$ S = area (OABC)

= area (OADC) + area (ABD)

$= OA \times OC + \frac{1}{2} AD + BD$

$= u \times t + \frac{1}{2} \times t \times (v - u)$

$= ut + \frac{1}{2} t \times at \qquad [\because \ v = u + at, \because \ v - u + at]$

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

Hence, position-time relation for the motion of an object is derived.

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