

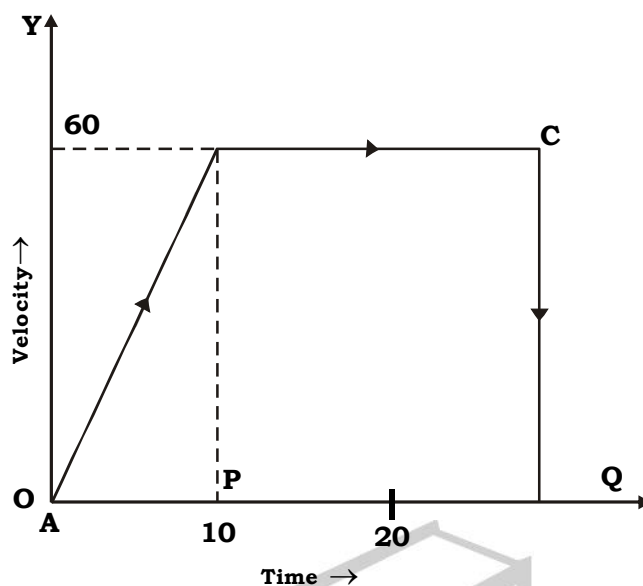
9 th CBSE Batch :	MAHESH TUTORIALS SUBJECT : SCIENCE & TECHNOLOGY Chapter : 1, 2, 5, 6, 8, 9 Model Answer Paper	Test - Date: Marks : 60 Time: 2 Hrs
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Q : 1	Answer the following questions : [1 Marks]	05								
	1. Fractional distillation	1								
	2. It is a colourless fluid that has filtered out of the blood capillaries. It transports nutrients. It brings CO ₂ and nitrogenous wastes from tissues fluid to blood.	1								
	3. Meristematic tissue is capable of dividing (rapid cell division) and is found in the developing regions.	1								
	4. One newton is that force which produces an acceleration of 1 m/s ² in an object of mass 1kg. 1 newton = 1 kg × 1m/s ² .	½ ½								
	5. (c) Dyne	1								
Q : 2	Answer the following questions : [2 Marks]	16								
	6. During freezing of water, some space between the particles of water is left vacant with some air trapped between them. These empty spaces having air in them makes the density of ice; lower than that of water. That's why ice floats on water.	2								
	7. (a) Temperature in Celsius scale = Temperature in Kelvin scale - 273 = 293 K - 273 = 20°C	½ ½								
	(b) Temperature in Celsius scale = Temperature in Kelvin scale - 273 = 470 K - 273 = 197°C	½ ½								
	8. Tyndall effect is shown by colloidal solution. Here milk and starch solution are colloids therefore milk and starch solution will show Tyndall effect.	2								
	9. The diffusion of water or solvent through a semi-permeable membrane from a solution of lower concentration of solutes to a solution of higher concentration of solutes is called osmosis.	2								
	10. Differences between tendon and ligament :									
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%; text-align: center;">Tendon</th> <th style="width: 50%; text-align: center;">Ligament</th> </tr> </thead> <tbody> <tr> <td>a. They join bone to muscles.</td> <td>a. They join bone to bone.</td> </tr> <tr> <td>b. They have limited flexibility.</td> <td>b. They have elasticity.</td> </tr> <tr> <td>c. They have more strength.</td> <td>c. They have less strength.</td> </tr> </tbody> </table>	Tendon	Ligament	a. They join bone to muscles.	a. They join bone to bone.	b. They have limited flexibility.	b. They have elasticity.	c. They have more strength.	c. They have less strength.	½ ½ 1
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	11. Phloem is a complex permanent tissue. It is made up of four types of elements: sieve tubes, companion cells, phloem fibres and the phloem parenchyma. Sieve tubes are tubular cells with perforated walls. Phloem transports food from leaves to other parts of the plant. Except for phloem fibres, all the phloem cells are living.	2								

12.	(i) Graph 'b' (ii) Graph 'a'.	1 1
13.	As the lower portion of the body in contact with the bus is set the motion whereas upper portion tends to remain in the state of rest, Hence the passenger gets a backward jerk due to inertia of rest.	2
Q : 3	Answer the following questions : [3 Marks]	24
14.	A - Heating - Melting B - Heating - Vapourisation C - Cooling - Condensation - Liquefaction D - Cooling - Freezing - solidification E - Sublimation F - Sublimation (Deposition)	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$
15.	Elements : Sodium, Silver, Tin and Silicon. Compounds : Calcium carbonate, Methane and carbon dioxide. Mixtures : Soil, Sugar, Coal, Air, Soap and Blood.	1 1 1
16.	It is an organelle of membrane bound sacs, tubules and vesicles. It lies near the nucleus. The membrane bound sacs of Golgi apparatus are thin and curved. They are called cisterns or cisternae. It occur in small sacs. Functions of Golgi apparatus : • It is involved in repair and synthesis of cell membrane. • Lysosomes are formed by Golgi apparatus. • Major function of Golgi apparatus is secretion. • Components of cell wall are synthesized by Golgi apparatus.	1 $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$
17.	• The cells of this tissue are living, elongated and irregularly thickened at the corners. • There are very little intercellular spaces. • It provides flexibility in plants. • It allows easy bending in various parts of a plant without breaking. • It also provides mechanical support to plants.	1 $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$
18.	These are large cell organelles found only in plant cells. On the basis of pigments present in plastids, these are of different types : 1) Leucoplasts - Colourless plastids. (white) 2) Chromoplasts- Coloured plastids. (other than white and green) 3) Chloroplasts - Green coloured plastids. - It contains chlorophyll. Functions of plastids : • Chromoplasts provide colour to fruits and flowers. • Leucoplasts help in storage of proteins. • Chloroplasts helps in photosynthesis.	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$
19.	AB represents the accelerated part of motion. BC represents the uniform motion. At C, its velocity is abruptly made zero (point Q). Distance travelled during the first 10 s = Area of ΔABP $= \frac{1}{2} \times AP \times BP$ $= \frac{1}{2} \times 10 \times 60$	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$

$= 300$
 Distance travelled during the next 20 s = Area of rectangle PBCQ
 $= 20 \times 60 = 1200 \text{ m.}$
 \therefore Total distance travelled = $300 + 1200 = 1500 \text{ m.}$

½



1

20. The use of seat belts in cars : These days all the cars are provided with seat belts for passengers to prevent injuries in case of an accident. In a car accident the fast running car stops suddenly. Due to this, the large momentum of the car is reduced to zero in a very short period of time. The stretchable seat belts worn by the passengers of the car increase the time taken by the passengers to fall forward. Due to longer time, the rate of change of momentum of passengers is reduced and hence, less stopping force acts on them. So, the passengers may either not get injured at all or may get less injuries.

3

21. Mass (m) = 1500Kg, $a = -1.7\text{ms}^{-2}$
 $F = ma$
 $= 1500(-1.7)$
 $= -2550\text{N}$

½

½

½

½

1

The force between the vehicle & the road is 2550N in a direction opposite to the direction of vehicle.

Q : 4 Answer the following questions : [5 Marks]

15

- 22.
- (a) Solution in which no more solute can be dissolved at a particular temperature is known as saturated solution. For example in aqueous solution of sugar no more sugar can be dissolved at room temperature.
- (b) A pure substance is a substance consisting of a single type of particles i.e., all constituent particles of the substance have the same chemical properties. For example water, sugar, salt etc.
- (c) A colloid is a heterogeneous mixture whose particles are not as small as solution but they are so small that cannot be seen by naked eye. When a beam of light is passed through a colloid then the path of the light becomes visible. For example milk, smoke etc.
- (d) A suspension is a heterogeneous mixture in which solids are dispersed in liquids. The solute particles in suspension do not dissolve but remain suspended throughout the medium. For example Paints, Muddy water chalk water mixtures etc.

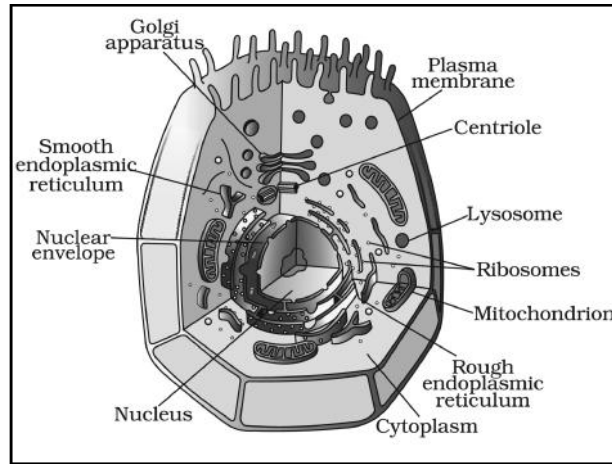
1

1

1½

1½

23.



5

24. Newton's second law of motion states that, "That rate of change of momentum of an object is proportional to the applied unbalanced force in the direction of force". ½

Consider an object of mass 'm' is moving along a straight line with an initial velocity 'u'. It is uniformly accelerated to the velocity 'v' in time 't' by applying a constant force 'F'. The uniform acceleration is 'a'. Thus, the initial and final momentum of the object will be $p_1 = mu$ and $p_2 = mv$, respectively. ½

So, according to the Newton's second law of motion,

Force \propto Rate of change of momentum ½

\therefore Force $\propto \frac{\text{Change of momentum}}{\text{time}}$ ½

\therefore Force $\propto \frac{\text{Final momentum} - \text{Initial momentum}}{\text{time}}$ ½

$\therefore F \propto \frac{p_2 - p_1}{t}$ ½

$\therefore F \propto \frac{mv - mu}{t}$ ½

$\therefore F \propto m \left(\frac{v - u}{t} \right)$ ½

$\therefore F \propto ma \quad \left[\text{since } a = \frac{v - u}{t} \right]$ ½

$\therefore F = kma \dots (1)$ [Where k is a constant] ½

The SI units of mass and acceleration are kg and m/s^2 , respectively. The unit of force is so chosen that the value of the constant, k becomes 1. ½

Substituting $k = 1$ in equation (1), we get

$F = ma$

★★★★ *Best of Luck* ★★★★★