KĀSIGA SCHOOL

DEHRADUN

Holiday Homework Summer Break 2020

IGCSE Year 1

ENGLISH (0500)

Visit the link below, and read the content. There is a short worksheet at the end.

https://drive.google.com/file/d/1UXLx1MlzLrwZQfcXkSQ3cyeRMR6guWtG/view?usp=sharing

Biology (0610)

Topic : Transport in plants

Link : https://www.youtube.com/watch?v=KhX20XQ7sPE

Watch the given link and using the textbook and internet as additional resources make a PowerPoint Presentation on Transport in plants. Your Presentation should cover the following points:

- Which organisms need a transport system?
- What do plants transport?
- What are xylem and phloem?
- Where are xylem and phloem located in the stem and root ?(include diagrams to show)
- What are the adaptations of xylem and phloem to carry out their function?

PHYSICS (0625)

1. **(a) (i)** Speed is a scalar quantity and velocity is a vector quantity.
   State how a *scalar* quantity differs from a *vector* quantity.

   .....

   .....[1]

   (ii) Underline the **two** scalar quantities in the list below.
   energy, force, impulse, momentum, temperature [1]

   (b) A boat is moving at constant speed.On Fig. 1.1, sketch a distance-time graph for the boat.

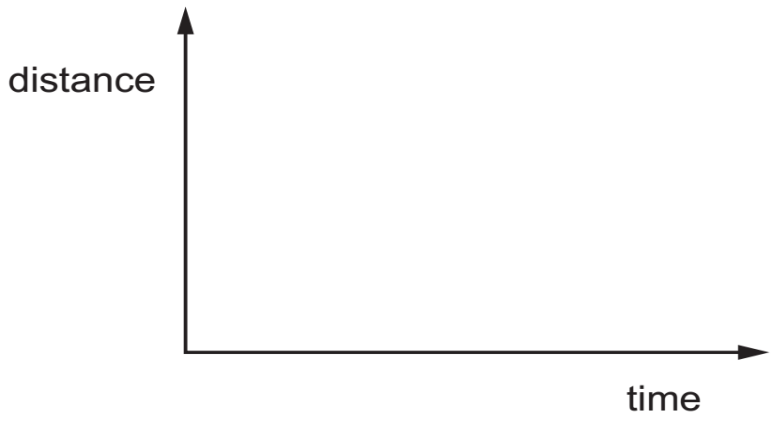


Fig.1.1 [1]

(c) The boat in **(b)** is moving due west at a speed of 6.5m/s relative to the water. The water is moving due south at 3.5m/s.
In the space below, draw a scale diagram to determine the size and direction of the resultant of these two velocities. State the scale used.

scale .....

size of resultant velocity = ...

direction of resultant .....[4]

2. **(a)** Fig. 2.1 shows the axes of a distance-time graph for an object moving in a straight line.

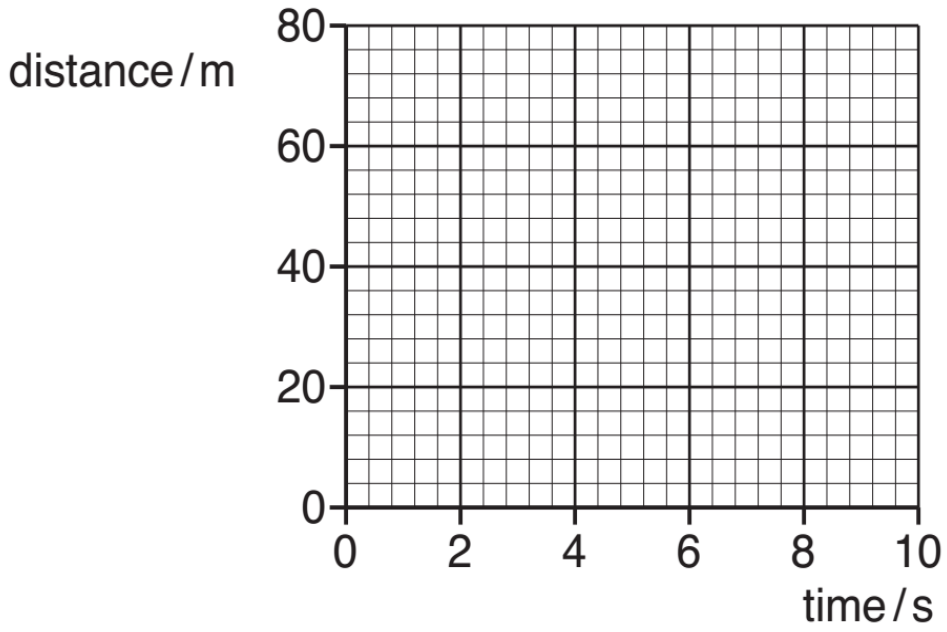


Fig.2.1
(i) 1. On Fig. 2.1, draw between time = 0 and time = 10s, the graph for an object movingwith a constant speed of 5.0m/s. Start your graph at distance = 0m.
2. State the property of the graph that represents speed.

.....[2]

(ii) Between time = 10s and time = 20s the object accelerates. The speed at time = 20s is9.0m/s. Calculate the average acceleration between time = 10s and time = 20s.

acceleration = ...[2]

(b) Fig. 2.2 shows the axes of a speed-time graph for a different object.

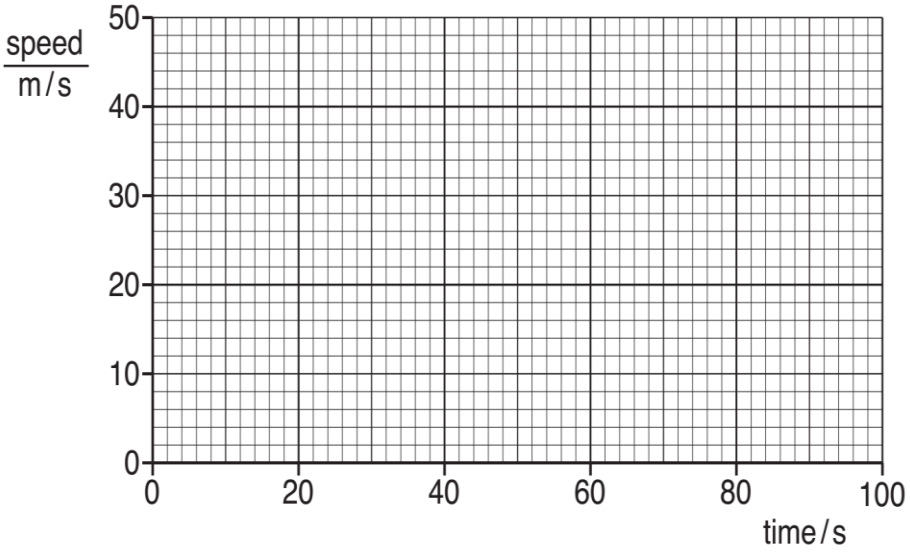


Fig.2.2

(i) The object has an initial speed of 50m/s and decelerates uniformly at 0.35m/s^2 for100s. On Fig. 2.2, draw the graph to represent the motion of the object. [2]

(ii) Calculate the distance travelled by the object from time = 0 to time = 100s.

distance = ...[3]

3. A boy steps off a high board into a swimming pool.
Fig. 3.1 shows the forces acting on the boy at one point in his fall.

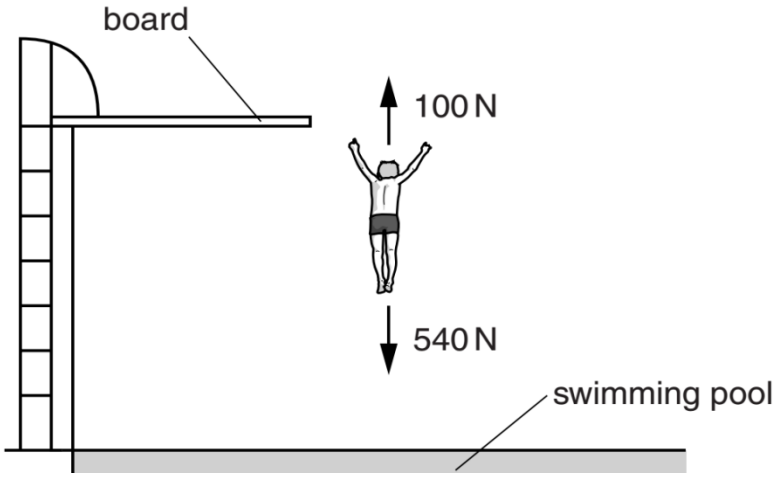


Fig.3.1

(a) The 540 N force is caused by gravitational attraction.
State the cause of the 100 N force.

.....[1]

(b) Calculate the mass of the boy.

mass of boy = ... kg [2]

(c) Calculate the resultant force on the boy. State its direction.

resultant force = ... N

direction = ...[2]

4. A driving instructor gives a student a sudden order to stop the car in the shortest possible time.
Fig. 4.1 shows the speed-time graph of the motion of the car from the moment the order is given.

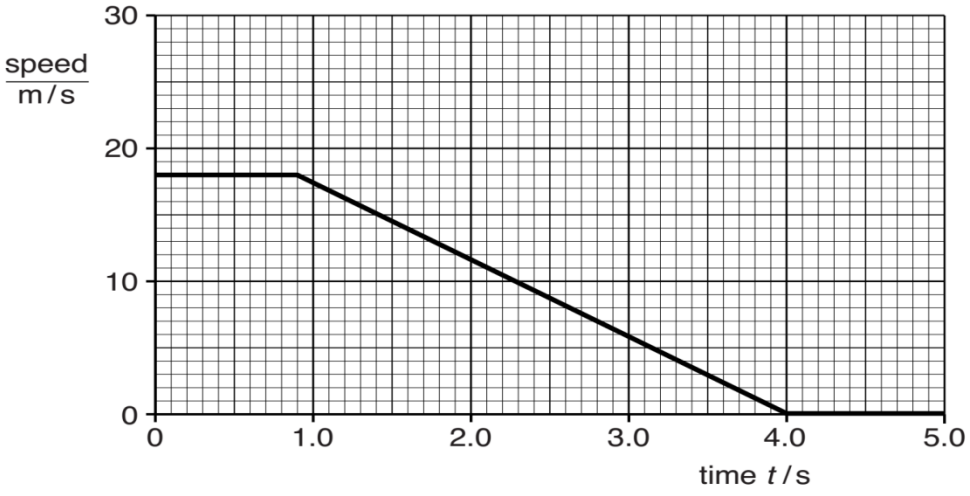


Fig.4.1

(a) The order to stop is given at time $t = 0$ s.
(i) State the speed of the car at $t = 0$ s.

speed = ...[1]
(ii) Suggest why the car continues to travel at this speed for 0.9 s.

.....

.....[1]
(b) Calculate
(i) the deceleration of the car between $t = 0.9$ s and $t = 4.0$ s,

deceleration = ...[2]
(ii) the total distance travelled by the car from $t = 0$ s.

distance = ...[3]
(b) Describe and explain a danger to a driver of not wearing a safety belt during a sudden stop.

.....

.....

.....

.....[2]

5. A comet, travelling in space, enters the atmosphere of a planet.Fig. 5.1 is the speed-time graph for the comet from time t = 0 s.

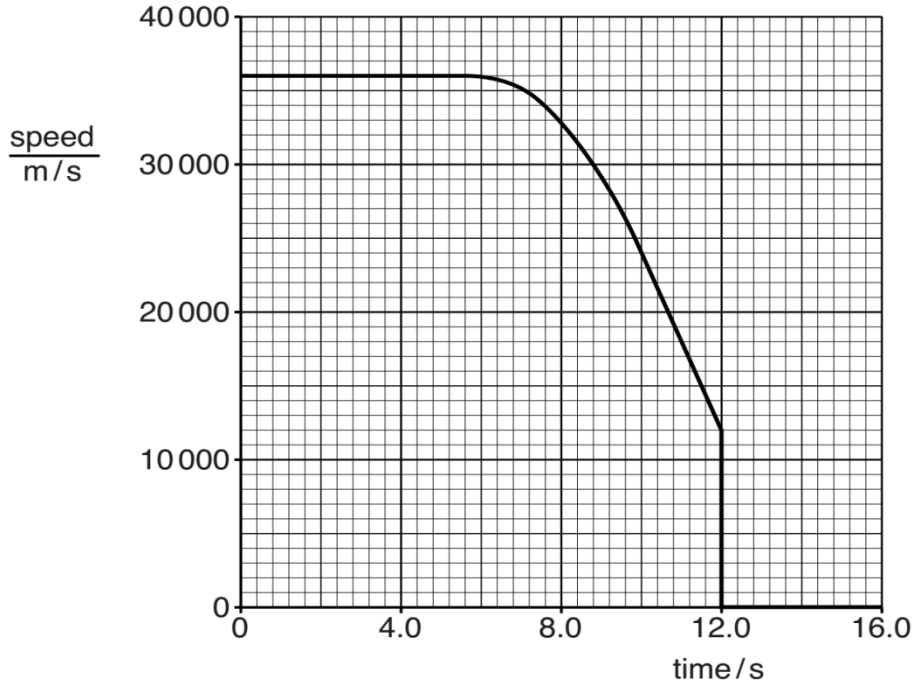


Fig.5.1

(a) (i) During the period t = 0 s to t = 6.0 s, both the speed of the comet and the velocity of the comet remain constant.
State what this suggests about the motion of the comet.

.....

.....[1]

(ii) Determine the distance travelled during the period t = 0 s to t = 6.0 s.

distance = ...[2]

(b) Explain what the graph shows about the motion of the comet during the period t = 6.0 s to t = 10.0 s.

.....

.....

.....[2]

(c) Determine the acceleration of the comet at t = 11.0 s.

acceleration = ...[2]

(d) Suggest what happens to the comet at t = 12.0 s.

.....

.....[1]

6. A student wishes to find the volume of a piece of wood of irregular shape. Her experiment requires the use of a small brass object of mass 200 g.
(a) Calculate the volume of the brass object. The density of brass is 8.4 g / cm^3.

volume = ...[2]

(b) To find the volume of the piece of wood, the student has a measuring cylinder, a supply of water and the brass object in **(a)**. The piece of wood and the brass object are small enough to be placed in the measuring cylinder.

(i) The piece of wood does not sink in water.
Suggest why.

.....[1]

(ii) Describe what the student does to find the volume of the piece of wood, stating the measurements that she makes and any calculations required.

.....

.....

.....

.....

.....

.....

.....

.....

.....[4]

7. Fig. 7.1 shows a block of wood.

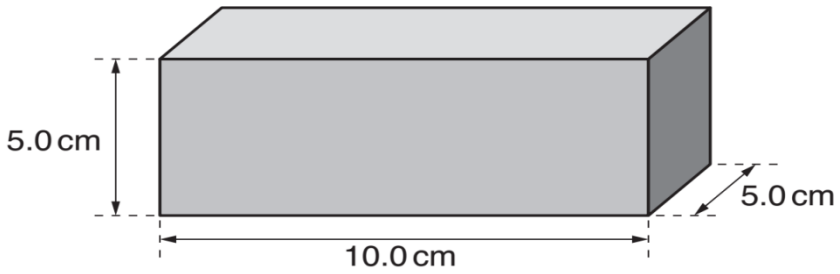


Fig.7.1

(a) A student measures the mass of the block. He then measures the length of each side, as shown in Fig. 7.1.
State the names of the measuring instruments used by the student.

1. .....

2. .....[2]

(b) Calculate the volume of the block of wood.

volume = ... cm^3 [1]

(c) The block of wood shown in Fig. 7.1 has a mass of 200g.
Calculate the density of the wood.

density = ...g/cm^3 [3]

(d) The table shows the densities of five liquids.

liquid	$\frac{\text{density}}{g/cm^3}$	does the block float?
alcohol	0.75	
freon	1.37	
glycerol	1.13	
petrol	0.72	
sea water	1.02	

Indicate the liquids on which the block of wood will float by placing ticks (√) in the final column.[2]

8. Fig. 8.1 is part of the speed-time graph for the vehicle travelling down the hill.

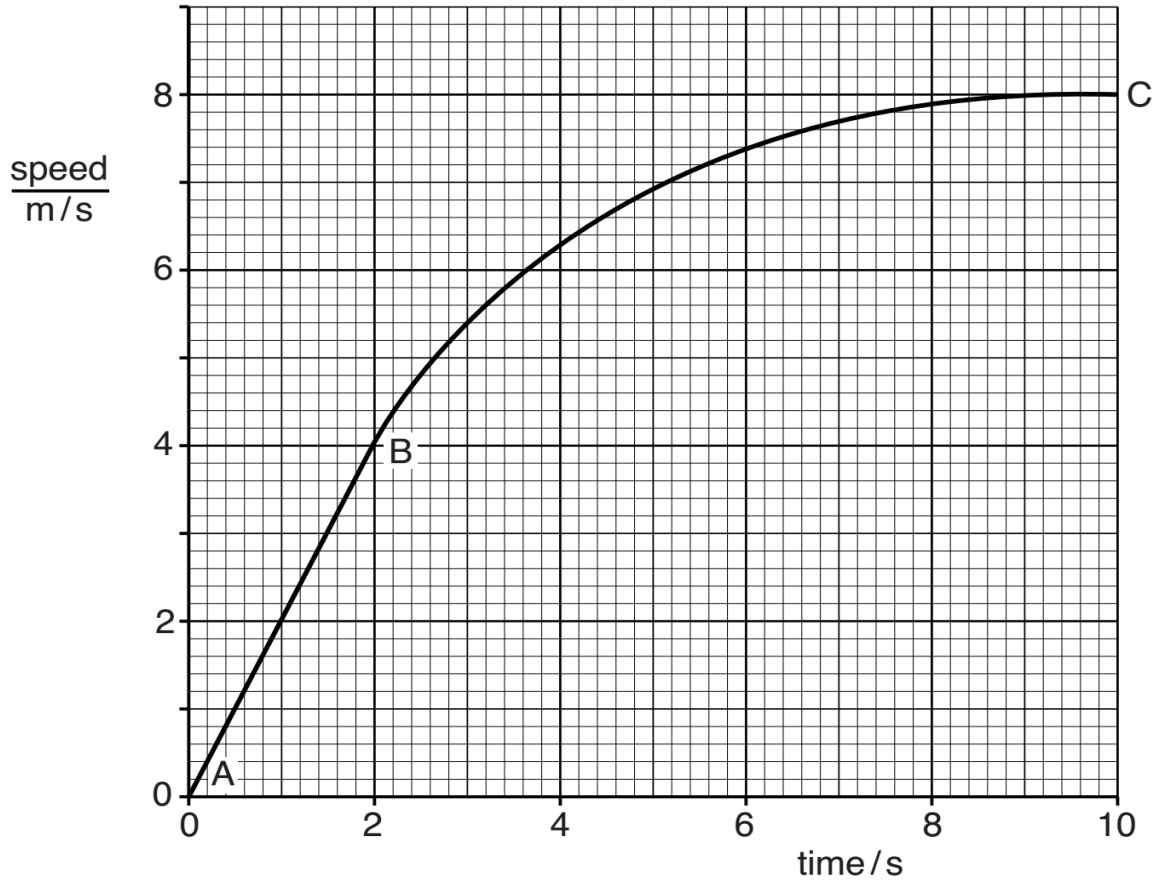


Fig.8.1

(a) (i) State how the graph shows that the acceleration is constant between A and B.

..... [1]

(ii) Calculate the acceleration between A and B.

acceleration = ... [2]

(iii) Describe how the acceleration changes between B and C.

..... [1]

(b) Use Fig. 8.1 to obtain an approximate value for the distance travelled by the vehicle in the first 10 s, as shown on the graph.

distance = ... [4]

9. Fig. 9.1 shows a cylinder made from copper of density 9000kg/m3.

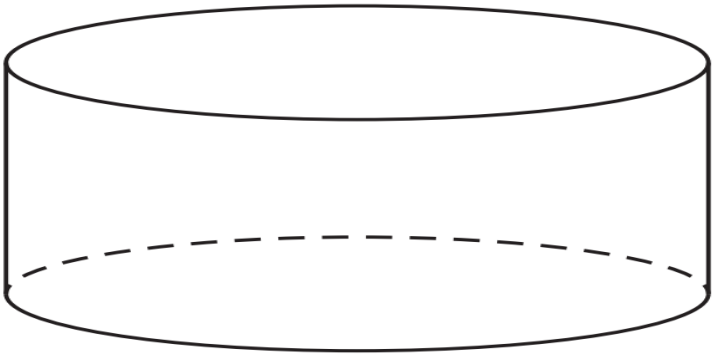


Fig.9.1

The volume of the cylinder is 75cm^3.

(a) Calculate the mass of the cylinder.

mass = ...[2]

(b) The gravitational field strength is 10N/kg.

(i) Calculate the weight of the cylinder.

weight = ...[2]

(ii) State **one** way in which weight differs from mass.

.....

.....[1]

10. Fig 10.1 shows liquid in a cylinder.

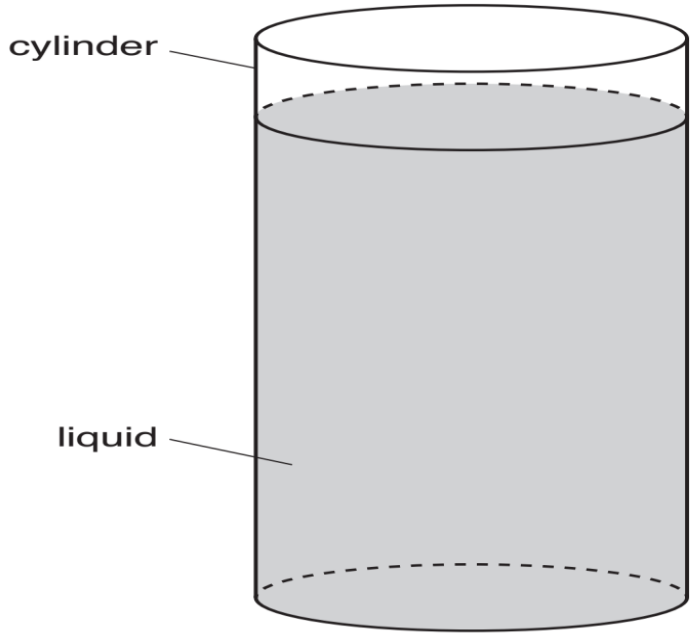


Fig.10.1

Table 10.1 gives some data about the cylinder and the liquid.

Table 10.1

radius of cylinder	3.5 cm
weight of empty cylinder	2.5 N
depth of liquid	12.0 cm
density of liquid	900 kg / m^3

The cylinder containing liquid is placed on a digital balance that displays the mass in kg.
Calculate the reading shown on the balance.

reading .....kg [4]

Combined Science

Topic :Plant nutrition

Link : https://www.youtube.com/watch?v=oT4jvKRYBjA

Watch the given link and make a three page folder to describe the structure and function of a leaf and its various parts. Your folder should include the diagram of cross section of leaf.

1. Fig. 1.1 shows a block of wood.

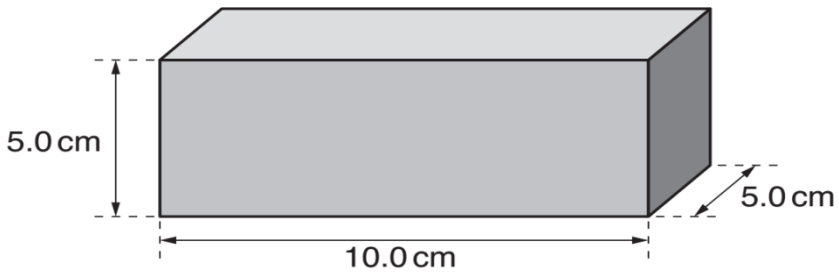


Fig.1.1

(a) A student measures the mass of the block. He then measures the length of each side, as shown in Fig. 1.1.
State the names of the measuring instruments used by the student.

1. .....

2. .....[2]

(b) Calculate the volume of the block of wood.

volume = ... cm^3 [1]

2. **Fig. 2.1 shows part of the speed-time graphs for a cyclist and for arunner.**

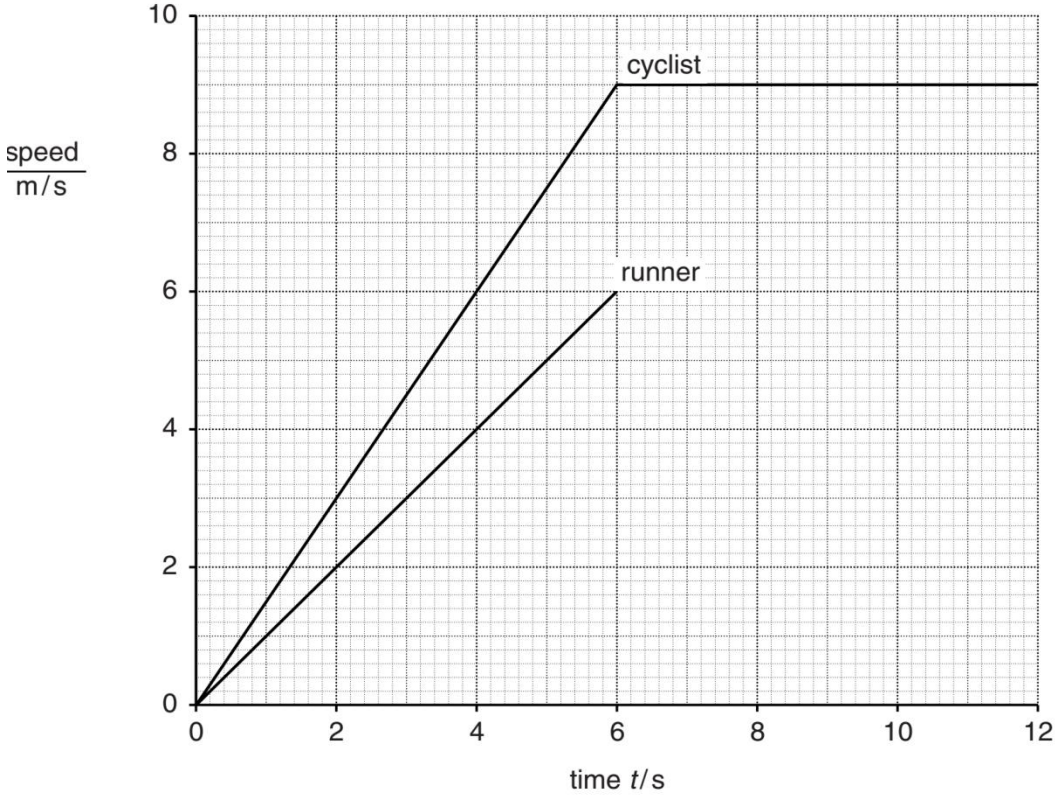


Fig.2.1

(a) Compare the motion of the cyclist and the runner during the first 6 seconds. Explain your answer.

.....

.....

.....

.....[3]

(b) Describe the motion of the cyclist between time t = 6.0 s and time t = 12.0 s.

.....[1]

(c) Calculate the total distance travelled by the cyclist between t = 0 and t = 12.0 s.

distance travelled = ... m [4]

(d) After the first 6.0 seconds, the runner moves at constant speed for 4.0 seconds. He thenslows down uniformly and stops in a further 2.0 seconds.
On Fig. 2.1, complete the graph for the runner's motion. [2]

3. A student is investigating volume and density. The student has a box, as shown in Fig. 3.1, a balance, a rule and some dry sand.
(a) Fig. 3.1 shows the dimensions of the inside of the box.

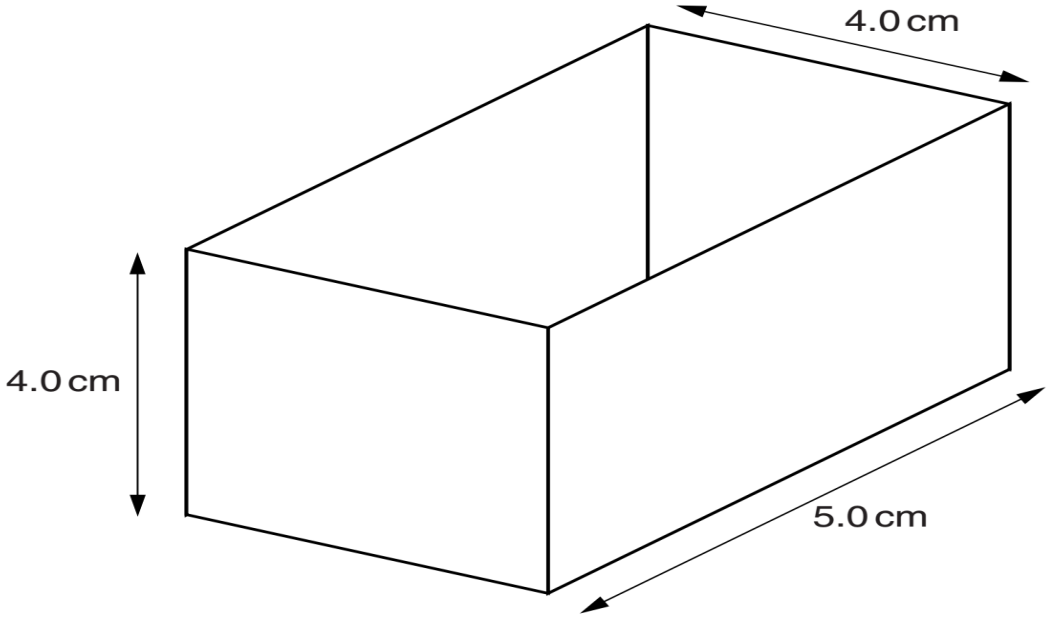


Fig. 1.1 (not to scale)

Calculate the volume of sand needed to fill the box.

volume of sand = ... cm^3 [1]

(b) The student measures the mass of the box when empty and when filled with sand.

quantity	mass/g
mass of box filled with sand	216.0
mass of empty box	40.0

Calculate the mass of the sand in the box, using her results.

mass of sand = ... g [1]

4. **Three students walk together from school to a bridge. The students stand together on the bridge**
for three minutes and then return separately to school.
The distance-time graphs for student A, student B and student C are shown in Fig. 4.1.

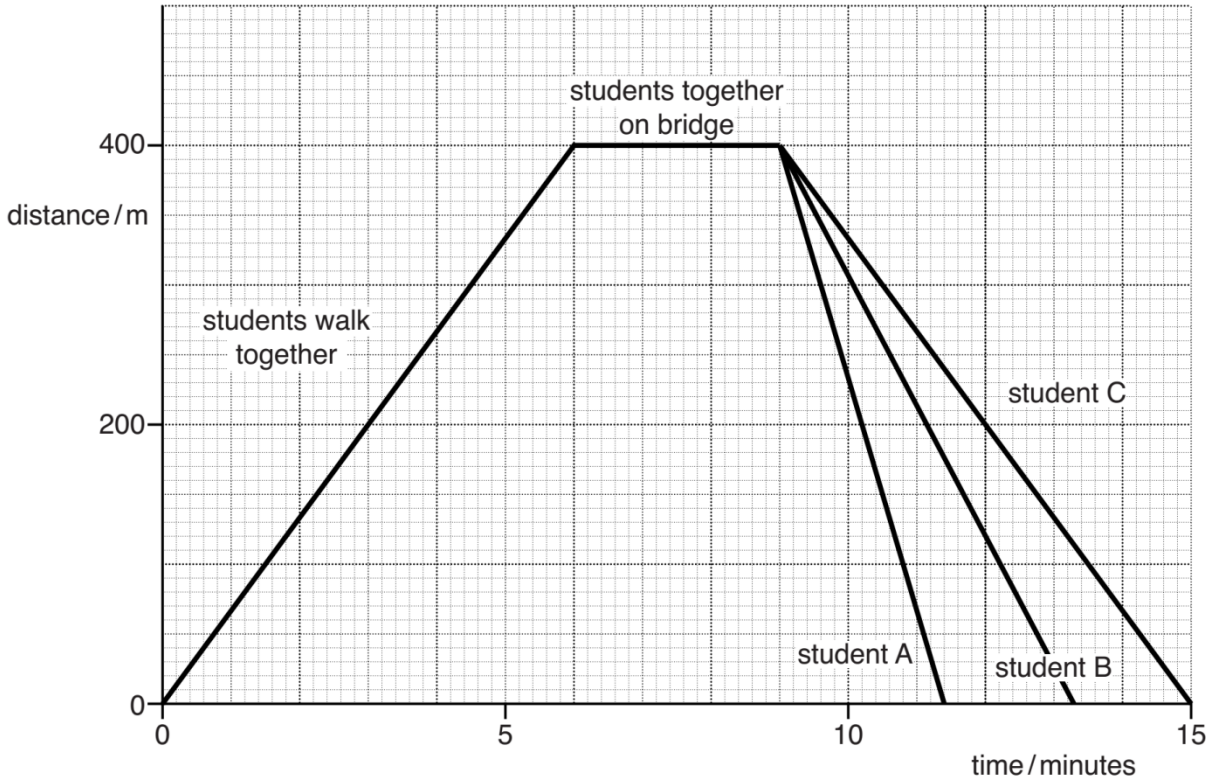


Fig.4.1

(a) (i) Determine the distance from the school to the bridge.

distance = ... m [1]

(ii) Calculate the average speed of the students when they are walking to the bridge. Give your answer in m / s.

average speed = ...m / s [4]

(b) The students return to school at different speeds. One student walks slowly, one student walks quickly and the other student runs.
State which student runs. Explain how this is shown by the graph.
student .....

explanation .....

.....[2]

5. Fig. 5.1 is the top view of a rectangular paddling pool of constant depth. The pool is filled with sea water.

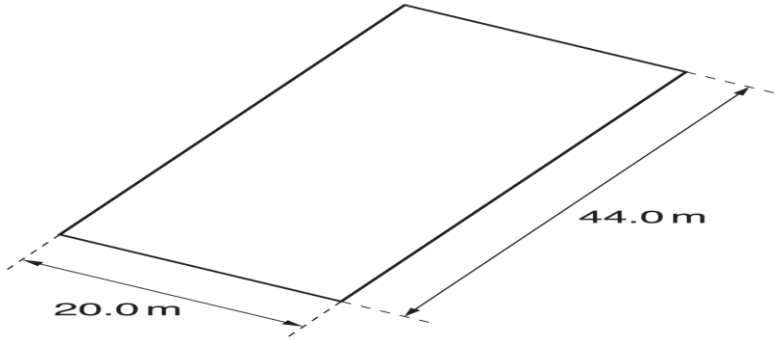


Fig.5.1

(a) The volume of the sea water in the pool is 264m^3.
Calculate the depth of the pool.

depth = ... [3]

6. (a) In many countries, vehicle speeds are measured by speed cameras to see if they areexceeding the speed limit. The camera takes two photographs of a vehicle after it passes thecamera.
Fig. 6.1 shows a moving van about to pass a speed camera.
The van drives over lines painted on the road at 1 metre intervals.

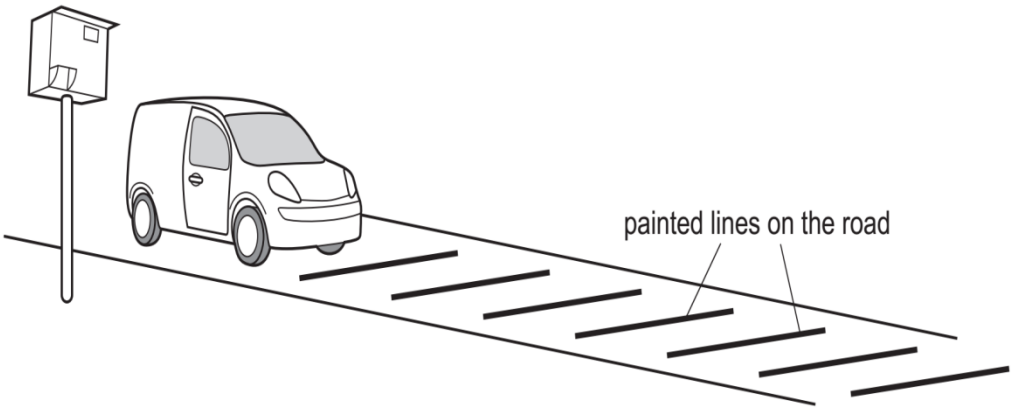


Fig.6.1

Fig. 6.2 shows the position of the van as the camera takes the first photograph. Fig. 6.3 shows the position of the van 0.2 seconds later, as the camera takes the second photograph.

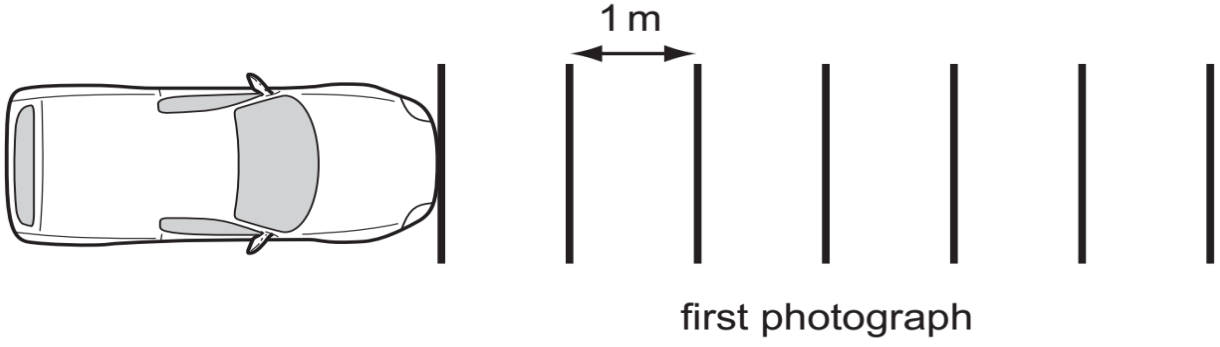


Fig.6.2

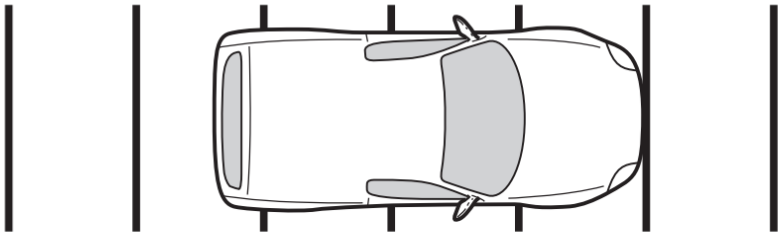


Fig.6.3

(i) Calculate the speed of the van in m/ s.
State the formula that you use and show your working.
formula
working

m / s [2]

(ii) The speed limit on this road is 80km/ h.Show, by calculation, that the van was breaking the speed limit.

speed of the van =……. km/ h [2]

7. **The pole vault is an athletics event in which the athlete attempts to get over a very high bar with**
the help of a long pole.Fig. 7.1 shows an athlete at five stages during a pole vault.

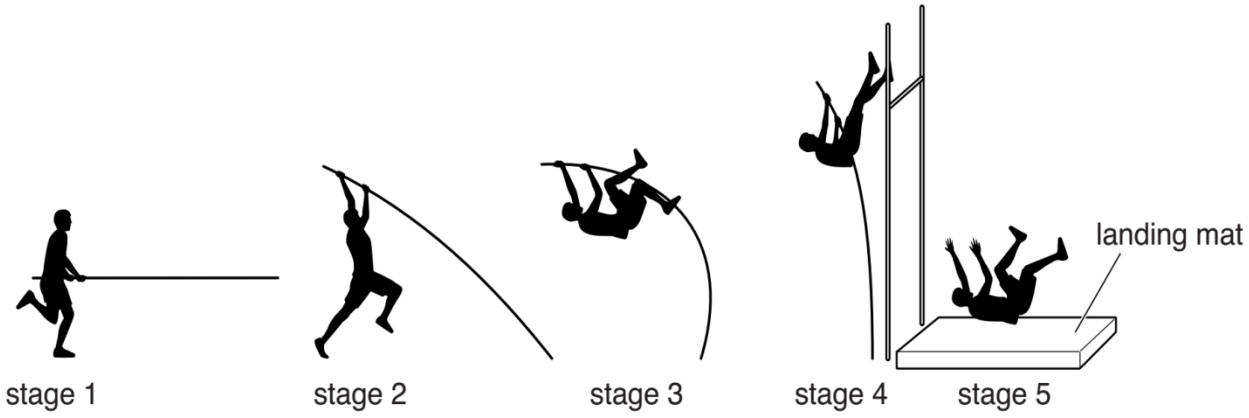


Fig.7.1

The athlete runs with his pole, places the pole in the ground and pushes himself upwards. He rises
to the height of the bar, remains there for a brief moment, then falls over the bar to the landing mat.Fig. 7.2 shows a simplified graph of the athlete's speed during the pole vault.

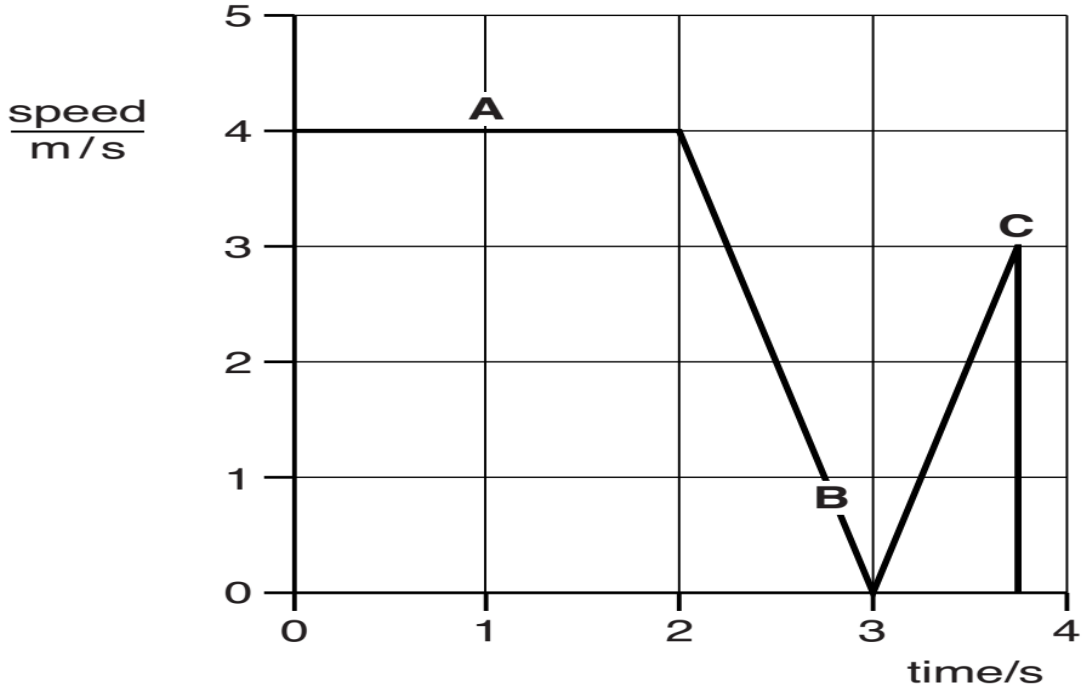


Fig.7.2

(a) The letters **A**, **B** and **C** on the graph in Fig. 3.2 correspond to three of the five stages in the pole vault shown in Fig. 3.1.

(i) Explain why **A** on the graph corresponds to stage 1.

.....

.....[1]

(ii) Explain why **B** on the graph corresponds to stage 4.

.....

.....[1]

(b) Describe the motion of the athlete between points **B** and **C**.

.....[1]

(c) Using the graph in Fig. 7.2, calculate the distance travelled by the athlete between 2 seconds and 3 seconds.

Show your working.

distance = ... m [2]

1 Kinetic theory explains the properties of matter in terms of the arrangement and movement of particles.

(a) Nitrogen is a gas at room temperature. Nitrogen molecules, N_2, are spread far apart and move in a random manner at high speed.

(i) Draw the electronic structure of a nitrogen molecule.
Show only the outer electron shells.

[2]

(ii) Compare the movement and arrangement of the molecules in solid nitrogen to those in nitrogen gas.

.....

.....

.....

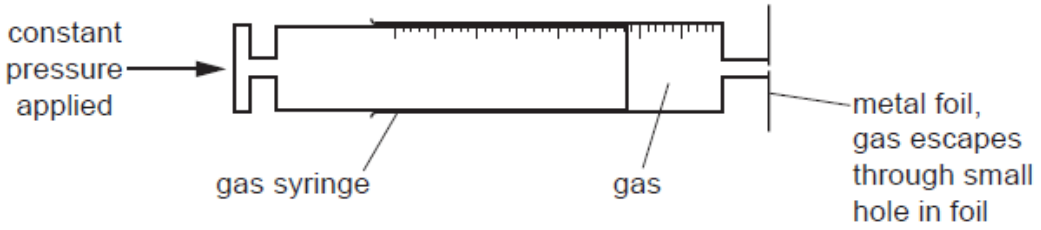
..... [3]

(b) A sealed container contains nitrogen gas. The pressure of the gas is due to the molecules of the gas hitting the walls of the container.
Use the kinetic theory to explain why the pressure inside the container increases when the temperature is increased.

.....

..... [2]

The following apparatus can be used to measure the rate of diffusion of a gas.



The following results were obtained.

gas	temperature /°C	rate of diffusion in cm^3 / min
nitrogen		1.00
chlorine		0.63
nitrogen		1.05

(c) Explain why nitrogen gas diffuses faster than chlorine gas.

.....

..... [2]

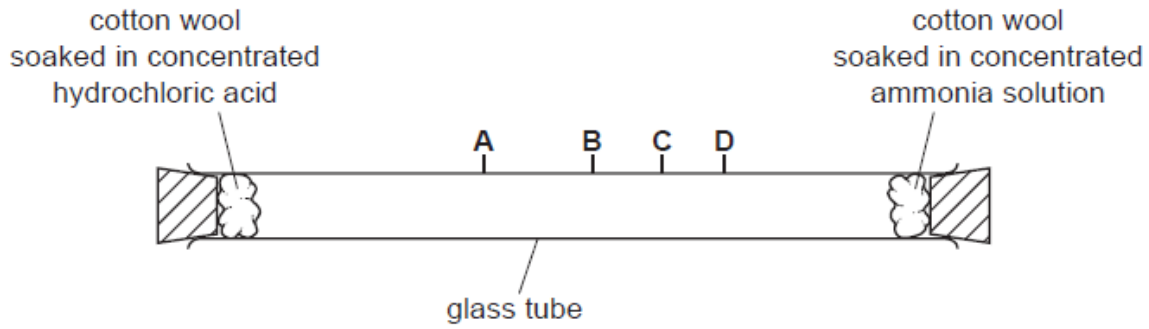
(ii) Explain why the nitrogen gas diffuses faster at the higher temperature.

..... [1]

[Total: 10]

2 Concentrated ammonia solution gives off ammonia gas. Concentrated hydrochloric acid gives off hydrogen chloride gas. Ammonia, NH_3, and hydrogen chloride, HCl, are both colourless gases. Ammonia reacts with hydrogen chloride to make the white solid ammonium chloride.

Apparatus is set up as shown.



After ten minutes a white solid forms in the tube where the gases meet.

(a) (i) Write the chemical equation for the reaction of ammonia with hydrogen chloride.

..... [1]

(ii) Name the process by which the ammonia and hydrogen chloride gases move in the tube.

..... [1]

(iii) At which point, **A**, **B**, **C** or **D**, does the white solid form? Explain why the white solid forms at that point.

the solid forms at .....

explanation .....

.....

[3]

(iv) The experiment was repeated at a higher temperature.

Predict how the results of the experiment would be different. Explain your answer.

.....

.....

..... [3]

(b) Some of the white solid is removed from the tube and dissolved in water.

Describe how the white solid could be tested to show it contains,

(i) ammonium ions,

test .....

.....

result .....

.....

[3]

(ii) chloride ions.

test .....

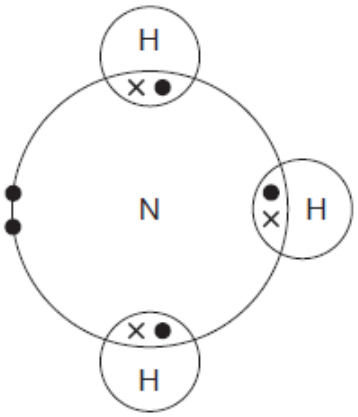
.....

result .....

.....

[3]

(c) The diagram shows the electron arrangement in a molecule of ammonia, showing only outer shell electrons.

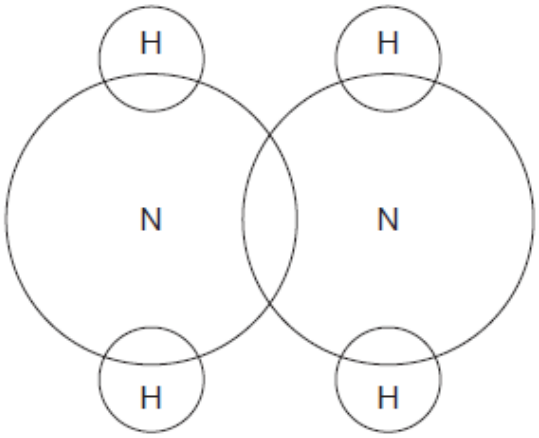


(i) State the type of bonding in ammonia.

..... [1]

(ii) Hydrazine, N_2H_4, is another compound of nitrogen and hydrogen.

Complete the diagram to show the electron arrangement in a molecule of hydrazine, showing only outer shell electrons.



[3]

) Nylon and proteins are both polymers containing nitrogen.

(i) Name the linkages found in the polymers of nylon and protein.

..... [1]

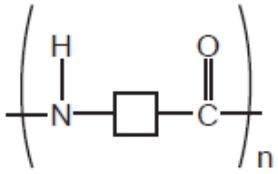
(ii) Describe **one** difference in the structures of nylon and protein.

..... [1]

(iii) What is the general name given to the products of hydrolysis of proteins?

..... [1]

(e) Suggest the structure of the monomer used to make the polymer shown.

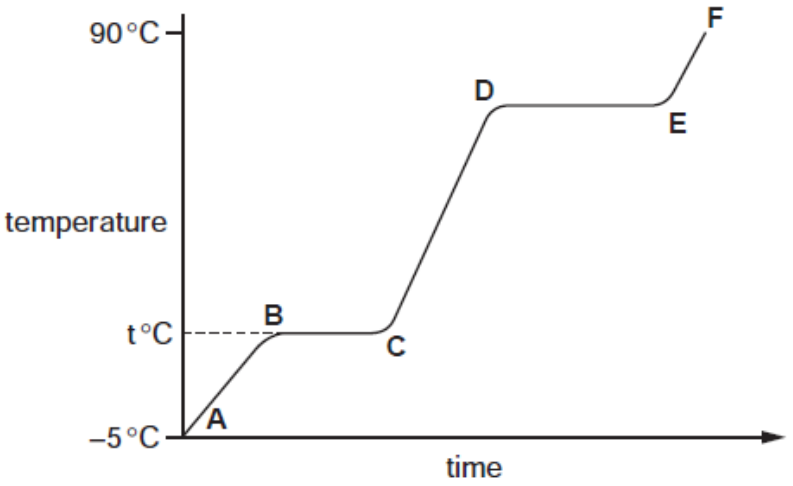


[1]

[Total: 22]

3 Compound X is a colourless liquid at room temperature.

(a) A sample of pure X was slowly heated from –5.0 °C, which is below its melting point, to 90 °C, which is above its boiling point. Its temperature is measured every minute and the results are represented on the graph.



(i) Complete the equation for the equilibrium present in the region **BC**.

X(s) ⇌ ..... [1]

(ii) What is the significance of temperature t °C?

..... [1]

(iii) What is the physical state of compound X in the region **EF**?

..... [1]

(iv) What would be the difference in the region **BC** if an impure sample of X had been used?

..... [1]

(b) Compound X is a hydrocarbon. It contains 85.7% of carbon. The mass of one mole of X is 84 g.

(i) What is the percentage of hydrogen in the compound ?

..... [1]

(ii) Calculate the empirical formula of X. Show your working.

empirical formula = ... [3]

(iii) What is the molecular formula of compound X?

..... [1]

4 **(a)** Different gases diffuse at different speeds.

(i) What is meant by the term *diffusion*?

.....

..... [1]

(ii) What property of a gas molecule affects the speed at which it diffuses?

..... [1]

(b) Helium is a gas used to fill balloons. It is present in the air in very small quantities. Diffusion can be used to separate it from the air.

Air at 1000 °C is on one side of a porous barrier. The air which passes through the barrier has a larger amount of helium in it.

(i) Why does the air on the other side of the barrier contain more helium?

..... [1]

(ii) Why is it an advantage to have the air at a high temperature?

.....

..... [1]

(c) Most helium is obtained from natural gas found in the USA. Natural gas contains methane and 7% helium. One possible way to obtain the helium would be to burn the methane.

(i) Write an equation for the complete combustion of methane.

..... [1]

(ii) Suggest why this would **not** be a suitable method to obtain the helium.

.....

..... [1]

(iii) Suggest another method, other than diffusion, by which helium could be separated from the mixture of gases in natural gas.

..... [1]

[Total: 7]

5 Explain each of the following in terms of the kinetic particle theory.

(a) The rate of most reactions increases at higher temperatures.

.....

.....

.....

..... [3]

(b) A liquid has a fixed volume but takes up the shape of the container. A gas takes up the shape of the container but it does not have a fixed volume.

.....

.....

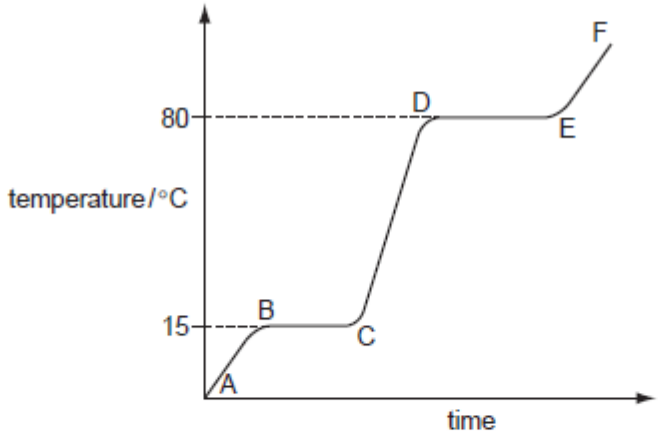
.....

.....

..... [3]

[Total: 6]

6 The diagram shows a heating curve for a sample of compound X.



(a) Is X a solid, a liquid or a gas at room temperature, 20 °C?

..... [1]

(b) Write an equation for the equilibrium which exists in region BC.

..... [2]

(c) Name the change of state which occurs in region DE.

..... [1]

(d) Explain how the curve shows that a pure sample of compound X was used.

.....

..... [2]

[Total: 6]

BUSINESS STUDIES

Answer the following questions

Each question contains 2 marks.

1. What is meant by the term Entrepreneur.
2. Identify and explain two reasons why a business owner might want to expand the business.
3. Outline two benefit to business a of vertically integrated towards another business.
4. Explain two disadvantages of a partnership.
5. State three possible drawbacks to converting a private limited company into a public limited company.
6. State two reasons why do businesses might decide to set up a joint venture.
7. Explain what is meant by franchise.
8. Identify and explain two possible benefits to a Society of having the main TV service operated as Public Corporation.
9. Sometimes there is a conflict between the management of a public limited company and its owners over how much profit should be earned. Explain the causes.
10. Explain what is meant by this statement identify and explain two benefits of a sole trader to convert into a private limited company

ACCOUNTING

1 Imagine that you have gone to the Mall or a shopping complex in a week for atleast four time. Your parents have given you a considerate amount of sum to spend in the Mall during this week(You can take money more number of time depending on your expense and balance).

Create a cash book to record the all the inflow and out flow of money in this particular week. find the balance of cash remaining with you after every to

Also figure out the following:

On what was the maximum money spent during the week?

On what was the minimum money spent during the week?

Did you fall short of money at any point of time If yes what did you do?

There should be minimum 10-12 transactions of money spent.

2 Based on the data below:

1. Prepare a balance sheet in the books of XYZ and Find out the capital balance as on 28th February, 2018

	Details	Amount $ Dr	Amount $ Cr
1	Cash in hand	25000	
2	Cash at bank		55000
3	Capital		?
	Trade receivables		
4	Kirti	4500	
5	Gaurav	2500	
6	Machinery	20000	
	Trade payables		
7	Anand		35000
8	Furniture	16000	
9	Air conditioner	3000	
10	Desk top computer	2000	
11	Long term loan	1000	

MATHEMATICS

1. Find the L.C.M of 72, 108 and 2100.

2. Arrange the fractions $\frac{17}{18}, \frac{31}{36}, \frac{43}{45}, \frac{59}{60}$ in ascending order.

3. Find the H.C.F of 0.54, 1.8 and 7.2 .

4. Find the cube root of 2744.

5. If y=5, then what is the value of $10y\sqrt{y^3 - y^2}$?

6. If $\frac{a}{b} = \frac{4}{3}$, then find the value of $\frac{6a+4b}{6a-4b}$.

7. Find the length of each side of a cube if its volume is 512 cm3.

8. Find the side of a square whose area is equal to the area of a rectangle with sides 6.4m and 2.5m.

9. Evaluate: $\sqrt[3]{27} + \sqrt[3]{0.008} + \sqrt[3]{0.064}$.

10. A three digit perfect square is such that if it is viewed upside down, the number seen is also a perfect square. What is the number?

11. Using prime factorisation, find which of the following are perfect squares.

(a)484 (b) 11250 (c) 841 (d) 729

12. Using prime factorisation, find which of the following are perfect cubes.

(a)128 (b) 343 (c) 729 (d) 1331

13. Use the number ,2,3,4,5,6,7,8,9 once each and in their natural order to obtain an answer of 100. you may use only the operations $+, -, \times, \div$.

14. Write down the first five terms of the sequence whose nth term is

(i)n+2 (ii) 5n (iii) 10n-1 (iv) $\frac{1}{n^2}$ (v) $\frac{1}{n}$ (vi) 100-3n.

15. Write the following numbers correct up to one place of decimal:

(i) 5.71 (ii) 0.7614 (iii) 11.241 (iv) 0.0614 (v) 0.0081 (vi) 11.12

16. A card measuring 11.5 cm long (to the nearest 0.1 cm) is to be posted in an envelope which is 12 cm long. Can you guarantee that the card will fit inside the envelope? Explain the answer.

17. Rahul walks 12m north from his house and turns west to walk 35m to reach his friend's house. While returning, he walks diagonally from his friend's house to reach back to his house. What distance did he walk while returning?

ECONOMICS

https://drive.google.com/open?id=16z-xyhccpEnBX_G7-_d3mZlP117DfREu