Royal College - Colombo 07

Grade 10 – First Term Test – July 2023

34

Duration : 1 hour

Science - 1

Name : ..... Class : ..... Index no : .....

- Answer all questions.
- In each of the questions 1 to 40; pick one of the alternatives 1,2,3,4 which you consider as correct or most appropriate.
- Mark a (×) on the number corresponding to your choice in the answer sheet provided.

(01) Type of carbohydrate stored in plants is,
(1) Cellulose (2) Starch (3) Glycogen (4) Sucrose

(2) Standard international unit of measuring velocity is,
(1) ms^{-2} (2) ms^{-1} (3) m^2s^{-1} (4) Ms^{-1}

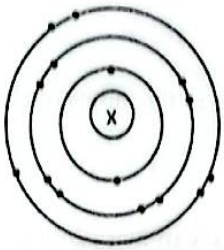
(3) The element which is not present in all amino acids is,
(1) Nitrogen (2) Phosphorous. (3) Sulphur (4) Hydrogen

(4) A food which is rich in lipids is,
(1) Dhal (2) Gingelly (3) Bread fruit (4) Guava

(5) An inorganic component present in living bodies is,
(1) hormones (2) enzymes (3) carbondioxide (4) amino acids

(6) Which of the following Vitamin deficiency leads to anaemia ?
(1) Vitamin A (2) Vitamin B (3) Vitamin C (4) Vitamin D

(7) Select the correct answer that shows the period and group to which X belongs.



(1) Period 2, Group V
(2) Period III, Group IV
(3) Period 3, Group V
(4) Period 4, Group II

(8) Select the answer with a vector quantity and a scalar quantity respectively.
(1) Velocity, distance (2) Velocity, displacement
(3) Distance, Acceleration (4) Distance, speed

(9) A toy car travelled in a uniform acceleration of $6ms^{-2}$ due to the application of an unbalanced force of 3N. What would be the mass of the toy car ?,
(1) 2 kg (2) 500 g (3) 750 g (4) 1 kg

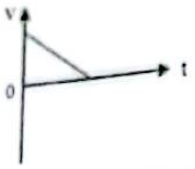
- **Questions 10 & 11 are based on the following incident.**

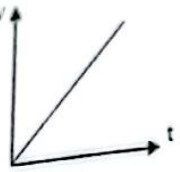
A fruit got detached from a tree and fell on the grass after 3 S. g = $10ms^{-2}$

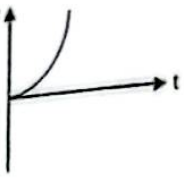
(10) What is the velocity at which it reached the ground ?
(1) $30ms^{-1}$ (2) $3ms^{-1}$ (3) $0.3ms^{-1}$ (4) $300ms^{-1}$

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(11) Select the velocity time graph for the above motion.

(1) 

(2) 

(3) 

(4) 

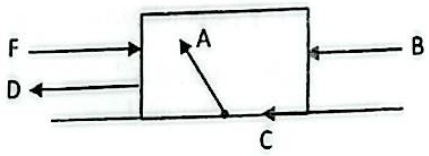
(12) Element M forms the ion M^{2+} which has the electronic configuration 2,8,8. What number of protons present in element M ?
(1) 18 (2) 19 (3) 20 (4) 17

(13) Select the incorrect statement about enzymes,
(1) They act on any substrate.
(2) They are made by proteins.
(3) They are sensitive to temperature.
(4) They increase the rate of bio-chemical reactio

(14) Select the answer with a metal, non metal and a metalloid respectively.
(1) Calcium, Carbon, Aluminum
(2) Sodium, Lithium, Silicon
(3) Carbon, Silicon, Boron
(4) Magnesium, Sulphur, Boron

(15) Main function of a mitochondrion is,
(1) Synthesis of energy.
(2) Controlling cellular activities.
(3) Production of proteins.
(4) Transportation of substances.

(16) An object on the ground is applied with a force of F. What indicates the correct friction force on

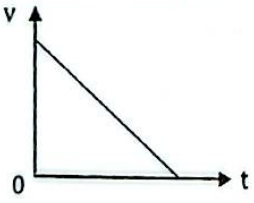


1) A (2) B (3) C (4) D

(17) The chemical formula of the nitrate of element X is XNO_3. What is the formulas of the carbonate by the element X ?
(1) X_2CO_3 (2) XCO_3 (3) $X(CO_3)_2$ (4) XSO_4

(18) Momentum of a vehicle of mass 250kg is 1250 $kgms^{-1}$. What would be the velocity of the vehicl
(1) 5.5 ms^{-1} (2) 3ms^{-1} (3) 5 ms^{-1} (4) 2.5 ms^{-1}

(19) The velocity – time graph is regarding a linear motion.



The correct incident related to this graph is,
1) Motion of a fruit detached from a tree.
2) Upward motion of a ball thrown vertically.
3) Motion of a vehicle in a uniform velocity.
4) Motion of a trolley in a uniform accelerator

(20) Which of the following is a deficiency symptom of element Potassium ?
(1) retardation of growth.
(2) chlorosis in tender leaves.
(3) death of leaf tips.
(4) yellow & brown patches in leaves.

(22) A metal burns with a bright white flame and white powder was left. Colour obtained when the above white powder is dissolved in water and few drops of phelolpthaline was added is,
(1) Blue (2) Pink (3) Red (4) Yellow

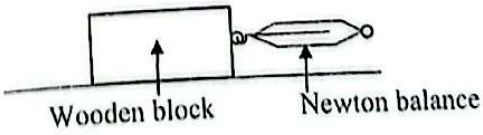
(23) Which of the following is a method of reducing friction ?
(1) increasing the roughness of contact surface.
(2) having grooves on tyres.
(3) applying lubricants between contact surfaces.
(4) applying sand on a muddy surface.

(24) Consider the following statements.
A) Meiosis takes place during the formation of gametes.
B) Meiosis helps to maintain the number of chromosomes of a species constant.
C) Mitosis leads to the evolutionary process since variations occur in chromosomes.

The true statements are,
(1) Only A & B (2) Only A & C (3) Only B & C (4) A, B, C all

(24) Which of the following ion has the same number of electrons as Mg^{2+} ?
(1) K^+ (2) Ca^{2+} (3) Be^{2+} (4) Na^+

(25) A block of wood with a mass of 3kg is pulled along a horizontal surface. The newton balance reading was 12N when it was about to move & it continued the motion when the Newton balance reading was maintained at 11 N.



What is the limiting frictional force ?
(1) 11 N (2) 12 N (3) 11.5 N (4) 12.5 N

(26) The mass of a man on earth is 54kg. Select the mass and weight of the man on moon. ($g = 10ms^{-2}$)
(1) 90 kg, 540 N (2) 90 kg, 54 N
(3) 54 kg, 90 N (4) 54 kg, 540 N

(27) Select the set of structures / organelles that can be seen only in plant calls,
(1) Chloroplast, Central vacuole, Mitochondrion
(2) Chloroplast, Endoplasmic Reticulum, Cell wall
(3) Chloroplast, Cell wall, Nucleus
(4) Chloroplast, Central vacuole, cell wall

(28) The element having the highest first ionization energy is,
(1) He (2) Ne (3) Ar (4) F

(29) Water soluble and fat soluble vitamin respectively are,
(1) B & C (2) B & A (3) A & C (4) A & E

- **Questions 30 & 31 are based on the motion of a trolley in the laboratory;**
  The trolley was moving in a uniform velocity of $4ms^{-1}$ for 3s and due to the application of an
  force it got accelerated within 4s and got a velocity of $8ms^{-1}$.

(30) Which Newton's Law is applied in the last 4s ?
(1) First Law (2) Second Low (3) Third Low (4) None of them

(31) Acceleration within last 4s is,
(1) $4ms^{-2}$ (2) $1ms^{-2}$ (3) $2ms^{-2}$ (4) $3ms^{-2}$

(32) The factor / factors affecting limiting frictional force is / are,
A) Surface area of the contacting surface.
B) Nature of the contracting surface.
C) Perpendicular reaction.
(1) A & B (2) B & C (3) A & C (4) All A, B, C

(33) Electronic configuration of element X is 2, 8, 2
Electronic configuration of element Y is 2, 8, 7
What is the chemical formula of the compound formed in between X & Y ?
(1) XY (2) X_2Y (3) XY_2 (4) X_2Y_2

(34) An instance where Newton's first law of motion is applied is,
(1) launching a rocket.
(2) Passengers falling backwards when a vehicle suddenly starts to move.
(3) Walking on a road.
(4) Motion of a vehicle with acceleration.

(35) The oxide with the highest basicity is,
(1) Na_2O (2) SO_2 (3) Cl_2O_7 (4) Al_2O_3

(36) What is not a significance of lipids ?
(1) As an energy source. (2) For the conservation of water.
(3) As enzyme. (4) Acting as hormones.

(37) The planetary model of the atom was presented by,
(1) James Chadwick (2) Dimitri Mendeleeff
(3) Niels Bohr (4) Ernest Rutherford

(38) Standard representation of Tritium is,
(1) ${}_1^1H$ (2) ${}_1^2H$ (3) ${}_1^3H$ (4) ${}_1^0H$

(39) Production of energy of a cell is carried out by,
(1) Endoplasmic reticulum (2) Mitochondria
(3) Ribosome (4) Golgi complex

(40) Characteristic feature of meiosis is,
(1) Having one stage of cell division. (2) Takes place only in diploid cells.
(3) Daughter cells are similar to mother cell. (4) Changes in chromosomes are rare.

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Grade 10 – First Term Test – July 2023

Duration : 3 hours

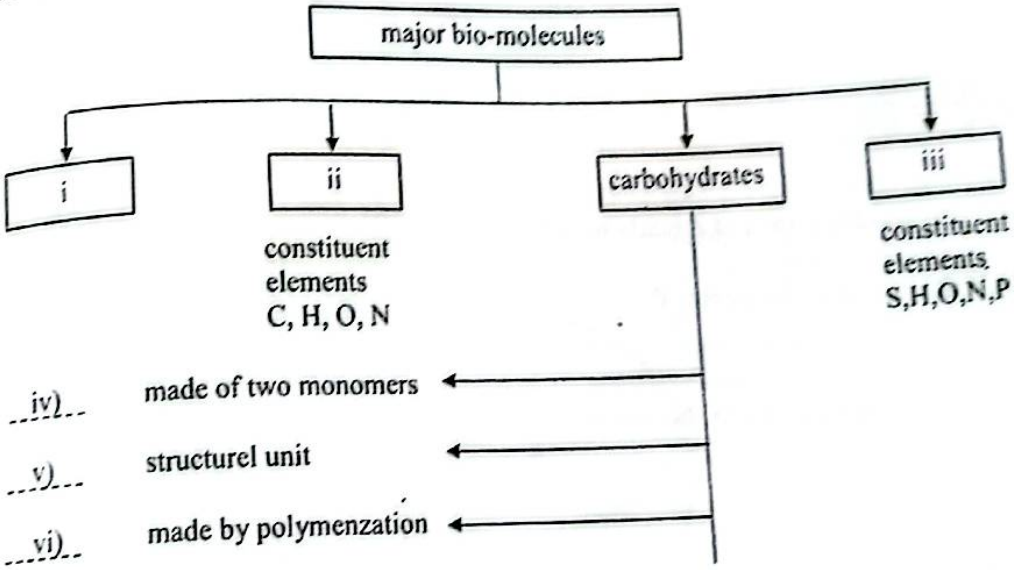
Science - II

Name: ..... Class: ..... Index no: - .....

Answer all (four) questions in part A in the space provided.
Answer three questions in part B.
After answering connect part A and the answer script of part B together and hand over.

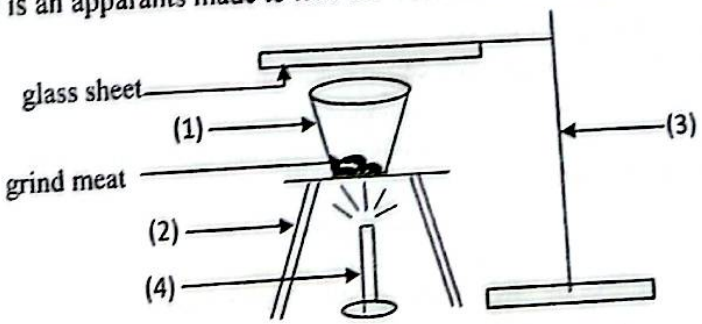
Part - A

1) A) Complete the following concept map based on major bio molecules.



(i) ..... (ii) .....
(iii) ..... (iv) .....
(v) ..... (vi) .....

B) Given below is an apparants made to find the water as a consfituent in food.



(i) Identify 1 to 4 parts of the set up and name them.
(1) ..... (2) .....
(2) ..... (4) .....

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ii) What is the function of the glass sheet. .....

iii) What is the chemical used to identification of water. .....

iv) Write the colour change of above chemical with water .....

v) Name bio molecule contains in meat. .....

C. Properties of X, Y and Z elements in third period of periodic table are given below.

Element	density	colour	nature of ...
X	2 gcm^{-3}	yellow	Acidic
Y	2.7 gcm^{-3}	dull gray	Amphoter
Z	0.9 gcm^{-3}	silvery white	Basic

i) What are symbols of X, Y and Z elements.

X .....

Y .....

Z .....

ii) Write an observation of Z reacts with cold water. .....

iii) Write two uses of elements Z. .....

.....

iv) Write the two forms of x that can be found in nature.

1) .....

2) .....

(02) A. Cell is the structural and functional unit of life.

i) What is meant by a typical cell .....

.....

ii) Mention the organelle that perform given functions.

a) Control all the living activities .....

b) Transportation of proteins in the cell .....

c) Maintain the turgidity of the cell .....

iii) Write two differences between plant cell and animal cell.

1) .....

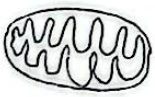
2) .....

iv) Write two facts in cell theory.

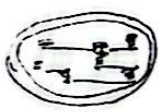
1) .....

2) .....

v) Given below are some organelles found in cells. Name these organelles.



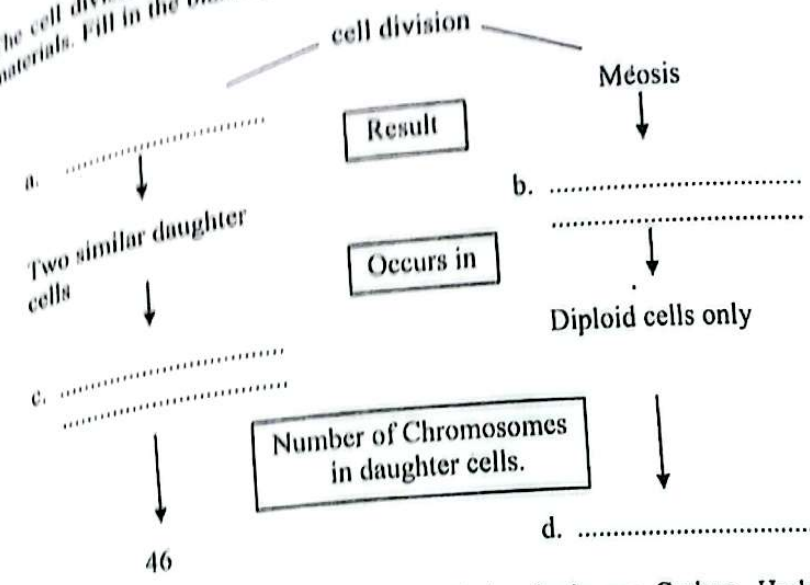




a) ..... b) ..... c) .....

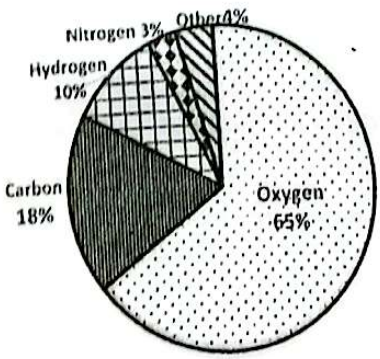
(1 mark)

v) The cell division is the process by which new cells are formed by the division of cellular materials. Fill in the blanks given in the following concept map.

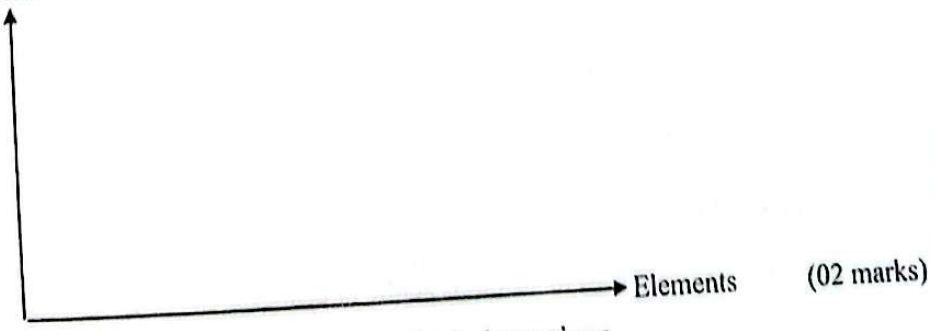


(04 marks)

B) The most common four elements in the living body are Carbon, Hydrogen, Oxygen and Nitrogen. Pie chart shows the percentages of main elements in the human body.



i) Sketch the bar graph to represent the above information.



(02 marks)

ii) Write two other elements essential for the survival of organisms.

..... (01 mark)

(15 marks)

03. A) Part of the periodic table is given below. Write the answer for given questions using the

H							
			C			F	
Na	Mg	Al					Ar
K							

(i) Mark the group numbers in the above periodic table.

(ii) Write the electronic configuration of a periodic 4 element in the above. (1

..... (1

(iii) What are the metals in the above table ..... (1

(iv) Write the chemical formula of the compound formed by Aluminum and Chlorine (1

..... (1

(v) Which element has the highest first ionization energy.

..... (1

(vi) Write the word chemical equation for the reaction between sodium with cold water.

..... (1

(vii) Write two observations that can be made when sodium reacts with water.

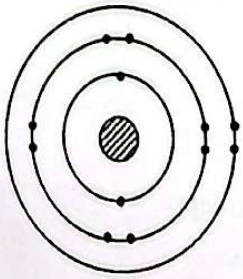
1) .....

2) ..... (1

(viii) What is the element with crystalline forms as well as amorphous forms. (2

..... (1

B) Atomic structure of a particular atom is given below.



i) Name the above atom .....

ii) How do you identify the position of this atom in the periodic table. (1

a) Period .....

b) Group .....

iii) What is the valancy of above atom ? (2

.....

iv) Does the oxide of this atom is acidic or basic ? (1

.....

v) Explain the reason for above answer. (1

.....

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(iii) Name the scientists who have contributed on the planetary model of the atom. (2 marks)
(iv) Why do we consider atoms are electrically neutral particles ? (1 mark)
(v) A certain atom has 13 protons and 14 neutrons.
a) What is the atomic number ? (1 mark)
b) Calculate the mass number ? (1 mark)
c) Write down the electronic configuration. (1 mark)
(vi) What is the type of sub atomic particle that is different among isotopes ? (1 mark)

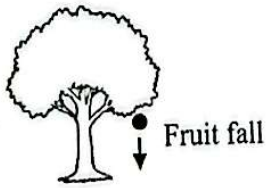
B) There are patterns among elements in the periodic table.
(i) What do you mean by the electro-negativity ? (2 marks)
(ii) In a period of element, element in which group has the maximum electro-negativity ? (1 mark)
(iii) Electronegtivity value VIII the group elements. Explain why ? (1 mark)

C) Valency is an important concept in chemical bonding.
(i) Write down the chemical formula of potassium oxide. (1 mark)
(ii) Mention whether potassium oxide is acidic or alkali ? (1 mark)
(iii) part of the periodic table is given below.

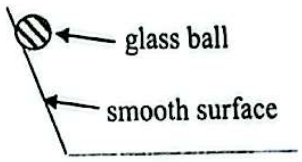
	I	II	III	IV	V	VI
1	A					
2						
3				X		

a) Name the period and group to which X belongs. (2 marks)
b) Write on use of element X to man. (1 mark)
c) What change do you identify in oxides when moving from left to right along a period of elements ? (1 mark)
(20 marks)

07. A) Motion is the change in the position of an object with time. Force is an external influence to move the objects. Consider the motions of the following objects.



a)

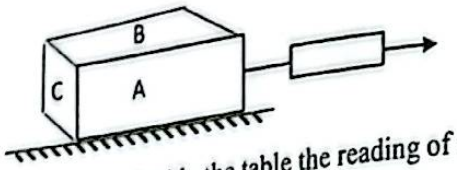


b)

(i) What is the type of motion given in a) and b) instances ? (1 mark)
(ii) Draw a v – t graph for the fruit fall. (v : ms^{-1} is maximum velocity, T = time taken for motion) (2 marks)
(iii) Draw a s – t graph for the motion of the glass ball along the smooth inclined plane. (2 marks)
(iv) What do you mean by a smooth surface ? (1 mark)
(v) After the motion along the smooth inclined plane, if the horizontal surface is smooth in which way the object moves along it ? (1 mark)
(vi) Which law in physics explains the above motion along the horizontal surface ? (2 marks)
(vii) If the fruit took 2 seconds to reach the ground level, find the maximum velocity ? (1 mark)

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B) A group of grade 10 students conducted the following experiments to show the relationship surface area and limiting frictional force.

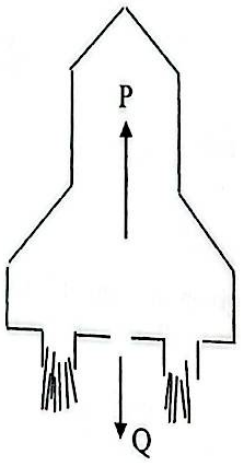


(i) When side A is contacted with the table the reading of the spring balance was 2N. What readings when side B is contacted ?
(ii) Write two factors to be kept constant in the above activity.
(iii) Write down one instance in the day to day life where friction is,
a) advantageous -
b) disadvantageous -

C) Mass of a motor car is 1200 kg and the thrust applied by the engine is 2400N.
(i) Calculate the weight of the car.
(ii) Find the acceleration of the car.
(iii) Calculate the momentum of it when it travels at a velocity of 5 ms^{-1}.

08. A) A group of students needed to observe plant cells using a compound microscope.
1) Name a suitable tissue to observe plant cells.
2) Write the method in 3 steps that these students should follow when preparing a plant specimen for this purpose.
3) Name two organelles that these students can observe in.
4) Name the organelle which is responsible for protein synthesis.
5) Name a nucleic acid that is present inside the above organelle.
6) Name the elements that are contributed to form above nucleic acid.
7) Name the cell division method that the cells in above mentioned tissue in question (1) has undergone.
8) Explain how the above cell division method helps to maintain a constant number of chromosomes in cells of an organism.

B) A diagram of a rocket moving up wards is given in the diagram.



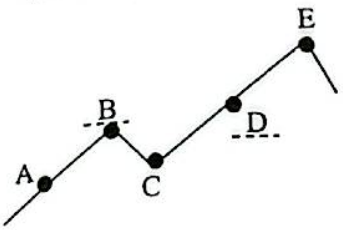
1) Name the Newton's law which can be used to explain the upward motion of the above
2) Name the two forces P & Q on the rocket according to the above law.
3) Explain how do above mentioned forces created on the rocket.

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4) Write another practical application of the above law. (1 mark)
5) If the mass of above rocket is 5000kg, and the acceleration is $2ms^2$ calculate the unbalanced force acting on the rocket. (2 marks)
6) What is the weight of the above rocket ? (1 mark)
7) Calculate the value of the force P on the rocket ? (2 marks)

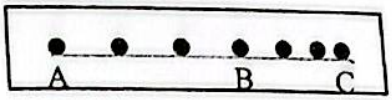
(20 marks)

09. A) A yellow colored solid chemical substance is burnt in air with a blue flame.
1) What is the above chemical substance ? (1 mark)
2) Name the gas emmited during the combustion of the above substance. (1 mark)
3) State whether the above gas is acidic or basic ? (1 mark)
4) Name a practical useage of the above chemical substance. (1 mark)
5) Part of a graph which represents the variation of first ionization energy, according to the atomic number of some elements are given below. All these laments belongs to 2nd period and E has highest first ionization energy in that period.



(i) Write the real symbols of elements suitable for the blanks. (1 mark)
(ii) Define what first ionization energy is. (2 marks)
(iii) Explain why E has highest first ionization energy. (2 marks)
(iv) Name another element in the periodic table which behaves as E. (1 mark)

B) Pattern of oil drops spilled out from an engine were marked on a road as given below in the diagram.



1) If an oil drop is spilled out after each 2 second interval, what kind of motion has occurre between A – B and B – C ? (2 marks
2) The distance between two oil drops in A, B is 3m what is the distance between the poin A and B. (1 mark
3) Calculate the velocity of the above vehicle between A and B. (2 mark
4) What is the time taken to stop the vehicle from B to C. (1 mark
5) Calculate the deceleration of the above vehicle. (2 mark
6) Calculate the displacement of the vehicle with deceleration. (2 mark
(Total 2

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