Grade 10	Third Term Test 2023(2024)	34 E I

Name: ..... **SCIENCE** **Time : 01 Hour**

Part I

- Answer all questions.

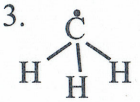
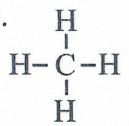
- Select the correct or most appropriate answer.

01. A cell, designed by including all organelles in a cell is introduced as,
    1. Living cell 2. Typical cell 3. Plant cell 4. Animal cell

02. If the electronic configuration of an atom of an element is 2,8,4, it is located in the,
    1. 2nd period 2. II group 3. III group 4. IV group

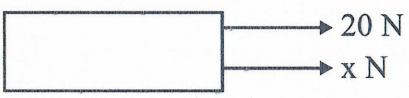
03. Select the four most abundant elements in the living matter
    1. C, H, O, N 2. C, H, S, O 3. C, H, O, Cl 4. C, H, O, K

04. What is the standard unit of acceleration?
    1. ms^{-1} 2. ms^{2} 3. ms^{-2} 4. ms

05. Select the answer which gives the correct lewis structure of Methane molecule
    1. :C–H 2. H–Ċ–H 3.  4. 

06. Which one is the chemical change from below changes.
    1. Burning a paper
    2. Breaking a stone
    3. Melting of ice
    4. Splitting a log into pieces

07. If the resultant force given in the figure is 30 N, What is the value of X?



    1. 10N 2. 20N 3. 30N 4. 40N

08. Select the answer which contains the correct relative molecular mass of urea.($CO(NH_2)_2$)
    (H=1 , C= 12 , O= 16 , N=14)
    1. 30 2. 60 3. 80 4. 110

09. Select the answer which contains only couples of forces
    1. Water tap and nut cracker.
    2. Steering wheel and spanner
    3. Wheel barrow and windlass
    4. Steering wheel and water tap

10. According to the conclusion of Neil Bhor, the maximum number of electrons present in the energy shell L is,
    1. 2 2. 4 3. 8 4. 18

11. The plant part that **cannot** be taken a tissue for tissue culture is,
    1. Apical bud 2. Sclerenchyma 3. Lateral bud 4. Root tip

12. The valency of the element X is three. The formula of the Chloride of that element may be,
1. XCl_3 2. X_2Cl 3. X_3Cl 4. X_3Cl_3

13. Three organelles in a cell is given below. The organelles that are present in both plant and animal cell,
a. Mitochondria b. Chloroplast c. Nucleus
1. a and b 2. b and c 3. a and c 4. only c

14. What is the type of chemical reaction between sodium and water?
1. Chemical combination reaction.
2. Chemical decomposition reaction
3. Single displacement reaction
4. Double displacement reaction

15. Not a necessary factor for the equilibrium under two forces,
1. The resultant of two forces should be zero.
2. The two forces should be opposite.
3. The two forces should be collinear.
4. The two forces should be directed to a single point.

16. What is the equivalent resistant when five resistors of 5Ω are connected parallelly.
1. 25Ω 2. 1Ω 3. $\frac{1}{5}\Omega$ 4. $\frac{1}{25}\Omega$

17. The living nature of an egg can be observed by,
1. Developing an embryo after heating to a definite temperature.
2. Directing the egg to the external environment.
3. When the egg is in the body of the hen.
4. In above 1,2,3 instances.

18. The reaction in which the rate of reaction is relatively high,
1. Rusting of iron
2. Ripening of fruits
3. Production of yogurt by milk.
4. Burning the gun powder in a match stick

19. What is the bio molecule which needs water for synthesis?
1. Glucose 2. Sucrose 3. Lactose 4. all of the above

20. A vehicle which was travelling at a velocity of $5ms^{-1}$, reduced velocity up to $2ms^{-1}$ by applying brakes, within five seconds. The acceleration of the vehicle may be,
1. $3ms^{-1}$ 2. $-0.6ms^{-2}$ 3. $0.6ms^{-2}$ 4. $-3ms^{-2}$

21. What is the factor that cannot be taken as an observation to obtain the rate of a reaction?
1. Volume of gas emitted.
2. Mass of reactants used up
3. Mass of catalysts used
4. Mass of products produced

22. The force exerted on a bus in rest when makes it moved by pushing is,
1. Equal to the limiting frictional force exerted by the ground.
2. Equal to the dynamic frictional force exerted by the ground.
3. Equal to the static friction exerted.
4. Equal to the force exerted by its wheels.

23. Consider the following statements regarding cell division.
a) Meiosis occurs in producing gametes.
b) The second step of meiosis is mitosis.
c) In separating chromosomes., three is no similarity in mitosis and meiosis.
The correct statements are,
1. Only a 2. a and b 3. b and c 4. a, b and c all

24. The number of electrons in F^- ion unequals to the number of electrons in which of the following ions?
1. Na^+ 2. K^+ 3. Mg^{+2} 4. O^{-2}

25. Inter molecular forces are present in between water molecules. The special properties received by water due to it are,
1. High boiling point of water
2. High specific heat capacity of water
3. Presence of high density than ice.
4. All of the above

26. Select the answer containing a domain,
1. Algae 2. Protozoa 3. Bacteria 4. Mammalia

27. Select the formula for kinetic energy,
1. Ma 2. Ms^{-2} 3. mgh 4. $\frac{1}{2} mv^2$

28. The Avogadro constant equals to,
1. Number of atoms in 0.008kg of $^{16}_{8}O$
2. Number of atoms 0.012kg of $^{12}_{6}C$
3. Number of atoms in 0.002kg of $^{+}_{1}H$
4. Number of atoms in 0.007kg of $^{14}_{7}N$

29. A disease transmitted by virus is,
1. Herpes 2. Syphillis 3. Gonorrhoea 4. Thallassemia

30. The answer containing a non flowering seed plant and non flowing seedless plant in order,
1. Salvinia , Marchantia
2. Cycas , Salvinia
3. Marchantia , Pinus
4. Neprolepis , Pinus

31. The metallic elements from B, C, N, Na, Mg, Si, S, are,
1. B, Na 2. Mg, Si 3. Na , Mg 4. C, S

32. Select the correct statement for the scientific name for *Cocos nucifera*,
1. It is incorrect, not underlined
2. It is correct, printed in Italics.
3. It is incorrect, the first letter is not capital
4. It is correct, introduced in Greek

33. The reading of a barometer which is close to a water pump is 120 kPa. (120 000 Nm^{-2}) The height for the water tank from the water pump is given by,
(The density of water is 1 000 kgm^{-3})
1. $\frac{1000 \times 10}{120\,000}$ m 2. $\frac{120\,000 \times 10}{1000}$ m 3. $\frac{120\,000 \times 1000}{10}$ m 4. $\frac{120\,000}{1000 \times 10}$ m

34. The taxonomic level of classification, which is used for scientific nomenclature are,
1. Domain and phylum
2. Generic name and specific name
3. Phylum and order
4. Phylum and genus

35. Select the answer containing only inherited charactors,
1. Ability to roll the tongue, curly hair, en large muscles
2. Curly hair , skin sweat rash , ability to roll the tongue
3. Skin sweat rash, curly hair, dimples in the cheek.
4. Curly hair, ability to roll the tongue, albinism.

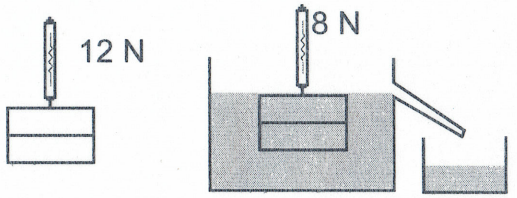
36. In extraction of Iron,
1. Reduction is done by CO.
2. Reduction is done by $CaCO_3$
3. Oxidation is done by coke (c)
4. Oxidation is done by liquidized fe_2O_3

37. The Mendal's experiment of inheritance is accepted up to today due to,
    1. being the first experiment in the world.
    2. being an experiment using more number of charactors.
    3. Being used scientific method effectively.
    4. Correct recording of results.

38. Select the correct answer for power.

Meaning	Unit
1. Rate of change of velocity	ms^{-2}
2. Rate of work done	W
3. Product of velocity and mass	J
4. Rate of transmission of charges	V

39. The weight of water present in the beaker is,
    1. 4N
    2. 8N
    3. 12N
    4. 20 N



40. Close to the 14th day in menstrual cycle,
    1. Oestrogen level increases and the wall of uterus is degraded.
    2. The body temperature increases and blood supply also increases.
    3. Oestrogen level increases and ovulation occurs.
    4. Projesterone level increases and uterus wall gets thickened further.

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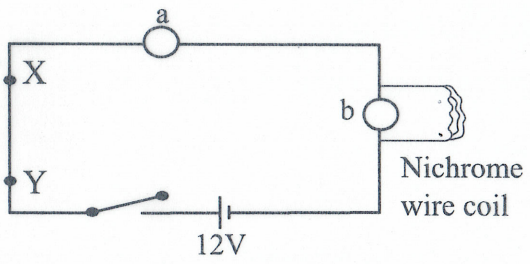
Name - ..... **SCIENCE II** **Time : 03 Hours**

- Answer the four question in part A in this paper itself.

Part A

(01) A.



Piece of candle

Piece of Mg

A device prepared by a student to generate heat by electricity is given below. After suppling electricity, the nichrome coil gets heated. To show that heat is received, it is observed that, when the piece of candle gets close to it, it gets melted and when the piece of Magnesium gets close to it, it gets burnt. The electric current flows through the circuit was 4A.

i. What is the potential difference supplied to the circuit (1mark)

.....

ii. State the symbols that should be used for the circles a and b (2marks)

a. .....

b. .....

iii. Fill in the blanks using X and Y. (1 mark)
The direction of flowing electors in this circuit is from .....to.....

iv. If 24 V current supply is used instead of 12V electric supply, what happens to the current flowing through the circuit? increased or decreased? ..... (1 mark)

v. If a long nichrome coil instead of the coil shown in the figure is used, the current flows through the circuit decreased or increased? .....(1marks)

B. i. To which type of chemical reaction does burning a Magnesium strip belong ? (1mark)

.....

ii. Write the balanced chemical reaction for the burning of Magnesium. (2marks)

.....

iii. (a) What is the physical change occured during this activity (1mark)

.....

(b) State another physical change occur in our environment (1mark)

.....

C. When a green gram seed soaked in water one day, kept on the soil,
a. Develops a root....
b. Increases height developing leaves.
c. Releases carbon dioxide
d. Turn leaves towards sunlight.
e. Does photosynthesis.
f. Develops flowers, gets pollinated and produces new seeds.

State the living characteristic related to the following instances. (4marks)

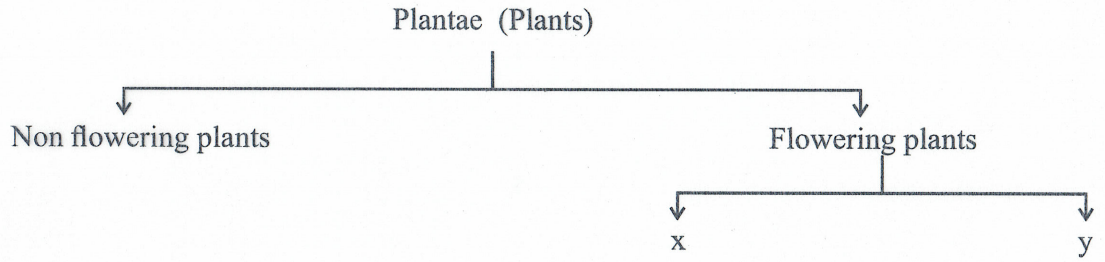
a. .....

b. .....

c. .....

d. .....

(02) A. A part of classification of organisms belongs to the domain Eukarya is given below.



i. Name x and y in above chart. (2mark)

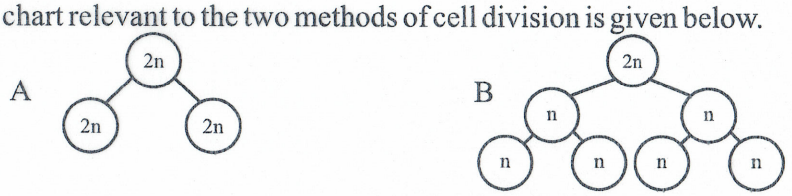
x..... y .....

ii. State a common characteristic for x and a common characteristic for y (2 mark)

x ..... y .....

iii. State one significance of classification of organisms. (1mark)

B. A chart relevant to the two methods of cell division is given below.



i. Name the two division methods A and B. (2 marks)

A: .....

B: .....

ii. State the instance where the B division method occures in living body. (1 mark)

.....

iii. State one function performed by following organelles (2marks)

Nucleus: .....

Mitochondrian: .....

C. Biological molecules are important for the existance of living matter.

i. Three main elements contribute to from proteins are C, H, and O. State the other element contributes to form protein ..... (1 mark)

ii. What is the term used to introduce proteins that increase the rate of biological reactions .

..... (1 mark)

iii. What is the name of the test done to identify proteins?

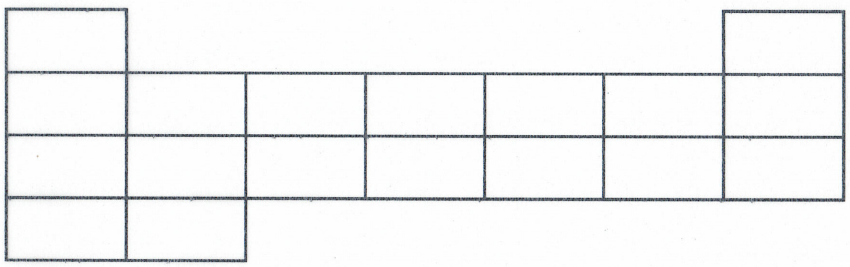
..... (1 mark)

iv. Name the two types of nucleic acids present in the nucleus.....

(2 marks)

(03) A. K, L, M, N, O, P, Q, R and S are consecutive elements in the periodic table. The symbols are hot standard symbols. Answer the questions using above symbols.

i. Q is an element belongs to the 2nd period and V th group. Write element Q is the due place of the periodic table. (1mark)



ii. State the electronic configuration of element R (1 mark)

iii. Based on which factor that the period number and the group number is decided (2marks)

a) Period number : .....

b) Group number : .....

iv. State the standard symbol of another element which belongs to the group that the element S belongs

..... (1mark)

B. A,B,C,D and E are five different metals. Some information revealed by a group of students is given below.

1. The lustre of surface of metal A disappears first, when exposure to air.
2. Metal A reacts with cold water rapidly than C and release air bubbles.
3. When reacting E and C with blue colour aqueous Sulphate of D, gives reddish brown precipitate.
4. B is a valuble metal which has an attractive appearance. exists as a native element.
5. E is commonly used for galvanizing iron objects.

i. State the highly reactive metal from A,B,C,D and E .....

(1mark)

ii. Write the standard symbol or name of the metal of E .....

(1 mark)

iii. Arrange above A,B,C,D and E metals according to the descending order of their reactivity.

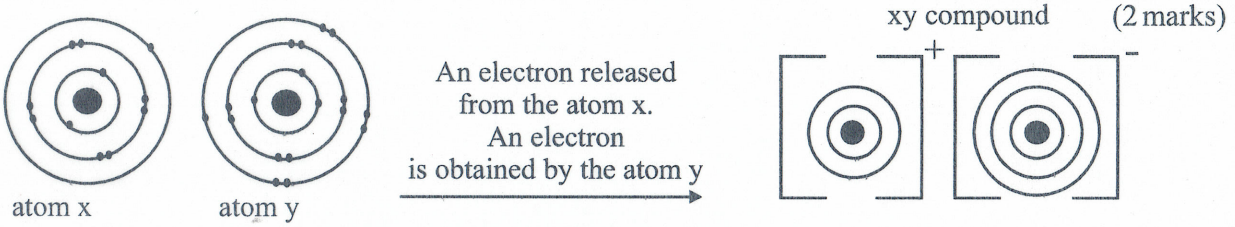
..... (2marks)

iv. State one importance of activity series.....

(1mark)

C. To form chemical bonds between atoms of elements, electrons in valence shell are used.

i. The way of forming the compound xy by a certain bond type between x and y atoms is represented below. complete the electrons in the compound xy in the figure.

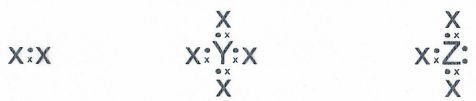


(2 marks)

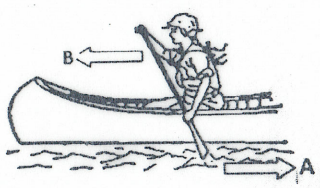
ii. What is the type of bond represented by the above figure?..... (1mark)

iii. State the compound xy in standard chemical symbols..... (1 mark)

iv. Mention the type of bond shown by following diagrams..... (1 mark)



(04) A. An instance of rowing boat is given below.



i. Which Newton's law can be used to explain rowing a boat better?

..... (1mark)

ii. According to that law, name A and B

A. .....

B. ..... (2 marks)

iii. The mass of the boat with the man is 75kg. Calculate the force given to the ore to give an acceleration of $1ms^{-2}$ for the boat. .....

(2 marks)

B. i. State two factors affecting friction .....

(2marks)

ii. Friction is of three types as static friction, dynamic friction and limiting frictional force. Mention the instance of each type of friction, affect in the instances given within brackets. (when an object is in motion, when an object is at rest, when a stationary object just begin to move)

a) Static friction : .....

b) Limiting frictional force : .....

c) Dynamic friction : ..... (3marks)

C. i. State one factor affecting the moment of force.....(1mark)

ii. What is the standard unit to measure moment of force.....(1mark)

iii. Two children are on a see saw. The weight of the child in left end of the see saw is 250N. He is in the distance of 4m from the center of the see- saw.
a) What is the momentum created by the child at the left end.
..... (1mark)

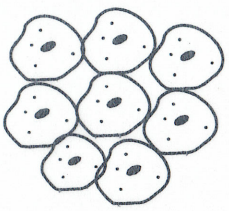
b) The weight of the child in right end of the see saw is 20 N. To bring the see saw into equillibrium, how far from the centre does the child in right end should sit? (2marks)

.....

Part - B

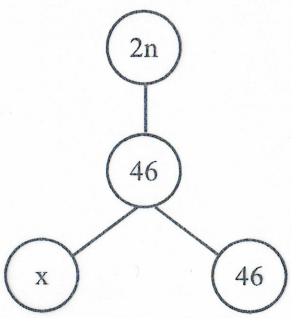
- Answer only three questions from the questions 5,6,7,8 and 9

(05) A. Animal cells under compound light microscope is given in the figure.



i. Name two organelles that can be observed in this figure (2mark)
ii. State one main difference between animal cells and plant cells (1 mark)
iii. Write suitable answers for the blanks A and B in the following chart (2 marks)

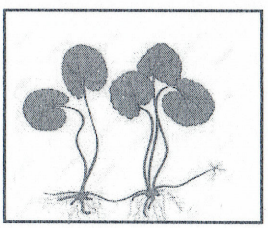
Organelle	Function
A	Maintain water balance
Golgi complex	B .....

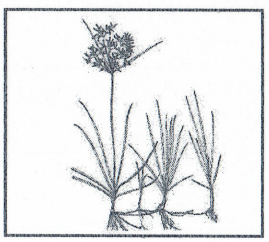


iv. A method of cell division in living body is given below.
a) State the number of chromosomes represented by x. (1 mark)
b) Name the above method of cell division. (1mark)

B. Reproduction is essential for the continuity of life.

i. Gotukola and kalanduru which produce new plants by natural vegetative propagation is given below. State the vegetative parts by which the above plants do the propagation. (2marks)





ii. State one difference between sexual reproduction and asexual reproduction. (1mark)
iii. What is the part of the female reproductive system in which the fusion of an ovum and a sperm takes place? (1 mark)
iv. What is the term used to introduce the sinking and deposition of divided zygote in the uterus? (1Mark)

C. Different species can be distinguished due to their specific inherited characteristics.

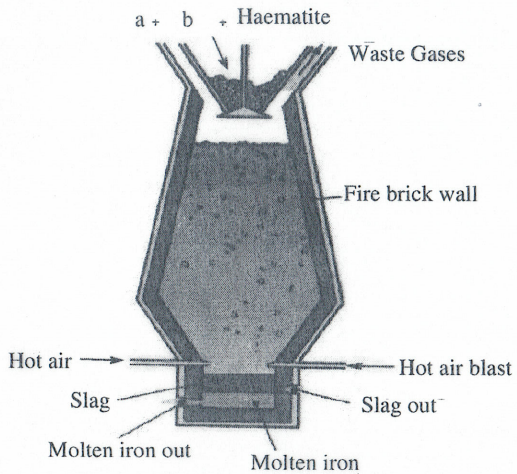
i. The gene responsible for tall plants in garden pea plant is T and the gene for short plants is t. If all the plants from a cross between a pure bred tall plant and a pure bred short plant were tall, State the genotype of the F_1 generation. (2Marks)

ii. Represent the off springs of F_2 generation from the plants of F_1 generation using a punettee square. (2Marks)

iii. State the phenotype ratio of F_2 generation (2Marks)

iv. Give one example for the instance of using gene technology in following field.
a. Agriculture field
b. Medical field (2Marks)

(06) A. An instrument used for iron extraction is given below.



i. What is the name of this instrument (1mark)

ii. Name a and b materials (2 marks)

iii. Write the balance chemical equation for the formation of iron. (2 marks)

iv. State the reason for the inability to use this method for the production of Mg (2 marks)

v. Name the acid that can be used in the laboratory to produce H_2 with the reaction of Mg (1 mark)

B. CO_2 can be produced easily in the laboratory.

i. State the difference of nature of bond between CO_2 and MgO. (2Marks)

ii. Draw the lewis structure of CO_2. (1Marks)

iii. Mention two different physical properties of NaCl and CO_2. (2Marks)

C. Quantification of elements and compounds are done in chemistry.

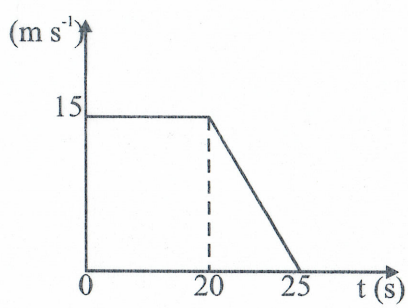
i. State the standard unit of quantification of matter. (1Mark)

ii. Define that unit. (2Marks)

iii. Caculate the relative molecular mass of $CaCO_3$.
(C=12, O=16, Ca=40) (2Marks)

iv. How many $CaCO_3$ molecules are there in 10g of $CaCO_3$. (2Marks)

(07) A. A motor cycle travelling at a uniform velocity had to be stopped by applying breaks due to a fallen tree across the road. The velocity time graph for the motion of above motor cycle is given in the figure. Answer the questions using that graph.



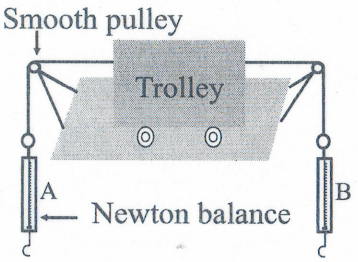
i. What is the maximum velocity of the motor cycle? (1mark)

ii. (a) What is the nature of motion of motor cycle between 0- 20 seconds? (2 marks)
(b) Calculate the deceleration of motor cycle. (1 mark)

iii. Calculate the distance travelled by the motor cycle from the instance of applying breaks up to coming to rest. (2marks)

iv. If the cycle travels at a uniform speed for the total time of 25 seconds, calculate the total distance that it would be travelled. (2 marks)

B. An activity done by a group of students in the laboratory is given below . Answer the following questions using this activity.



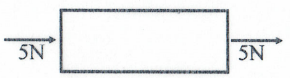
i. If the weights of 10 N are hung on the newton balances A and B, What should be the observation (1 mark)

ii. a) What is the observation when hanging 5 N on B and 10 N in A? (1mark)

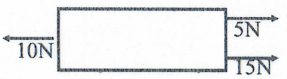
b) What is the resultant force in that instance ? (1 mark)

iii. Give one example for the instance where a collinear resultant force is exerted. (1mark)

iv. Calculate the resultant force in following figures. (2 marks)

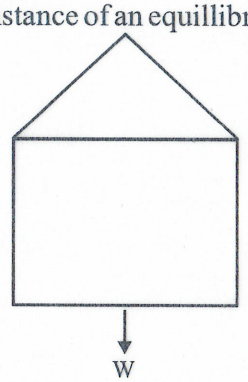


A



B

C. An instance of an equillibrium under three inclined forces is given below. Answer questions using it.



i. The weight of the object is marked as W. Copy this figure in your answer script and mark the rest two forces F_1 and F_2 with arrows heads for the direction. (2marks)

ii. State two conditions that should be satisfied by a system to be in equillibrium like this. (2 marks)

iii. Mention two conditions that should be satisfied for an equillibrium under three parallel forces. (2marks)

(08) A. i. What is the name used to introduce the compound formed by the combination of fatty acids and glycerol (1mark)

ii. Name the biomolecule which stores genetic information. (1 mark)

iii. What is the building unit of RNA? (1mark)

iv. Name one chemical used for the biurette test which is used to identify protein. (1 mark)

v. State one iron deficiency symptom in man. (1mark)

vi. Mention the colour change of dried paper soaked with Cobolt Chloride in the presence of water vapour. (1 mark)

B. i. Mention one disease transmitted through genes. (1 mark)

ii. The marriage between blood relatives increase the risk of disease that are transmitted through genes. Explain. (2marks)

iii. State one disadvantage of genatic engineering. (1 mark)

C. The weight of an irregular stone in air is 20 N. The spring balance reading after innersing totally in water is 16 N. The density of water is 1000kgm^{-3}.

i. What is the upthrust exerted by water on the stone. (1 mark)

ii. What is the weight of water displaced by the stone? (1mark)

iii. What is the volume of water released? (3 marks)

iv. What is the density of the irregular stone? (2marks)

v. The hydrometer is sunk in three liquids. The sinking heights in above instances are given below.

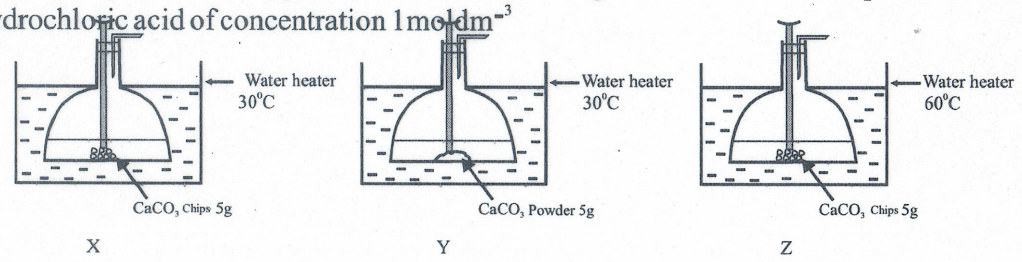
A= 10cm B= 7cm C= 14cm

a) Which liquid possessed the highest density (1 mark)

b) State one instance where the hydrometer is used in our day-to-day life. (1mark)

vi. State one instance where the hydraulic pressure is transmitted. (1mark)

(09) A. Three set-ups used to compare the rate of reaction is given below. Each setup contains 50 ml of hydrochloric acid of concentration 1 moldm^{-3}



i. What are the two factors that affect the rate reaction, when comparing the three aparatus X, Y and Z? (2 marks)

ii. What is the observation obtained, to compare the rate of reactions in X and Y? (1mark)

iii. Apart from the two factors mentioned in (i) write any other factor that affects the rate of reaction. (1mark)

B. The element A, B, C, D, E, F, G, H and I are consecutive elements in periodic table. Symbols used are not standard symbols.
F is the element which has the highest electro negativity. Answer following questions using given symbols.

i. Write the electronic configuration of element G. (1mark)

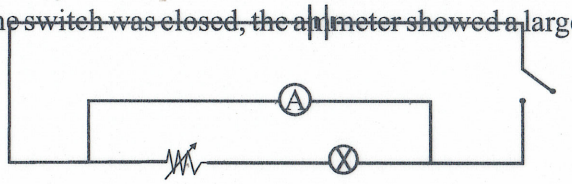
ii. Mention one element of which the valency is one from the above elements. (1mark)

iii. Mention the chemical formula of the compound formed between the elements A and F? (1mark)

iv. Which element shows the least first ionization energy? (1mark)

v. Write the balanced chemical equation for the reaction between the element I with dilute HCl (2 marks)

C. The circuit diagram of a circuit prepared by a student to measure the electric current flows through a filament bulb is given below. When the switch was closed, the ammeter showed a large current and connecting wires got very hot.



i. What us the defect in the circuit? (1mark)

ii. Explain the reason for showing a large current in Ammeter? (2mark)

iii. Redraw the circuit connecting a Voltmeter. (2marks)

iv. When the bulb is lighting, several reading were taken by changing the current.

Potential differences (V)	2.0	4.0	6.0
Current (A)	0.2	0.3	0.4

a) Which appliance is used to change the current in the circuit? (1mark)

b) Calculate the resistance of the filament bulb when the potential different is 2V and 6V. (2Marks)

c) What is the reason for receiving two resistances in the answer b? (1mark)