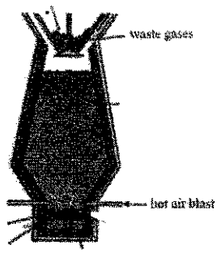
B The structure used to extract iron is illustrated in the following figure.



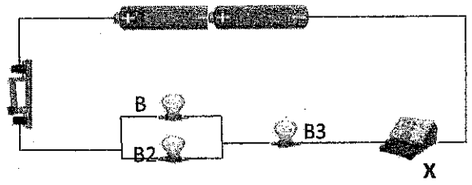
i. What is the name of this structure? (1 mark)
ii. What are the raw materials used here? (2 marks)
iii. Complete the following balanced equation of extraction of iron. (2 marks)

.....(a)..... + 3CO ⟶ 2Fe + ...(b).....

iv. Write the extraction method of following metals based on the location of the metals in the activity series. (2 marks)
(a) Ag (Silver) (b) Al (Aluminium)
(b)

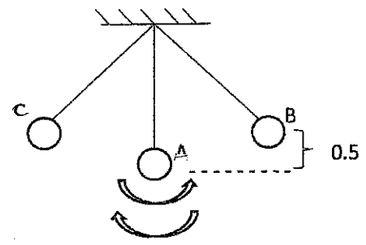
C B.
i. Relative atomic mass of Zinc is 65. Find the number of moles in 130g of Zn. (2 marks)
ii. Zinc metal reacts with hydrochloric acid.
(a) Write the balanced chemical equation for the above reaction. (2 marks)
(b) State the type of chemical reaction between Zn and HCl. (1 Mark)
iii. Mention 2 steps that can be taken to increase the rate reaction of the reaction between Zn and HCl. (2 marks)

7) A) The below figure shows a circuit constructed to light up 3 bulbs with same resistance, using 2 torch batteries and a switch.



i. Name the method in which the bulbs B_1 and B_2 are connected in the above circuit? (1 mark)
ii. What is the instrument labelled as 'X'? (1 mark)
iii. Draw the circuit diagram for the above circuit using standard symbols. (3 marks)
iv. If the resistance of each bulb is 20 Ohm, find the equivalent resistance of the bulb system. (2 marks)
v. What is the appliance that should be added to the circuit in order to control the brightness of the bulb? (1 mark)
vi. If the bulb B_1 burns out,
(a) What would be the observation of bulbs B_2 and B_3? (1 mark)
(b) Mention the observation of the reading of the 'X' meter. (1 mark)

A) A, B, C are the positions of a simple pendulum as shown in the above diagram.

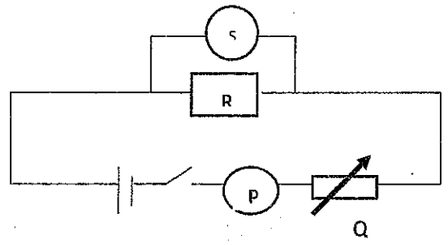


i. Which is the position with highest Potential energy out of A, B and C? (1 mark)
ii. What is the position with highest kinetic energy? (1 mark)
iii. If the mass of the simple pendulum is 150g, find the gravitational potential energy at B. ($g = 10ms^{-1}$) (2 marks)
iv. Find the kinetic energy of the simple pendulum when it oscillates with a velocity of $4ms^{-1}$. (2 marks)
v. When the simple pendulum is at rest the metallic ball detached and falls down. Sketch the rough velocity-time graph of that motion. (2 marks)
vi. Find the velocity of the metallic ball if it is reached to the ground within 0.5s. ($g = 10ms^{-1}$) (2 marks)

8) A) Classifying Organisms based on common features is known as classification of organisms

i) Write 3 significance of classification of organisms (3 marks)
ii) What are the 2 methods of classification of organisms? (2 marks)
iii) Name two prokaryotic groups belong to the classification introduced by Carl Woese (2 marks)
iv) What is the kingdom that invertebrates belong? (2 marks)
v) State 2 standards of binomial nomenclature (2 marks)

B) The following figure displays a circuit constructed to investigate whether there is a relationship between the current passing through a conductor and the potential difference across it.



i. Name P, Q, R and S apparatuses. (2 marks)
ii. What is the purpose of using Q here? (1 mark)
iii. What are the readings should be obtained to build up the above relationship? (2marks)
iv. The switch is always opened and it is close only during the time taking readings. What is the reason for this? (1 mark)
v. Plot a rough sketch of a graph you obtained from the experiment. (2 marks)
vi. One of ammeter reading is 1.5A and the voltmeter reading related was 4.5V. Calculate the resistance of the resistor. (2 marks)

9) A) Out of the first 20 elements of the periodic table,

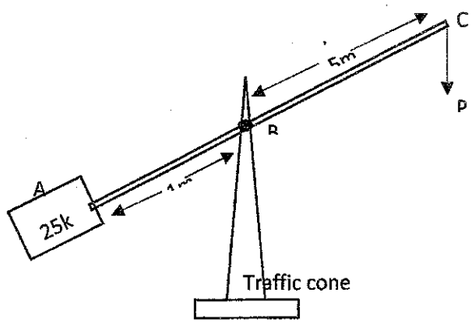
i. (a) Name the element with highest electronegativity. (1 mark)

(b) Draw the Lewis dot cross diagram of a molecule of the above element. (2 marks)

ii. Write 2 elements which form cations. (2 marks)
iii. Write an element which forms anion. (1 mark)
iv. Write 2 elements showing allotropy as well as low reactivity. (2 marks)
v. Aluminium belongs to group 3. Write the chemical formulae of the compound formed by aluminium with X, which is having a valancy of 2. (2 marks)

A.

i. What is the weight of part A? (1 mark)
ii. What is the importance of having the pivoted point 'B' more closer to end 'A' than to end 'C'? (1 mark)
iii. What is the force that should be held at 'P' of the rod in order to bring the rod to equilibrium around traffic cone? (2 marks)



B. Figure (A) shows how an object is positioned in water.

Figure (A)

i. What is the force that effect for floating of the object? (1 mark)
ii. Mention the law which corresponds to this instance. (1 mark)
iii. What is the upthrust given on block of wood by water according to figure (B)? (2 marks)

C. The time taken to lift a mass of 8kg to a height of 10m is 5s.

i. What is the weight of the object? (1 mark)
ii. What is the name used for the oppose force given by air on mass when lifting upwards? (1 mark)

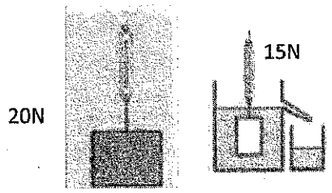


Figure (B)

Part B - Essay

5)

A B C

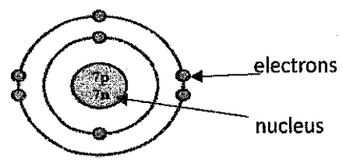
A, B, C pictures show 3 types of underground stems that store food.

i. Identify A, B, C underground stems and state one example for each. (3 marks)
A ..... Ex: .....
B ..... Ex: .....
C ..... Ex: .....
ii. Mention another function of underground stems except storage of food. (1 mark)
iii. (a)Write a plant part that can be used to obtain tissues for tissue culture. (1 mark)

(b) Name 2 substances that are included in tissue culture medium. (2 marks)

iv. Write the function of the following parts of the male reproductive system. (2 marks)
(a) Epididymis
(b) Prostate gland and Cowper's gland.
v. State 2 functions of male reproductive system. (2 marks)
vi. Out of the sexually transmitted diseases,
(a) Name a disease transmitted by bacteria. (1 mark)
(b) Name a disease transmitted by virus. (1 mark)
vii. In the removal of excretory products,
(a) Mention a gaseous excretory product. (1 mark)
(b) Name a nitrogenous excretory product. (1 mark)
viii. What is meant by growth? (2 marks)
(a) What is the structure used to measure the growth of a plant? (1 mark)
(b) Explain the reason why the above structure is more suitable to measure the growth of a plant. (2 marks)

6) A) Following figure shows the subatomic particles in an atom of an element.

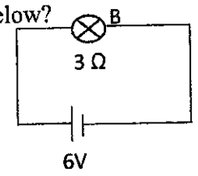


i. What is this element? (1 mark)
ii. Represent the atomic number and mass number of that element in the standard way (2 marks)
iii. Write the molecular formulae of the compound formed by the above element with Hydrogen. (2 marks)
iv. Name the type of chemical bond present in the compound you mentioned in (iii) above. (1 mark)

10) The invertebrate group with sessile (dentary) forms,

1. Mollusca 2. Amphibia 3. Arthropoda 4. Cnidaria

11) What is the current flowing through the 'B' bulb in the circuit given below?

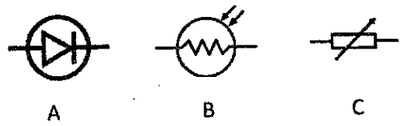


1. 0.25A 2. .5A

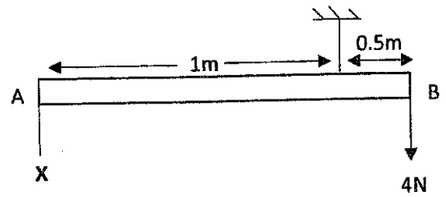
3. 1A 4. 2A

12) Identify the above symbols of appliances A, B and C.

1. Diode, LDR, variable resistor
2. Diode, LED, variable resistor
3. Diode, variable resistor, LED
4. Diode, LDR, LED



13) As shown in the above figure a uniform rod AB is suspended. What is the weight 'X', should be hung at the end A in order to balance the rod horizontally?



1. 0.5N 2. 1N
3. 2N 4. 4N

14) The correct scientific name of element is,

1. *Elephas Maximus* 2. *Elephas maximus* 3. *ELEPHAS MAXIMUS* 4. *Elephas MAXIMUS*

15) Calculate the hydrostatic pressure of a point located at 3m depth in water. (Density of water $1000kgm^{-3}$, gravitational acceleration $10ms^{-1}$)

1. 9000Pa 2. 3000Pa 3. 30000Pa 4. 10000P

16) The correct statement on catalysts is,

1. Increases the rate of reaction of a reaction
2. Amount of catalysts increases in a reaction
3. Remain same in its physical state after the reaction
4. There are catalysts for all reactions

17) The heterozygous genotype for the character height is,

1. TT 2. Tt 3. tt 4. TT and tt

18) The gas/gases collected from downward displacement of air,

1. O_2 2. H_2 3. CO_2 4. O_2 and H_2

19) The characteristic feature of organisms measured by the auxanometer,

1. Nutrition 2. Growth 3. Irritability 4. Respiration

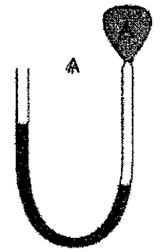
20) Most suitable time gap for fertilization of a human ovum,

1. Between 0-7 days 2. Between 7-14 days 3. Between 14-21 days 4. Between 21-28 days

21) Four forces are acting on an object is shown in the below diagram. What is the resultant force of it?

1. 15N ← 2. 10N →
3. 8N → 4. 4N ←

22) A U-tube is filled with water and an air filled balloon is tied to one arm of the tube. The correct statement about the pressure of point A in the balloon,



1. Pressure at 'A', equal to the atmospheric pressure
2. Pressure at 'A', higher than the atmospheric pressure
3. Pressure at 'A', lower than the atmospheric pressure
4. Pressure at 'A', equal or lesser than atmospheric pressure

23) The metal which is not reacting with water and dilute acids,

1. Magnesium 2. Zinc 3. Iron 4. Copper

24) The most convenient method to extract gold metal from ore containing gold,

1. Digging and sifting 2. Electrolysis of molten solution
3. Reduction 4. Separating by magnets

25) What is used as dry ice?

1. Oxygen 2. Carbon dioxide 3. Nitrogen 4. Water

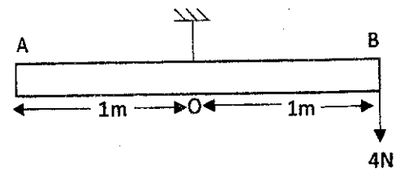
26) The chemical reaction which occurs slowly comparatively to others,

1. Reaction between sodium with cold water 2. Reaction of magnesium and dil.HCl
3. Acid base reaction 4. Rusting of iron

27) The method that cannot be used to increase the rate reaction of Mg with dil. HCl,

1. Increase the concentration of HCl 2. Usage of Mg chips instead of Mg powder
3. Increase the temperature 4. Increase the masses of reactants

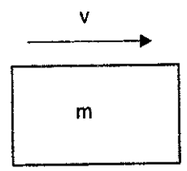
28) AB rod is 2m long. It is suspended and balanced at point 'O'. Then a weight of 4N is held at end B. In order to bring the rod back into equilibrium, how far from end B should a weight of 2N could be held?



1. 0.25m 2. 1m

3. 1.25m 4. 2m

29) If an object with a mass of 'm' moving with 'v' velocity, the kinetic energy of it is given by,

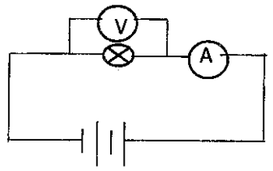


1. mv 2. Mgh 3. $\frac{1}{2}mv^2$ 4. mv^2

30) Find the work done when an electrical fan with 60W power is operating for 5 minutes.

1. 60J 2. 60 x 60 x 5 J 3. $\frac{60 \times 60}{5}$ J 4. 60 X 5 J

31) The voltmeter reading of the below circuit is 3V and the ammeter reading is 0.75A. Find the resistance of the bulb.



1. 1 Ω` 2. 2.25 Ω

3. 3 Ω 4. 4 Ω

32) What are the factors affecting for the resistance of a conductor out of the given factors?

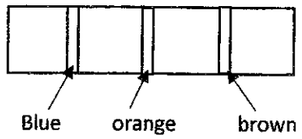
(a) Length of the conductor

(b) Material used to construct the conductor

(c) Cross area of the conductor

1. Only (a) 2. (a) and (b) 3. (a) and (c) 4. (a), (b), (c) all

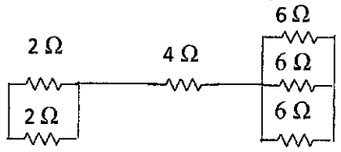
33) What is the resistor value of a resistor marked with blue, orange and brown coloured bands orderly? (Brown = 1, orange = 2, blue = 6)



1. 620 Ω 2. 621 Ω

3. 6210 Ω 4. 6200 Ω

34) Find the equivalent resistance of the system.



1. 5 Ω 2. 7 Ω 3. 12 Ω 4. 26 Ω

35) Not a common inherited characteristic in human population,

1. Nature of the hair 2. Skin colour
3. Colour of eyes 4. Language skills

36) A genetical disorder occurring due to a mutation of autosomal chromosome,

1. Thalassemia 2. Colour blindness 3. Hemophilia 4. Cancers

37) A weight of 10N is hung to a Newton spring balance. If another 200g of a mass is added to it, what is the newton reading of the spring balance? ($g = 10ms^{-2}$)

1. 8N 2. 10N 3. 12N 4. 15N

38) Who presented the three domain classification?

1. Carolus Linnaeus 2. Carl Woese 3. Robert Whittaker 4. Aristotle

39) Though the essential factors for germination are fulfilled, sometimes seeds do not germinate. This condition is known as,

1. Livingliness 2. Eutrophication 3. Dormancy 4. Parthenocarpy

40) The ability to respond to stimuli received from an internal or an external environment is known as,

1. Coordination 2. Organizational levels of cells 3. Irritability 4'. Development

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வருட இறுதி மதிப்பீடு - 2021
Year End Evaluation

தரம் Grade	பாடம் Subject	பகுதி வினாத்தாள் Paper	மணித்தியாலம் Hours
10	SCIENCE	i	1

- Answer all questions. Select the most appropriate answer.

1) The laboratory test that is used to identify proteins present in food,

1. Iodine test 2. Biurette test
3. Heating with Benedict reagent 4. Alcoholic Sudan test

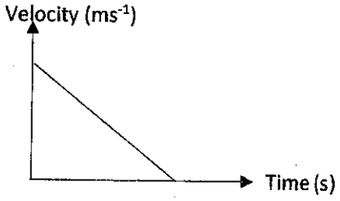
2) The deficiency symptom of plants due to the deficiency of potassium,

1. Yellow patches in leaves 2. Disappearing of green colour
3. Dying of tissues at the tips of the leaves 4. Purple patches on leaves

3) The answers with a vector and a scalar quantity orderly,

1. Speed, acceleration 2. Displacement, distance
3. Force, acceleration 4. Speed, time

4) The motion type denoted by the following velocity time graph,



1. Acceleration
2. Deceleration
3. Uniform velocity
4. Remains at rest

5) Neutral sub atomic particles in an atom,

1. Proton 2. Electrons 3. Neutrons 4. Protons and electrons

6) Select the matter with following features.

- Conduction of electricity
- Showing allotropy
- Presence of crystalline and amorphous forms

1. Sulphur 2. Silicon 3. Carbon 4. Gold

7) The quantity measured in $kgms^{-1}$,

1. Velocity 2. Pressure 3. Momentum 4. Work

8) The non-living structure of a plant cell,

1. Mitochondria 2. Cell wall 3. Chloroplast 4. Golgi bodies

9) The valency of 'X' element is 2. What is the chemical formulae of the Sulphate of 'X'

1. XSO_4 2. X_2SO_4 3. $X(SO4)_2$ 4. $X_2(SO4)_3$