01.03.2024

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மேல் மாகாணக் கல்வித் திணைக்களம்
Department of Education - Western Province

වර්ෂ අවසාන ඇගයීම - 2023 (2024)
ஆண்டிறுதி மதிப்பீடு - 2023 (2024)
Year End Evaluation - 2023 (2024)

ශ්‍රේණිය தரம் Grade	11	විෂය பாடம் Subject	Science	පත්‍රය வினாத்தாள் Paper	I	කාලය காலம் Time	1 Hours

නම பெயர் Name ..... විභාග අංකය சுட்டிலக்கம் 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.**

01. What is the standard unit of measuring energy?
1. J 2. W 3. N 4. Ω

02. What is the element that forms a stable - 2 ion?
1. K 2. Si 3. O 4. Cl

03. Select the photo autotrophic organism.
1. Amoeba 2. Paramecium 3. Yeast 4. Chlamydomonas

04. Select the pair of metals that react with dilute HCl acid.
1. Cu and Zn 2. Zn and Ag 3. Zn and Fe 4. Ag and Pt

05. Select the correct formula out of following scientific relationships?
1. Density = $\frac{\text{Volume}}{\text{Mass}}$ 2. Weight = Mass × gravitational acceleration
3. Density = $\frac{\text{Force}}{\text{Area}}$ 4. Force = Weight × acceleration

06. Which answer contains the seeds that are adapted to disperse by wind?
1. Love grass, "wara" 2. Orchid, "Gammalu" 3. "Olu", "Hora" 4. "Epala", "Wara"

07. Of the following which one is an alkene?
1. Ethene 2. Propane 3. Ethane 4. Pentane

08. In which character, the animals and plants **do not** show a fundamental difference.
1. Movement 2. Nutrition 3. Cellular organization 4. growth

09. What is the chemical substance that shows a pink colour with phenolphthelin?
1. Lime Juice 2. Lime water 3. Vinegar 4. glucose solution

10. A phase that occur inside the ovary of a female is,
1. Secretary phase 2. Menustrual phase 3. Leuteal phase 4. Proliferation phase

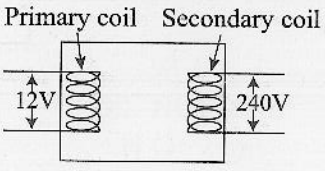
11. What is the potential energy stored in a 5 kg object present at a height of 10 m?
1. 5 J 2. 500 J 3. 5000 J 4. 50000 J

12. In the decomposition of H_2O_2, MnO_2 is used as a catalyst. What is the inhibitor of this reaction?
1. Sand 2. Iron powder 3. Nickel powder 4. Sulphuric acid

13. What is the type of tissue made up of only one type of cells?
1. Phloem tissue 2. Xylem tissue 3. Smooth muscle tissue 4. Blood tissue

14. Which one is an endothermic reaction?
1. Reaction between Zn and HCl.
2. Adding water to quick lime.
3. Adding water to concentrated acid.
4. Production of CO_2 and H_2O in photosynthesis.

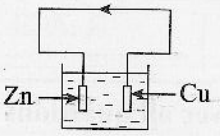
15. In the given step-up transformer, the voltage of the primary coil is 12 V and the number of turns is 1000. If the voltage of secondary coil is 240 V. Find the number of turns in it?



1. 20 2. 200 3. 2000 4. 20000

16. What are the two substances present in the artificial growth medium that is used in tissue culture.
1. Sucrose, Minerals
2. Agar, Salt
3. Minerals, Copper sulphate
4. Vitamin, Amylase

17. Given here is a simple voltaic cell. What is denoted by the arrow head?



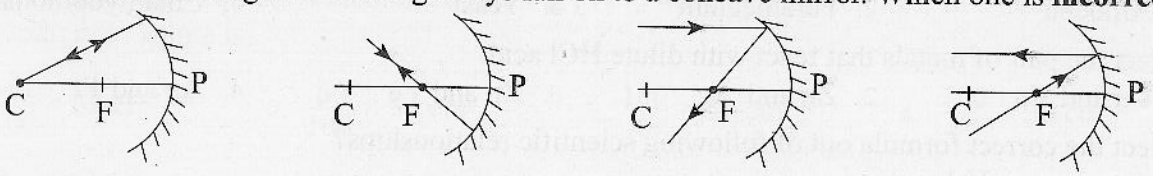
1. Direction of ion flow
2. Direction of convectional current
3. Direction of electron flow
4. Direction of current and electron flow

18. An unbalancedd force of 24 N was applied to a 8 kg object which is moving in the same direction with a uniform velocity. What is the acceleration of the object when force is applied?

1. 24 ms^{-2} 2. $24 \times 8\ ms^{-2}$ 3. $\frac{8}{24}\ ms^{-2}$ 4. $\frac{24}{8}\ ms^{-2}$

19. Which is correct regarding the reproduction of Gymnosperms.
1. Form seeds during sexual reproduction
2. Seeds are covered with pericarp
3. Sexual reproduction is occured by spores
4. Seeds are covered

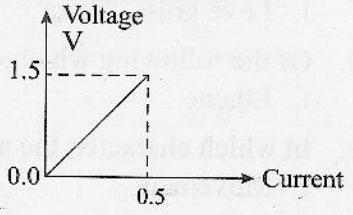
20. Given here are some diagrams with light rays fall on to a concave mirror. Which one is **incorrect**.



1. 2. 3. 4.

21. Which is **not** an advantage of classifying elements using the periodic table.
1. Able to differentiate metals and non metals.
2. Able to identify elements with similar properties.
3. Able to identify metals with more reactivity.
4. Able to identify elements in the same period.

22. The graph shows the variation of the potential difference and current flowing through a conductor. What is the resistance of the conductor?

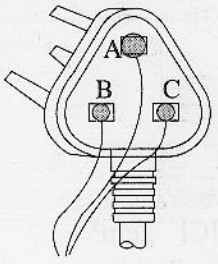


1. 0.3 Ω 2. 3 Ω 3. 30 Ω 4. 3.5 Ω

23. Which statement defines the typical cell more accurately.
1. Structural and functional unit of organisms.
2. The cell that provides origin of the other cell.
3. The build up cell that contains all the cell organclles
4. The cell that does not show growth further.

24. Select the two materials with similar mass.
(O = 16, S = 32, C = 12, H = 1, N = 14)
1. One molecular mole of O_2 and one atomic mole of S.
2. One molecular mole of H_2O and one molecular mole of CH_4
3. One molecular mole of NH_3 and one molecular mole of CH_4
4. One molecular mole of N_2 and one molecular mole of H_2O

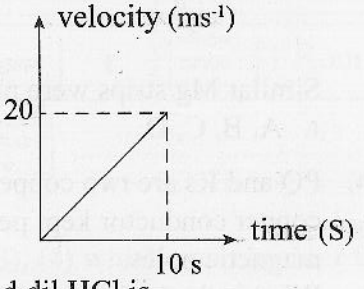
25. What are the correct wires for A, B, C place given in the 3 pin plug.



1. A - earth wire, B - neutral wire, C - live wire
2. A - live wire, B - earth wire, C - neutral wire
3. A - live wire, B - neutral wire, C - earth wire
4. A - neutral wire, B - live wire, C - earth wire

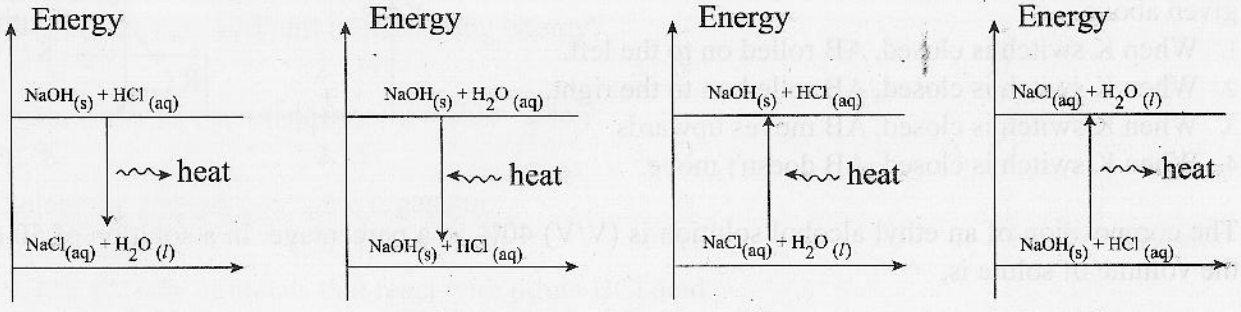
26. Select the **incorrect** statement about the products of photosyntnesis.
1. Stores temporarily inside the leaves as starch.
2. Translocate as sucrose through phloem tissue.
3. Store inside fruits and seeds only as starch.
4. Part of it is used for respiration in plants.

27. The diagram shows the velocity time graph of an object starts its motion at rest. What is the displacement of it after 10 seconds?



1. 100 m 2. 200 m 3. 50 m 4. 150 m

28. The correct energy level diagram for the reaction between solid NaOH and dil HCl is,



1. 2. 3. 4.

29. Given below are 3 statements about the cell wall of plant cell.
(a) Cell wall is non living.
(b) Cell wall is a semi permeable membrane.
(c) Cell wall is made up of phospholipids.
The correct statement/s are,

1. only a 2. only b 3. only a and b 4. all a, b, c

30. Given below is a reaction between 0.5 moldm^{-3} HCl solution and Mg.

$Mg + 2HCl \longrightarrow MgCl_2 + H_2$

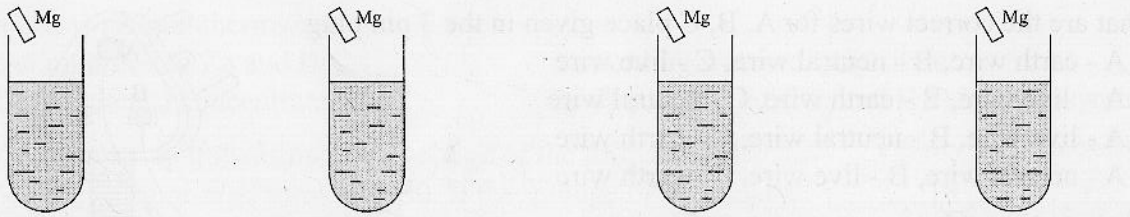
What is the mass of Mg reacted with 20 cm^3 of HCl solution (Mg = 24)

1. 0.06 g 2. 0.12 g 3. 0.24 g 4. 0.48 g

31. For a certain plant, tall is the dominant character and short is the recessive character. If a cross was done between heterozygous tall and homozygous short, what is the genotypic ratio of the F_1 generation. (Dominant gene - T, recessive gene - t)

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

32. Which is **not** an importance of carbohydrate.
1. Act as a storage component.
2. Act as a structural component of living organisms.
3. Contribute in respiration as an energy source.
4. Synthesis of enzymes.

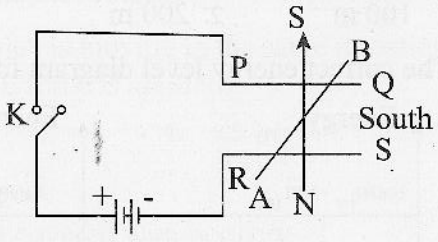
33. 

Dil. HCl 2cm³, H_2O 8cm³ (A)
Dil. HCl 4cm³, H_2O 6cm³ (B)
Dil. HCl 6cm³, H_2O 4cm³ (C)
Dil. HCl 8cm³, H_2O 2cm³ (D)

Similar Mg strips were put to the 4 tubes. Decending order of the time taken to dissolve Mg strip is,

1. A, B, C, D
2. A, D, C, B
3. D, C, B, A
4. D, C, A, B

34. PQ and Rs are two copper rods kept parallely. AB is another copper conductor kept perpendicularly on it. N and S are magnetic poles.
What is the **incorrect** statement regarding the apparatus given above.

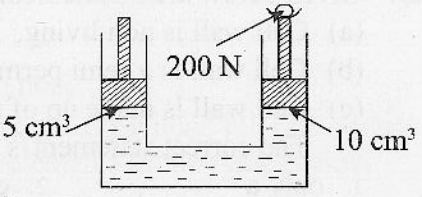


1. When K switch is closed, AB rolled on to the left.
2. When K switch is closed, AB rolled on to the right.
3. When K switch is closed, AB moves upwards.
4. When K switch is closed, AB doesn't move.

35. The composition of an ethyl alcohol solution is (V/V) 40% as a percentage. In a solution of 50 cm³, the volume of solute is,

1. $\frac{40}{100} \times 50\ cm^3$
2. $\frac{60}{100} \times 50\ cm^3$
3. $\frac{100}{40} \times 50\ cm^3$
4. $\frac{100}{60} \times 50\ cm^3$

36. Hydraulic jak is used to transmit pressure through liquids. What is the force that should be excerted on A to lift the 200 N weight upwards.

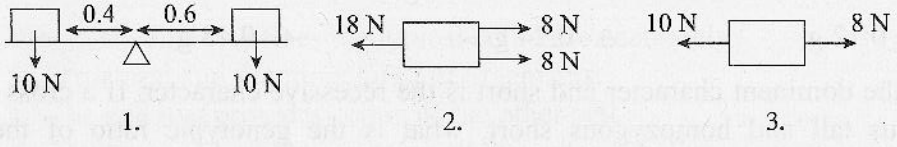


1. 20 N
2. 50 N
3. 100 N
4. 400 N

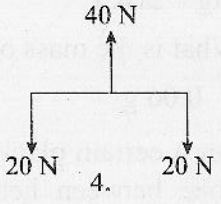
37. Which contains only disaccharides;

1. Sucrose, Glucose
2. Moltose, Cellulose
3. Glucose, Fructose
4. Moltose, Lactose

38. Out of the forces given below which system is at equilibrium?



1. 2. 3.



4.

39. What is the most suitable method to reduce traffic in the roads of city areas?

1. Building fly overs.
2. Reduce import of vehicles.
3. Increase usage of electric vehicles.
4. Develop public transport system.

40. The gases released by industrialization and urbanisation cause acid rains. Which is **not** a harmful effect of acid rain?

1. Reduce the fish in water bodies.
2. Increase the sea level.
3. Reduce the bio diversity.
4. Destroy ancient ruins.

1-03-2024

බස්නාහිර පළාත් අධ්‍යාපන දෙපාර්තමේන්තුව
மேல் மாகாணக் கல்வித் திணைக்களம்
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වර්ෂ අවසාන ඇගයීම - 2023 (2024)
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Year End Evaluation - 2023 (2024)

07053

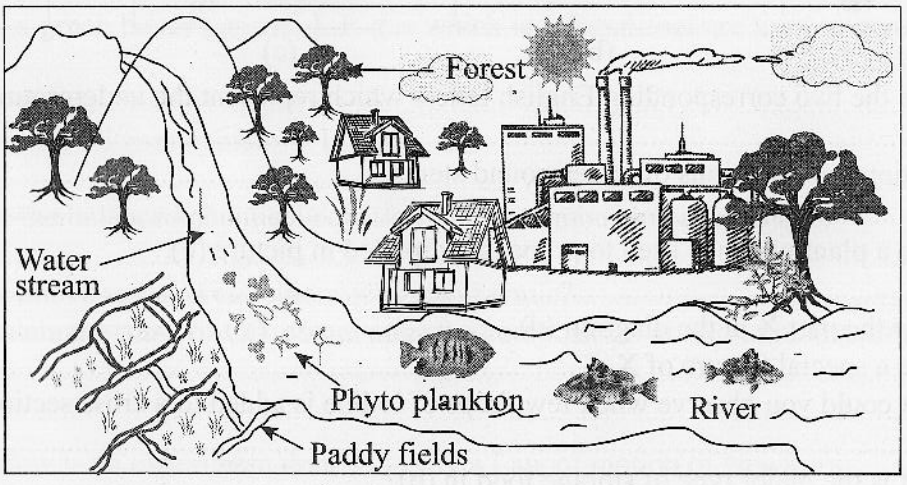
ශ්‍රේණිය தரம் Grade	11	විෂයය பாடம் Subject	Science	පත්‍රය வினாத்தாள் Paper	II	කාලය காலம் Time	3 Hours

නම பெயர் Name ..... විභාග අංකය சுட்டிலக்கம் Index No. .....

- **Answer the four questions in Part A, in the space provided.**
- **Of the five questions in Part B answer three questions only.**

Part A

01. Biosphere is a combination of all hydrosphere, lithosphere and atmosphere. In the eco system given below show less plant population in mountineous area.



(A) i. Name an eco system that can be seen in the above diagram..... (1 mark)

ii. What is the primary source of energy in the above environment?..... (1 mark)

iii. Write a food chain with three links that can be seen in the above environment
..... (2 marks)

iv. According to the food chain that you have written above name the organism that has the highest amount of toxic chemical pollutants..... (1 mark)

v. Write two harmful effects occur due to the deforestation in the above environment
.....
..... (2 marks)

vi. Name two green house gases that exists in industrial gaseous effluents.
..... (2 marks)

vii. Villagers have told that the deforestation and destruction and destruction of aquatic organisms occured after the establisment of the factory. Write two gases that cause for the above observations..... (2 marks)

(B) The meal of resident in the above environment is given below.

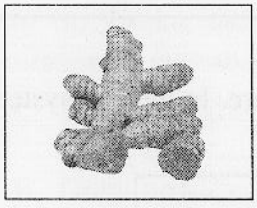
i. Red rice, dhal curry, coconut sambol and eggs. Using the given details calculate the food mile for the given meal.

- Rice was taken from the paddy - 01 mile .....
- Dhal was taken from Misoor area in India - 925 miles .....
- Coconut was taken from the home garden. .....
- Eggs were taken from the poultry farm nearby - 2 miles .....
- Chille was taken from Jaffna - 185 miles ..... (2 marks)

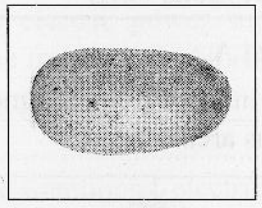
ii. Write two advantages of having a short food mile

..... (2 marks)

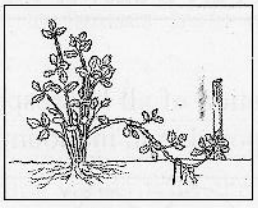
02. (A) Ways of reproduction of plants are shown in the figures given below. Answer the following questions regarding them.



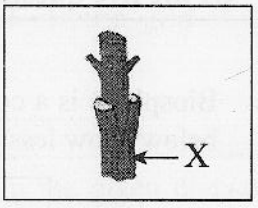
(a)



(b)



(c)



(d)

i. Write the two corresponding English letters which represent the underground stems

..... (2 marks)

ii. Mention two functions of underground stems.....

..... (2 marks)

iii. Write a plant which is used to propagate dipicted in picture (c).

..... (1 mark)

iv. Name the part X in the diagram (d) .....

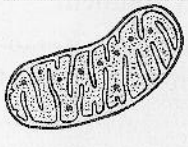
Write a special feature of X..... (2 marks)

v. What could you observe when few drops of iodine is added to a cross section of (b)

..... (1 mark)

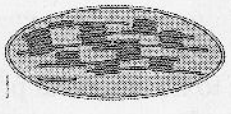
vi. What is the major type of storage food in (b)?..... (1 mark)

(B) The following diagrams represent some organelles found in a cell. Answer the questions according to the given organells.

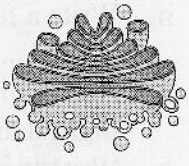


(a)

(b)



(c)



(d)

i. What is the organell that could not be seen in an animal cell?..... (1 mark)

ii. Mention two contents of the cell theory.....

..... (2 marks)

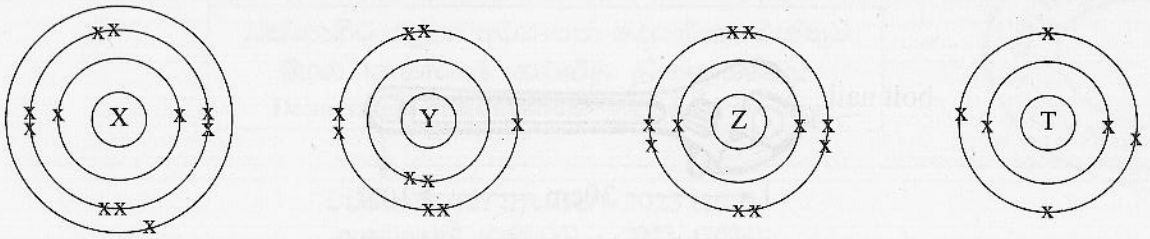
iii. A gas evolved due to the biological process in (a) act as a raw material for a biological process occurs in (c). What is that gas?..... (1 mark)

iv. Mention a major difference in structure of (b) in a bacteria.

..... (1 mark)

v. Write a function of (d)? ..... (1 mark)

03. The given below diagram represent how the electrons of an atom are filled in four different elements.



(A) i. What is the valency of the element X?..... (1 mark)

ii. Which one is a metalic element among the above elements..... (1 mark)

iii. Write the name of the element that bears the following features.

a. The allotropic form that conducts electricity (.....)

b. Exists in the third period of the periodic table (.....)

c. Has the highest first ionization energy (.....) (3 marks)

iv. Write the chemical formula of the compound formed by X and Y elements.

..... (1 mark)

v. What type of a chemical bond is formed due to the reaction of X and Y elements.

..... (1 mark)

vi. Write a feature of the above compound..... (1 mark)

(B) Methane, a green house gas and L.P. gas which is a fossil fuel are used to generate heat to cook food.

i. Draw the structure of methane ..... (1 mark)

ii. Name two alkanes contain in L.P. gas

..... (2 marks)

iii. Write the balanced chemical equation for the combustion of methane.

..... (2 marks)

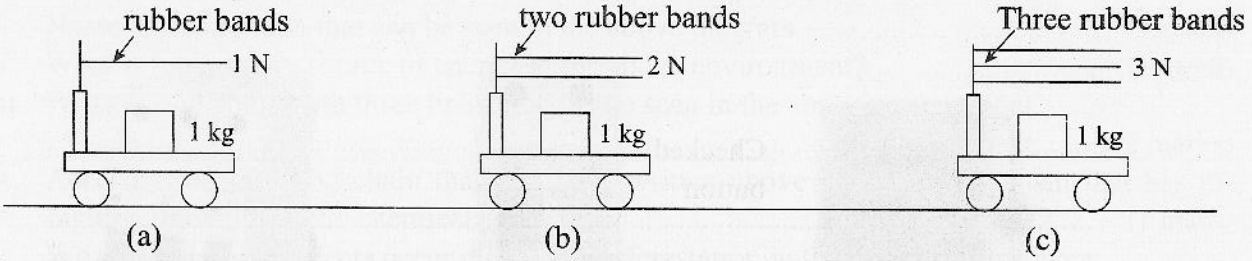
iv. Is the above reaction endothermic or exothermic?..... (1 mark)

v. Calculate the mass of CO_2 obtain after the composition of 80g of methane? (C = 12, H = 1, O = 16)

.....

..... (1 mark)

04. (A) Given below is an experiment done to verify a Law of motion of Newton's.



i. Name a factor that should be kept constant through out the experiment.

..... (1 mark)

ii. Which physical factor increases in a, b and c instances when the force is increased?

..... (1 mark)

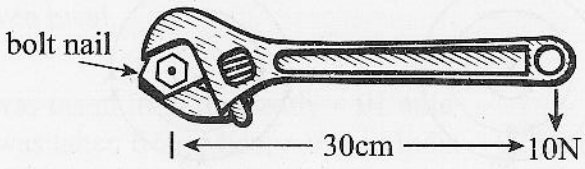
iii. What is the Newton's law build up from the above experiment.

..... (1 mark)

iv. What is the energy stored in the streched bands?

..... (1 mark)

(B) The figure below illustrates an instance where a bolt nail is tightened using a spanner.



i. Calculate in SI units, the moment of force exerted on the shaft of the spanner using the data given in the figure.....
..... (2 marks)

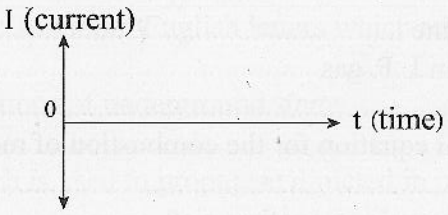
ii. In which direction does the head of the bolt nail rotate in the instance given in the above figure.
..... (1 mark)

iii. Suggest a suitable method to increase that moment of force, while using the same spanner and applying the same force of 10 N..... (1 mark)

(C) In Sri Lanka, the basic electric power supplied to houses from national electric grid is an alternative current and the frequency is 50 Hz.

i. What is an alternative current? .....
..... (1 mark)

ii. Draw how the above mentioned electric current varies with the time in the given diagram below. (2 marks)

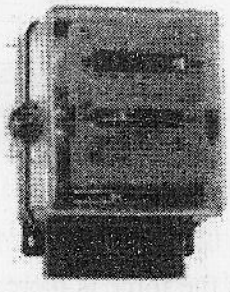


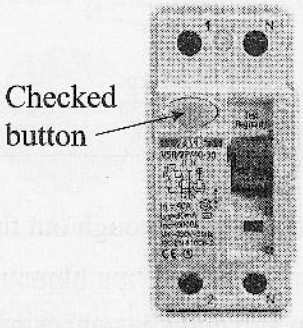
iii. Given below are some parts of a domestic electric circuit. Identify and name them.

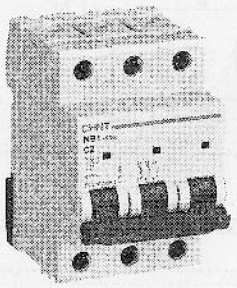
(a) .....

(b) .....

(c) ..... (3 marks)







(a) (b) (c)

iv. Write the function of b in (iii) .....
..... (1 mark)

1.03.2024
G.11

Answer only <u>three</u> questions from the questions No 5, 6, 7, 8 and 9.

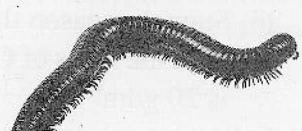
Part B

05. (A) The given below are some organisms seen by some grade 11 students during a field trip.

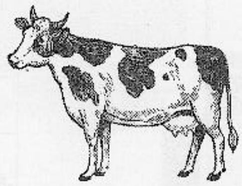

(A)

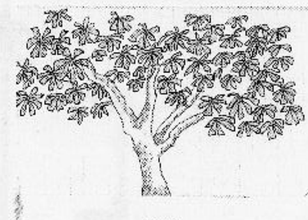

(B)


(C)


(D)

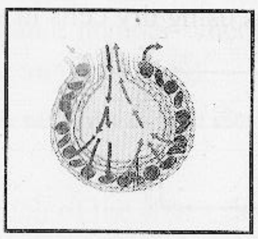

(E)

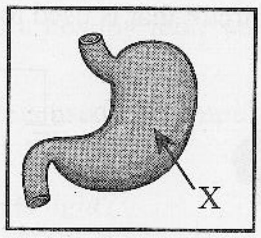

(F)


(G)

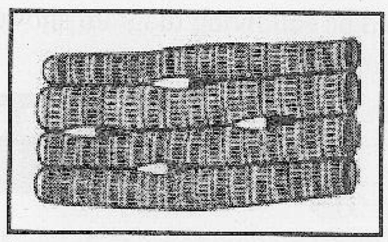
i. State one morphological difference between A and G trees. (1 mark)
ii. According to the classification of living organisms what is the kingdom that diagram "A" belongs? (1 mark)
iii. Name two vertebrates in the above diagram. (2 marks)
iv. Name two common features of phylum that organism "D" belongs. (2 marks)
v. Write two common features of both B and C organisms. (2 marks)
vi. Students wrote the scientific name of the mango tree as Mangifera Indica. Write it correctly. (2 mark)

(B)


(A)



(B)


(C)

i. What is the most common component of human blood? (1 mark)
ii. State two reasons of structure A as an efficient respiratory surface. (2 marks)
iii. What is the reason to decrease the amount of oxygen in the blood of a smoker? (1 mark)
iv. Write two common features in red blood cells of mammals. (2 marks)
v. State functions of the below materials which secreated by the organ X in diagram B.
   (a) HCl acid (b) Pepsine (2 marks)
vi. Write two common features of muscle tissue in diagram C. (1 mark)
vii. State a place which could be seen in tissue C in human body. (1 mark)

06. There are many factors that effect solubility. Understanding about the composition of mixtures is very important in everyday life as well as in laboratory experiments.

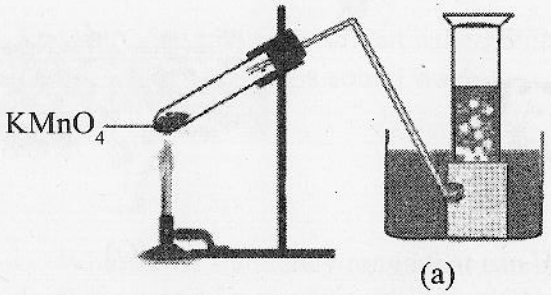
i. Define the solubility. (2 marks)

ii. 64 g of $CuSO_4$ dissolves saturatedly in 200 g of water at 20 °C. Calculate the solubility of $CuSO_4$ in water. (2 marks)

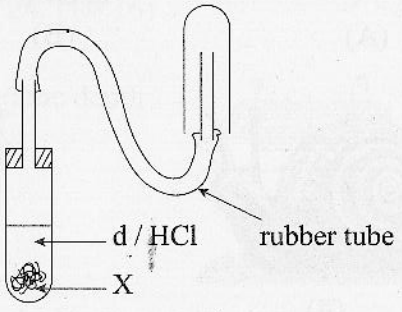
iii. State the reason that dissolves $CuSO_4$ well in water. (2 marks)

iv. Find the mass of $CuSO_4$ solution with composition of a mixture in terms of mass/ volume (m/v) is 20 gdm^{-3}. (2 marks)

(B) Following (a) and (b) two set ups are used to prepare H_2 and O_2 gas in the laboratory respectively



(a)



(b)

i. What are the two gas collecting methods that shown in the above diagram as (a) and (b)? (2 marks)

ii. State the two types of chemical reactions in (a) and (b). (2 marks)

iii. Write two physical properties that are common to O_2 and H_2 gas. (2 marks)

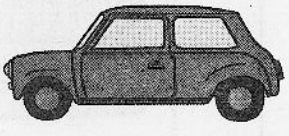
iv. What is the metal named as X? (1 marks)

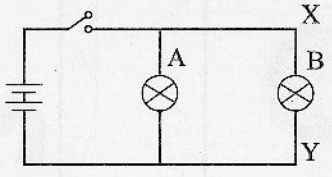
v. Write a method that can be used to increase the rate of reaction in (b) (2 marks)

vi. State two uses of H_2 gas. (2 marks)

vii. How to identify the O_2 gas in the laboratory? (1 marks)

07. (A) The following diagram shows the circuit that is used to light bulbs using dry cells in a toy car.





i. What is the method used to connect A and B bulbs? (1 mark)

ii. State an advantage of that connecting method. (1 mark)

iii. Potential difference of one dry cell is 1.5 V. What is the potential difference between X and Y? (1 mark)

iv. Resistance of a bulb is 12Ω. If the both bulbs are same, Find the equivalent resistance of the circuit. (2 marks)

v. What is the current flowing through the bulb A? (2 marks)

(B) Mass of the above toy car is 100 g. It moves a velocity of 0.5 ms^{-1}.

i. Calculate the kinetic energy of the toy car. (2 marks)

ii. It moves at a uniform velocity for 10 seconds. Sketch a velocity-time graph of that period. (2 marks)

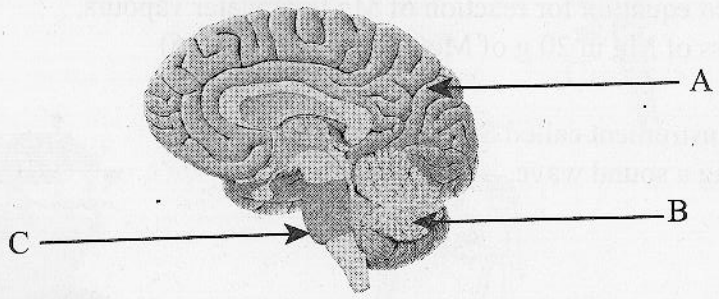
iii. Find the distance traversed by a toy car using the graph. (2 marks)

iv. What is the momentum of the toy car? (2 marks)

(C) A man thought to change the position of the cupboard in his room and pushed the cupboard. But it didn't move. Then he removed the contents in the cupboard and put coconut husks to the four legs. Then it was easier to push it.

i. Briefly explain the reason for not moving the cupboard at the first attempt. (2 marks)
ii. What are the two factors that affect limiting frictional force? (2 marks)
iii. Removing the contents from the cupboard, the effect of which factor reduced on the limiting frictional froce? (1 mark)

08. (A) Following diagram shows some main parts of central nervous system in human.



i. Name B and C (2 marks)
ii. State a function of A. (1 mark)
iii. What is the name of the protective membrane around the above system? (1 mark)

(B) Sexual reproduction is important for the formation of new plant varieties.

i. State two reasons to select the garden pea plant for Mendel's experiments about inheritance. (2 marks)
ii. Construct the punnett square to indicate the phenotypes of the F_2 offsprings when a pure breeding tall garden pea plant was crossed with a pure breeding short garden pea plant. (tall is dominant) (2 marks)
iii. A healthy man for Haemophilia married with a Haemophilia carrier woman. Indicate in a suitable manner whether there is a healthy male among the offsprings. (Dominant gene for Haemophilia is H) (2 marks)

(C) Mirrors and lenses are devices which is used to manipulate light. These devices refract or reflect light.

i. Which of the above devices refracts light? (1 mark)
ii. A larger, inverted and real image obtained from an object placed in front of a concave mirror.
(a) Where should be the object placed?
(F-focal point, P-pole, C-centre of curvature) (1 mark)
(b) Height of the object is 5cm. Focal length of the concave mirror is 10 cm. Use the scale as 5 cm = 1 cm and draw the ray diagram for the image formed by concave mirror. (3 marks)

(D) Temperature is measure of the mean kinetic energy possessed by the particles that form an object.

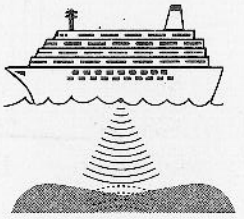
i. What is the international unit of measuring heat capacity? (1 mark)
ii. Convert the following temperatures given in degrees celsius into kelvin.
(a) 0 ^{0}C (b) -273 ^{0}C (2 marks)
iii. A vessel contains 500 g of water. Find the quantity of heat required to increase the temperature by 20^{0}C degrees. (2 marks)
(Specific heat capacity of water is 4200 Jkg^{-1} k^{-1})

09. (A) The standard way of writing Mg and Cl are as follow.

$$^{24}_{12}Mg \qquad ^{35}_{17}Cl$$

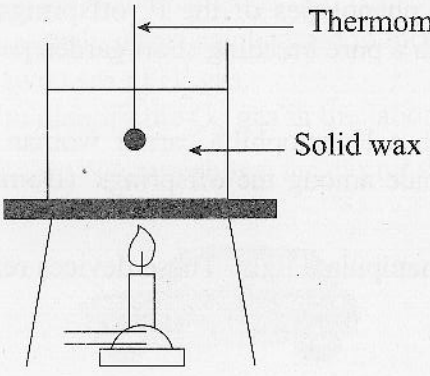
i. Find the number of neutrons in Cl atom. (1 mark)
ii. Write the formula of the compound formed by the reaction between Mg and Cl. (1 mark)
iii. Draw the Lewis structure of the Cl_2 molecule. (1 mark)
iv. Calculate the molar mass of the $MgCl_2$ (Mg = 24, Cl = 35.5) (2 marks)
v. What is the common feature in atomic structure of Mg and Cl? (1 mark)
vi. Write the balanced equation for reaction of Mg with water vapours. (1 mark)
vii. Calculate the mass of Mg in 20 g of MgO (Mg = 24, O = 16) (2 marks)

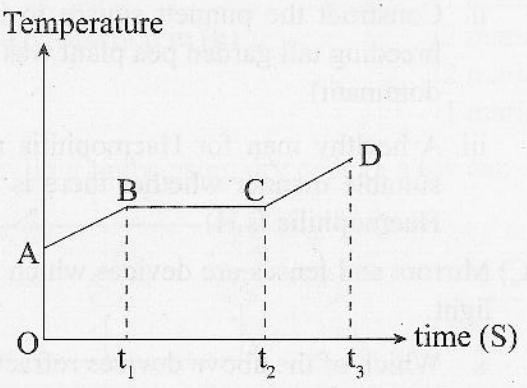
(B) The ship is used an instrument called SONAR to find the depth of the sea by emitting a sound wave.



i. What is the frequency range that can be heard by the human ear? (1 mark)
ii. What type of wave is emitted by SONAR? (1 mark)
iii. Which phenomenon of that named wave type is used to find the depth of the sea? (1 mark)
iv. State two other uses of that type of wave (2 marks)

(C) The following graph shows the change of temperature when solid wax was heated.





i. State the physical state of wax in the following time ranges.
(a) between A and B (b) between B and C (c) between C and D
(3 marks)

ii. According to the graph which time period shows the change of state in wax? (2 marks)

iii. What is the name of the amount of heat absorbed by the wax in between B and C.
(1 mark)