

G.C.E (O/L) Examination – 2020

Support Paper

Grade : 11

Subject : Science

Paper : 01

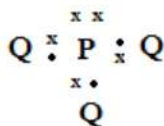
Time : 1 hour

Name :

- Answer all questions
 - In each of the questions 1 to 40, pick one of the alternatives, which you consider as correct or most appropriate.
-

- Which type of carbohydrate is not contained in ripen fruit ?
1. Glucose 2. Lactose 3. Fructose 4. Sucrose
- Out of the following organisms which one is considered as mollusca
1. Star fish 2. Leech 3. Octopus 4. Sea Urchin
- Which of the following is a solid – liquid homogeneous mixture ?
1. Sugar and salt mixture 2. Salt and water mixture
3. Kerosene oil and salt mixture 4. Copper and zinc mixture
- What is the incorrect statement regarding hydrogen ?
1. It dissolves slightly in water 2. It is low denser than air
3. It is not a combustible gas 4. It doesn't have an odour and colour
- What did Robert Hook first used to observe in through a microscope ?
1. a cross section of a cork 2. a cross section of a beehive
3. a section of an onion cell 4. a cross section of a plant stem
- A specific feature of a mammal is
1. having four chambers in the heart 2. having ear lobes
3. being homoiothermic 4. having presence of pentadactyle limbs

7. Sifting, winnowing and floating on water are few Mechanical methods of separating compounds in mixtures. What is the common physical property of these methods ?
1. Difference in the size of component particles
 2. Difference in densities of the components
 3. Difference in volumes of components
 4. Difference in nature of surface of the component
8. What is the name used to identify the process where a fertilized ovum divides and deposits in the uterine wall ?
1. implantation
 2. plantation
 3. copulation
 4. fertilization
9. The occurrence of F_2 generation was introduced by the scientist,
1. Watson
 2. Morgan
 3. Mendal
 4. Punnett
10. Element X forms X^+ ion with the electronic configuration of 2,8. What is the period and the group of it in the periodic table respectively ?
1. 2 and viii
 2. 3 and I
 3. 2 and I
 4. 3 and viii
11. What is the mass of 2 moles of O_2 molecule ($O = 16$)
1. 8g
 2. 16g
 3. 32g
 4. 64g

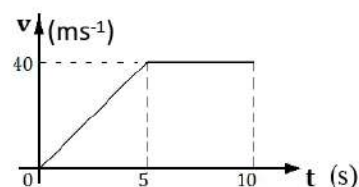


12. Dot cross diagram of a certain molecule is shown above. (Real symbols are not given here) What would be matching elements for P and Q respectively ?
1. C and H
 2. N and H
 3. O and H
 4. Na and H
13. Given below are three statements given by three students for the following chemical reaction
- $$2H_2O_2 \longrightarrow 2H_2O + O_2$$
- a) A decomposition reaction
 - b) is an unbalanced reaction
 - c) Oxygen can be produced
- The correct statements are,
1. a, b only
 2. b,c only
 3. a, c only
 4. a,b,c all

14. What is the mode of nutrient that produces their own food by themselves ?
1. heterotrophic
 2. autotrophic
 3. symbiosis
 4. parasitic
15. According to the Newton's second law,
1. Mass of an object is directly proportional to acceleration
 2. Mass and unbalanced force is indirectly proportional
 3. Unbalanced force and acceleration is directly proportional
 4. Acceleration and unbalanced force is indirectly proportional
16. Of the following blood vessels which vessel has the highest pressure when blood flows through it
1. Superior vana cava
 2. Pulmonary artery
 3. Inferior Verna cava
 4. Aorta
17. Select the glands present only in the Endocrine system
1. Pancrease, Pitiutary, thyroid
 2. Liver, salivary glands, pancrease
 3. Adernal, gall bladder
 4. Thyroid, lever, salivary glands
18. 10g of MgO has 6g of Magnesium. What is the mass fraction of Mg in MgO
1. $\frac{3}{8}$
 2. $\frac{3}{5}$
 3. $\frac{5}{3}$
 4. $\frac{5}{8}$
19. Which of the following group comprises of slow rate of reactions
1. Burning firewood, digestion, combustion of petrol
 2. Iron corrosion, burning firewood, ignition of gun powder
 3. Digestion, iron corrosion, ripening fruit
 4. combustion of petrol, ignition of gun powder, reaction of metal and acids

20. What is the acceleration that has taken place according to the given velocity – time graph

1. $\frac{40-0}{10} \text{ ms}^{-1}$
2. $\frac{0-40}{5} \text{ ms}^{-2}$
3. $\frac{40-0}{5} \text{ ms}^{-2}$
4. $\frac{0-40}{10} \text{ ms}^{-2}$



21. The change that take place when air passes through the nasal cavity during inspiration is

1. Cooling down inhaled air
2. Removal of wastes from inhaled air
3. drying up of inhaled air
4. warming up inhaled air more than the body temperature

22. What colour changes would occur when a pH paper, litmus paper and methyl orange indicators are inserted into a strong acid respectively ?

- | | |
|-------------------------|------------------------|
| 1. red, blue and yellow | 2. red, red and yellow |
| 3. red, red and red | 4. red, blue and red |

23. What is the temperature value of 50°C in Kelvin ?

- | | | | |
|--------|---------|----------|---------|
| 1. 50k | 2. 200k | 3. 310 k | 4. 323k |
|--------|---------|----------|---------|

24. Which statement is correct about the locations A and B when drinking through a straw?



1. Pressure at B is greater than A
2. Pressure at A is greater than B
3. Pressure at A and B are equal
4. None can be said about the pressure at A and B

25. What is the kinetic energy of an object with a mass of 8kg and velocity of 5ms^{-1} ?

- | | | | |
|--------|--------|---------|---------|
| 1. 10J | 2. 40J | 3. 100J | 4. 200J |
|--------|--------|---------|---------|

26. Rheostat is a type of variable resistor. By changing the resistance it can control the current following through a circuit. Which factor affect the resistance of the rheostat ?

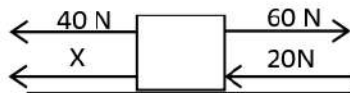
1. Area of cross section of the conductor
2. Material of the conductor
3. Length of the conductor
4. Temperature of the conductor

27. Of the following statements which ones are correct on photosynthesis ?

- a. The sunlight is fixed in the food
- b. CO_2 is released as by product
- c. The main product is starch

- | | | | |
|-----------|-----------|-----------|--------------|
| 1. a only | 2. b only | 3. c only | 4. a,b,c all |
|-----------|-----------|-----------|--------------|

28.



If the X object moves towards the force X, what is the minimum force it should have ?

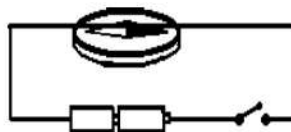
1. 1N
2. 5N
3. 20N
4. 40N

29.

Absorptive function, perception of stimuli, secretory functions are carried out by

1. Smooth muscle tissue
2. epithelial tissue
3. nervous tissue
4. connective tissue

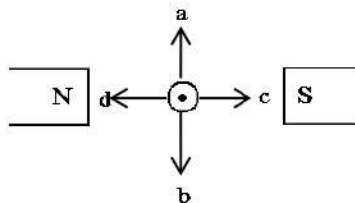
30.



When a compass is placed in a circuit as shown above it deflects. Who was the first scientist to observe this scientific principle ?

1. Michael Faraday
2. Earnest Rutherford
3. James Clerk Maxwell
4. Hans Christine Oersted

31.



The conductor is arranged to be perpendicular to the magnetic field and the current flows out of the page. What is direction of the force ?

1. towards a
2. towards b
3. towards c
4. towards d

32.

Given below are few techniques of separating mixtures.

- a) steam distillation
- b) solvent extraction
- c) pressing under pressure

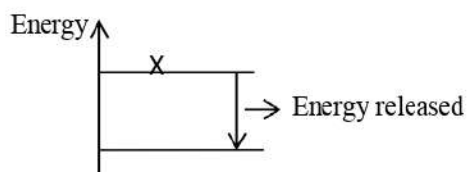
Out of the given techniques above which techniques can be used to extract essential oils ?

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

33. Which is correct about, long term collection of carbonic pollutants ?

1. They are not very toxic
2. They are collected in organisms through the food chain
3. They are destroyed in a short period
4. They do not spread in large area

34.



Which of the following components are suitable for the 'X' in the Energy diagram

1. Magnesium and hydrochloric acid
2. Glucose and water
3. Citric acid and sodium bicarbonate
4. Urea and water

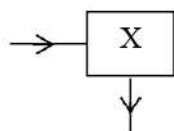
35. Select the correct statement on waves

1. A transverse waves propagate through air
2. Sound waves are a kind of longitudinal wave
3. Compressions and rarefactions can be seen in transverse waves
4. Crests and troughs are occurred in longitudinal waves

36. What is the electrical energy consumed, if a 60W bulb is lighted for an hour ?

1. 60J
2. 60 x 60 J
3. 60 x 60 x 60J
4. 60 x 1000J

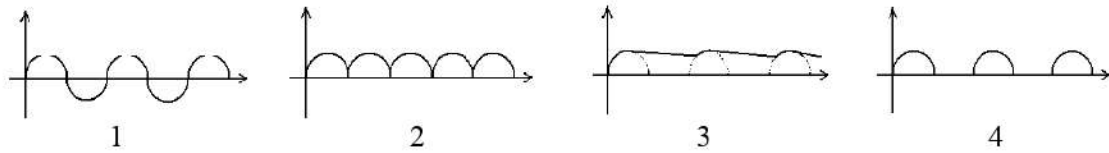
37.



X is a device which convert light rays as shown in the diagram. Which of the following can be 'X'

1. a glass block
2. rectangular prism
3. concave lense
4. convex lense

38. Which of the following could be the diagrammatic representation of electric current, time and voltage of full wave rectification ?



39. What is the strategy to protect an eroding bund of a water filled tank from water waves?
1. Bisokotuwa
 2. The sluice
 3. Ralapanawa
 4. Isweti
40. The most suitable practice one should carry out to prevent from the recent highly spreading microbial disease is,
1. Discuss allergic reactions very often with others
 2. Get medicine for allergies very often
 3. Get to know about the microbes that produce these diseases
 4. Always consider the personal health

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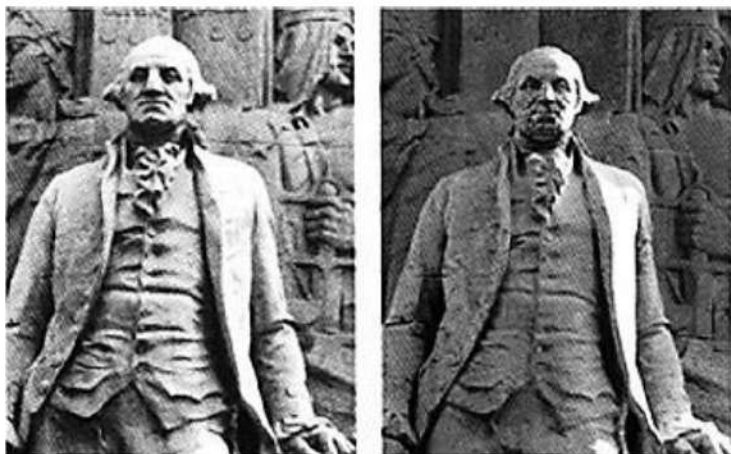
Name :

- This paper consist part A and part B
 - Answer the four questions in part A, in the space provided
 - Out of the five questions in part B, answer three questions only.
-

Part A

01.

A



Acid rain is an adverse effect of environmental pollution. Destruction of metallic statue due to acid rain is shown in the above picture. The pH is about 5.6 of natural rain water.

- (1) What is meant by acid rain ? (1m)

.....
.....
.....

- (2) What is the reason of the pH value of natural rain (1m)

.....

- (3) Write 2 gases that help acid rain (2m)

.....

B. The graphical representation of Ecological pyramids have been designed using data different relationships in different trophic levels

1. Number pyramid is one type of ecological pyramid. Name the other two (2)

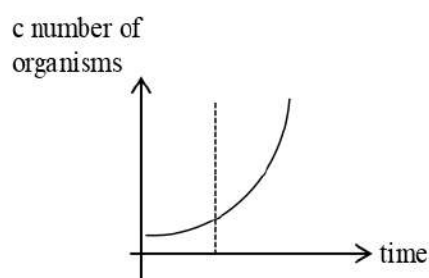
.....
.....

2. Of the pyramids you mentioned above which one is upright always ? (1)

.....

3. Write the reason for the above answer (2)

C.



The graphical representation of the growth curve of human population is shown above.
Answer the following questions using it.

1. What is the reason for the rapid growth of human population ? (1)

.....

2. The growth curve of human population is J shaped and it has two phases

a) What is the shape of a growth curve of a natural population ? (1)

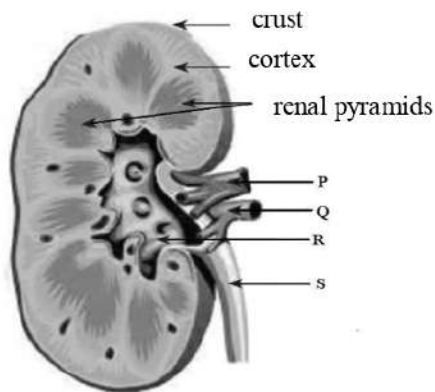
.....

b) How many phases are there in such a growth curve ? (1)

.....

3. The definition of population consists three features. Write one of them (1)

02.
A



Shown above is a longitudinal section of a human kidney

1. What is the structural and functional unit of a kidney ? (1)
.....
2. Name P, Q, R and S (1/2 x 4 = 2)
P -
Q -
R -
S -
3. Write 2 other human excretory organs except the kidney (2)
.....
4. Write the function of S
.....

B. The following characteristics of plant tissues written by a student after microscopic observation

- a) Cells are polygonal
- b) Cell walls are not evenly thickened
- c) Less number of intercellular spaces

1. According to the observations given above which plant tissue has he observed?
.....

2. According to the classification of plant tissues to which group does the above mentioned plant tissue belong..... ? (1)

3. A certain component is responsible for the thickening of cell walls

(i) What is the component ?

.....

(ii) What is the bio molecule to which it belong ? (1)

.....

C. The following lines are quoted from a note book of a Grade 11 student

Observed a plant has round seeds. The seeds are heterozygous. The phenotype of the seed is round, the genotype is Rr

1. Explain the words underlined in the above paragraph (2)

.....

2. Write the genotype of a homozygous pea plant

.....

3. DNA is important, in storage of genetic information. What is meant by 'Gene' in a DNA molecule (1)

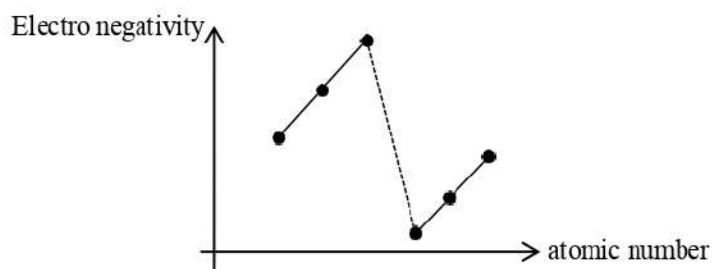
.....

4. Name a genetic disorder (1)

.....

03.

- A The graph shows the electro negativity of the six consecutive elements belonging to 2nd and 3rd period in the periodic table. The English letters are not the standard symbols of the elements.



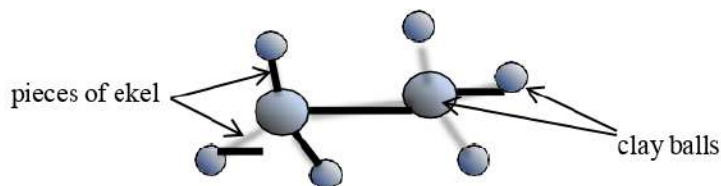
1. State the elements which has the highest electro negativity ? (1)
.....
2. (a) Write the chemical formula formed when the two elements B and D are combined (1)
.....
- (b) Name the bond type of the above given compound (1)
.....
3. Out of the above given elements which one reacts very fast with water (1)
.....
4. Which group cannot be seen in the electro negativity graph ? (1)
.....

- B. The following is a corrosion reaction



- (1) What is the mass of Fe_2O_3 needed to get 224g of Fe according to the above reaction (Fe = 56, O = 16, C = 12) (2)
.....
- (2) Find the number of Fe_2O_3 moles needed to release 12 moles of CO_2 (2)
.....
- (3) Write a method to increase the rate of the above reaction (1)
.....

C. Following is a hydrocarbon structure made by a student using clay balls, and ekel



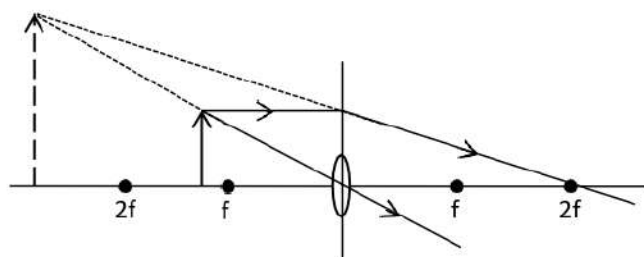
1. State the component element of the hydrocarbon that corresponds to the parts given below. (3)
 - (a) large clay ball -
 - (b) small clay ball -
 - (c) pieces of ekel -
2. Name the hydrocarbon shown above (1)

.....
3. Write the formula of the hydrocarbon given above (1)

.....

04.

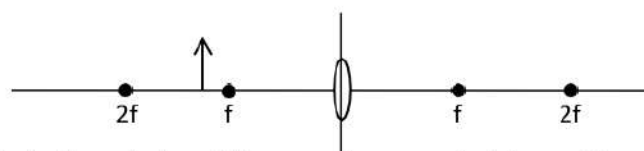
A Given below is a ray diagram drawn by a student. His teacher said that it is incorrect.



1. State the error shown by the teacher (1)

.....
2. Mention 2 characteristics of the image received by the student in his ray diagram (2)

.....
3. Complete the following ray diagram correcting the above one



4. If the student wants to get the same image as in his ray diagram where should he place the object ? (1)

.....

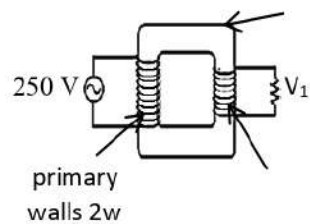
B.



A student is near a fire place to keep him warm in a very cold day

1. Name 2 ways of heat transfer from the fire place to him
.....
2. Write a difference between the two heat transfer methods you mentioned above..... (1)
3. Following are techniques that have been used to prevent heat loss from a thermos flask
 - a) Silver colour inner surface
 - b) a vacuum between two glass walls

C. Given below is a structure of a transformer



1. What type of transformer is this ? (1)
.....
2. What type of current does a transformer need to work (1)
.....
3. Write the equation to show the relationship between the voltages and number of turns of the transformer to find V_1 . (Use the given figures) (1)
.....
4. Write a day today activity that the above given type transformer is used (1)
.....

Part (B)

05.

A



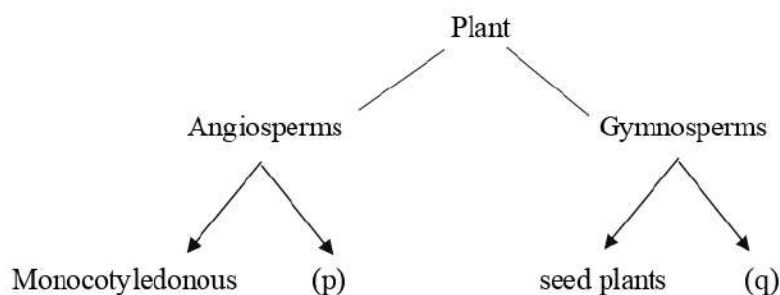
Given above are stages of plant grafting and tissue culture. Grafting and tissue culture are two important methods used to propagate plants at present

- (i) Which part of a plant is taken in tissue culture ? (1)
- (ii) What is the propagative methods of tissue culture (1)
- (iii) Write two advantages of tissue culture (2)
- (iv) What is meant by grafting ? (1)
- (v) What is the method of grafting showing above ? (1)
- (vi) Name another method of propagating plant mentioned in (ii), grafting and tissue culture (1)

B. The ability to respond to stimuli received from internal or external environment is known as irritability. The communication between different organs during responding to a stimulus is known as co-ordination

- (i) What is meant by stimulus ? (1)
- (ii) Endocrine system is important in co-ordination. What is the other system which is important for it ? (1)
- (iii) Name 2 organs that belong to the system you mentioned above (1)
- (iv) Hormones are secreted by endocrine glands
Name an endocrine gland, a hormone it secretes and a function of it (3)

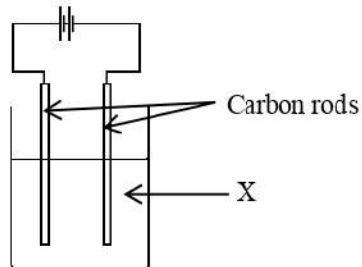
C. Shown below is an incomplete plant classification written by a student.



- (i) Mention P and Q (2)
- (ii) Write 2 characteristics of monocotyledon (2)
- (iii) Fruits are produced by angiosperms. Fruits bear seeds
 - a) According to this give another name for angiosperms? (1)
 - b) Give examples for P and Q (2)

06.

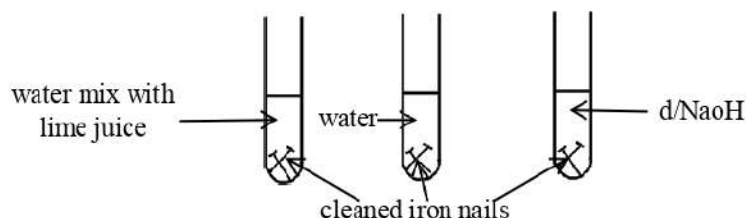
A



An Electrochemical cell is shown in the diagram. This contains two carbon rods inserted in solution 'X'.

- (i) Name 'X' solution (1)
- (ii) How have carbon rods been used? (1)
- (iii) Name another type of rod that can be used instead of carbon rods (1)
- (iv) What can you observe near the above given rods if the solution X is CuSO_4 (4)

- B. Given below are three test tubes assigned to show a relevant experiment in the laboratory.



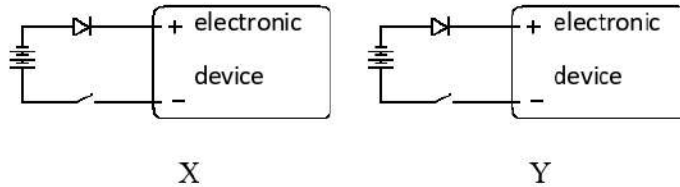
- (i) What are you going to investigate using the above set up ? (2)
 - (ii) Write an observation that can be made after one day in each test tube separately
 - (iii) A student said that there should be another test tube with nails in a salt solution
 - (a) Out of the test tubes P, Q, R which one gives the similar observations for the nails inserted in a salt solution.
 - (b) What are the two techniques used to extract salt from a saltern ?
 - (c) What is the final concentration of sea water from the initial concentration when salt is ready to be extracted.
- C. A child has written following notes on his Science note book

Protium	}	X
Deuterium		
Tritium		

- (i) Write a suitable term for X (1)
- (ii) Write one difference of atom if the same element has different masses.
- (iii) Answer the following questions which are based on three allotropic forms of carbon such as diamond, graphite, and charcoal.
 - a) Of the three allotropic forms which one is used to cut gems and glass (1)
 - b) What is used as a lubricator ? (1)
 - c) Of the three allotropic forms which one is considered as non crystalline and write a use of it (2)

07.

A. Given below are two electronic devices with dry cells



- (i) Which device can be operated when the switch is on ? (1)
- (ii) What is the reason for your answer ? (1)
- (iii) What is the function of the diode in the electronic device ?
- (iv) What are the elements used in making diodes ?

B. There are bowlers, batsmen and fielders in a cricket team. Cricket is a game where force is applied very often.

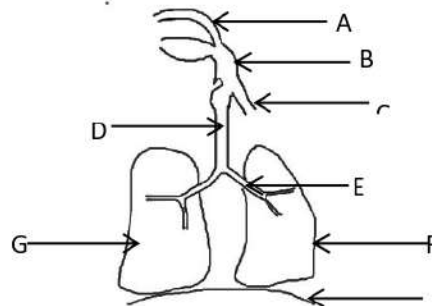
- (i) How is the force applied in following situations (4)
 - a) bowler - To move on object at rest
 - b) batsman - batting vigorously
 - c) fielder - Catching a ball
 - d) batsman - batting the ball to catch by the bowler himself
- (ii) State Newton's first law for a moving body when applying a force (2)
- (iii) Write three conditions that must be satisfied to maintain equilibrium under two forces (3)

C. A child pulled a box with a force of 20N to a distance of 15m. The area of the bottom of the box is 2.5m^2 and its mass is 25kg ($g = 10\text{ms}^{-2}$)

- (i) Calculate the work done when pulling the box (2)
- (ii) What is the pressure exerted by the box when it is at rest (2)
- (iii) Calculate the efficiency if one takes 10 seconds to pull the box (2)
- (iv) Draw a diagram to show the forces exerted on the box (2)

08.

A The following diagram shows the human respiratory system



- (i) Name A,B, D and E (2)
- (ii) To where does external air reach in the lungs ?
- (iii) How does the structure H works during inspiration ? (2)
- (iv) How do D and E valves prevent contracting themselves ? (1)

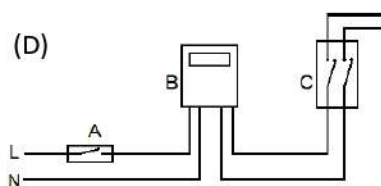
B Xylem and phloem are two types of complex permanent tissues.

- (i) Write the functions of these two tissues separately (2)
- (ii) Name two common cells for both these tissues (2)
- (iii) Which tissue obtain more non living cells (1)

C Ultrasound waves are employed to find the depth of the sea. An instrument called SONAR is fixed to a ship to emit ultrasounds.

- (i) What is meant by ultrasounds ? (1)
- (ii) If the time taken by ultra sound waves transmitted by a ship to reach the detector again after reflection from the sea bottom is 6S, find the depth of the sea (The velocity of water is 1440ms^{-1})

D.

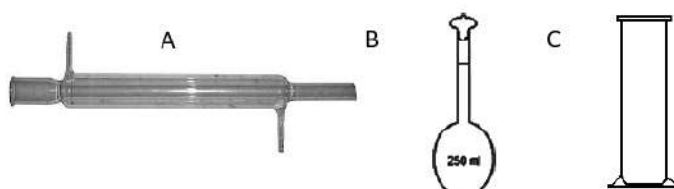


A part of a domestic electric circuit is given here.

- (i) What is the device shown by A (1)
- (ii) Of the devices A,B and C which one doesn't belong to the consumer ? (1)
- (iii) Write the function of B (1)
- (iv) Write standard colours used in L and N wires (2)

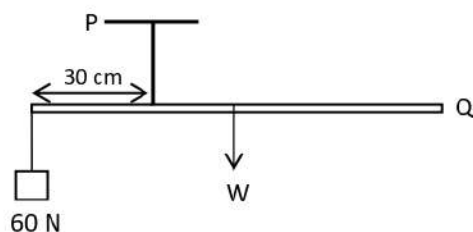
09.

A. Below given are 3 equipment used in laboratory practicals



- (i) Name 3 equipment A,B and C (3)
- (ii) Write a function and a use of device A (2)
- (iii) B instrument is used to prepare standard solutions
 - (a) What is meant by standard solution ? (1)
 - (b) Name 2 equipment other than A to prepare standard solutions (2)
 - (c) Calculate the mass of NaOH to prepare 500ml of 1mol dm^{-3} NaOH solution. (Na = 23, O = 16, H = 1) (2)
- (iv) Write a use of device 'C' (1)

- B. PQ 1m long rod is suspended as shown in the diagram. 60N load is hung at P to maintain equilibrium



- (i) What condition should be satisfied to maintain the equilibrium of the rod (1)
- (ii) Calculate the weight of the rod (2)
- (iii) It is easier to rotate an object when applying a couple of forces.
 - a. Explain, what is meant by couple of forces? (2)
 - b. Write an example for an application of couple of forces.
- (iv) A couple of forces act on a simple motor
 - a. What is the principle behind a simple motor ? (1)
 - b. Write the energy transformation of simple motor (2)