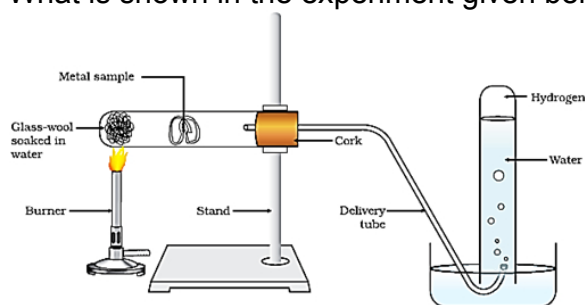


- a) A and C are isomers of hexane and B is benzene.
- b) A is a saturated cyclic hydrocarbon and B and C are unsaturated cyclic hydrocarbons.
- c) A is cyclohexane and B and C are the isomers of benzene.
- d) A is an isomer of hexane, B is benzene and C is an isomer of hexene.

5. What is shown in the experiment given below:

[1]



- a) Reaction of metals with salt solutions
- b) Heating a salt sample on a spatula
- c) Action of steam on a metal
- d) Testing the conductivity of a salt solution

6. Which one of the following four metals would be displaced from the solution of its salts by the other three metals?

[1]

- a) Mg
- b) Ag
- c) Cu
- d) Zn

7. Which of the following gas is used in welding and cutting metals?

[1]

- a) All of these
- b) Ethyne
- c) Ethane
- d) Ethene

8. The autotrophic mode of nutrition requires:

[1]

- a) sunlight
- b) All of these
- c) carbon dioxide and water
- d) chlorophyll

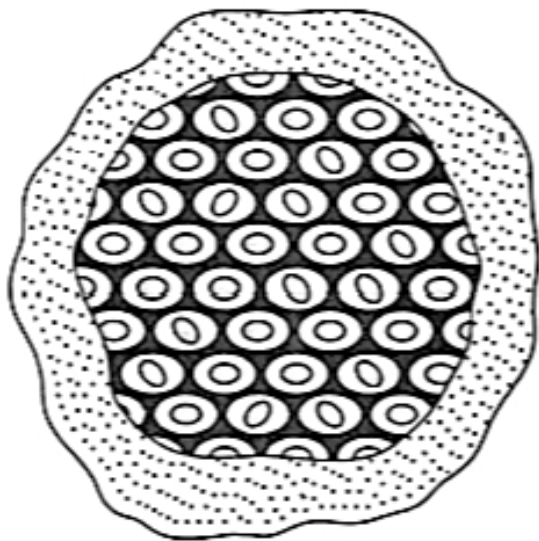
9. Father of Human genetics is

[1]

- a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A.
- c) A is true but R is false. d) A is false but R is true.
18. **Assertion:** At puberty, in boys, the voice begins to crack and thick hair grows on the face. **[1]**
Reason: At puberty, there is decreased secretion of testosterone in boys.
- a) Assertion and reason both are correct statements and reason is correct explanation for assertion. b) Assertion and reason both are correct statements but reason is not correct explanation for assertion.
- c) Assertion is correct statement but reason is wrong statement. d) Assertion is wrong statement but reason is correct statement.
19. **Assertion (A):** Electric appliances with metallic body have three connections, whereas an electric bulb has two pin connections. **[1]**
Reason (R): Three-pin connections reduce heating of connecting wires.
- a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A.
- c) A is true but R is false. d) A is false but R is true.
20. **Assertion (A):** Flow of energy in a food chain is unidirectional. **[1]**
Reason (R): Energy captured by autotrophs does not revert back to the solar input and it passes to the herbivores.
- a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A.
- c) A is true but R is false. d) A is false but R is true.

Section B

21. What is the role of concentrated H_2SO_4 in the esterification reaction? **[2]**
22. The picture given below depicts the process of asexual reproduction in Plasmodium. **[2]**

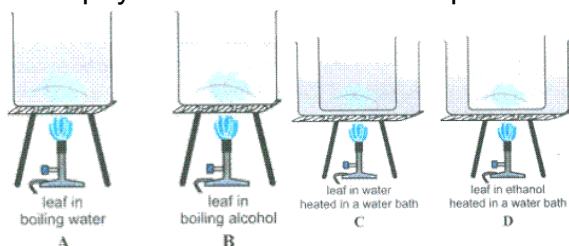


- i. Name the process depicted above and define it?
- ii. What is meant by asexual reproduction?

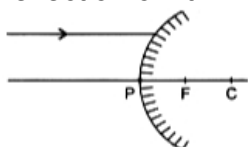
23. What are the differences between aerobic and anaerobic respiration? Name some organisms that use the anaerobic mode of respiration. [2]

OR

Out of the following figures, choose the one showing the correct procedure for removing chlorophyll from the leaf in the experiment, "light is necessary for photosynthesis".



24. A ray of light is incident on a convex mirror as shown. Redraw the diagram and complete the path of this ray after reflection from the mirror. Mark angle of incidence and angle of reflection on it. [2]



25. Rearrange the following according to their trophic levels in a food chain. [2]
Fish, zooplankton, seal, phytoplankton



OR

The depletion of ozone layer is a cause of concern. Why?

26. State one main function each of iris, pupil, and cornea. [2]

Section C

27. A metal 'X' is found in the form of filings which burns vigorously when sprinkled on flame. When these filings are treated with sulphur a black coloured compound 'Y' is formed which is not attracted by magnet. 'X' reacts with dil HCl to liberate hydrogen gas. 'X' reacts with steam to form 'Z' along with hydrogen gas. Identify 'X', 'Y', and 'Z'. Write the reaction involved. [3]
28. Give two examples each of the metals that are good conductors and poor conductors of heat respectively. [3]

OR

An alkali metal A gives a compound B (molecular mass = 40) on reacting with water. The compound B gives a soluble compound C on treatment with aluminium oxide. Identify A, B and C and give the reactions involved.

29. What are the common features between all the respiratory organs? Explain the mechanism of gaseous exchange between tissues and blood. [3]
30. Two plants, A with white flowers and B with red flowers were crossed. The F_1 progeny shows all red flowers and F_2 has three red and one white. Categorise the trait as dominant and recessive. [3]
31. Differentiate between virtual image formed by a concave mirror and of a convex mirror. [3]

32. a. State Joule's law of heating. Express it mathematically when an appliance of resistance R is connected to a source of voltage V and the current I flows through the appliance for a time t . [3]
b. A 5Ω resistor is connected across a battery of 6 volts. Calculate the energy that dissipates as heat in 10s.
33. a. Define Electric Power and write its SI unit. [3]
b. Two bulbs rated 100 W; 220 V and 60 W; 220 V are connected in parallel to an electric mains of 220 V. Find the current drawn by the bulbs from the mains.

Section D

34. Discuss the important characteristics of covalent compounds. [5]

OR

Discuss the formation of covalent bonds in molecules of

- i. Ammonia
- ii. Ethylene
- iii. Carbon dioxide.

35. Name the following: [5]
- i. The body part in which the testes are present in a human male.
 - ii. The part from where the sperms are released out of the body.
 - iii. The part of the female reproductive system containing a mature egg.
 - iv. The accessory fluid in human males, whose secretion activates the sperms.
 - v. The period of adolescence when the reproductive tissues begin to mature.

OR

Nervous and hormonal system together perform the function of control and co-ordination in human beings". Justify the statement.

36. A thin converging lens form a real magnified image and virtual magnified image of an object in front of it. [5]
- i. Write the positions of the objects in each case.
 - ii. Draw ray diagrams to show the image formation in each case.
 - iii. How will the following be affected on cutting this lens into two halves along the principal axis?
 - a. Focal length
 - b. Intensity of the image formed by half lens.

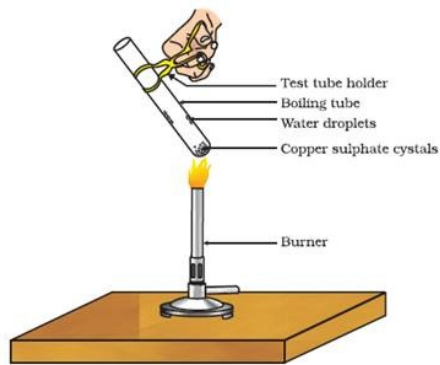
OR

We wish to obtain an erect image of an object, using a concave mirror of focal length 15 cm. What should be the range of distance of the object from the mirror? What is the nature of the image? Is the image larger or smaller than the object? Draw a ray diagram to show the image formation in this case.

Section E

37. Read the text carefully and answer the questions: [4]
- Copper sulphate crystal contains water of crystallisation when the crystal is heated the water is removed and salt turns white. The crystal can be moistened again with water. The water of crystallisation is the fixed number of water molecules present in 1 formula unit of copper sulphate. On heating gypsum at 373K, it loses water molecules and became

calcium sulphate hemihydrate.



- (i) If the crystal is moistened with water, then which colour of the crystal reappears?
- (ii) What is the commercial name of calcium sulphate hemihydrate?

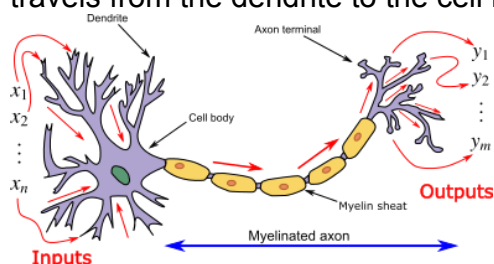
OR

How many water molecules are present in one formula unit of copper sulphate?

38. Read the text carefully and answer the questions:

[4]

In animals, control and coordination are provided by nervous and muscular tissues. Touching a hot object is an urgent and dangerous situation for us. We need to detect it and respond to it. How do we detect that we are touching a hot object? All information from our environment is detected by the specialised tips of some nerve cells. These receptors are usually located in our sense organs, such as the inner ear, the nose, the tongue, and so on. So gustatory receptors will detect taste while olfactory receptors will detect the smell. This information, acquired at the end of the dendritic tip of a nerve cell, see figure, sets off a chemical reaction that creates an electrical impulse. This impulse travels from the dendrite to the cell body, and then along the axon to its end.



- (i) Name the largest cell present in the body.
- (ii) What is an axon ?
- (iii) Name one gustatory receptor and one olfactory receptor present in a human beings.

OR

Name the following parts of a neuron:

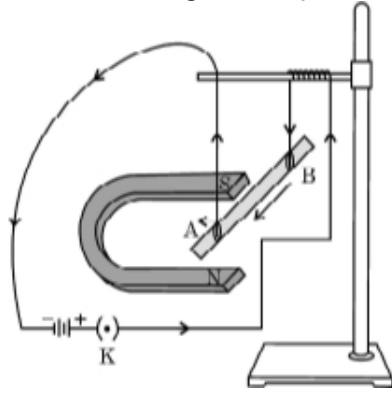
- a. Where information is acquired.
- b. Through which information travels as an electrical impulse.

39. Read the text carefully and answer the questions:

[4]

A student was asked to perform an experiment to study the force on a current carrying conductor in a magnetic field. He took a small aluminum rod AB, a strong horse shoe magnet, some connecting wires, a battery and a switch and connected them as shown. He observed that on passing current, the rod gets displaced. On reversing the direction of current, the direction of displacement also gets reversed. On the basis of your

understanding of this phenomenon, answer the following questions :



- (i) State the condition under which the displacement of the rod is largest for the same magnitude of current flowing through it.
- (ii) State the rule that determines the direction of the force on the conductor AB.
- (iii)
 - i. If the U shaped magnet is held vertically and the aluminum rod is suspended horizontally with its end B towards due north, then on passing current through the rod from B to A as shown, in which direction will the rod be displaced?
 - ii. Name any two devices that use current carrying conductors and magnetic field.

OR

Draw the pattern of magnetic field lines produced around a current-carrying straight conductor held vertically on horizontal cardboard. Indicate the direction of the field lines as well as the direction of the current flowing through the conductor.