



SPECIAL SAMPLE PAPER

Class 10 - Science

Time Allowed: 3 hours

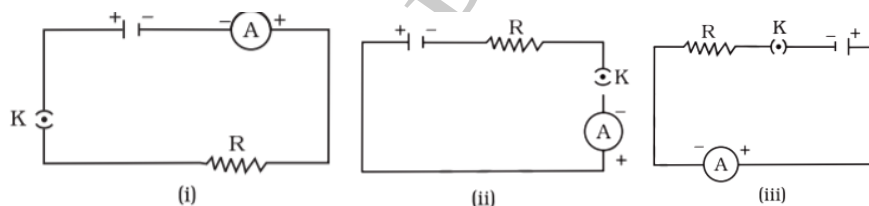
Maximum Marks: 80

General Instructions:

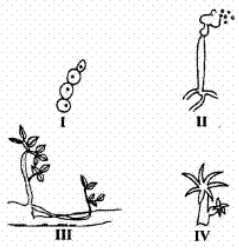
1. This question paper consists of 39 questions in 5 sections.
2. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
3. Section A consists of 20 objective type questions carrying 1 mark each.
4. Section B consists of 6 Very Short questions carrying 02 marks each. Answers to these questions should in the range of 30 to 50 words.
5. Section C consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should in the range of 50 to 80 words.
6. Section D consists of 3 Long Answer type questions carrying 05 marks each. Answer to these questions should be in the range of 80 to 120 words.
7. Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts

Section A

1. A cell, a resistor, a key, and an ammeter are arranged as shown in the circuit diagrams of the figure. The current recorded in the ammeter will be **[1]**



- a) Maximum in (ii) b) The same in all the cases
- c) Maximum in (i) d) Maximum in (iii)
2. The maleness of a child is determined by **[1]**
- a) the Y chromosome in zygote b) the cytoplasm of germ cell which determines the sex
- c) the X chromosome in the zygote d) sex is determined by chance
3. A black strip of paper was clipped onto a destarched leaf in a potted plant to cover a part of the leaf. The plant was then exposed to sunlight for four hours, the paper strip was removed and the leaf was tested for starch. When iodine solution was added: **[1]**
- a) The entire leaf turned blue-black. b) The uncovered part of the leaf became blue-

- black.
- c) The colour of the iodine solution remain unchanged.
- d) The covered part of the leaf became blue-black.
4. The fuse wire should have [1]
- a) Low resistance, High melting point
- b) Low resistance, Low melting point
- c) High resistance, High melting point
- d) High resistance, Low melting point
5. When iron nail is placed in copper sulphate solution for a few hours the blue colour of solution will [1]
- a) Remain blue
- b) Change to colourless
- c) Change to pink
- d) Change to green
6. The correct formula of ethanol is: [1]
- a) CH_3OH
- b) $\text{C}_2\text{H}_5\text{OH}$
- c) $\text{C}_2\text{H}_6\text{OH}$
- d) $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$
7. Name an indicator which indicates the various levels of hydrogen ion concentration. [1]
- a) None of these
- b) Phenolphthalein
- c) Universal indicator
- d) Litmus paper
8. Two of the following four figures that illustrate budding are [1]
- 
- a) I and III
- b) II and IV
- c) I and IV
- d) I and II
9. Match the chemical substances given in Column (A) with their appropriate application given in Column (B) [1]
- | Column (A) | Column (B) |
|----------------------|---|
| (A) Bleaching powder | (i) preparation of glass |
| (B) Baking soda | (ii) Production of H_2 and Cl_2 |
| (C) Washing soda | (iii) Decolourisation |
| (D) Sodium chloride | (iv) Antacid |
- a) A- (ii), B - (i), C - (iv), D - (iii)
- b) A - (iii), B - (iv), C - (i), D - (ii)
- c) A- (ii), B - (iv), C - (i), D - (iii)
- d) A - (iii), B - (ii), C - (iv), D - (i)
10. In human females, an event that reflects the onset of the reproductive phase is [1]
- a) growth of body
- b) changes in hair pattern
- c) menstruation
- d) change in voice

[1]

11. In peas, a pure tall plant (TT) is crossed with a short plant (tt). The ratio of pure tall plants to short plants in F_2 is
- a) 3 : 1
b) 1 : 1
c) 1 : 3
d) 2 : 1
12. How much energy is does a 100W electric bulb transfer in 1 minute? [1]
- a) 100 J
b) 3600 J
c) 6000 J
d) 600 J
13. A 10 mm long awl pin is placed vertically in front of a concave mirror. A 5 mm long image of the awl pin is formed at 30 cm in front of the mirror. The focal length of this mirror is [1]
- a) - 20 cm
b) - 40 cm
c) - 30 cm
d) - 60 cm
14. Generally, metals are solid in nature. Which one of the following metals is found in liquid state at room temperature? [1]
- a) Hg
b) Fe
c) Na
d) Cr
15. A factor not affecting photosynthesis is [1]
- a) Carbon dioxide concentration in air
b) Temperature
c) Light intensity
d) Wind velocity
16. In binary fission, the parent cell divides by the process: [1]
- a) The nucleus first divides then cytoplasm
b) The cytoplasm and nucleus do not divide
c) The cytoplasm first divides then nucleus
d) Cytoplasm and nucleus divide at same time
17. **Assertion (A):** A proton moves horizontally towards a vertical long conductor having an upward electric current. It will deflect vertically downward. [1]
Reason (R): Seeing the proton and the conductor from the side of the proton, the magnetic field at the site of the proton will be towards the right. Hence the force $\vec{F} = q\vec{v} \times \vec{B}$ will deflect the proton vertically downward.
- 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 (A):** H_3PO_4 and H_2SO_4 are known as polybasic acids. [1]
Reason (R): They have two or more than two protons per molecule of the acid.
- 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.
19. **Assertion (A):** Medulla oblongata causes reflex actions like vomiting, coughing and sneezing. [1]
Reason (R): It has many nerve cells which control autonomic reflexes.
- 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):** Garden is an artificial ecosystem. [1]

Reason (R): Biotic and abiotic components of the ecosystem are manipulated by humans.

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. Under what conditions, an oxidation reaction becomes a combustion reaction? [2]

OR

Explain the Saponification reaction with the examples.

22. Name the main thinking part of the human brain. List any two major functions (other than thinking) of this part. [2]

23. Diagrammatically represent the transfer of energy in a food chain. [2]

24. What is the environment significance of the increasing Antarctica ozone hole? [2]

25. An object 3 cm high is placed 20 cm from convex lens of focal length 12 cm. Find the nature, position and height of the image. [2]

OR

Draw ray diagrams showing the image formation by a convex mirror when an object is placed at finite distance from the mirror.

26. A compound X with molecular formula C_2H_4 burns with a sooty flame. It decolourises bromine water. Identify X. [2]

Will it dissolve in water or not? Will it conduct electricity in aqueous solution? Will it have high melting point or low melting point?

Section C

27. On heating blue coloured powder of copper (II) nitrate in a boiling tube, copper oxide (black), oxygen gas and a brown gas X is formed. [3]

i. Write a balanced chemical equation of the reaction.

ii. Identify the brown gas X evolved.

iii. Identify the type of reaction.

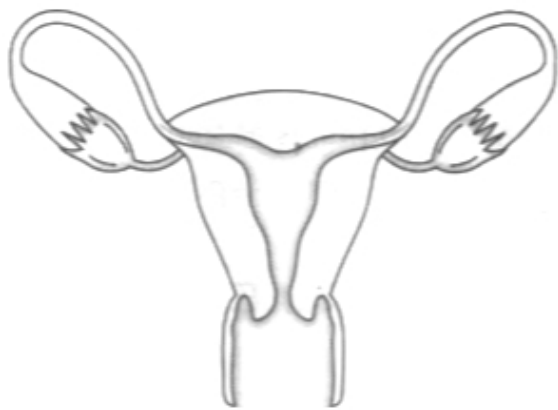
iv. What could be the pH range of the aqueous solution of the gas X?

28. A pencil when dipped in water in a glass tumbler appears to be bent at the interface of air and water. Will the pencil to be bent to the same extent, if instead of water we use liquids like, kerosene or turpentine? Support your answer with reasons. [3]

29. DNA copies generated during reproduction will be similar but may not be identical to the original. justify this statement. [3]

OR

Answer the following by carefully studying the figure:



- i. Identify the image shown above.
 - ii. Label in the figure the ovary, oviduct, uterus, vagina.
 - iii. State the functions of the labeled parts in part b.
30. Why do different rays deviate differently in the prism? [3]
31. Why are decomposition reactions called the opposite of combination reactions? Write equations for these reactions. [3]
32. In a monohybrid cross, pink coloured flowers are dominant over white coloured flowers. If parent plants belong to pure breeding dominant trait and pure breeding recessive trait, what will be the phenotype or morphological feature of F_1 -generation? If F_1 plants are self-fertilised, what would be the phenotypic ratio or how many dominant and recessive traits will be produced in the progeny? Explain with an illustration. [3]

OR

Show how man has been able to produce crop plants by selective breeding.

33. For a class, the physics teacher told her students that our eyes can live even after our death. She told them that by donating our eyes after we die, one pair of our eyes can give vision to two corneal blind people. Eye donors may belong from either sex or any age group. People who are suffering from diabetes, hypertension, asthma or any other non-communicable disease can donate eyes. Eye banks have been established for this purpose, where you can pledge to donate your eyes after your death? Read the given passage and answer the following questions: [3]
- i. Is it possible that people using spectacles or those who have been operated for cataract donate their eyes?
 - ii. Why is the pledge necessary?
 - iii. Do you intend to make such a pledge? Why?

Section D

34. What is the cause of the inertness of noble gas elements? [5]

OR

Carbon cannot reduce the oxides of sodium, magnesium, and aluminium to their respective metals. Why? Where are these metals placed in the reactivity series? How are these metals obtained from their ores? Take an example to explain the process of extraction along with chemical equations.

35. a. Mention any two components of blood. [5]
- b. Trace the movement of oxygenated blood in the body.
- c. Write the function of valves present in between atria and ventricles.
- d. Write one structural difference between the composition of artery and veins.

OR

- i. Draw a diagram depicting human alimentary canal and label the components gall bladder, liver and pancreas in it.
- ii. State the role of liver and pancreas.

iii. Name the organs which perform the following functions in humans.

a. Absorption of digested food

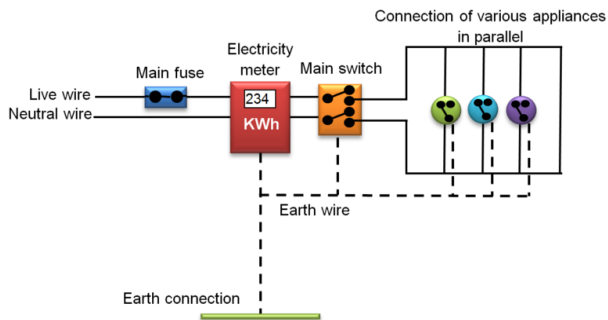
b. Absorption of water

36. Describe an experiment to illustrate the action of an electric fuse. [5]

Section E

37. Read the text carefully and answer the questions: [4]

In our homes, either the overhead electric poles or underground cables support the power supply flowing through the mains supply. One of the wires in this supply is covered with insulation in the colour red, and another wire colored black. At the meter board, these wires pass into an electric meter through the main fuse. The main switch, live wire, and the neutral wire are in connection to the line wires in our homes; these wires then supply electricity to separate electric circuits within the house.



(i) What is the colour of the live wire?

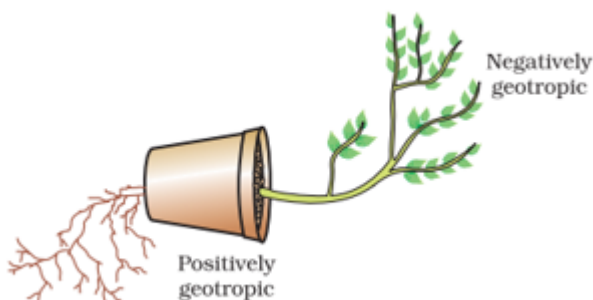
(ii) Where is the fuse placed in the electric supply in the above-given figure?

OR

What is the commercial unit of the power supply?

38. Read the text carefully and answer the questions: [4]

Environmental triggers such as light, or gravity will change the directions that plant parts grow in. These directional, or tropic, movements can be either towards the stimulus or away from it. So, in two different kinds of phototropic movement, shoots respond by bending towards light while roots respond by bending away from it. How does this help the plant? Plants show tropism in response to other stimuli as well. The roots of a plant always grow downwards while the shoots usually grow upwards and away from the earth. This upward and downward growth of shoots and roots, respectively, in response to the pull of earth or gravity, is, obviously, geotropism. If 'hydro' means water and 'chemo' refers to chemicals, what would 'hydrotropism' and 'chemotropism' mean? Can we think of examples of these kinds of directional growth movements? One example of chemotropism is the growth of pollen tubes towards ovules, about which we will learn more when we examine the reproductive processes of living organisms.



(i) Where does negative phototropism occur in plants?

(ii) Phototropism in shoots is attributed due to which plant hormone?

(iii) Tendrils exhibit/ twining of tendrils show which type of tropic movement?

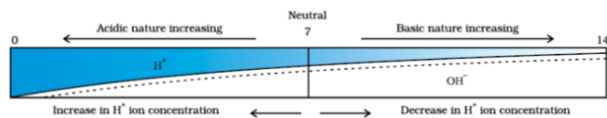
OR

If the stem grows towards sunlight and the root grows just opposite to it, then what type of movement of the stem is it?

39. **Read the text carefully and answer the questions:**

[4]

A scale for measuring hydronium ion in a solution is called the pH scale. The pH of a neutral solution is 7. A value of less than 7 on the pH scale represents an acidic solution. As the pH value, increases from 7 to 14 it represents OH⁻ ion concentration in solution i.e a basic solution.



- (i) What is the pH range of the Human Body?
- (ii) The strength of acid and bases depends on which factor?
- (iii) If the pH of soil X is 7.5 while that of soil Y is 4.5, then which soil should be treated with powdered chalk to adjust its pH?

OR

Tooth decay starts when the pH of the mouth is lower than which pH?

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Priyam Sir