Sample Paper 2022-23

IMPORTANT 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. Electrical resistivity of a given metallic wire depends upon **[1]**

   a) its length b) its shape

   c) its thickness d) nature of the material

2. Name the chromosomes that possess the gene for maleness and femaleness in humans. **[1]**

   a) Sex chromosomes b) None of these

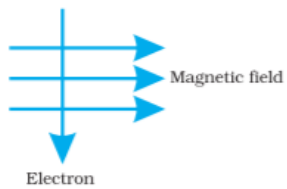
   c) Somatic ctromosomes d) Autosomes

3. Which of these is not a part of the small intestine? **[1]**

   a) Jejunum b) Rectum

   c) Duodenum d) Ileum

4. An electron enters a magnetic field at right angles to it, as shown in Fig. The direction of force acting on the electron will be **[1]**



a) into the page.

b) to the right.

c) out of the page.

d) to the left.

5. Galvanization is a method of protecting iron from rusting by coating with a thin layer of **[1]**

a) Silver

b) Gallium

c) Zinc

d) Aluminium

6. The chemical compound present in a fruit is**:** **[1]**

a) $CH_3COOC_2H_5$

b) C_2H_5COOH

c) C_2H_5OH

d) All of these

7. A student added dilute HCl to Zn granules taken in a test tube. The correct observation would be **[1]**

a) evolution of gas

b) no change

c) Zn granules turned green

d) formation of a precipitate

8. What is another name for tissue culture? **[1]**

a) None of these

b) Artificial vegetative propagation

c) Micropropagation

d) Natural vegetative propagation

9. What happens when two drops of phenolphthalein are added to a dilute solution of NaOH? **[1]**

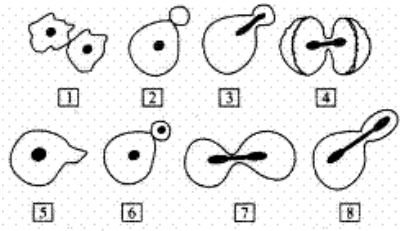
a) solution turns colourless

b) solution turns red

c) solution turns orange

d) solution turns pink

10. From the following diagrams, select the correct ones showing stages of binary fission in Amoeba and budding in Yeast in their proper sequence: **[1]**



a) 7, 4, 1 and 3, 8, 6

b) 3, 4, 7 and 2, 8, 6

c) 5, 1, 4 and 2, 3, 6

d) 8, 7, 4 and 3, 2, 6

11. Which of the following organism has only one type of sex chromosome called X-chromosome? **[1]**

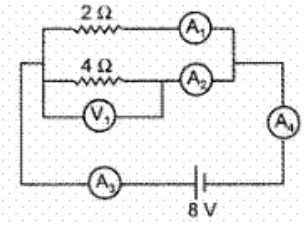
a) Cricket

b) Lizard

c) Bee

d) Ant

12. Using the given circuit with ammeter and voltmeter answer the question. **[1]**



The current indicated by A_3 is :

a) 6A
b) 2A
c) 1A
d) 4A

13. Your school laboratory has one large window. To find the focal length of a concave mirror using one of the walls as the screen, the experiment may be performed: **[1]**

a) on the wall adjacent to the window
b) on the same walls as the window
c) only on the table as per the laboratory arrangement
d) near the wall opposite to the window

14. Which of the following can be beaten into thin sheets? **[1]**

a) Zinc
b) Oxygen
c) Sulphur
d) Phosphorus

15. When the cell is kept in a hypertonic solution, then water moves **[1]**

a) Into the cell
b) Out of the cell
c) None of these
d) No movement of water

16. A condom is a method of control that falls under the following category: **[1]**

a) Hormonal Method
b) Mechanical method
c) Chemical Method
d) Surgical Method

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 $\vec{F} = q\vec{\nu} \times \vec{B}$ 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):** The aqueous solution of glucose and alcohol does not show acidic character. **[1]**

Reason (R): Aqueous solutions of glucose and alcohol do not give H^+ ions.

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):** Cyton region of nerve fibre collects information for the brain. **[1]**

Reason (R): Nerve fibres can either have or lack the myelin sheath.

a) Both A and R are true and R is the correct
b) Both A and R are true but R is not the

explanation of A.

correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

20. **Assertion (A):** Man is an omnivore. **[1]**

Reason (R): Man eats food products obtained from both plants and animals.

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. a. State any three physical property of carbon compounds. **[2]**

b. Carbon is a versatile element. Justify this statement.

OR

i. Covalent bonds formed as a result of sharing of electron pairs between two atoms are strong in nature. But the covalently bonded molecules have low melting and boiling points compared to the ionic molecules. What is the reason behind such behaviour?

ii. Why are the unsaturated carbon compounds more reactive than saturated carbon compounds?

22. How does feedback mechanism regulate the hormone secretion? **[2]**

23. Give reason: "Life on earth depends on the sun." **[2]**

24. What measures are taken to protect the depletion of ozone layer? **[2]**

25. Define power of a lens. What is its unit? One student uses a lens of focal length 50 cm and another of –50 cm. What is the nature of the lens and its power used by each of them? **[2]**

OR

A convex lens forms a real and inverted image of a needle at a distance of 50 cm from it. Where is the needle be placed in front of the convex lens if the image is equal to size of the object? Also, find the power of the lens.

26. Explain the Saponification reaction with the examples. **[2]**

Section C

27. Translate the following statement into a chemical equation and then balance it : **[3]**

Barium chloride reacts with aluminium sulphate to give aluminium.

28. Differentiate between virtual image formed by a concave mirror and of a convex mirror. **[3]**

29. Ravi took three bread slices and kept them in the following conditions **[3]**

i. Slice 1 in a dry and dark place

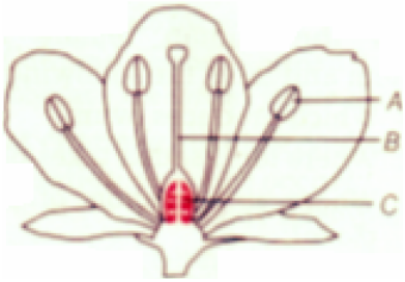
ii. Slice 2 in moist and dark place

iii. Slice 3 in moist and in refrigerator

What would he observe in each of the above conditions? Give reasons for your answer.

OR

Name the parts A, B and C shown in the following diagram and state one function of each.



30. A camera in many ways is similar to the human eye, still, there are some basic differences in image formation between the two. Explain. **[3]**

31. Give reason and name the type of chemical reaction taking place in each case: **[3]**

i. Dissolution of ammonium chloride in water leads to cooling of the glass apparatus used for dissolutions.

ii. Silver chloride powder which is white in colour, turns grey when kept in sunlight.

iii. Blue colour of copper sulphate solution fades when an iron nail is dipped inside the solution.

32. 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]**

OR

In Mendel's experiment of inheritance in which he took two contrasting characters, i.e. round green and wrinkled yellow seeds,

i. What was the phenotype of offsprings in F_1 - generation?

ii. What was the ratio of offsprings in F_2 - generation?

33. Why do we observe difference in colours of the Sun during sunrise, sunset and noon? **[3]**

Section D

34. i. By the transfer of electrons, illustrate the formation of bond in magnesium chloride and identify the ions present in this compound. **[5]**

ii. Ionic compounds are solids. Give reasons.

iii. With the help of a labelled diagram show the experimental set up of action of steam on a metal.

OR

i. Write the steps involved in the extraction of pure metals in the middle of the activity series from their carbonate ores.

ii. How is copper extracted from its sulphide ore? Explain the various steps supported by chemical equations. Draw labelled diagram for the electrolytic refining of copper.

35. What is the difference between an intercellular and intracellular digestion? **[5]**

OR

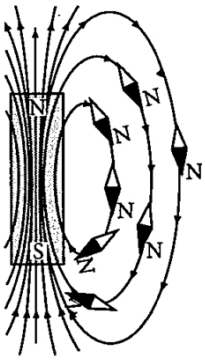
Explain the nutrition process in an Amoeba with the help of a diagram.

36. What is the electrical resistivity of a material? What is its unit? Describe an experiment to study the factors on which the resistance of conducting wire depends. **[5]**

Section E

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

A magnetic field is described by drawing the magnetic field lines. When a small north magnetic pole is placed in the magnetic field created by a magnet, it will experience a force. And if the north pole is free, it will move under the influence of the magnetic field. The path traced by a north magnetic pole free to move under the influence of a magnetic field is called a magnetic field line.



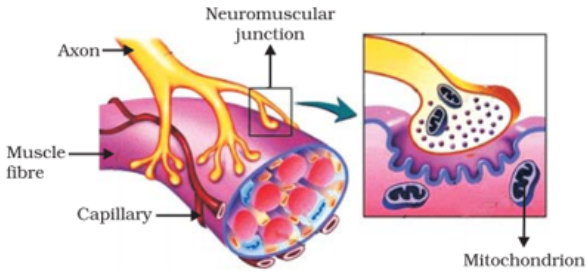
Since the direction of the magnetic field line is the direction of the force on a north pole, so the magnetic field lines always begin from the N-pole of a magnet and end on the S-pole of the magnet. Inside the magnet, however, the direction of magnetic field lines is from the S-pole of the magnet to the N-pole of the magnet. Thus, the magnetic field lines are closed curves. When a small compass is moved along a magnetic field line, the compass needle always sets itself along the line tangential to it. So, a line drawn from the south pole of the compass needle to its north pole indicates the direction of the magnetic field at that point.

(i) Do the magnetic field lines intersect? if not why?

(ii) A strong bar magnet is placed vertically above a horizontal wooden board. What would be the magnetic lines of force?

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 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. At the end of the axon, the electrical impulse sets off the release of some chemicals. These chemicals cross the gap, or synapse, and start a similar electrical impulse in the dendrite of the next neuron. This is a general scheme of how nervous impulses travel in the body. A similar synapse finally allows the delivery of such impulses from neurons to other cells, such as muscles cells or glands.



(i) Why does the flow of signals in a synapse from axonal end of one neuron to dendritic end of another neuron take place but not in the reverse direction?

(ii) From where the electrical impulse travels?

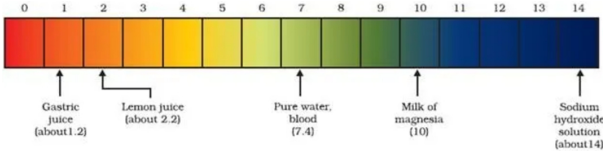
(iii) Name the chemical which released at the end of axon to transmit the signal to the other neuron.

OR

What happens at the synapse between 2 neurons?

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

The strength of acid and base depends on the number of H^+ and the number of OH^- respectively. If we take hydrochloric acid and acetic acid of the same concentration, say one molar, then these produce different amounts of hydrogen ions. Acids that give rise to more H^+ ions are said to be strong acids, and acids that give less H^+ ions are said to be weak acids. Can you now say what weak and strong bases are?



(i) Fresh milk has a pH of 6. How do you think the pH will change as it turns into curd?

(ii) Is Gastric juice a weak acid?

(iii) Milk of magnesia is an acid or base? For what purpose it can be used?

OR

What is the pH value of saliva after the meal?