S.R. Study Material

VERY 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 be 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 be in the range of 50 to 80 words.
6. Section D consists of 3 Long Answer type questions carrying 05 marks each. Answers 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. The food items like cheese that is shown in the given below image become unfit for eating. This happens due to: **[1]**

a) Corrosion b) Rusting

c) None of these d) Rancidity

2. When calcium oxide reacts with water, it forms a product named **[1]**

a) Ammonia b) Quick lime

c) Lime stone d) Slaked lime

3. Bleaching powder is a **[1]**

a) white crystalline solid b) pale yellow powder

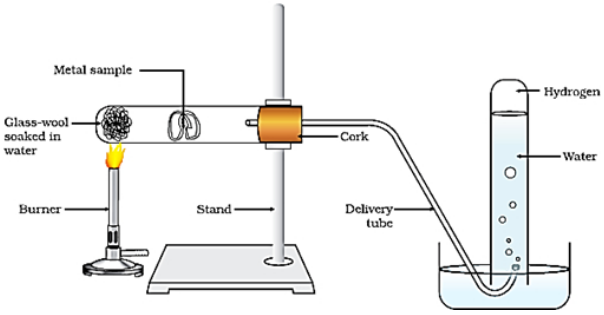
c) greyish white powder d) transparent crystalline solid

4. Fresh milk has a pH of 6. To delay its curdling, a chemical substance is added to it, which is: **[1]**

a) Baking soda (Sodium hydrogen carbonate) b) Sodium carbonate

c) Sodium hydroxide (Caustic soda)
d) Baking powder

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. Dried fruit plastic bags sold in the market are filled with: **[1]**

a) Hydrogen gas
b) All of these
c) Helium gas
d) Nitrogen gas

7. Which of the following statements are false about soaps and detergents? **[1]**

i. Soaps are water soluble while detergents are not.
ii. Soaps are non-biodegradable while detergents are biodegradable.
iii. Hardness of water is due to presence of Ca and Mg salts which form scum with soap.
iv. The polar group in soaps is -COONa.

a) (iii) and (iv) only
b) (i) and (ii) only
c) (i), (ii) and (iv) only
d) (i), (ii) and (iii) only

8. An organism which breaks down the food material outside the body and then absorbs it is **[1]**

a) an animal parasite, Tapeworm
b) a fungi, Rhizopus
c) a bacteria, Rhizobium
d) a plant parasite, Cuscuta

9. Which plant hormone is essential for the cell elongation? **[1]**

a) Cytokinin
b) Auxin
c) Gibberellins
d) Ethylene

10. A Yeast cell in which budding occurs, it can have **[1]**

a) One bud cell
b) Two bud cell
c) A chain of bud cells
d) Three bud cell

11. A cross between a tall plant (TT) and short pea plant (tt) resulted in progeny that were all tall plants because **[1]**

a) height of pea plant is not governed by gene 'T' or 't'
b) tallness is the recessive trait
c) shortness is the dominant trait
d) tallness is the dominant trait

12. One of the events that does not occur during photosynthesis is: **[1]**

a) Chlorophyll absorbs solar energy.
b) Carbon dioxide is released during the process.

c) Oxygen is released during the process.

d) Carbon dioxide is absorbed during the process.

13. A ray of light is incident on a plane mirror making an angle of 90 degree with the mirror surface. The angle of reflection for this ray of light will be: **[1]**

a) 60 degree

b) 90 degree

c) 45 degree

d) 0 degree

14. The sky appears dark to passengers flying at very high altitudes mainly because: **[1]**

a) the size of molecules is smaller than the wavelength of visible light.

b) scattering of light is not enough at such heights.

c) there is no atmosphere at great heights.

d) the light gets scattered towards the earth.

15. An example of a man-made ecosystem is: **[1]**

a) Grassland

b) River

c) Desert

d) Garden

16. The number of trophic levels in a food chain is: **[1]**

a) Two to three

b) Three to four

c) Four to five

d) Unlimited

17. **Assertion (A):** Copper vessels get covered with green coating in rainy season. **[1]**
Reason (R): It is because of the formation of copper carbonate.

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):** When a bacterium divides into two, and the resultant two bacteria divide again, the four bacteria produced would be almost similar. **[1]**
Reason (R): DNA copying involves small inaccuracies in the reproduction process.

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):** On changing the direction of flow of current through a straight conductor, the direction of a magnetic field around the conductor is reversed. **[1]**
Reason (R): The direction of magnetic field around a conductor can be given in accordance with left-hand thumb rule.

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):** Decomposers help in recycling of nutrients between living and non-living components of ecosystem. **[1]**

Reason (R): Decomposers help in decomposing dead bodies of organisms and return various nutrient elements to their source viz soil, water and air.

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 soil condition do you think a farmer would treat the soil of his fields with quick lime (calcium oxide) or slaked lime (calcium hydroxide) or chalk (calcium carbonate)? **[2]**

22. i. Which glands provide fluid to the semen? **[2]**

ii. State two advantages of semen in relation to sperms.

23. What changes take place as blood enters the kidney tubule? **[2]**

OR

What criteria do we use to decide whether something is alive?

24. Draw a ray diagram to represent the nature, position and size of the image formed by a convex lens for the object placed at **[2]**

i. infinity

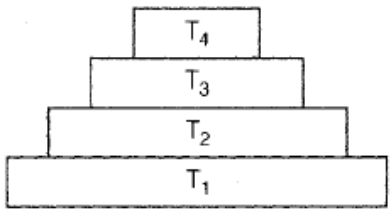
ii. Between F_1 and optical centre (O)

25. Which of the following fuse ratings would be suitable for an electric motor of power 3 kW, if it is operated at 220 V supply? (5 A, 10 A, 12 A, 15 A) **[2]**

OR

The atoms of copper contain electrons and the atoms of rubber also contain electrons, then, why does copper conduct electricity but rubber does not conduct electricity?

26. In the given figure, the various trophic levels are shown in a pyramid. At which trophic level is maximum energy available? **[2]**



Section C

27. State three reasons for the following facts: **[3]**

i. Sulphur is a non-metal.

ii. Magnesium is a metal.

One of the reasons must be supported with a chemical equation.

28. i. Distinguish between ionic and covalent compounds under the following properties: **[3]**

a. Strength of forces between constituent elements

b. Solubility of compounds in water

c. Electrical conduction in substances

ii. Explain how the following metals are obtained from their compounds by the reduction process:

a. Metal M which is in the middle of the reactivity series.

b. Metal N which is high up in the reactivity series. Give one example of each type.

OR

What is the cause of the inertness of noble gas elements?

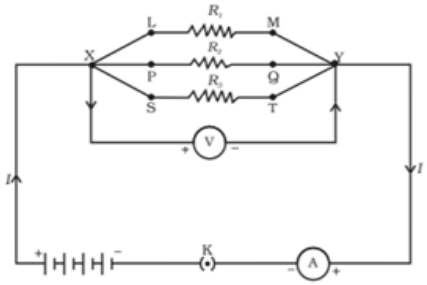
29. Explain how deoxygenated blood travels from body to lung for purification. Draw well-labelled diagram in support of your answer. **[3]**

30. A Mendelian's experiment consist of breeding a pea plant bearing violet flowers with pea plant that bear white flowers. What will be the result in F_1 progeny? **[3]**

31. Distinguish between real image and virtual image. **[3]**

32. A battery made of 5 cells, each of 2 V and have internal resistance 0.1Ω, 0.2Ω, 0.3Ω, 0.4Ω and 0.5 Ω is connected across 10Ω resistance. Draw circuit diagram and calculate the current flowing through 10Ω resistance? **[3]**

33. In the circuit diagram given in figure, suppose the resistors R_1, R_2 and R_3 have the values 5Ω, 10Ω, 30Ω, respectively, which have been connected to a battery of 12 V. Calculate: **[3]**



a. the current through each resistor,

b. the total current in the circuit, and the total circuit resistance.

Section D

34. What are alcohols? What is its general formula? Give the names and molecular formula of first three members of the homologous series of alcohols. **[5]**

OR

Write the chemical equation for the following:

i. Combustion of methane

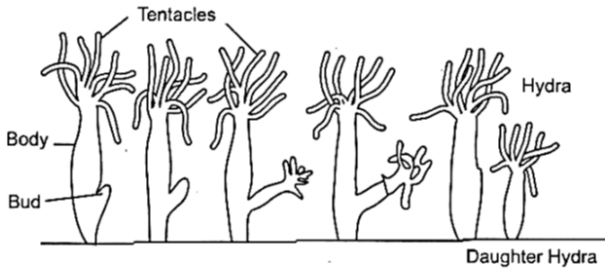
ii. Oxidation of ethanol

iii. Hydrogenation of ethene

iv. Esterification Reaction

v. Saponification Reaction

35. With the help of suitable diagrams explain the various steps of budding in Hydra. **[5]**



Budding in Hydra

OR

Why do we call pituitary gland as the master gland? Where is it located and what are its functions?

36. a. What is a lens? List two main categories of lenses. In which category is a double concave lens placed? **[5]**

b. A convex lens of focal length 15 cm forms a real image at a distance of 20 cm from its optical centre. Find the position of the object. Is the image formed by the lens magnified or diminished?

OR

What are the rules to form image of an object by concave lens? Form the images of an object when it is moved from infinity to the lens.

Section E

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

Two allotropic forms of carbon which are crystalline in nature, are diamond and graphite. They differ physically but chemically they are similar. Diamond is the hardest crystalline form of carbon. In diamond, each carbon atom is linked to four other carbon atoms by covalent bonds. In graphite, each carbon atom is linked to three other carbon atoms by covalent bond. Graphite is relatively soft and greasy. It is also a good conductor of electricity. The C—C bond length in graphite is 141.5 pm while in diamond it is 154 pm.

(a) Which is a good conductor of heat and electricity- graphite or diamond? Explain.

(b) Which binding force is present in the structure of diamond?

OR

Why Diamond is not a good conductor of electricity and heat?

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

Mendel blended his knowledge of Science and mathematics to keep the count of the individuals exhibiting a particular trait in each generation. He observed a number of contrasting visible characters controlled in pea plants in a field. He conducted many experiments to arrive at the laws of inheritance.

(a) What do the F1 progeny of tall plants with round seeds and short plants with wrinkled seeds look like?

(b) Name the recessive traits in above case.

(c) Mention the type of the new combinations of plants obtained in F2 progeny along with their ratio, if F1 progeny was allowed to self pollinate.

OR

If 1600 plants were obtained in F2 progeny, write the number of plants having traits:

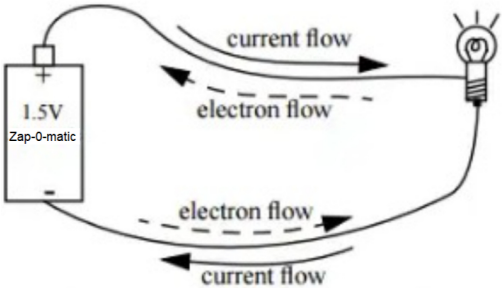
a. Tall with round seeds

b. Short with wrinkled seeds

Write the conclusion of the above experiment.

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

The rate of flow of charge is called electric current. The SI unit of electric current is Ampere (A). The direction of flow of current is always opposite to the direction of flow of electrons in the current.



The electric potential is defined as the amount of work done in bringing a unit-positive test charge from infinity to a point in the electric field. The amount of work done in bringing a unit positive test charge from one point to another point in an electric field is defined as potential difference.

$V_{AB} = V_B - V_A = \frac{W_{BA}}{q}$

The SI unit of potential and potential difference is volt.

(a) Write the formula of voltage in terms of work done, current, time and charge.

(b) What is the number of electrons flowing per second in a conductor if 1 A current is passing through it?

(c) What would be the potential difference between the two terminals of a battery, if 100 joules of work is required to transfer 20 coulombs of charge from one terminal of the battery to other?

OR

The 2 C of charge is flowing through a conductor in 100 ms, then what would be the current in the circuit?