THE VILLAGE INTERNATIONAL SCHOOL THODUPUZHA
SECOND MODEL EXAMINATION (2023-24)
Science (Subject Code – 086)

Class X **Time: 3 hours**
08-01-2024 **Max.Marks: 80**

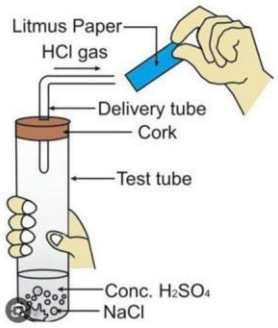
General Instructions.

i. This question paper consists of 39 questions in 5 sections.
ii. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
iii. Section A consists of 20 objective type questions carrying 1 mark each.
iv. 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.
v. 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.
vi. 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.
vii. Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

Section-A

Select and write the most appropriate option out of the four options given for each of the questions 1 - 20. There is no negative mark for incorrect response.

1. When ferrous sulphate is heated strongly it undergoes decomposition to form ferric oxide as a main product accompanied by a change in colour from
   a. Blue to green
   b. Green to blue
   c. Green to brown
   d. Green to yellow
2. Consider reaction: $Al(s)+O_2(g) \longrightarrow Al_2O_3$. Moles of Al(s) needed to balance equation are
   a. 1 c. 3
   b. 2 d. 4

3. Mild non-corrosive basic salt is .....
   a. $Ca(OH)_2$
   b. NaCl
   c. NaOH
   d. $NaHCO_3$
4. 

   Blue litmus paper is brought near the mouth of the delivery tube to check the presence of HCl acid but no change is observed in the colour of litmus paper because
   a. The litmus paper used is dry
   b. The litmus paper used is moist
   c. Blue litmus paper does not change its colour with an acid.
   d. The litmus paper is kept very close to the mouth of the delivery tube.
5. Aluminum is used for making cooking utensils which of the following properties of Al are responsible for the same.
   i. Good thermal conductivity
   ii. Good electrical
   iii. Ductility
   iv. High melting point

   a. i & ii
   b. i & iii
   c. ii & iii
   d. i & iv
6. The element which forms a basic oxide has the atomic number of
   a. 18
   b. 17
   c. 14
   d. 19
7. The electronic configuration of 3 elements X, Y and Z are X - 2,8 ; Y - 2,8,7 and Z - 2,8,2. Which of the following is correct.
   a. X is a metal
   b. Y is a metal

c. Z is a non metal
d. Y is a non metal and Z is a metal

8. An infant feeding entirely on the mother's milk posses stools that are coloured yellow. What is the reason for this?.
   a. casein.
   b. bile pigments.
   c. pancreatic pigments.
   d. none of the above.

9. Which is the correct sequence of the components of a reflex are?.
   a. receptors ☐ muscles ☐ sensory neuron ☐ motor neuron ☐ spinal cord.
   b. receptors ☐ motor neuron ☐ spinal cord ☐ sensory neuron ☐ muscles.
   c. receptors ☐ spinal cord ☐ sensory neuron ☐ motor neuron ☐ muscles.
   d. receptors ☐ sensory neuron ☐ spinal cord ☐ motor neuron ☐ muscles.

10. Vegetative propagation refers to formation of new plants from
   a. stem, roots and flowers
   b. stem, roots and leaves.
   c. stem, flowers and fruits.
   d. stem, leaves and flowers.

11. Iodine is necessary for the synthesis of which hormone?.
   a. adrenaline.
   b. thyroxine.
   c. auxin.
   d. insulin.

12. During respiration, exchange of gases takes place in:
   a. trachea and larynx.
   b. alveoli of lungs.
   c. alveoli and throat.
   d. throat and larynx.

13. A spherical air bubble in water will act as:
   a. A concave lens
   b. A convex lens
   c. Plane – concave lens
   d. Plane glass plate

14. Red colour of the sun at the time of sunrise and sunset because
   a. Red colour is least scattered

b. Blue colour is least scattered
c. Red colour is scattered the most
d. All colour are equally scattered

15. Depletion of ozone is mainly due to:
    a. chloroflurocarbon compounds.
    b. carbon monoxide.
    c. methane.
    d. pesticides.
16. The layer P is present in the stratosphere region of atmosphere. Which of these chemical causes the thinning of layer "P"
    a. carbon monoxide.
    b. sulphur dioxide.
    c. chlorofluorocarbons.
    A. (a) only
    B. (a) and (b) only
    C. (a) and (c) only
    D. (a) (b) and (c)

Question no. 17 to 20 are Assertion - Reasoning based questions.
(a) Both Assertion and Reason are True and Reason is the correct explanation of the Assertion.
(b) Both Assertion and Reason are True but Reason is not the Correct explanation of the Assertion.
(c) Assertion is True but the Reason is False.
(d) Both Assertion and Reason are False.

17. Assertion (A): Lead nitrate on thermal decomposition gives lead oxide, brown coloured nitrogen dioxide and oxygen gas.
    Reason (R): Lead nitrate reacts with potassium iodide to form yellow ppt of lead iodide and the reaction is double displacement as well as precipitation reaction.

18. Assertion (A):

    Height in pea plants is controlled by efficiency of enzymes and is thus genetically controlled.

    Reason (R): Cellular DNA is the information source for making proteins in the cell.

19. Assertion (A): On changing the direction of current around a straight conductor, the direction of the magnetic field around the conductor will also be reversed.

    Reason (R): The direction of the magnetic field around a straight conductor can be given in accordance with Fleming's left hand rule.
20. Assertion (A):

Biodegradable substances result in the formation of compost and natural replenishment.

Reason (R): it is due to breakdown of complex inorganic substances into sample organic substance.

Section-B

Question No. 21 to 26 are very short answer questions Very short answerquestions.

21. A metal A which is used in thermite process, when heated with oxygen gives an oxide B, which is amphoteric in nature. Identify A and B. Write down the reaction of oxide B with HCl and NaOH.
22. During polyembryony, if one embryo is formed from synergids and the other from nucellus, state the one that haploid and the one that is diploid.
23. Name the reproductive parts of an angiosperm. Where are these parts located?. Explain the structure of its male reproductive part.

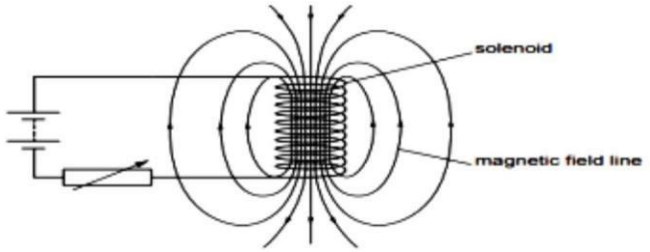
OR

Why are the valves needed in the heart?.

24. The refractive index of glass is 1.5 and that of water is 1.33. What is the refractive index of glass with respect to water?
What is the refractive index of water with respect to glass?
25. A piece of wire of resistance R is cut into 5 equal parts. These parts are then connected in parallel. If the equivalent resistance of this combination is R1. What is the value of the ratio R1:R?

Or

A circuit contains a battery, a variable resistor and a solenoid. The figure below shows the magnetic field pattern produced by the current in the solenoid.



a. State how the magnetic field pattern indicates regions where the magnetic field is stronger.
b. What happens to the magnetic field when the current in the circuit is reversed?

26. In the following food chain, 100J of energy is available to the

lion. How much energy was available to the producers?.

Plants ⟶ Deer ⟶ Lion

Section-C
Question No. 27 to 33 are short answer questions

27. Give reasons.
    a. Aluminium is more reactive than iron. But its corrosion is less than iron.
    b. Hydrogen gas is not evolved when zinc metal is react with dil.HNO_3.
    c. Carbon is not used for reducing aluminium from aluminum oxide.
28. Al element A forms 2 oxides AO and AO_2. The oxide AO is neutral whereas the oxide AO2 is acidic in nature. Would you call element A a metal or a non metal? Draw the electron dot structure of AO_2.

    Or

    A brown and bright element 'X' when heated in presence of air turns into black substance 'Y'. If hydrogen gas is passed over this heating material again X is obtained. Identify 'X' and 'Y'. Draw a well-labelled diagram to represent the process of refining 'X'.
29. a) Explain what is the role of mucus in stomach?
    b) How exit of food from the stomach is regulated?
    c) When does food enter from stomach?
30. Why are the testes located outside the abdominal cavity? Mention the endocrine and exocrine function of testes?
31. State two positions in which a concave mirror produces a magnified image of a given object. List two differences between the two images.
32. Calculate the total cost of running the following electrical devices in the month of September, if the rate of 1 unit of electricity is Rs.6.00.
    i. Electric heater of 1000W for 5 hours daily.
    ii. Electric refrigerator of 400W for 10 hours daily.
33. What is short circuiting? State one factor or condition that can lead to it. Name a device in household that acts as a safety measure for it. State the principal of its working?

Section-D
Question No. 34 to 36 are long answer questions.

34. A compound X (having vinegar like smell) when treated with ethanol in presence of the and Z gives a compound 'Y' which have a fruity smell.

The reaction is

$C_2H_5OH + X \xrightarrow{z} Y + H_2O$

a. Identify Y and Z
b. Write the structural formula of X.
c. Name the above reaction.

Or

An organic compound, (A) C_2H_4 decolourises bromine water. (A) on reaction with the chlorine gives Br.(A) reacts with the HBr to give (C). identify A,B,C. Explain the reaction.

35. Differentiate between asexual and sexual reproduction

OR

a) State the role played by the following in the process of digestion

i) Enzyme trypsin
ii) Enzyme lipase
iii) List two functions of villi

b) How does a touch – me not plant respond to touching?.
What is this movement called?.

36. A 2.0 m tall object is placed perpendicular to the principal axis of a convex lens of focal length 10 cm. The distance of the object from the lens if 15 cm. Find the position, nature and size of the image form.

Or

- What is meant by a magnetic field?
- How is the direction of magnetic field at a point determined?
- Describe an activity to demonstrate the direction of the magnetic field generated around a current carrying conductor.

SECTION – E

Question No. 37 to 39 are case-based/data -based questions with 2 to 3 shortsub-parts. Internal choice is provided in one of these sub-parts.

37. Carbon compounds can be easily oxidized on combustion. In addition to this complete oxidization we have reaction in which alcohols are converted to carboxylic acids.
We see that some substances are capable of adding oxygen to others. These substances are known as oxidizing agents.
1. Give 2 examples of good oxidizing agent.
2. Complete the reaction.
$CH_3CH_2CH_2OH$ + Alkaline $KMnO_4 \longrightarrow$ .....

3. Why acidified potassium dichromate is called an oxidizing agent?
4. What are the uses of alcohol?

38. A scientist cross pure bred tall (dominant) pea plant with pure dwarf (recessive) pea plant. He will get pea plants of F1 generation. If now self cross the pea plant of F2 generation is done. Then we obtain pea plants of F2 generation.

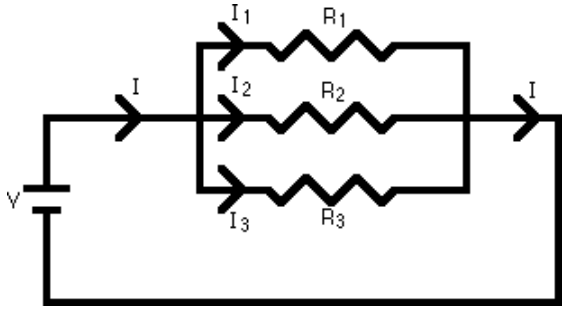
i) State the type of plants not found in F1 generation but appeared in F2 generation, mentioning the reason for the same.

ii) State the ratio of all plants to dwarf plants in F2 generation. Write the full from of DNA.

iii) What do the plants of F2 generation look like?

iv) How does the creation of variation in a species promote survival?.

39. If two or more resistances are connected in such a way that the same potential difference gets applied to each of them then they are said to beconnected in parallel. The current flowing through the two resistances in parallel is, however, not the same. When we have two or more resistances joined in parallel to one another, then the same current gets

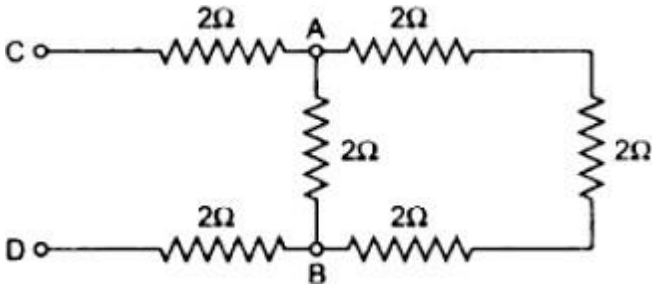


additional pathsto flow and the overall resistance decreases.

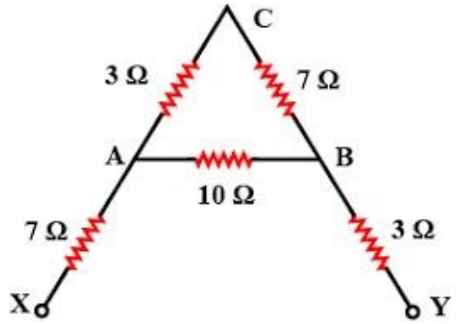
(a) Three resistances, 2 Ω, 6 Ω and 8 Ω are connected in parallel. Find the equivalent resistance.

(b) A wire is cut into three equal parts and then connected in parallel with the same source. How will its Resistivity get affected?

(c) In the circuit shown below, calculate the equivalent resistance between the points A and B.



(d) Find the equivalent resistance between point X and Y in the given circuit.



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