**Practice Paper -4**
**2020-21**
**Class-X**
**Science (086)**

**Time: 3 hours** **Maximum Marks: 80**

**General instructions:**

i. The question paper comprises four sections A,B,C and D. There are 36 questions in the question paper all questions are compulsory.
ii. Section-A- question number 1 to 20- all questions and parts there of are of one mark each. These questions contain multiple choice questions( MCQs),very short answer questions and assertion-reason type questions. Answers to these questions should be given in one word or one sentence.
iii. Section-B- question number 21 to 26- are short answer type questions carrying 2 marks each. Answers to these questions should in the range of 30 to 50 words.
iv. Section-C-question number 27-33- are short answer type questions carrying 3 marks each. Answer to these questions should be in the range of 50 to 80 words.
v. Section-D-question number 34 to 36 –are long answer type questions carrying 5 marks. Answer to this question should be in the range of 80 to 120 words.
vi. There is no overall choice .However, internal choices have been provided in some questions. a student has to attempt only one of the alternative in such questions.
vii. Wherever necessary, neat and properly labelled diagrams should be drawn.

| **Section-A** | | |
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| **No.** | **Questions** | **Marks** |
| 1. | Balance the given equation and also write the type of chemical reaction represented by it.<br>$BaCl_2 + Al_2(SO_4)_3 \longrightarrow AlCl_3 + BaSO_4$<br><br>**OR**<br><br>Write balanced chemical equation with state symbols for the given reaction:<br>Solution of Barium chloride and sodium sulphate (in water) to form insoluble barium sulphate and solution of sodium chloride. | 1 |
| 2. | Blue litmus solution is added to two test tubes A and B containing HCl and NaOH solution respectively. In which test tube a colour change will be observed? | 1 |
| 3. | Chemical formulae of methane and ethane are:<br><br>a. $C_2H_6$ and $C_3H_6$<br>b. $CH_4$ and $C_2H_6$<br>c. $CH_3$ and $C_2H_6$<br>d. $C_2H_4$ and $C_2H_6$ | 1 |

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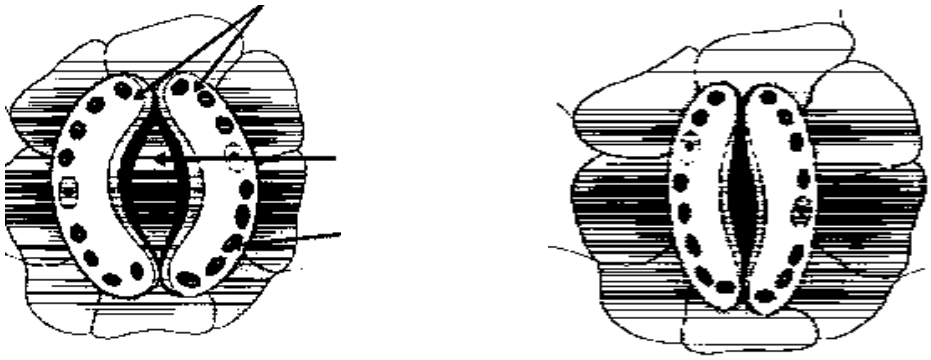
| 4. | Why is the colour of sky blue? | 1 |
| 5. | Power of a lens is - 4.5. What will be its focal length? | 1 |
| 6. | What is Snell's law?<br>**OR**<br>Define magnification produced by a lens? | 1 |
| 7. | What is the function of galvanometer in a circuit? | 1 |
| 8. | Name the rule to determine the direction of force experienced by a current carrying straight conductor placed in a uniform magnetic field which is perpendicular to it. | 1 |
| 9. | Three resistors of resistances $R_1$ ,$R_2$ and $R_3$ are connected in parallel. Write expressions for the equivalent resistance of the combination.<br>**OR**<br>Three resistors of resistances 2Ω each are connected in parallel. Find the equivalent resistance of the combination. | 1 |
| 10. | List two functions of human heart. | 1 |
| 11. | Write the way in which glucose is broken down in absence of oxygen.<br>**OR**<br>Write the way in which glucose is broken down in shortage of oxygen. | 1 |
| 12. | List two main components of an ecosystem.<br>**OR**<br>Write various steps of a terrestrial food chain of four trophic levels. | 1 |
| 13. | In the given figures , identify the open and closed stomata.<br>a) b)<br>  | 1 |

For question number **14, 15** and **16**, two statements are given- one labeled **Assertion (A)** and the other labeled **Reason (R).** Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:

a) Both A and R are true, and R is correct explanation of the assertion.
b) Both A and R are true, but R is not the correct explanation of the assertion.
c) A is true, but R is false.
d) A is false, but R is true.

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| 14. | **Assertion:** Glucose is absorbed in the small intestine and reabsorbed by the kidney tubules.<br>**Reason :** Maximum absorption of glucose takes place in large intestine | 1 |
| 15. | **Assertion:** Polythene bags are non-biodegradablesubstances.<br><br>**Reason**: These bags cannot be broken down by microorganisms to simpler substances. | 1 |
| 16. | **Attempt any one from 16(I) and 16(II).**<br><br>**(I) Assertion:** Snails can change their sex.<br><br>**Reason**: Sex determination is not based on heredity in Snails.<br>**OR**<br><br>**(II) Assertion:** In human sex of a child be determined by what they inherit from their father.<br><br>**Reason**: A child who inherits X chromosomes from her father will be a girl and a child who inherits a Y chromosome from his father will be a boy. | 1 |

Answer Q.No. 17-20 contain five (5) sub-parts each . You are expected to answer any **FOUR** sub-parts in these questions

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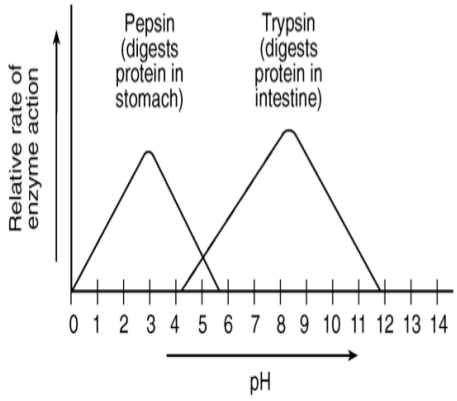
| 17. | **Read the following and answer any FOUR questions from 17 (i) to 17 (v)**<br><br>The digestion in stomach is taken care of by the gastric glands present in the wall of the stomach. These release hydrochloric acid, a protein digesting enzyme called pepsin, and mucus. The hydrochloric acid creates an acidic medium which facilitates the action of the enzyme pepsin. The mucus protects the inner lining of the stomach from the action of the acid under normal conditions. From the stomach, the food now enters the small intestine. The food coming from the stomach is acidic and has to be made alkaline for the pancreatic enzymes to act. Bile juice from the liver accomplishes this in addition to acting on fats. | 1x4 |
| 17i. | In which medium Pepsin and trypsin are active -<br><br>a. basic and acidic medium<br>b. acidic and basic medium<br>c. neutral medium<br>d. sometimes acidic sometimes basic medium<br><br>  <br> | |

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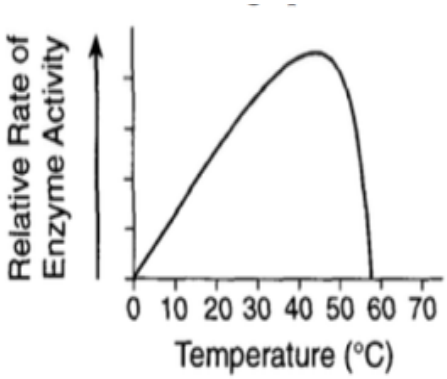
| 17-ii | Enzyme pepsin helps in the digestion of …….<br><br>a. starch in mouth<br>b. protein in stomach<br>c. fat in stomach<br>d. protein in pancreas | |
| 17-iii | The inner lining of the stomach is protected by<br><br>a. enzyme pepsin<br>b. mucus<br>c. Hydrochloric acid<br>d. Muscle | |
| 17-iv | Which statement is a valid conclusion based on the information in the graph –<br><br>a. The maximum rate of human digestion occurs at about $45^0$C.<br>b. The maximum rate of human respiration occurs at about $57^0$C<br>c. Temperature can influence the action of an enzyme.<br>d. Growth can be controlled by enzyme<br><br>  <br> | |
| 17-v | Small Intestine receives the secretions from ……. for complete digestion.<br><br>a. Mouth and Stomach<br>b. Stomach and liver<br>c. Liver and Pancreas<br>d. All the above | |
| 18. | **Read the following and answer any FOUR questions from 18 (i) to 18 (v)**<br><br>Modern periodic table arranges the elements in the increasing order of atomic numbers. It has 18 groups and 7 periods. Atomic numbers are consecutive in a period and increases in group in a pattern. 78% of elements are metals, about 20% elements are non- metals and few elements like B, Si, Ge, As are metalloids. Metallic character increases down the group but decreases along the period from left to right. The physical and chemical properties of elements vary with their atomic numbers.<br>Periodic trends are observed in atomic size, metallic and non-metallic character and valence. Oxides of metals are basic and some are amphoteric. Non-metals form acidic oxides and some form neutral oxides. | 1x4 |

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| 18-i | Element X forms a chloride with the formula $XCl_2$, which is a solid with high melting point. X would most likely be in the same group of the Periodic table as-<br>a. Na<br>b. Mg<br>c. Al<br>d. Si | |
| 18-ii | Which of the following does not change while moving down the group of the periodic table?<br>a. Atomic radius<br>b. Metallic character<br>c. Number of shells in the atom<br>d. Number of Valence electrons | |
| 18-iii | Which of the following metal forms amphoteric oxide?<br>a. Copper<br>b. Silver<br>c. Aluminium<br>d. Iron | |
| 18-iv | Which one among the following is an acidic oxide?<br>a. $Na_2O$<br>b. CO<br>c. $CO_2$<br>d. $Al_2O_3$ | |
| 18-v | Considering the elements B, Al, Mg and K, the correct order of their metallic character is<br>a. B > Al > Mg > K<br>b. Al > Mg > B > K<br>c. Mg > Al > K > B<br>d. K > Mg > Al > B | |
| 19. | **Read the following and answer any FOUR questions from 19 (i) to 19 (v)**<br>A thick lens has shorter focal length because for a thick lens the optical path- length of the light is more than for a thin lens, thus the bending of light will be more in case of a thicker lens. Consequently, it has a shorter focal length. The focal length of a lens is determined when the lens is focused at infinity.<br>The principal focal length of a lens can be calculated from the lens formula. Remember focal length is the property of a lens . And the colour of light is dependent on wavelength. So focal length of the lens is independent of the colour, wave length and frequency of the light which is passing through the lens. | 1x4 |
| 19 i | A thick lens has<br>a. shorter focal length<br>b. longer focal length<br>c. neither short nor long<br>d. none of the above | |

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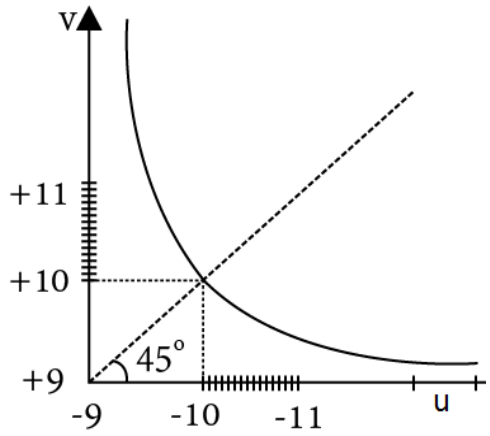
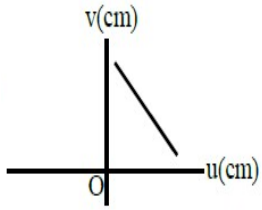
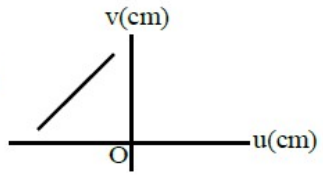
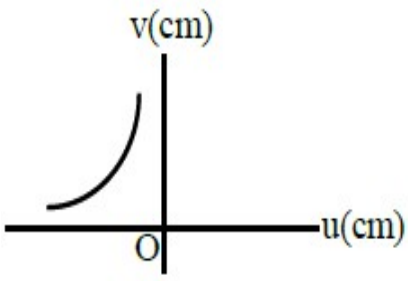
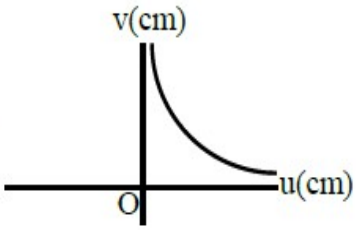
| 19.ii | The graph between object distance ‘u’ and image distance ‘v ‘for a lens is given. The focal length of the lens is<br><br>a. 5 (unit)<br>b. -5 (unit)<br>c. 0.5(unit)<br>d. -0.5(unit)<br><br>  | |
| 19-ii | A student measures the focal length of a convex lens by putting an object (pin) at a distance 'u' from the lens and measuring the distance 'v' of the image. The graph between 'u' and 'v' plotted by the student should look like:<br><br>a.<br>  <br>b.<br>  <br>c.<br>  <br>d.<br>  | |
| 19-iv | So focal length of the lens is independent of<br><br>a. the colour, wave length and frequency of the light<br>b. the colour and wave length of the light<br>c. the wave length and frequency of the light<br>d. None of the above | |

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| 19-v | The lens formula is –<br>a. $\frac{1}{\mathrm{f}} = \frac{1}{v} - \frac{1}{u}$<br>b. $\frac{1}{\mathrm{f}} = \frac{1}{v} + \frac{1}{u}$<br>c. $\frac{1}{\mathrm{f}} = \frac{1}{-v} + \frac{1}{u}$<br>d. $\frac{1}{\mathrm{f}} = \frac{1}{-v} + \frac{1}{-u}$ | |
| 20 | Read the following and answer any four questions from 20 (i) to 20 (v)<br><br>An electric current always produces a magnetic field. Even weak ion currents that travel along the nerve cells in our body produce magnetic fields. When we touch something, our nerves carry an electric impulse to the muscles we need to use. This impulse produces a temporary magnetic field. These fields are very weak and are about one-billionth of the earth's magnetic field. Two main organs in the human body where the magnetic field produced is significant, are the heart and the brain. The magnetic field inside the body forms the basis of obtaining the images of different body parts. This is done using a technique called Magnetic Resonance Imaging (MRI). Analysis of these images helps in medical diagnosis. Magnetism has thus, got important uses in medicine. | 1 x4 |
| 20-i | The main organs in the human body where the magnetic field produced is significant are –<br>a. Heart and lungs<br>b. Intestine ad kidneys<br>c. Brain and heart<br>d. Brain and eyes | |
| 20-ii | An electric current always produces a –<br>a. Induced current<br>b. magnetic field<br>c. magnetic force<br>d. all the above | |
| 20-iii | When we touch something the electrical impulse are carried by<br>a. muscles to the nerves.<br>b. nerves to the muscles.<br>c. hands to the fingers.<br>d. none of the above | |

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| 20-iv | The magnetic field produced by electrical impulses in our body is<br><br>a. temporary and are very strong.<br>b. temporary and are very weak.<br>c. permanent and are very strong.<br>d. permanent and are very weak. | |
| 20-v | The technique used for obtaining images of the body parts for medical diagnosis is<br><br>a. Magnetic Rotating Imaging.<br>b. Magnetic Resonance Imaging<br>c. Both a and b are correct<br>d. None of the above | |
| | **Section –B** | |
| 21 | Which of these two animals Lion and Cow has long small intestine and why?<br><br>**OR**<br><br>Write two functions of lymph. | 2 |
| 22 | If you chew a piece of bread for longer duration ,it feels sweet .Why? | 2 |
| 23. | What are structural isomers? Draw the possible structures of butane.<br><br>**OR**<br><br>What is methane? Draw its electron dot structure. Name the type of bonds formed in this compound. | 2 |
| 24. | What are ionic compounds? Why do ionic compounds not conduct electricity in the solid state? | 2 |
| 25. | A glass prism is able to produce a spectrum when white light passes through it but a rectangular block of same transparent glass does not produce any spectrum why? | 2 |
| 26. | Write the relation between resistance and electrical resistivity of the material of a conductor in the shape of a cylinder of length (l) and area of cross-section(A) . | 2 |
| | **Section –C** | |
| 27. | In the following crosses, write the characteristics of the progeny:<br><br>a) RrYy x RrYy<br>b) rryy x rryy | |

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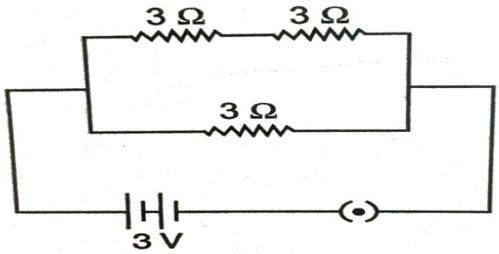
| | c) RRYY x rryy<br>**OR**<br>What do you understand by the term Monohybrid cross? Explain it with an example. | 3 |
| 28. | Explain depletion of ozone layer. Name the chemical which is responsible for this? Write its harmful effects also. | 3 |
| 29. | Why double circulation of blood is necessary in human? Explain it. | 3 |
| 30. | State the effect of concentration of $H^+$(aq) ions on the nature of the solution. Do basic solutions also have $H^+$(aq) ions? If yes then why are these basic? | 3 |
| 31. | "Atomic number of an element is considered to be more appropriate parameter than its atomic mass for a chemist." Take the example of the element X (atomic number 13 to justify this statement. | 3 |
| 32. | Out of three metals X , Y , and Z ,X is less reactive than Y and Z is more reactive than X and Y both. Suggest an activity to arrange X ,Y and Z in order of their increasing reactivity. | 3 |
| 33. | What is atmospheric refraction ? Explain with the help of a labelled diagram that the position of a star as seen by us is not its true position. | 3 |
| | **Section-D** | |
| 34. | a. A dry pallet of a common base B , when kept in open absorbs moisture and turns sticky. The compound B is also a by-product of chlor-alkali process. Identify B . State the type of reaction that occurs when B is treated with an acidic oxide , sulphur dioxide. Also write chemical equation for the reaction involved.<br>b. Write the chemical equation to represent the action of $CO_2$ gas on bleaching powder when exposed in open. | 5 |
| 35. | a. What are Sexually Transmitted Diseases (STD)? List two bacterial and two viral STDs.<br>b. What is reproduction? List its two types.<br>**OR**<br>Define pollination. Explain the different types of pollination. List two agents of pollination. How does suitable pollination lead to fertilization? | 5 |
| 36. | a. Three resistors of 3Ω each are connected to a battery of 3V .Calculate the current drawn from the the battery. | |




b. Two wires of equal length,one of copper and the other of manganin (an alloy) have the same thickness. Which one is used for electric transmission lines and why?

OR

a. Find the highest and the lowest value of resistance that can be obtained by the combination of four resistors of 4Ω , 8Ω, 12Ω and 24Ω.

b. State Joule's law of heating. Find the expression for amount of heat produced.

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