**KENDRIYA VIDYALAYA SANGATHAN, LUCKNOW REGION**
**FIRST PRE BOARD EXAMINATION**
**SESSION – 2025-26**

**CLASS – 10th** **SUBJECT – SCIENCE (086)**

**MM – 80**

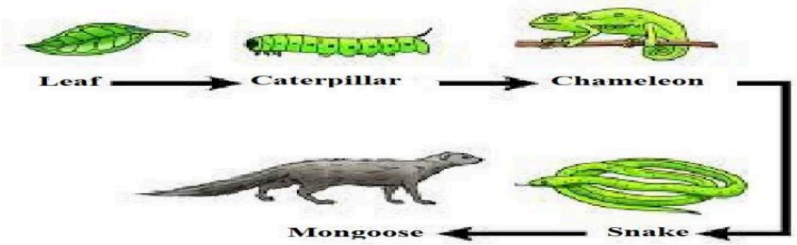
**TIME – 3 HOURS**

**General Instructions:**

***(i) This question paper consists of 39 questions in 3 sections. Section A is Biology, Section B is Chemistry and Section C is Physics.***

***(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.***

| Q.No | **Section A** | Marks |
|---|---|---|
| 1 | Which of the following is a correct combination of function and part of the brain?<br>a. Posture and balance: Cerebrum<br>b. Salivation: Medulla in midbrain<br>c. Hunger: Pons in hindbrain<br>d. Blood pressure: Medulla in hindbrain | 1 |
| 2 | Which of the following limits the number of trophic levels in a food chain:-<br>a) Decrease in energy at higher trophic levels. b) Sufficient food supply<br>c) Polluted air d) water. | 1p |
| 3 | In human alimentary canal, the digestive juice secreted by the gastric glands are:-<br>a).Bile,trypsin, pepsin b) HCl,pepsin, mucus c)Lipase,bile,mucus d)Salivary amylase. | 1 |
| 4 | A cross between pea plant with white flowers (vv) and pea plant with violet flowers (VV) resulted in $F_2$ progeny in which rati of violet (VV) and white flower (vv) will be:<br>a)1:1 b)2:1 c)3:1 d) 1:3 | 1 |
| 5 | Which of the following human activities has resulted in an increase of non-biodegradable substances?<br>a) Organic farming b) Increase in tree plantation<br>c) Use of plastic as packaging material d) Composting of kitchen waste | 1 |
| 6 | The blood glucose level in a patient was very high. It may be due to inadequate secretion of:<br>a. growth hormone from pituitary gland<br>b. oestrogen from ovary<br>c. insulin from pituitary gland<br>d. insulin from pancreas | 1 |
| 7 | In an ecosystem, the amount of energy of sunlight captured by green plants to convert it in to food energy is:<br>a)90% b)99% c)1% d)10% | 1 |
| The following question consists of two statements – Assertion (A) and Reason (R). Answer these questions by selecting the appropriate option given below:<br>A. Both A and R are true, and R is the correct explanation of A.<br>B. Both A and R are true, and R is not the correct explanation of A.<br>C. A is true but R is false.<br>D. A is false but R is true | | |
| 8 | Assertion-Amphibians can tolerate mixing of oxygenated and deoxygenated blood.<br>Reason- Amphibians are animals having two chambered heart. | 1 |
| 9. | Assertion- The sex of a child will be determined by chromosome received from the father.<br>Reason: A human male has one X and one Y-chromosome. | 1 |
| 10 | **Attempt either option A or B.**<br>A. List the steps for the synthesis of glucose by the plants. What special feature is found in desert plants related to this process?<br>**OR** | 2 |

<table>
<tr><td></td><td>B. Explain the role of the following enzymes in the process of digestion of food in humans:<br>(i) Salivary amylase (ii) Pepsin (iii) Trypsin (iv) Lipase</td><td></td></tr>
<tr><td>11</td><td>Differentiate between alveoli and nephron on the basis of the following points:<br><table><tr><th>S. No.</th><th>Feature</th><th>Alveoli</th><th>Nephron</th></tr><tr><td>1</td><td>Structure and location</td><td></td><td></td></tr><tr><td>2</td><td>Function</td><td></td><td></td></tr></table></td><td>2</td></tr>
<tr><td>12</td><td>Study the food chain given below and answer the questions that follow:<br>  <br><br>a) If the amount of energy available at the third trophic level is 100 joules, then how much energy will be available at the producer level? Justify your answer.<br>b) Is it possible to have 2 more trophic levels in this food chain just before the fourth trophic level? Justify your answer</td><td>2</td></tr>
<tr><td>13</td><td>A green stemmed rose plant denoted by GG and a brown stemmed rose plant denoted by gg are allowed to undergo a cross with each other.<br>i)What is the colour of stem in their F1 progeny?<br>ii)Find the percentage of brown stemmed plants in F2 progeny, if plants are self pollinated.<br>iii)Based on the findings of this cross, what conclusion can be drawn?</td><td>3</td></tr>
<tr><td>14</td><td>A doctor has advised Sameer to reduce sugar intake in his diet and do regular exercise after checking his blood test reports. Which disease do you think Sameer is suffering from? Name the hormone responsible for this disease and the organ producing the hormone.</td><td>3</td></tr>
<tr><td>15</td><td>Attempt either option A or B.<br>Riya, a 14-year-old girl, often complained of stomach pain and bloating after meals. Upon medical examination, it was found that she lacked sufficient bile secretion. Her doctor explained that bile is essential for the digestion of fats.<br>(a) "Identify the organ responsible for bile production and explain how bile contributes to the process of digestion."?<br>(b)How does bile help in digestion?<br>(c)What life process is being affected in Riya’s case?<br>(d)Name one enzyme that digests protein and mention where it is secreted.<br>OR<br>B.Mr. Sharma, a 52-year-old man, was diagnosed with a blockage in one of his coronary arteries. This was causing reduced blood flow to parts of his heart muscle, leading to chest pain and weakness.<br>(a)Which life process is affected in Mr. Sharma’s case?<br>(b) "Explain the function of the coronary arteries and analyze why their proper functioning is essential for the overall health of the circulatory system."? .<br>(c)How does reduced blood supply affect the cells in the heart?<br>(d)Name the main components of blood that help in transport.</td><td>4</td></tr>
<tr><td>16</td><td>Attempt either option A or B.<br>A. Puneet wanted to grow banana plants.<br>(i) Based on your knowledge on plant reproduction should he opt for seeds or any alternate method of reproduction. Justify your answer.<br>(ii) Offsprings of a banana plant usually show very little variation. What causes variation and are variations good or bad? Justify.<br>OR</td><td>1+1<br>+1+<br>2</td></tr>
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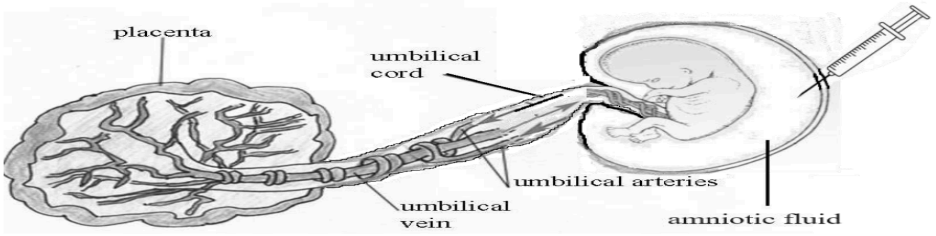
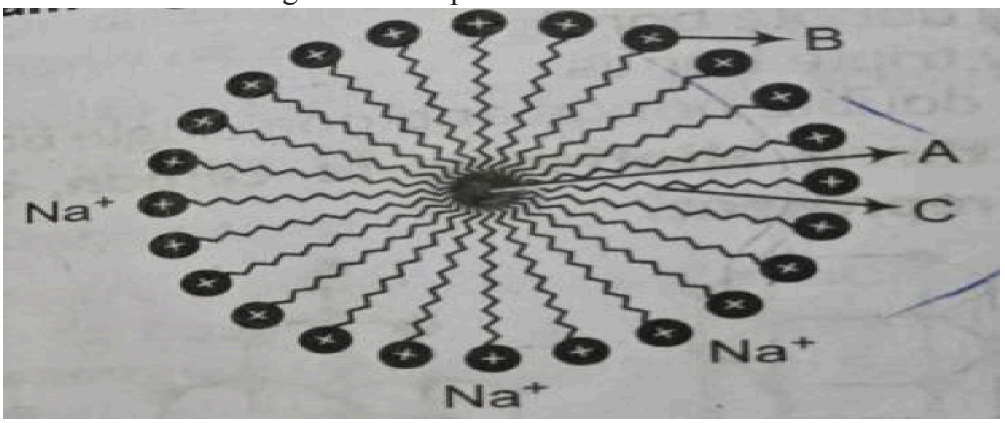
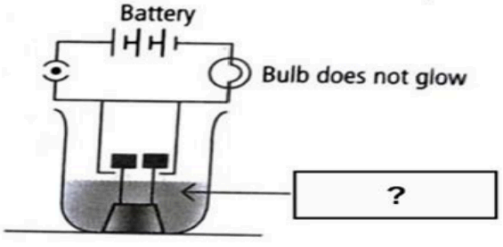
| | B.The image below shows a developing fetus in the mother's womb. The developing fetus is connected to the placenta by means of umbilical cord. The Umbilical vein and artery run inside the umbilical cord.<br>  <br><br>(i) Name two substance that moves through the blood vessels.<br>(ii) If the placenta has less villi how will it affect the baby's growth?<br>(iii) Name the region where the embryo develops inside the female body. Explain how this region is adapted for nourishing the baby.<br>(iv) Some of the fetal cells fall off into the amniotic fluid and can be collected by careful procedure. The cells were screened and found to contain XY chromosome.<br>a) What is the sex of the foetus?<br>b) How is this prenatal sex determination misused? | |
| | **Section B** | |
| 17 | In the given balanced equation, the coefficients x, y, z and p respectively are<br>x Mg 3 N 2 + y H 2 O —--> z Mg (OH) 2 + p NH 3<br>(a) 1,3,3,2 (b) 1,2,3,2 (c ) 1,6,3,2 (d) 2,3,6,2 | 1 |
| 18 | Which of the following are correct parts of micelle formation<br>  <br><br>(a) A=hydrophilic end, B= oil droplet C= hydrophobic end<br>(b) A= hydrophobic end B= hydrophilic end C= oil droplet.<br>(c) A= oil droplet, B = hydrophilic end C=hydrophobic end.<br>(d) A= oil droplet, B= hydrophobic end C=hydrophilic end | 1 |
| 19 | Which of the following substances when dissolved in equal volume of water, will have the highest pH value?<br>a. Sulphuric acid b. Acetic acid<br>c. Magnesium hydroxide d. Sodium hydroxide | 1 |
| 20 | Mild non-corrosive basic salt is<br>a) $Ca(OH)_2$ b) NaCl c) NaOH d) NaHCO3 | 1 |
| 21 |  <br><br>The solution in the given figure is likely to be<br>A. $HNO_3$ B.$C_2H_5OH$ C. $H_2SO_4$ D. $CO_2$ in water | 1 |

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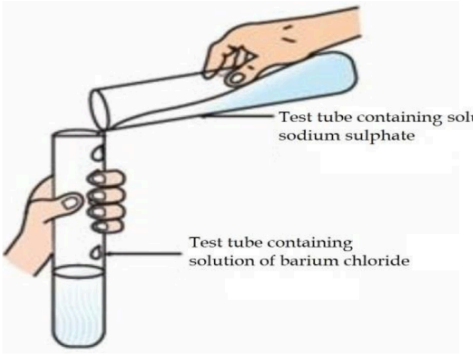
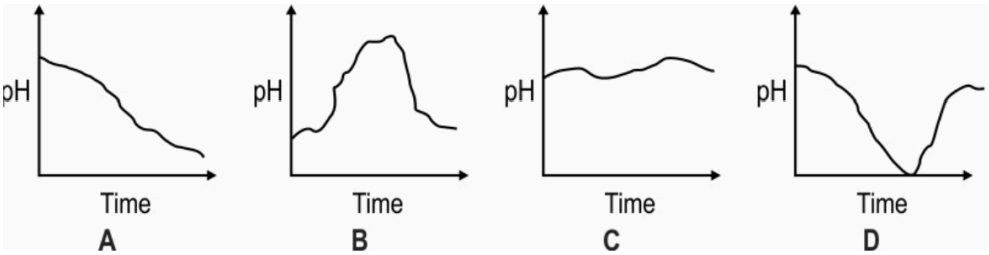
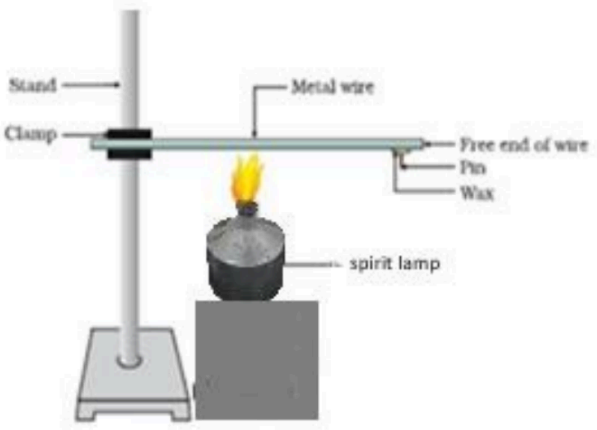
| 22. |  <br>Identify the product which represents the solid state in the above reaction.<br>a) Barium chloride b) Barium sulphate<br>c) Sodium chloride d) Sodium sulphate | 1 |
| 23 | **Which of these graphs shows how the pH of milk changes as it forms curd?**<br>  | 1 |
| 24 | The following question consists of two statements – Assertion (A) and Reason (R). Answer these questions by selecting the appropriate option given below:<br>A. Both A and R are true, and R is the correct explanation of A.<br>B. Both A and R are true, and R is not the correct explanation of A.<br>C. A is true but R is false.<br>D. A is false but R is true<br>ASSERTION- Rusting of Iron is endothermic in nature.<br>REASON: As the reaction is slow, the release of heat is barely evident | 1 |
| 25 | The following activity is set-up in the science lab by the teacher.<br>He clamped an aluminium wire on a stand and fixed a pin to the free end of the wire using wax. Then he heated the wire with a burner from the end where the wire is clamped. Students observed the pin fall off.<br>  <br>A. If the teacher replaces aluminium wire by silver wire, will the students' observation change? Justify your answer.<br>B. Will the aluminium wire melt? Give reason for your answer. | 2 |
| 26 | *Attempt either option A or B.*<br>A. A teacher asks her student to identify a metal M .She gives him the following clues to help them.<br>(P) Its oxide reacts with both HCl and NaOH.<br>(Q) It does not react with hot or cold water but reacts with steam. | 3 |

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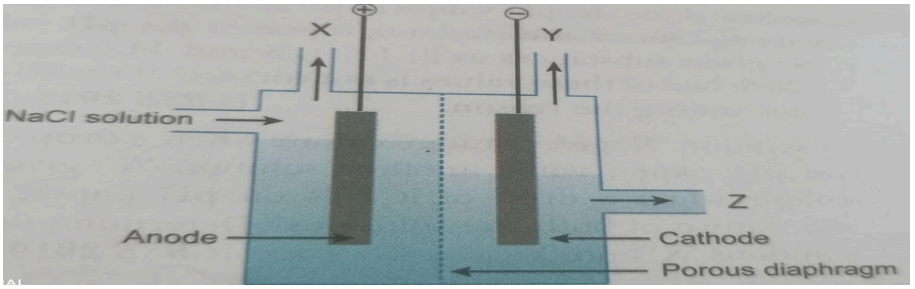
| | (R) It can be extracted by electrolysis of its ore.<br>Now answer the following questions.<br>a) Identify the metal.<br>b) Write the chemical equations for the reaction of metal with HCl & NaOH respectively.<br>c)what would happen if the metal is reacted with iron oxide.<br>**OR**<br>B.<br>An element 'X' is stored in kerosene, and cannot be extracted from its ore using a reducing agent. 'X' forms an ionic compound on reaction with chlorine.<br>(i) Can we store 'X' in water? Give reason to support your answer.<br>(ii) Identify element 'X'. Name the process used and write the equation for extraction of 'X' from its ore. | |
| 27 | Tina finds a paper covered with white substance in a chemistry lab.she keeps the paper near the window of the lab and come back to pick it up after 5 hours to take it home.She noticed that the white substance had turned grey.<br>a) What could be most likely substance on the paper that tina found?<br>b) The substance that changed from white to grey .write the chemical equation for this reaction.<br><br>State one application of this property of the substance seen in daily life. | 3 |
| 28. | In a given diagram when electricity is passed through an aqueous solution of a common salt,a substance Z is produced along with the evolution of gases X and Y. When an burning<br>  <br><br>matchstick is brought near the gas Y it burns with a pop sound.where as X is used for disinfecting drinking water.When the gas X is passed through a solution of slaked lime,an insoluble sunstance A is produced.<br>i) Write the names of gases X and Y.<br>ii) Write the balanced chemical equation for the formation of substance A.<br>iii) Write your observations if a drop of blue litmus solution is added to aqueous solution of substance Z.<br>iv) What happens when Methyl orange is added to substance Z.<br><br>**OR**<br>Reeta and her family went out for dinner. After enjoying the dinner her grandmother felt a burning sensation. Reeta's father gave her a liquid medicine for curing this.<br>Answer the following questions:-<br>i)What caused acidity in Reeta's grandmother stomach?<br>ii) What tablet did Reeta's father give to her grandmother? Give one example of such a substance.<br>iii) what will happen if blue litmus paper is dipped in the substance that causes this burning sensation?<br>iv)Explain the mechanism that involved in the action of that medicine in stomach. | 4 |
| 29 | *Attempt either option A or B.*<br>A. A hydrocarbon with a formula $C_xH_y$ undergoes complete combustion as shown in the following equation:<br>$2\ C_xH_y + 9O_2 \rightarrow 6CO_2 + 6H_2O$<br>a) What are the values of x and y?<br>b) Give the chemical (IUPAC) name of the hydrocarbon. | 5 |

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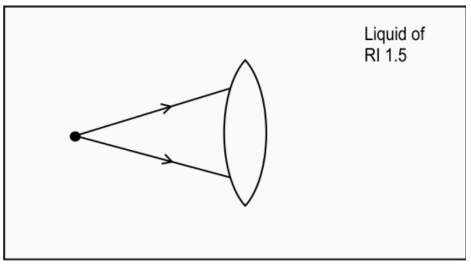
| | c) Draw its electron dot structure.<br>d) Name an alcohol which on heating with conc.$H_2SO_4$ will produce the above hydrocarbon $C_xH_y$.<br>e) Write a balanced chemical equation for the reaction of $C_xH_y$ with hydrogen gas in presence of nickel.<br>OR<br>B. Raina while doing certain reactions observed that heating of substance 'X' with vinegar like smell with a substance 'Y' (which is used as an industrial solvent) in presence of conc. Sulphuric acid on a water bath gives a sweet-smelling liquid 'Z' having molecular formula C4H8O2. When heated with caustic soda (NaOH), 'Z' gives back the sodium salt of and the compound 'Y'.<br>a)Identify 'X', 'Y', and 'Z'.<br>b)Illustrate the changes with the help of suitable chemical equations. | |
| | **SECTION C** | |
| 30 | An object is placed in front of a convex mirror. Its image is formed:<br>A. at a distance equal to the object distance in front of the mirror.<br>B. at twice the distance of the object in front of the mirror.<br>C. half the distance of the object in front of the mirror.<br>D. behind the mirror and it's position varies according to the object distance. | 1 |
| 31 | When light enters the atmosphere it strikes on extremely fine particles, which deflect the rays of light in all possible directions, This is due to –<br>a) reflection of light b) atmospheric refraction<br>c) scattering of light d) dispersion of light | 1 |
| 32 | The following question consists of two statements – Assertion (A) and Reason (R). Answer these questions by selecting the appropriate option given below:<br>A. Both A and R are true, and R is the correct explanation of A.<br>B. Both A and R are true, and R is not the correct explanation of A.<br>C. A is true but R is false.<br>D. A is false but R is true<br>**Assertion (A)**: A convex mirror always forms an image behind it and the image formed is virtual.<br>**Reason (R)**: According to the sign convention, the focal length of a convex mirror is positive | 1 |
| 33 | A lens made of material with refractive index 1.5 is immersed in a liquid with refractive index 1.5 .The diagram below shows two rays incident on a lens when it is immersed in a liquid.<br>  <br>Copy the diagram and draw the light rays after they pass through the lens .Justify your diagram. | 2 |

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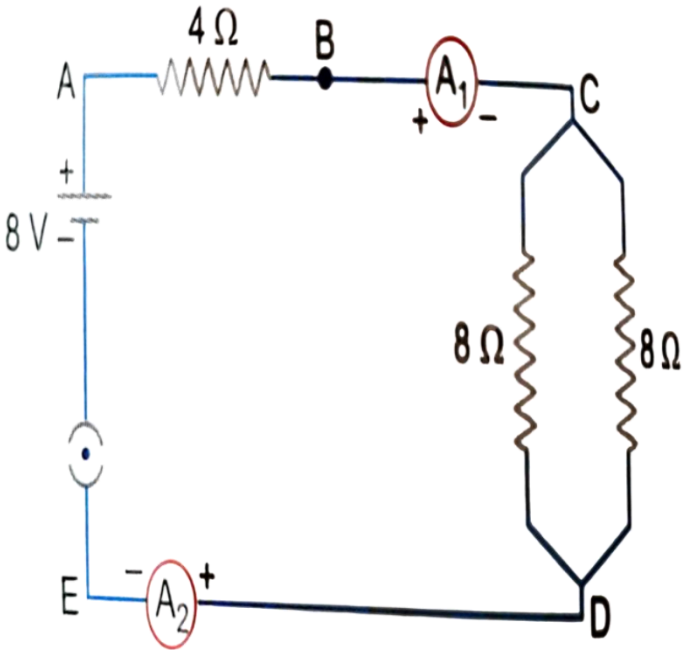
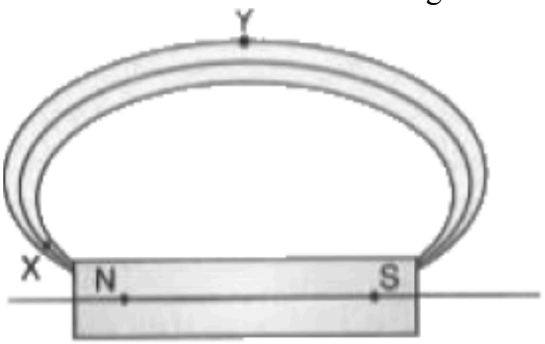
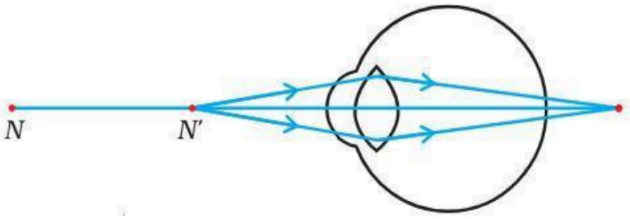
| 34 | A.<br>  <br><br>Find out the following in the electric circuit given in the figure-<br>(i) Effective resistance of two 8 ohm resistors in the combination.<br>(ii) Current flowing through the 4-ohm resistor | 2 |
| 35 | Anannya responded to the question:<br>Why do electrical appliances with metallic bodies are connected to the mains through a three pin plug, whereas an electric bulb can be connected with a two pin plug?<br>She wrote: Three pin connections reduce heating of connecting wires.<br>(i) Is her answer correct or incorrect? Justify.<br>(ii) What is the function of a fuse in a domestic circuit? | 3 |
| 36 | Magnetic field lines are shown in the given diagram. A student makes a statement that the magnetic field at X is stronger than at Y.<br>(i) Explain with reason if the student's claim is correct.<br>(ii) Also redraw the diagram and mark the direction of magnetic field lines<br>  <br> | 3 |
| 37 | A. What is the fundamental difference between hypermetropia and myopia in terms of the optical experience of a person?<br>B. The diagram below shows a special case of an eye defect.<br>(i) What is the defect that is shown in the figure?<br>(ii) State one cause for such a defect?<br>(iii) Explain with reason if a concave lens can be used to correct the defect.<br>  <br> | 3 |

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| 38 | Zarina worked as an apprentice in a factory where flashlights and solar cookers are made. She learnt to make the circuits, the design of the light-box and light concentrators of the solar cookers as well. She learnt the uses of lenses in making all those tools. Based on your understanding of lenses, answer the following questions.<br>A. What kind of lenses are used in the flashlight and light concentrator of the solar-cooker?<br>B. Give reasons for your choices in your answer for part A.<br><br>*Attempt either subpart C or D.*<br>C. An object is placed 40 cm away from a lens which is normally used in a solar-cooker. The image formed is twice the size of the object. Calculate the focal length of the lens.<br><br>**OR**<br>D. An object is placed 20 cm in front of a lens which is used in a flashlight, and the image is formed 10 cm away from the lens on the same side as the object. Calculate the focal length of the lens. | 4 |
| 39 | Two identical resistors, each of resistance 15 W, are connected in (i) series and (ii) parallel, in turn to a battery of 6 V. Calculate the ratio of the power consume in the combination of resistors in each case.<br>OR<br>(i) State Joules law of heating and write its mathematical expression.<br>(ii) Two resistors of resistances 2$\Omega$ and 4$\Omega$ are connected in<br>a) series b) parallel<br>with a battery of given potential difference. Compute the ratio of total quantity of heat produced in the combination in the two cases if the total voltage and time are kept the same for both. | 5 |