



**SAMPLE PAPER 2**  
**Half Yearly Examination, 2018-19**  
**Sub: SCIENCE**  
**Class – X**

**Time Allowed: 3 hrs.**

**Maximum Marks : 80**

Name \_\_\_\_\_

Sign of Invigilator \_\_\_\_\_

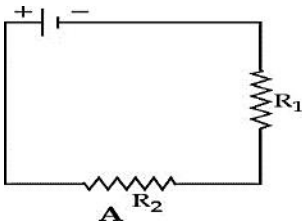
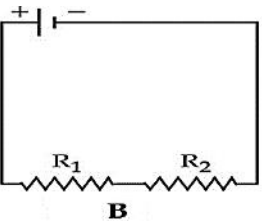
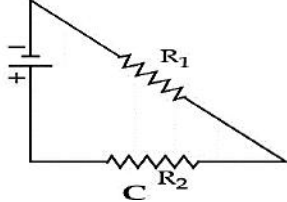
**General Instructions :**

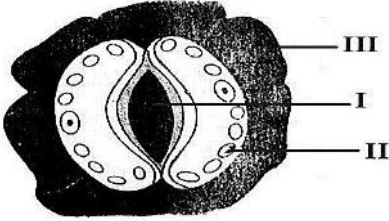
1. *The question paper comprises of two sections A and B. You are to attempt both the sections.*
2. *All questions are compulsory.*
3. *All questions of section A and all questions of section B are to be attempted separately*
4. *Question number 1 to 2 in section A are one mark questions. These are to be answered in one word or in one sentence*
5. *Question number 3 to 5 are two marks questions. These are to be answered in about 30 words each.*
6. *Question number 6 to 15 are three marks questions including a value based question. These are to be answered in about 50 words each.*
7. *Question number 16 to 21 are five marks questions. These are to be answered in about 70 words each.*
8. *Question numbers 22 to 27 in Section-B are Practical based questions. Each question carry two marks.*

**SECTION-A**

|   |  |   |
|---|--|---|
| 1 | Name the acid and base would be used to prepare the following salts :<br>(i) Potassium sulphate<br>(ii) Ammonium Chloride  | 1 |
| 2 | While setting up an experiment for phototropism, common observation is – stem bends towards the source of light. Suggest reason behind such an observation.  | 1 |
| 3 | DDT has entered food chain. Which food habit is safer- vegetarian or nonvegetarian?  | 2 |
| 4 | List two factors on which the magnetic field produced by a current carrying straight conductor depends.  | 2 |
| 5 | State with reason two disadvantages of using fossil fuels.   | 2 |
| 6 | Give reasons for the following:<br>(i) All decomposition reactions are endothermic reactions.<br>(ii) Colour of copper sulphate solution changes when an iron nail is dipped in it.<br>(iii) Respiration is an exothermic reaction.                      | 3 |
| 7 | A brown substance 'X' on heating in air forms a substance 'Y'. When hydrogen gas is passed over heated 'Y', it again changes back into 'X'.<br>(i) Name the substance 'X' and 'Y'<br>(ii) Name the chemical processes occurring during both the changes. | 3 |

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|     | (iii) Write the chemical equations involved in both the changes.  |   |
| 8   | (a) How is copper obtained from its sulphide ore ? Write balanced chemical equations.<br>(b) Explain electrolytic refining of impure copper with the help of a diagram.   | 3 |
| 9   | (a) Name the main ore of mercury. How is it obtained from its ore? Explain with balanced chemical equation.<br>(b) How is thermit reaction used to join railway tracks or cracked machine parts ?<br>(c) Name the method used to extract metals of high reactivity.   | 3 |
|     | <b>OR</b>   |   |
|     | Explain corrosion with an example, list four different ways that are used to prevent corrosion ?  |   |
| 10  | Describe an activity to prove that all hydrogen containing compounds such as alcohols and glucose are not acids.  | 3 |
| 11  | Explain the process of fertilization in plants with the help of neat labeled diagram.   | 3 |
| 12. | Explain why:<br>(a) It is difficult to burn a piece of fresh wood from a tree.<br>(b) Pouring dry sand over the fire extinguishes it.<br>(c) It is difficult to use hydrogen as source of energy.   | 3 |
| 13  | In the context of conservation of natural resources, explain the terms reduce, recycle and reuse. From among the materials that we use in daily life, identify two materials for each category.   | 3 |
| 14  | (a) Aquarium requires regular cleaning whereas lakes normally do not. Why?<br>(b) How is ozone depletion caused? Name the compounds causing it.   | 3 |
| 15  | A geyser is rated 1500W, 250V. This geyser is connected to 250V mains. Calculate -<br>The current drawn and the energy consumed in 50hrs, the cost of energy consumed at Rs. 2.20 per kWh.  | 3 |
| 16  | A compound 'X' is bitter to taste. It is a compound of washing powder and reacts with dilute HCl to produce brisk effervescence due to a colourless and odourless gas 'Y' which turns lime water milky due to the formation of 'Z' when excess of CO <sub>2</sub> is passed, milkiness disappears due to formation of 'P'. Identify 'X', 'Y', 'Z' and 'P'. Write the equations involved in the formation of Y, Z and P. | 5 |
| 17  | (a) Write three main steps that take place in chloroplast during photosynthesis.<br>(b) How does stomata open and close? Explain. Which raw material is made available to plants for photosynthesis when stomata are open?  | 5 |
| 18  | (a) What are the different methods of contraception?<br>(b) Malaria parasite divides into many daughter individuals simultaneously through multiple fission. State an advantage the parasite gets because of this type of reproduction.   | 5 |
| 19  | (a) Name the various plant hormones.<br>(b) Give physiological effects of hormones on plant growth and development.<br>(c) Explain briefly why a plant bends towards light during its growth.   | 5 |
| 20  | (a) Derive an expression for Joule's law of heating.<br>(b) Give two examples for applications of heating effect of electric current.<br>(c) 100 J of heat is produced each second in a 4 Ω resistor. Find the potential difference   |   |

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|                  | across the resistor.  |   |
| 21               | <p>(a) Name and explain the rule used to determine the direction of current induced in a coil due to its rotation in a magnetic field.</p> <p>(b) Two circular coils A and B are placed close to each other. Coil A is connected to a battery and coil B is connected to a galvanometer. If the current in coil A is changed, what change will be observed in the galvanometer connected to coil B. Give reasons to justify your observation?</p> <p style="text-align: center;"><b>OR</b></p> <p>(a) List four important features of domestic electric circuits.</p> <p>(b) Draw a schematic diagram of common domestic circuit showing live, neutral and earth wires.</p> | 5 |
| <b>SECTION-B</b> |   |   |
| 22               | <p>A student performs the following reactions. Based on the observation he wants to suggest a displacement reaction to his friend. Which one of the following should he suggest? Gives reasons.</p> <p>(a) Action of heat on ferrous sulphate crystals</p> <p>(b) Action of water on quick lime</p> <p>(c) Reaction between barium chloride and sodium sulphate solution</p> <p>(d) Reaction between iron nails and aqueous solution of copper sulphate</p>   | 2 |
| 23               | <p>Four solutions I, II, III, IV were given to a student to test their acidic or basic nature by using pH papers. He observed that the colour of pH paper turned to red, blue, green and orange respectively when dipped in the four solutions. Write the correct conclusion made by the student.</p>   |   |
| 24               | <p>In which of the following circuits are resistors R1 and R2 connected in series and why?</p> <div style="display: flex; justify-content: space-around; align-items: center;">    </div>   | 2 |
| 25               | <p>(a) What is potential difference?</p> <p>(b) Four identical cells of emf 1.5 V each, were connected in four different ways as shown in the following figures. In which circuit is the potential difference between X and Y would be 6.0 V?</p> <p style="text-align: center;"> A X <math>\bullet</math> —   H   H   H — <math>\bullet</math> Y<br/> B X <math>\bullet</math> —   H   H   H — <math>\bullet</math> Y<br/> C X <math>\bullet</math> —   H   H   H — <math>\bullet</math> Y<br/> D X <math>\bullet</math> —   H   H   H — <math>\bullet</math> Y </p>   | 2 |

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| 26        | <p>On observing stomata on epidermal peel of a leaf, some stomata were found open and some were closed. What is the position of guard cells in the following diagram giving reasons.</p>  | 2 |
| 27        | <p>If you are being asked to observe the permanent slide of the binary fission of Amoeba, then how would you draw the figures of the following two stages?</p> <p>(a) Division of nucleus                      (b) Division of Cytoplasm</p>                               | 2 |
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**MARKING SCHEME -SAMPLE PAPER-2  
HALF YEARLY EXAMINATION-2018-19**

**SUB: SCIENCE**

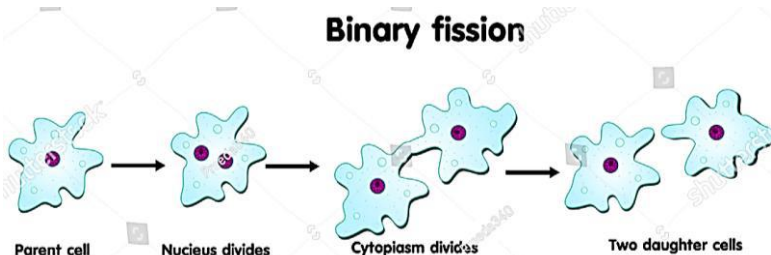
**CLASS – X**

**Section A**

|   |   |   |
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| 1 | (i) $\text{KOH} + \text{H}_2\text{SO}_4$ (ii) $\text{NH}_4\text{OH} + \text{HCl}$   | 1 |
| 2 | Tropic Movement/Stimulus-Sunlight   |   |
| 3 | It leads Biomagnification from grasses to higher trophic levels. As producers has less DDT percentage so vegetarian diet is good as compare to non-vegetarian.  | 2 |
| 4 | Amount of current flowing through the conductor.<br>Distance from the conductor.  | 2 |
| 5 | 1. It is non-renewable fuel    2. It releases pollutants.   | 2 |
| 6 | (i) The absorption of heat is required to carry the reaction.<br>(ii) Iron is more reactive than copper, it displaces copper from its salt solution.<br>(iii) During respiration heat is released in the form of 38 ATP that is why it is exothermic in nature.   | 3 |
| 7 | (a) $\text{X} = \text{Cu}, \text{Y} = \text{O}_2$ (b) Redox Reaction<br>(c) $2\text{Cu} + \text{O}_2 \rightarrow 2\text{CuO}$ and $\text{CuO} + \text{H}_2 \rightarrow \text{Cu} + \text{H}_2\text{O}$  | 3 |
| 8 | (a) Electrolytic Refining<br>(b) copper which is found as $\text{Cu}_2\text{S}$ in nature can be obtained from its ore by just heating in air.<br>$2\text{Cu S} + 3\text{O}_2 \rightarrow (\text{g}) 2\text{Cu O}(\text{s}) + 2\text{SO}_2 (\text{g})$<br>$2\text{Cu O} + \text{Cu}_2 \text{S} + \text{Heat} \rightarrow 6\text{Cu}(\text{s}) + \text{SO}_2 (\text{g})$<br>(c) Refer Page-52, Figure 3.12   | 3 |
| 9 | (a) Mercury is obtained from its sulphide ore called cinnabar, $\text{HgS}$ which is actually mercury(ii) sulphide. ... when this mercury oxide is heated at about 300 degrees Celsius, it decomposes to form mercury metal.<br>The following steps are involved in its extraction:<br>1. mercury ore is roasted<br>$2\text{HgS}(\text{s}) + 3 \text{O}_2 (\text{g}) \rightarrow 2\text{HgO} (\text{s}) + 2 \text{SO}_2 (\text{g})$<br>2. when this mercury oxide is heated at about 300 degrees Celsius, it decomposes to form mercury metal.<br>$2\text{HgO} (\text{s}) \rightarrow 2\text{Hg} (\text{l}) + \text{O}_2(\text{g})$<br><br>(b) Thermite reaction:-It is the reduction of metal oxide to form metal, by using aluminium powder as a reducing agent. These reaction (metal oxide with aluminium) are highly | 3 |

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|    | <p>exothermic (large amount of heat is released ).Due to the large amount of heat produced , the metals are produced in molten state. This reduction property of aluminium is used in welding broken pieces of heavy iron objects like railway tracks. Here is the chemical reaction that takes place, <math>\text{Fe}_2\text{O}_3 + 2\text{Al} \rightarrow 2\text{Fe} + \text{Al}_2\text{O}_3</math> Here , molten iron is formed ,which is poured between the broken iron pieces to weld them.</p> <p>(c) Electrolytic reduction.</p> <p style="text-align: center;">OR</p> <p>Corrosion is defined as a process where materials, usually metals, deteriorate as a result of a chemical reaction with air, moisture, chemicals, etc. For example, iron, in the presence of moisture, reacts with oxygen to form hydrated iron oxide.</p> $4\text{Fe} + 3\text{O}_2 + n\text{H}_2\text{O} \rightarrow 2\text{Fe}_2\text{O}_3 \cdot n\text{H}_2\text{O}$ <p>Turn to non-corrosive metals such as aluminum and stainless steel.</p> <p>Keep the area around the metal surface dry.</p> <p>Use drying agents and moisture barrier products.</p> <p>Make sure any electrical components are cleaned regularly</p> |   |
| 10 | Refer Text Book Page No:22   | 3 |
| 11 | Refer Text Book Page No:134-135  | 3 |
| 12 | <p>A)The fresh wood has water in it which makes it difficult to catch fire</p> <p>B) it blocks out the external oxygen from the fire which is the source of fire thus dry sand works as the fire extinguisher</p>  | 3 |
| 13 | <p>Reduce means to use a material/commodity in lesser quantity, e.g., electricity and water. Recycle means a material that is used once is collected and sent back to a manufacturer so that they can make some other useful material from it.</p> <p>e.g., plastic cups and buckets, glass tumbler, paper, metal objects.</p> <p>Reuse means using a thing over and over again: instead of throwing it away. It does not involve the process of recycling either in small or large scale, e.g., used envelopes, plastic carry bags, bottles of jam.</p>   | 3 |
| 14 | <p>[a] In the Aquarium the uneaten food as well as the waste generated by the fishes mixes with the water and is left untreated due to the lack of decomposers. The waste materials thus accumulate in the water making it toxic. Hence an aquarium has to be cleaned after regular intervals and Natural Bacteria Cleanse the lakes.</p> <p>[b] Ozone depletion occurs when chlorofluorocarbons (CFCs) and halons—gases formerly found in aerosol spray cans and refrigerants—are released into the atmosphere CFCs and halogens cause chemical reactions that break down ozone molecules, reducing ozone's ultraviolet radiation-absorbing capacity.</p>   | 3 |
| 15 | <p><math>P = VI \Rightarrow 1500 = 250 \times I \Rightarrow I = 6 \text{ A.}</math></p> <p><math>P = 1500 \text{ W} = 1.5 \text{ kW.}</math></p>   | 3 |

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|    | <p>Energy consumed in 50 hours. = <math>1.5 \times 50 = 75</math> kWh.</p> <p>Total Money = <math>75 \times 2.20 = \text{Rs. } 165.0</math></p>  |   |
| 16 | <p>1) X is Sodium carbonate (<math>\text{Na}_2\text{CO}_3</math>).</p> <p>2) Y is <math>\text{CO}_2</math> gas.</p> <p>3) Z is calcium carbonate</p> <p>4) P is calcium hydrogen carbonate.</p> <p>the balanced equation is :</p> <p><math>\text{Ca(OH)}_2 + \text{CO}_2 \rightarrow \text{H}_2\text{O} + \text{CaCO}_3</math></p> <p><math>\text{CaCO}_3 + \text{CO}_2 + \text{H}_2\text{O} \rightarrow \text{Ca(HCO}_3)_2</math></p>   | 5 |
| 17 | <p>(a) The steps that takes place in chloroplast during photosynthesis are:</p> <p>(i) Absorption of light energy by chlorophyll.</p> <p>(ii) Conversion of light energy into chemical energy, and splitting of water into hydrogen and oxygen using light energy.</p> <p>(iii) Reduction of carbon dioxide by hydrogen to form carbohydrate like glucose by utilizing the chemical energy.</p> <p>(b) The opening and closing of stomata is controlled by guard cells. When water flows into the guard cells, they swell, become curved and cause the stomata to open. When the guard cells loses water, they shrink, become flacid and straight thus closing the stomata.</p>  | 5 |
| 18 | <p>(a) Any Four</p> <p>1) The prevention of pregnancy in women by preventing fertilisation is called contraception.</p> <p>2) Any device or chemical (drug) which prevents pregnancy in woman is called . contraceptive. -</p> <p>3) Physical devices such as condoms and diaphragm (cap) are used. This prevents reaching of sperms to ova for fertilisation.</p> <p>4) Chemicals in the form of pills are induced either orally or inserting into female reproductive organ vagina.</p> <p>5) Pills for males kill the sperms and hence are called spermicide.</p> <p>6) The use of intra - uterine device called copper - T, loop, etc. are also very effective in preventing pregnancy.</p> <p>7) Surgical methods of birth control are available for males as well as females.</p> <p>8) In males a small portion of vas deferens (sperm duct) is removed by surgical operation and both ends are tied properly. This method is called Vasectomy.</p> <p>9) In females a small portion of oviducts (fallopian tubes) is removed by surgical operation</p> | 5 |

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|                  | and the cut ends are tied. This method is called Tubectomy.<br>(b) It produces many individuals through multiple fission which gives better chances of survival for the species. Being a parasite, if few individual gets eliminated then also rest of the individuals multiply rapidly to maintain larger number of parasites. |   |
| 19               | [A] Auxin,Cytokinins,Gibberellins,Abscisic Acid,Ethylene.<br><br>[B] Refer NCERT Page no: 120   | 5 |
| 20               | (a) Refer page 216 and 217 for derivation. NCERT Textbook<br>(b)Refer page 218, NCERT Textbook<br>(c) $H = 100 \text{ J}; T = 1 \text{ s}; R = 4 \Omega$<br>Now $H = \frac{V^2}{R} \times T$ . Hence $V = 20 \text{ V}$ .   | 5 |
| 21               | (a) Fleming's Right Hand Rule. Refer page 235 NCERT Textbook for the statement of the rule.<br>(b)Deflection will be seen in galvanometer. Electromagnetic Induction. Refer page 235 NCERT Textbook.<br><br>OR<br>(a) Refer page 237 and 238 NCERT Textbook.<br>(b) Refer Fig. 13.20 on page 238, NCERT Textbook.               | 5 |
| <b>Section B</b> |   |   |
| 22               | Option(d) Fe is more reactive which displaces copper from its salt solution.  | 2 |
| 23               | Red-More Acidic, blue-Less basic, green-neutral, orange-less acidic   | 2 |
| 24               | All the resistances in all the circuits are connected in series. Reason- the resistances are connected one after the other and there is no branching out of the connections.  | 2 |
| 25               | (a) Refer page 201 NCERT Textbook<br>(b) Circuit A will generate 6 V potential difference.  | 2 |
| 26               | This stomata is open because the conduction of water makes the guard cells turgid.  | 2 |
| 27               |  <p style="text-align: center;"><b>Binary fission</b></p> <p style="text-align: center;">Parent cell      Nucleus divides      Cytoplasm divides      Two daughter cells</p> <p style="text-align: center;">-o0o0o0o-</p>                   | 2 |



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