

केन्द्रीय विद्यालय संगठन, जयपुर संभाग  
Kendriya Vidyalaya Sangathan, Jaipur Region

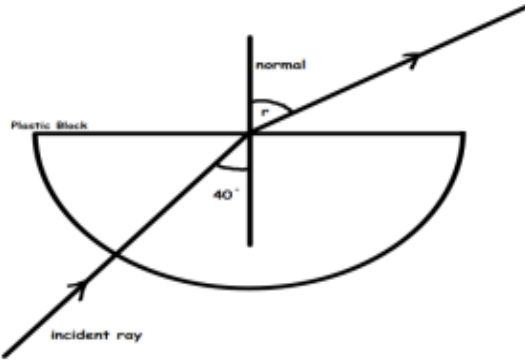
अभ्यास पत्र /Practice Paper :2024-25

सेट सं. /SET No. – 02

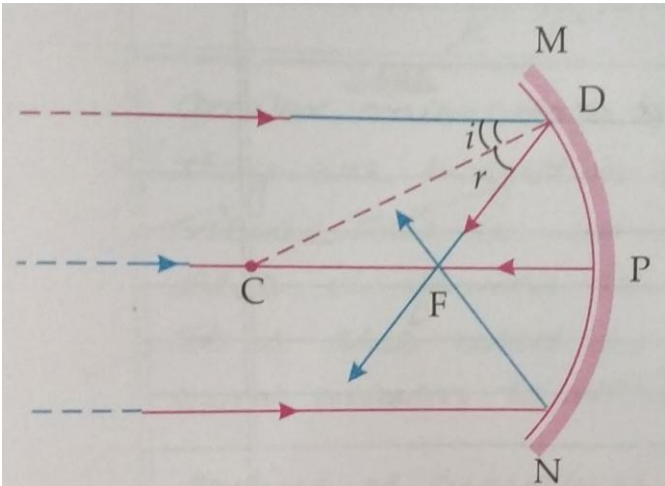
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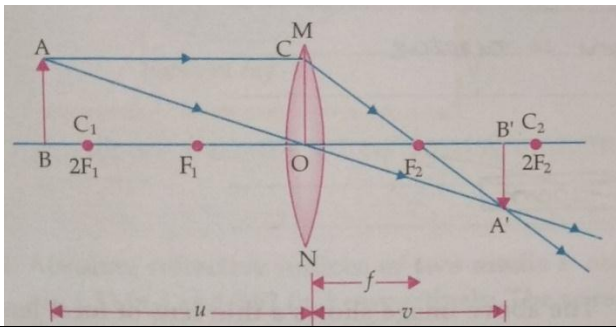
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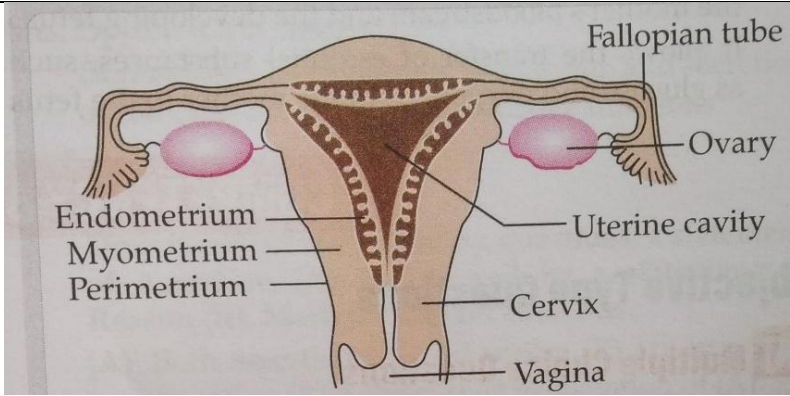
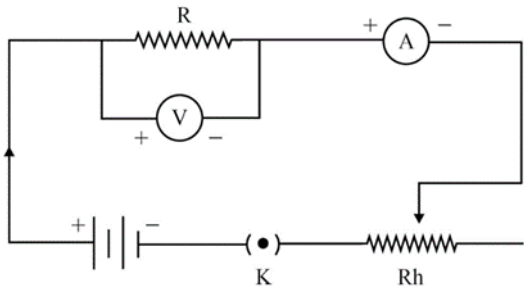
विषय/ Subject: विज्ञान/Science

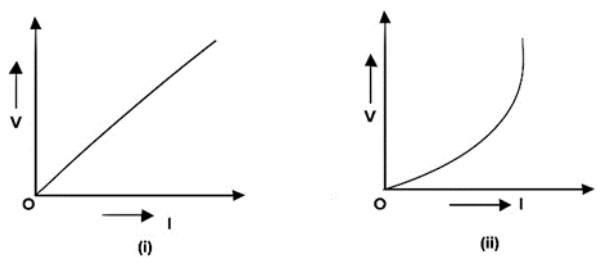
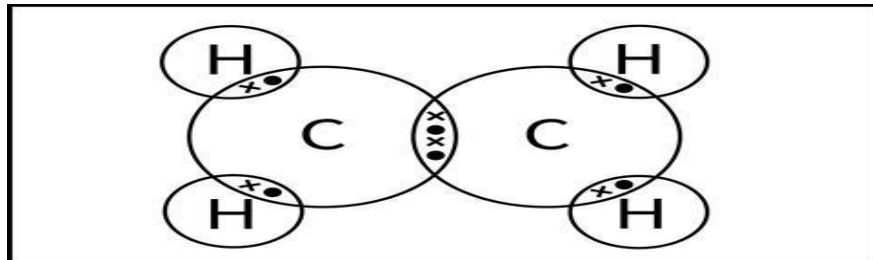
| SECTION A |                                                                                                                                                                                                                                                                                                                                                                                              |                   |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| S.No.     | Question                                                                                                                                                                                                                                                                                                                                                                                     | Marks             |
| Q. 1      | (b) $2\text{NaOH} + \text{Zn} \longrightarrow \text{Na}_2\text{ZnO}_2 + \text{H}_2$                                                                                                                                                                                                                                                                                                          | 1                 |
| Q. 2      | (d) 16 ml                                                                                                                                                                                                                                                                                                                                                                                    | 1                 |
| Q. 3      | (b) 5% - 8% acetic acid in water                                                                                                                                                                                                                                                                                                                                                             | 1                 |
| Q. 4      | (b) Mitochondria                                                                                                                                                                                                                                                                                                                                                                             | 1                 |
| Q. 5      | (b) A- Epidermal cell, B - Subsidiary cell, C – Stomatal Pore, D – Guard cell                                                                                                                                                                                                                                                                                                                | 1                 |
| Q. 6      | (c) $\text{SO}_2$ is oxidising agent and $\text{H}_2\text{S}$ is reducing agent                                                                                                                                                                                                                                                                                                              | 1                 |
| Q. 7      | (b) 25%                                                                                                                                                                                                                                                                                                                                                                                      | 1                 |
| Q. 8      | (b) Barium sulphate`                                                                                                                                                                                                                                                                                                                                                                         | 1                 |
| Q. 9      | (d) $1\Omega$                                                                                                                                                                                                                                                                                                                                                                                | 1                 |
| Q. 10     | (c) Mercury and Bromine                                                                                                                                                                                                                                                                                                                                                                      | 1                 |
| Q. 11     | (d) Neuromuscular junction                                                                                                                                                                                                                                                                                                                                                                   | 1                 |
| Q. 12     | (b) (ii) and (iv)                                                                                                                                                                                                                                                                                                                                                                            | 1                 |
| Q. 13     | (d) The field consists of concentric circles centred on the wire.                                                                                                                                                                                                                                                                                                                            | 1                 |
| Q. 14     | (d) 25 W                                                                                                                                                                                                                                                                                                                                                                                     | 1                 |
| Q. 15     | (b) 2                                                                                                                                                                                                                                                                                                                                                                                        | 1                 |
| Q. 16     | (b) (i) and (iv)                                                                                                                                                                                                                                                                                                                                                                             | 1                 |
| Q. 17     | (a) Both A and R are true, and R is the correct explanation of A.                                                                                                                                                                                                                                                                                                                            | 1                 |
| Q. 18     | (c) A is true but R is false.                                                                                                                                                                                                                                                                                                                                                                | 1                 |
| Q. 19     | (c) A is true but R is false.                                                                                                                                                                                                                                                                                                                                                                | 1                 |
| Q. 20     | (b) Both A and R are true, and R is not the correct explanation of A.                                                                                                                                                                                                                                                                                                                        | 1                 |
| SECTION B |                                                                                                                                                                                                                                                                                                                                                                                              |                   |
| Q. 21     | <p>(i) The refractive index of a medium with respect to air is given by</p> $\frac{\text{Speed of light in air}}{\text{Speed of light in medium}}$ <p>Since speed of light in the medium is always less than the speed of light in air, hence the above ratio is always greater than 1.</p> <p>(ii)</p>  | <p>1</p> <p>1</p> |

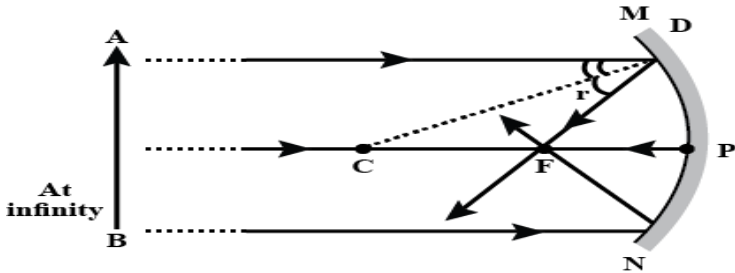
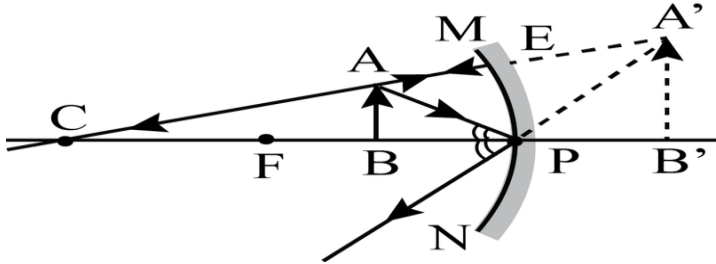
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|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Q. 22            | <p>In order to release more energy to perform sudden activity, pyruvate is converted into lactic acid in the lack of oxygen. Formation of lactic acid in muscles causes cramps or fatigue.</p> <p style="text-align: center;"><b>OR</b></p> <p>A terrestrial organism can obtain oxygen directly from the air and have slow breathing rate but aquatic organisms have to obtain oxygen for respiration which is dissolved in water. Since, the amount of oxygen dissolved in water is fairly low as compared to the amount of oxygen in air, the rate of breathing in aquatic organisms is faster.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 2                   |
| Q. 23            | <p>(a) No reaction.</p> <p>(b) <math>S + O_2 \longrightarrow SO_2</math><br/>(sulphur) (sulphur dioxide)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1<br><br>1          |
| Q. 24            | <p>Water and minerals are transported through xylem cells from soil to the leaves. The xylem cells of root, stem and leaves are interconnected to form a conducting channel that reaches all parts of the plant. The root cells take ions from the soil. This creates a concentration difference between ions of root and soil. Therefore, there is a steady movement of water into xylem. An osmotic pressure is created and water and minerals are transported from one cell to the other cell due to osmosis. On the other hand, there is a continuous loss of water due to transpiration. This creates a suction pressure, which results in absorption of water into xylem cells of roots.</p> <p style="text-align: center;"><b>OR</b></p> <p>Food is transported from the leaves to other parts of the plant via the vascular tissue, called phloem. The term “translocation” refers to the process of transferring food. Plants move carbohydrates from areas with abundant carbs, such as mature leaves, to areas where they are needed via the phloem.</p> | 2                   |
| Q. 25            | When the tip of a tendril touches a support, then the auxins present in its tip move to that side of tip which is away from the support. Auxins promote growth. So, due to more auxins in it, the side of tendril away from the support grows faster (and becomes longer) than the side which is in contact with the support and makes the tendril twirl (or bend) around the support.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 2                   |
| Q. 26            | <p>a) 10000J because only 10 % of energy is available for the next trophic level.</p> <p>b) No, since the loss of energy at each step is so great that very little usable energy will remain after 4 trophic levels.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1<br><br>1          |
| <b>SECTION C</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                     |
| Q. 27            | <p>(a) The white powdery substance is calcium oxide (quicklime), <i>i.e.</i>, CaO Quicklime reacts with water to form calcium hydroxide (slaked lime):<br/><math>CaO(s) + H_2O(l) \longrightarrow Ca(OH)_2(aq)</math></p> <p>(b) This is an exothermic reaction as during this reaction, a lot of heat is produced.</p> <p>(c) During whitewash, calcium hydroxide is applied to the walls and it reacts slowly with the carbon dioxide in air to form a thin layer of calcium carbonate on the walls. Calcium carbonate is formed after two to three days of whitewashing and gives a shiny finish to the walls.<br/><math>Ca(OH)_2(aq) + CO_2(g) \longrightarrow CaCO_3(s) + H_2O(l)</math></p>                                                                                                                                                                                                                                                                                                                                                                   | 1<br><br>1<br><br>1 |
| Q. 28            | (a) Move the mirror / paper to focus the reflected rays at one point.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1                   |

|       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
|       | <p>(b) Concave mirror.</p> <p>(c) Yes, the distance between the mirror and the point at which the sharp focussed image of the sun is formed gives approximate focal length.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <p>1</p> <p>1</p>                            |
| Q. 29 | <p>(a) Double circulation is a process during which blood passes twice through the heart during one complete cycle. Blood is circulated to the body tissue through systemic circulation and to the lungs through pulmonary circulation.</p> <p>(b) The separation of the right side and the left side of the heart helps in the separation of oxygenated and deoxygenated blood, which allows a more efficient supply of oxygen to the body cells.</p> <p>(c) Birds and mammals are warm blooded animals. Since they require more energy to maintain a constant body temperature; hence, the Separation provides the availability of oxygen during respiration to generate more energy for thermoregulation.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <p>1</p> <p>1</p> <p>1</p>                   |
| Q. 30 | <p>(a) The molecular oxygen is divided into nascent oxygen by the Sun's UV rays. Ozone (<math>O_3</math>) is formed when this nascent oxygen unites with molecular oxygen.</p> <p>(b) Just above the troposphere in the atmosphere's stratospheric layer, ozone is present.</p> <p>(c) The major causes of ozone depletion are synthetic chemicals like CFCs (chlorofluorocarbons), which are used in a variety of applications, including as refrigerants in air conditioners and refrigerators, propellants in aerosol sprays, solvents in cleaning products, and in the production of foam insulation</p> <p style="text-align: center;"><b>.OR</b></p> <p>(a) The two types of wastes on the basis of the colour of dustbin are:</p> <p><b>(1) Green dustbin containing biodegradable wastes:</b> These are organic wastes that can be broken down into simpler forms by microorganisms like bacteria, fungi. These do not cause pollution.<br/>Examples: Fruits and vegetable peels, flowers, paper, wood, leftover food, etc.</p> <p><b>(2) Blue dustbin containing non-biodegradable wastes:</b> These are the wastes that cannot be broken down into simpler substances by microorganisms. Such type of wastes are responsible for environmental pollution. Examples: Plastics, glass, metals, electronic gadgets, etc.</p> <p>(b) Importance of waste segregation:</p> | <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> |

|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                       |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
|                  | <p>(1) It reduces landfills and thus, reduces pollution and transmission of diseases.</p> <p>(2) Compost of kitchen waste serves as an excellent manure.</p> <p>(3) Makes waste disposal easy.</p> <p>(4) Serves as a livelihood for rag pickers as they sell segregated wastes to recycle companies.</p> <p>(C) Decomposers feed on dead plants and animals and thus, act as a cleansing agent. They are regarded as Earth's clean-up crew. They help in recycling the nutrients and provide space on Earth by decomposing the dead, otherwise dead organisms would pile up everywhere.</p> | 1                     |
| Q. 31            | <p>(a) Platinum, gold and silver are used to make jewellery because these are malleable and ductile. These are highly resistant to corrosion.</p> <p>(b) Sodium, potassium and lithium are very reactive and catch fire when exposed to air. This is due to their low ignition temperature and high reactivity.</p> <p>(c) Aluminium forms a non-reactive layer of aluminium oxide on its surface. This layer prevents aluminium to react with other substances. That's why aluminium is used to make cooking utensils.</p>                                                                  | 1<br>1<br>1           |
| Q. 32            | <p>(a) A current carrying solenoid is called an electromagnet. When soft iron is placed inside a solenoid carrying current, the soft iron piece behaves like a magnet so long as electric current passes through it. The magnet so formed is electromagnet.</p> <p>(b) Soft iron core is used to increase the strength / power of the electromagnet.</p> <p>(c) (i) By increasing the current.<br/>(ii) By increasing the number of turns in the coil.</p>                                                                                                                                   | 1<br>1<br>1           |
| Q. 33            | <p>The image will be real and inverted, since the magnification has negative value. The lens that can produce a real and inverted image is a converging / convex lens.</p>                                                                                                                                                                                                                                                                                                                               | 3                     |
| <b>SECTION D</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                       |
| Q. 34            | <p>(a) Prostate gland and seminal vesicle add their secretions so that the sperms are in a fluid. It makes their transport easier and also provides nutrition. Testes secrete testosterone which brings about changes in the appearances in the boys at the time of puberty.</p> <p>(b) Female foeticides / illegal sex selected abortion of female foeticide.</p> <p>(c) Interfere in release of egg and eggs are not released.</p> <p style="text-align: center;"><b>OR</b></p> <p>(a)</p>                                                                                                 | 3<br>1<br>1<br><br>1½ |

|       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                          |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
|       |  <p>(i) Fallopian tube / Oviduct</p> <p>(ii) Uterus</p> <p>(iii) Vagina</p> <p>(b) People prefer use of condoms as it prevents STDs / gives privacy to the user. Condoms help create a mechanical barrier preventing meeting of sperms and ovum.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <p><math>\frac{1}{2}</math></p> <p><math>\frac{1}{2}</math></p> <p><math>\frac{1}{2}</math></p> <p>2</p> |
| Q. 35 | <p>(a) Parallel.</p> <p>(b) If one lamp is faulty, it will not affect the working of the other lamps. They will also be using the full potential of the battery as they are connected in parallel.</p> <p>(c) The lamp with the highest power will glow the brightest.<br/>As we know, <math>P = VI</math>. In this case, all the bulbs have the same voltage. But lamp C has the highest current.<br/>Hence, for lamp C:<br/><math>P = 5 \times 60 \text{ W} = 300 \text{ W}</math> ( maximum)</p> <p>(d) The total current in the circuit = <math>3 + 4 + 5 + 3 \text{ A} = 15 \text{ A}</math><br/>Voltage = <math>60 \text{ V}</math><br/><math>V = IR</math> or <math>R = V/I</math><br/><math>= 60/15 \Omega</math><br/><math>= 4\Omega</math></p> <p style="text-align: center;"><b>OR</b></p> <p>a) Ohms Law states that the current through a conductor between two points is directly proportional to the potential difference across its ends. Mathematically, the law states that <math>V = IR</math>, where <math>V</math> is the potential difference or voltage, <math>I</math> is the current, and <math>R</math> is the resistance of the conductor.</p> <p>b) Ohm's Law Equation : <math>V = IR</math>, where <math>V</math> is the voltage across the conductor, <math>I</math> is the current flowing through the conductor and <math>R</math> is the resistance provided by the conductor to the flow of current.</p> <p>c)</p>  <p>A = Ammeter<br/>V = Voltmeter<br/>R = Resistor<br/>B = Battery<br/>K = Key<br/>Rh = Rheostat</p> <p>d)</p> | <p>1</p> <p>1</p> <p>1</p> <p>2</p>                                                                      |

|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                            |   |   |   |    |    |   |    |    |                            |
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|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                            |   |   |   |    |    |   |    |    |                            |
| Q. 36            | <p>(a) Ethanoic acid (<math>\text{CH}_3\text{COOH}</math>).</p> <p>(b) The evolved gas 'W' turns the lime water milky.</p> <p>(c) <math>\text{C}_2\text{H}_5\text{OH} \xrightarrow{\text{Acid. K}_2\text{Cr}_2\text{O}_7} \text{CH}_3\text{COOH}</math><br/> (X) (Y)<br/> <math>\text{C}_2\text{H}_5\text{OH} + \text{CH}_3\text{COOH} \longrightarrow \text{CH}_3\text{COOC}_2\text{H}_5 + \text{H}_2\text{O}</math><br/> (X) (Y) (Z)</p> <p>(d) Esterification reaction.</p> <p>(e) Perfumes / Cosmetics.</p> <p style="text-align: center;"><b>OR</b></p> <p>(A) Homologous series is a group of organic compounds with the same general formula, same chemical properties and a common functional group but different only in the carbon chain length.</p> <p>The general formula of alkene is <math>\text{C}_n\text{H}_{2n}</math></p> <p>Ethene is the first homolog of the series.</p> <p>The electron dot structure of ethene is as follows</p>  <p>A functional group is a group of atoms (heteroatoms) or bonds in a molecule of an organic compound that is responsible for its unique chemical properties.</p> <p>In general, Aldehyde are represented by the formula <math>\text{R-CHO}</math></p> <p>The functional group of a ketone is the <math>\text{R-CO-R}</math>.</p> | <p><math>\frac{1}{2}</math></p> <p>1</p> <p>2</p> <p><math>\frac{1}{2}</math></p> <p>1</p> |   |   |   |    |    |   |    |    |                            |
| <b>SECTION E</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                            |   |   |   |    |    |   |    |    |                            |
| Q. 37            | <p>(i) (b) Recessive</p> <p>(ii) (c) Black eye</p> <p>(iii) Poornima's brother is heterozygous (Bb) and his wife is homozygous (bb)</p> <p style="text-align: center;"> Wife<br/>bb Poornima's brother<br/>Bb </p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td></td><td>B</td><td>b</td></tr> <tr> <td>b</td><td>Bb</td><td>bb</td></tr> <tr> <td>b</td><td>Bb</td><td>bb</td></tr> </table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                            | B | b | b | Bb | bb | b | Bb | bb | <p>1</p> <p>1</p> <p>2</p> |
|                  | B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | b                                                                                          |   |   |   |    |    |   |    |    |                            |
| b                | Bb                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | bb                                                                                         |   |   |   |    |    |   |    |    |                            |
| b                | Bb                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | bb                                                                                         |   |   |   |    |    |   |    |    |                            |

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|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---|---|---|----|----|---|----|----|--|
|       | <p style="text-align: center;"><b>Or</b></p> <p style="text-align: center;">There is a probability of 50% that the offspring of Poornima and Ravi will have green eyes.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>Poornima</p> <p>bb</p> </div> <div style="text-align: center;"> <p>Ravi</p> <p>Bb</p> </div> </div> <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <tr> <td></td><td style="background-color: yellow;">B</td><td style="background-color: yellow;">b</td></tr> <tr> <td style="background-color: yellow;">b</td><td>Bb</td><td>bb</td></tr> <tr> <td style="background-color: yellow;">b</td><td>Bb</td><td>bb</td></tr> </table> |                            | B | b | b | Bb | bb | b | Bb | bb |  |
|       | B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | b                          |   |   |   |    |    |   |    |    |  |
| b     | Bb                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | bb                         |   |   |   |    |    |   |    |    |  |
| b     | Bb                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | bb                         |   |   |   |    |    |   |    |    |  |
| Q. 38 | <p>(i) (b) R</p> <p>(ii) (d) Magnesium</p> <p>(iii) Zinc, ZnO and Aluminium, Al<sub>2</sub>O<sub>3</sub></p> <p style="text-align: center;"><b>OR</b></p> <p>Metal P, and increasing order of reactivity is S &lt; P &lt; Q &lt; R</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p>1</p> <p>1</p> <p>2</p> |   |   |   |    |    |   |    |    |  |
| Q. 39 | <p>(i) (b) Distance between pole and the centre of curvature is twice the focal length.</p> <p>(ii) (a) When object is located within the focal length.</p> <p>(iii)</p> <div style="text-align: center;">  <p style="margin-top: 10px;"><b>OR</b></p>  </div>                                                                                                                                                                                                                                                                                                                         | <p>1</p> <p>1</p> <p>2</p> |   |   |   |    |    |   |    |    |  |