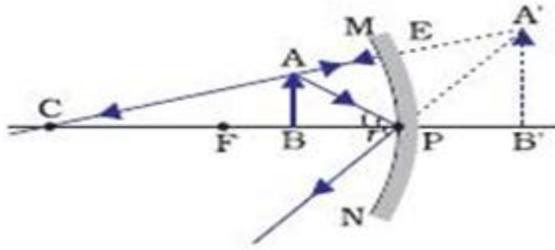


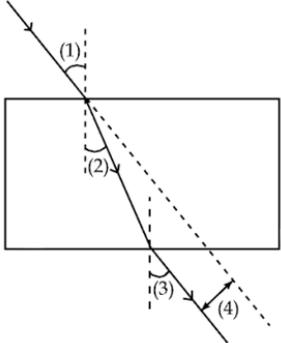
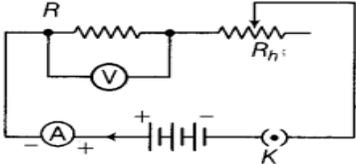
SECTION A		
1.	The red light is scattered the least by air molecules. The effect of scattering is inversely proportional to the fourth power of the wavelength. Red light has longer wavelength and so it is scattered less.	1
2.	The elements of the same group have same valence electrons therefore, have similar properties.	1
3.	X- Chlorine , Y- Bleaching powder (CaOCl_2) $\text{Ca}(\text{OH})_2 + \text{Cl}_2 \rightarrow \text{CaOCl}_2 + \text{H}_2\text{O}$	2
4.	1. Black hair 2. Genes are the units of heredity which transfer characteristics from parents to their offspring.	1+1=2
5.	1. a. Fallopian tube b. Uterus 2. Sperm formation requires a lower temperature than the body temperature.	1+1=2
6.	i) Salt - Silver chloride, it's a photochemical decomposition AgCl is used in photography. ii) To prevent iron from rusting. OR i) The element is Copper and compound is copper oxide. $2\text{Cu} + \text{O}_2 \rightarrow 2\text{CuO}$ ii) To prevent the oily food from being oxidized.	3
7.	i) It neutralizes the acid injected by the bee sting. ii) The process of dissolving the acid in the water is highly exothermic and the mixture may splash and cause severe burns. iii) To prevent it from converting to gypsum	3
8.	i) Due to more nuclear charge on Mg/more number of protons attract more number of e^- ii) Due to small atomic size F. iii) They are more electropositive/energy required to remove electron is less/lose electrons easily.	3
9.	1. A reflex is voluntary action which is a rapid and automatic response to stimuli while walking is a voluntary action which requires our thinking. 2. Cerebellum.	2+1
10.	1. a. Transpiration b. Translocation 2. Hydrochloric acid – Creates an acidic medium for pepsin to act Mucus – Protects the inner lining of the stomach from the action of the acid under normal conditions OR 1. a. It will cause large amount of water from the body which may lead to dehydration. b. A group of capillaries present in the cavity of Bowman's capsule. c. Transpiration, Resin and gums(Any relevant point)	2+1
11.	1. Gustatory- Taste Olfactory- Smell	1+2

	2. Neuron diagram Text book, page115, 7.1	
12.	<p>object size $h_i = 5 \text{ cm}$ $u = -30 \text{ cm}$ $f = 20 \text{ cm}$, $v = ?$ Using the lens formula $1/f = 1/v - 1/u$ We have $1/v = 1/u + 1/f = 1/-30 + 1/20 = -2+3/60 = 1/60$ $\implies 1/v = 1/60$ Therefore $v = 60\text{cm}$</p> <p>Magnification $v/u = 60/-30 = -2$ Magnification = Image size/Object size $h_i/h_o = -2$ $h_i/5 = -2$ $h_i = -2 \times 5 = -10 \text{ cm}$ The nature of the image is real inverted and magnified. Position of the image is beyond $2F$</p>	$1 \frac{1}{2} + 1 \frac{1}{2}$
13.	<p>(a) SI unit of resistance is Ohm 1 Ohm is defined as the resistance between two points of a conductor when a constant potential difference of 1.0 volt, applied to these points, produces in the conductor a current of 1.0 ampere.</p> <p>(b) Resistivity depends on nature of the material and temperature.</p> <p>(c) $R = \rho l/A$ $R_1 = \rho l/2/2A$ $R/R_1 = 4$ $20/R_1 = 4$ Or $R_1 = 20/4 = 5\text{Ohm}$</p> <p>OR</p> <p>2. (a) The amount of heat produced in a current conducting wire, is proportional to the square of the amount of current that is flowing through the wire, proportional to the resistance of the conducting wire and proportional to the time of current flow. $H = I^2rt$ Derivation</p> <p>(b) The working principle of a fuse wire is based on the heating effect of current. When high current flow through the fuse (current higher than the rated value) then the heat developed in the wire melts it and breaks the circuit.</p>	<p>$2+1=3$</p> <p>$2+1$</p>
14.	<p>(a) range of object distance = 0 to 12 cm (b) image will be formed behind the mirror $u = -6\text{cm}$ $f = -12\text{cm}$ $1/u + 1/v = 1/f$ Solving $V = 12\text{cm}$ Image is virtual and erect</p>	<p>$\frac{1}{2}$</p> <p>1</p> <p>$\frac{1}{2}$</p> <p>1</p>



15	<p>(a) Myopia (b) $f = 1/p = -100/4.5 = -22.2\text{cm}$ (c) Concave lens</p>	<p>1 1 1</p>																
16	<p>i) Non metals - Iodine & graphite Metals - sodium,lithium (any 2alkali metals) ii) lead and tin iii) a)Pure silver as cathode and impure silver rod as anode. b)Pure silver will be formed at cathode.</p>	5																
17	<p>Mendeleev’s periodic law- statement i) Element P At. No.- 17 and valency- 1 ii)Element Q Group-2 and period-4 iii) Ionic compound , formula - QP₂</p> <p>OR</p> <table border="1"> <thead> <tr> <th></th> <th>Mendeleev’s Periodic table</th> <th>Modern periodic table</th> <th></th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>The elements were arranged according to increased atomic Masses.</td> <td>The elements were arranged according to increased Atomic numbers.</td> <td>1</td> </tr> <tr> <td>2.</td> <td>Position of isotopes was not Justified.</td> <td>There was no problem in the Placing of isotopes</td> <td>1</td> </tr> <tr> <td>3.</td> <td>Position of hydrogen was not Justified because it resembles Both with Alkali metals and Halogens.</td> <td>Hydrogen has been given a unique position due to its resemblance with alkalis and Halogens.</td> <td>1</td> </tr> </tbody> </table> <p>Atomic number of X = Mass number of X - No. of neutrons =35-18=17 ½ Electronic configuration = 2, 8, 7 ½ Group number = 17 , Period No. = 3 ½</p>		Mendeleev’s Periodic table	Modern periodic table		1.	The elements were arranged according to increased atomic Masses.	The elements were arranged according to increased Atomic numbers.	1	2.	Position of isotopes was not Justified.	There was no problem in the Placing of isotopes	1	3.	Position of hydrogen was not Justified because it resembles Both with Alkali metals and Halogens.	Hydrogen has been given a unique position due to its resemblance with alkalis and Halogens.	1	5
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18	<p>1, The process by which new species develop from the existing species. No It does not depend on other plants for its process of reproduction to be carried out. 2.Excavating, Carbon dating, Studying fossils, determining DNA sequences.</p>	1+1+1+2=5																
19	<p>1.a. Plants raised by vegetative propagation can bear flowers and fruits earlier, b. Possible for plants have lost the capacity to produce seeds. c. all plants produced are genetically similar enough to the parent plant to have all its characteristics. 2.Bisexual and Unisexual Eg: Hibiscus and Watermelon</p>	5																

20	<p>a) Ohm's law states that the electrical current (I) flowing in an circuit is proportional to the voltage (V) and inversely proportional to the resistance (R) provided physical conditions like temperature etc remains constant.</p> <p>(b)</p> <ul style="list-style-type: none"> consider a battery which is connected across parallel combination of resistors so as to maintain potential difference V across each resistor. Then total current in the circuit would be <p>Since potential difference across each resistors is V. Therefore, on applying Ohm's Law</p> <ul style="list-style-type: none"> Substituting these values in equation we have <p>(c) $I_1 = V/R_1 = 12/4 = 3A$ $I_2 = V/R_2 = 12/6 = 2A$ Maximum I is obtained through 4Ω resistor and minimum I through 6Ω resistor</p> <p>(c) $p = 100W$ $V = 220V$ $I = P/V = 100/220 = 0.45A$</p> <p>$p = 60W$ $V = 220V$ $I = P/V = 60/220 = 0.27A$</p>	
21	<p>(a) A current carrying conductor placed in a magnetic field experiences a force. If the direction of the field and that of current are mutually perpendicular to each other, then the force acting on the conductor will be perpendicular to both and that can be determined using the Fleming's left-hand rule. When current establishes in the conductor, it gets displaced which verifies the existence of a force on the conductor.</p> <div data-bbox="349 1312 860 1816" data-label="Image"> </div> <p>(b) Fleming's left hand rule. According to Fleming's left hand rule if we stretch the thumb, the centre finger and the middle finger of our left hand such that they are mutually perpendicular to each</p>	<p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>1</p> <p>2</p>

	<p>other. If the centre finger gives the direction of current and middle finger points in the direction of magnetic field then the thumb points towards the direction of the force or motion of the conductor.</p> <p>(c) Magnetic field lines never cross each other. It is unique at every point in space. If they cross then it would mean that at the point of intersection the compass needle has two directions which is impossible.</p>	1
SECTION B		
22	<p>i) Grey to black</p> <p>ii) No reaction as Zn is less reactive than Al.</p>	2
23	<p>i) X- NaOH & Y - HCl</p> <p>ii) Neutralisation reaction.</p>	2
24	1. Karyokinesis 2. Cyto kinesis	2
25	No colour change, Absence of starch, blocked from sunlight	2
26	 <p>1-incident ray 2-refracted ray 3-emergent ray 4-lateral displacement</p> <p>Lateral displacement depends upon the thickness of the glass slab the angle of incidence the refraction index (any two factors)</p>	2
27		2