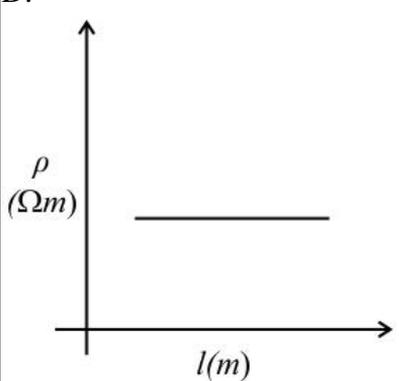
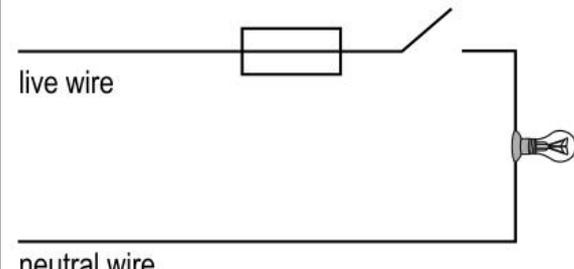


## Practice Questions - MARKING SCHEME

Session 2022-23  
Class X  
Subject - Science (086)

Q.No	Question	Marks
<b>SECTION A</b>		
Q.1	C. P is not a base.	1
Q.2	D. neutral copper atoms lose electrons to become ions	1
Q.3	D. only P and S	1
Q.4	B. only Q	1
Q.5	D. D	1
Q.6	D. any of P, Q and R	1
Q.7	C. only P and S	1
Q.8	B. Transpiration	1
Q.9	C. Setup R	1
Q.10	A. 25%	1
Q.11	C. insufficient growth of the body	1
Q.12	C. Plants grown by vegetative propagation bear fruits earlier.	1
Q.13	B. 3 V	1
Q.14	B. The current changes direction 120 times in a second.	1
Q.15	D. 	1
Q.16	A. 	1
Q.17	C. A is true but R is false.	1
Q.18	C. A is true, but R is false.	1
Q.19	A. Both A and R are true, and R is the correct explanation of A.	1

Q.20	D. A is false but R is true.	1										
<b>SECTION B</b>												
Q.21	<p>Diana is likely to see that the cake mixture (ii) has risen while cake mixture (i) has not.</p> <p>1 mark for each of the following:</p> <ul style="list-style-type: none"> <li>- The sodium bicarbonate and tartaric acid in baking powder react on mixing with one another, producing carbon dioxide that causes the cake mixture to rise.</li> <li>- Baking soda does not contain tartaric acid and hence does not produce carbon dioxide before baking.</li> </ul> <p style="text-align: center;"><b>OR</b></p> <p>1 mark for each of the following:</p> <p>A positive sodium is more stable than a neutral sodium atom. A positive sodium ion has a complete octet of electrons in its penultimate shell.</p>	2										
Q.22	<p>0.5 marks for each point of difference:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><b>Control in plants</b></th> <th style="text-align: left;"><b>Control in animals</b></th> </tr> </thead> <tbody> <tr> <td>Plant hormones diffuse to the place of action.</td> <td>Animal hormones are carried in blood vessels.</td> </tr> <tr> <td>Plants depend on hormones for control and coordination.</td> <td>Animals depend on nerve impulses and hormones for control and coordination.</td> </tr> <tr> <td>Hormones in plants are not secreted by specialised glands.</td> <td>Hormones in animals are secreted by specialised glands.</td> </tr> <tr> <td>Movement in plants occurs through a change in the water content of the action cells.</td> <td>Movement in animals occurs through a change in the shape and arrangement of proteins in the muscle cells.</td> </tr> </tbody> </table> <p>(Accept any other valid point of difference.)</p>	<b>Control in plants</b>	<b>Control in animals</b>	Plant hormones diffuse to the place of action.	Animal hormones are carried in blood vessels.	Plants depend on hormones for control and coordination.	Animals depend on nerve impulses and hormones for control and coordination.	Hormones in plants are not secreted by specialised glands.	Hormones in animals are secreted by specialised glands.	Movement in plants occurs through a change in the water content of the action cells.	Movement in animals occurs through a change in the shape and arrangement of proteins in the muscle cells.	2
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Q.23	<p>1 mark for each correct description/explanation:</p> <ul style="list-style-type: none"> <li>- Since the liver produces bile which creates an alkaline medium for effective digestion, in absence of bile acidic foods may cause more acidity and poor digestion.</li> <li>- Since bile is responsible for fat digestion by converting large fat globules to smaller ones for efficient digestion, in absence of which fats will not be properly digested.</li> </ul> <p>(Accept any other valid answer.)</p>	2										
Q.24	<p>1 mark for each correct reason:</p> <ul style="list-style-type: none"> <li>- Carbon dioxide is more soluble in water than oxygen.</li> <li>- Haemoglobin (the red pigment in RBC) has a very high affinity for oxygen.</li> </ul>	2										

Q.25	<p>(a) 0.5 marks for each correct answer:</p> <ul style="list-style-type: none"> <li>- maximum angle of deviation - violet colour ray</li> <li>- minimum angle of deviation - red colour ray</li> </ul> <p>(b) 0.5 marks each for both correct points:</p> <ul style="list-style-type: none"> <li>- The emergent ray will be blue in colour.</li> <li>- Since blue colour ray cannot be split any further it will pass through the prism undispersed.</li> </ul> <p style="text-align: center;"><b>OR</b></p> <p>Neat diagram drawn with the following components marked:</p> <ul style="list-style-type: none"> <li>- light rays coming from infinity [0.5 marks]</li> <li>- concave lens in front of the eye [0.5 marks]</li> <li>- lens of the eye [0.5 marks]</li> <li>- image formed on retina [0.5 marks]</li> </ul> <p>(No marks are to be awarded for incomplete diagram.)</p>	2
Q.26	<p>(a) Grass --&gt; Mouse --&gt; Eagle [1 mark] (No marks to be given for incomplete food chain.)</p> <p>(b) 0.5 marks each for both correct points:</p> <ul style="list-style-type: none"> <li>- The eagle will be the most affected.</li> <li>- Biomagnification.</li> </ul>	2
<b>SECTION C</b>		
Q.27	<p>(a) The number of atoms of each element should be the same on the reactants' side and the products' side.</p> <p>(b) P [1 mark] Balanced equation: <math>\text{Ca}(\text{OH})_2 + 2 \text{HNO}_3 \rightarrow \text{Ca}(\text{NO}_3)_2 + 2 \text{H}_2\text{O}</math> [1 mark]</p>	3
Q.28	<p>(a) 0.5 marks each for writing the correct formulae and physical state of the reactants and products:</p> <p><math>2\text{Al}(\text{s}) + \text{Fe}_2\text{O}_3(\text{s}) \rightarrow 2 \text{Fe}(\text{l}) + \text{Al}_2\text{O}_3(\text{s})</math> [2marks]</p> <p>(Note: (i) balancing of the equation is not required. (ii) no marks to be awarded if the state or formula of the reactant/product is incorrect)</p> <p>(b) The iron formed is in the molten(liquid) state due to the heat generated in the reaction. [1 mark]</p>	3
Q.29	<p>(a) 0.5 marks for each correct answer:</p> <ul style="list-style-type: none"> <li>- Fluid A - Lymph</li> <li>- Fluid B – Blood</li> </ul>	3

	<p>(b) 0.5 marks for all four nodes stated correctly, 0.5 marks for the correct direction of arrows:</p> <p>intercellular spaces --&gt; lymphatic capillaries --&gt; lymph vessels --&gt; larger veins [1 mark]</p> <p>(c) Lymph carries digested and absorbed fat from the intestines back to the blood. [1 mark]</p> <p style="text-align: center;"><b>OR</b></p> <p>(a) 0.5 marks for each correct answer:</p> <ul style="list-style-type: none"> <li>- force A: transpirational pull</li> <li>- force B: root pressure</li> </ul> <p>(b) 1 mark for each correct point:</p> <ul style="list-style-type: none"> <li>- Transpirational pull: evaporation of water molecules from the stomata of a leaf due to transpiration creates a suction that pulls water from the xylem cells of roots.</li> <li>- Root pressure: Active absorption of ions by roots from the soil causes water to steadily move into the root xylem creating a column of water that is pushed upwards.</li> </ul>	
Q.30	<p>(a) The height of the image produced when the object is at C will be less than h'. The magnification is more when the object is at point P than at C. (1 mark for the correct answer.)</p> <p>(b) To find the distance between the two images we need to find the image distance when the object is at P and when it is at C.</p> <p>To find the image distance when the object is at P:  <math>u = -30 \text{ cm}</math>  <math>f = -20 \text{ cm}</math>  Using mirror formula <math>v_1 = -60 \text{ cm}</math>  (1 mark for finding <math>v_1</math>.)</p> <p>To find the image distance when the object is at C:  Since C is the centre of curvature, image distance = object distance (i.e.) <math>v_2 = -40 \text{ cm}</math>  (0.5 marks for finding <math>v_2</math>.)</p> <p>Distance between the images = <math> v_2  -  v_1  = 60 - 40 = 20 \text{ cm}</math>  (0.5 marks for finding the distance between the images.)</p>	3
Q.31	<p>(a) (i) decrease the object distance  (ii) increase the focal length  (0.5 marks for each correct answer)</p> <p>(b) (i) diverging lens/ concave lens (0.5 marks)  (ii) <math>f = 1/P = 1/(-2) = -0.5 \text{ m}</math></p>	3

	<p>(0.5 marks. No marks are to be allotted if the negative sign and unit is not mentioned.)</p> <p>(iii) Given <math>u = -10</math> cm; <math>P = -2</math> D  <math>f = -0.5</math> m = <math>-50</math> cm</p> $\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$ $v = \frac{uf}{u + f}$ $v = \frac{(-10)(-50)}{-10 - 50}$ $v = -8.33$ cm <p>(0.5 marks for the use of correct formula and 0.5 marks for correct calculation.)</p>	
Q.32	<p>(a) pin P [1 mark]          (b) to the metallic body of the clothes iron [1 mark]          (c) It prevents severe shocks by providing a low resistance path for any leakage current to the metallic body of the iron. [1 mark]</p> <p style="text-align: center;"><b>OR</b></p> <p>(a) the red and the black wire [1 mark]          (b) there is a drastic increase in the current [1 mark]</p> <p>Reason: The resistance in the circuit decreases. [1 mark]</p>	3
Q.33	<p>(a) 0.5 marks for each correct point:</p> <ul style="list-style-type: none"> <li>- High energy UV radiation from the Sun breaks apart some of the molecular oxygen into free oxygen.</li> <li>- The free oxygen then combines with the remaining molecular oxygen to form ozone.</li> </ul> <p>(b) Ozone is deadly to humans at lower levels of the atmosphere. [1 mark]</p> <p>(c) 0.5 marks each for any two consequences stated below:</p> <ul style="list-style-type: none"> <li>- skin cancer</li> <li>- cataract</li> </ul> <p>(Accept any other valid answer.)</p>	3
<b>SECTION D</b>		
Q.34	<p>(a) 0.5 marks each for the following:</p> <ul style="list-style-type: none"> <li>- Y: <math>C_6H_{13}OH</math></li> </ul>	5

	<p>- molecular mass of Y = X + 28; (where 28 = atomic wt. of C X 2 + atomic wt. of H X 4 = 12 x 2 + 1 x 4)</p> <p>(b) 1 mark each for the following</p> <ul style="list-style-type: none"> <li>- The chemical properties of X and Y will be similar.</li> <li>- Both X and Y are have an alcoholic functional group which determines their chemical properties.</li> </ul> <p>(c) 1 mark each for the following:</p> <ul style="list-style-type: none"> <li>- chemical formula of Z: C<sub>5</sub>H<sub>11</sub>COOH</li> <li>- C<sub>n</sub>H<sub>2n+1</sub>COOH OR C<sub>n</sub>H<sub>2n</sub>O<sub>2</sub> .</li> </ul> <p style="text-align: center;"><b>OR</b></p> <p>(a) 1 mark each for any two of the following:</p> <ul style="list-style-type: none"> <li>- HC ≡ C – CH<sub>2</sub> – CH<sub>3</sub></li> <li>- H<sub>3</sub>C – C ≡ C – CH<sub>3</sub></li> <li>- H<sub>2</sub>C = C = CH – CH<sub>3</sub></li> <li>- H<sub>2</sub>C = CH – CH = CH<sub>2</sub></li> </ul> <p>(b) 1 mark each for the following:</p> <ul style="list-style-type: none"> <li>- concentrated sulphuric acid</li> <li>- heat</li> </ul> <p>(c) C<sub>n</sub>H<sub>2n-2</sub></p>	
Q.35	<p>(a) 1 mark for each correct point:</p> <ul style="list-style-type: none"> <li>- Variation allows diversity in organisms.</li> <li>- In case of drastic alteration of niches, a population with variation is most likely to have some surviving members to ensure continuity of species.</li> </ul> <p>(b) A higher rate of reproduction would lead to unchecked population growth leading to competition for resources and subsequent lower standards of living. [1 mark]</p> <p>(c) 1 mark for each correct point:</p> <ul style="list-style-type: none"> <li>- The egg survives for a day in the reproductive system.</li> <li>- In case the egg is not fertilised, it is shed along with the lining of the uterus</li> </ul>	5

out of the vagina as blood and mucus.

**OR**

(a) 0.5 marks for each correct point:

- The pollen from the stamen is transferred to the stigma.
- The pollen tube germinates and penetrates the style to reach the ovary.
- The male germ cell and the female germ cells combine to form the zygote.
- The zygote undergoes rapid division to form the embryo inside the ovule.
- The ovule develops a seed coat and turns into a seed.

(b) 0.5 marks for each correct reason:

- Females will not have reached full sexual maturity at the time of marriage.
- There are possibilities of pregnancy in the teenage years that may cause adverse effects on the female's body.

(Accept any other valid answer.)

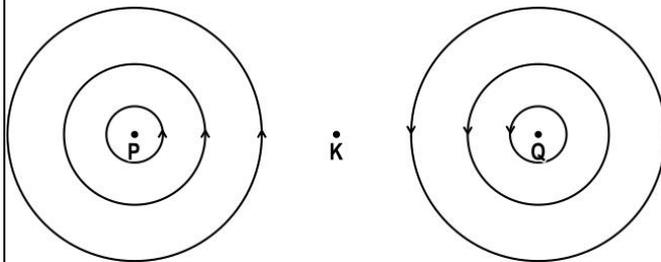
(c) 0.5 marks for each correct point:

- Contraceptive pills can cause hormonal imbalances.
- CopperT and IUD can cause irritation to the uterine lining if not placed correctly.
- Surgical methods, if not performed properly, can lead to infections and complications.

(Accept any other valid answer.)

Q.36

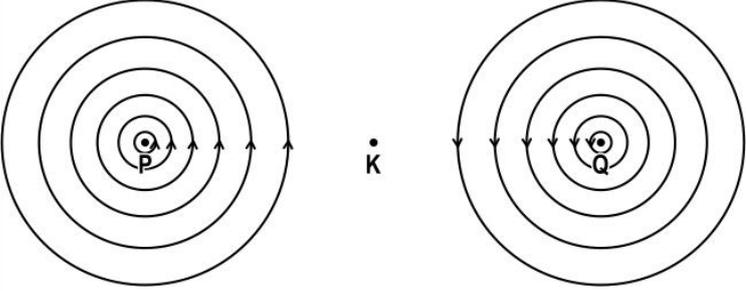
(a)



[1 mark]

(b) The strength of the magnetic field around P and Q will increase. [0.5 mark]

5

	 <p>[1 mark for correctly drawing more number of field lines to indicate a stronger magnetic field.]</p> <p>(c) Zero. [0.5 marks]</p> <p>The magnetic fields at point K due to current in the wires P and Q are equal in magnitude but opposite in direction. The two fields cancel each other. [1 mark]</p> <p>(d) 2B. [1 mark]</p>	
<b>SECTION E</b>		
Q.37	<p>(a) 1 mark each for the following:</p> <ul style="list-style-type: none"> <li>- 75%</li> <li>- silver, copper</li> </ul> <p>( no marks if only one metal is mentioned)</p> <p>(b) 1 mark each for the following:</p> <p>(i) carbon (ii) nickel and chromium</p> <p><b>OR</b></p> <p>(b) 1 mark each for the following:</p> <ul style="list-style-type: none"> <li>- homogeneous</li> <li>- The electrical conductivity of an alloy is less than that of the pure metal.</li> </ul>	4
Q.38	<p>(a) not rolling [0.5 marks]</p> <p>(b) 0.5 marks for each correct genotype:</p> <ul style="list-style-type: none"> <li>- RR Rr, rr</li> </ul> <p>(Homozygous dominant, heterozygous dominant, homozygous recessive)</p> <p>(c) 1 mark for correct cross:</p>	4

	R	r
R	RR	Rr
r	Rr	rr

- 50% of the offspring will show the same genotype as the parents. [1 mark]

**OR**

(c) 1 mark for the correct cross:

	R	r
r	Rr	rr
r	Rr	rr

- ratio of tongue roller to non tongue roller offspring = 1:1 [1 mark]

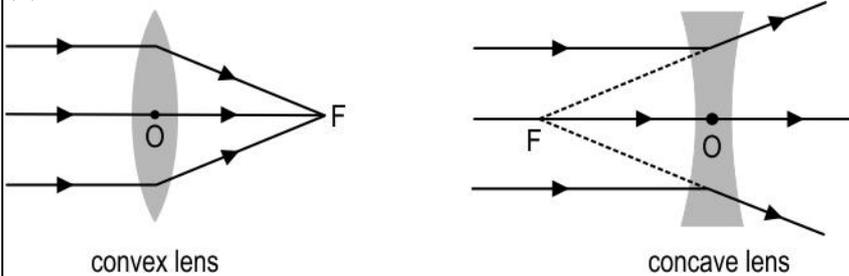
Q.39 (a) Light does NOT pass through a second medium and hence there is no refraction and splitting of colours. [1 mark]

4

(b) Increase the diameter/aperture of the objective lens/ primary mirror. [1 mark]

(c) equal to the sum of the focal length of the objective and eyepiece. [1 mark]

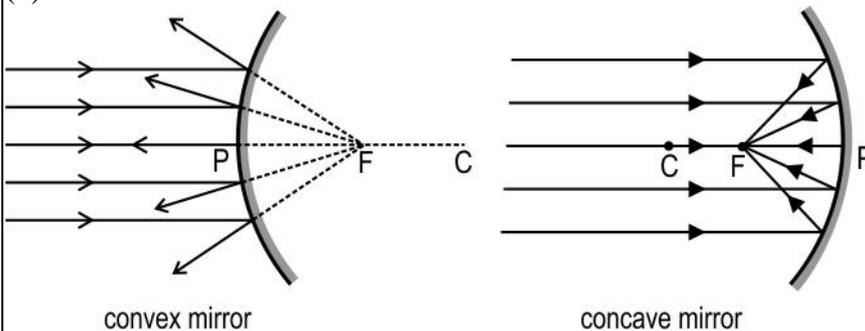
(d)



[0.5 marks each for convex lens and concave lens ray diagram.]

**OR**

(d)



[0.5 marks each for convex mirror and concave mirror ray diagram.]

