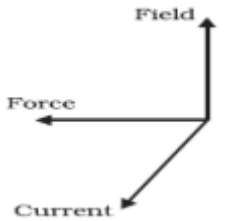
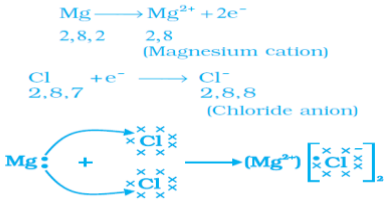
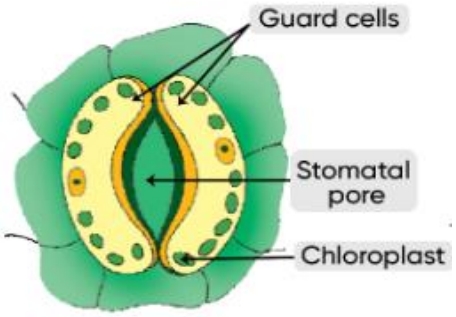
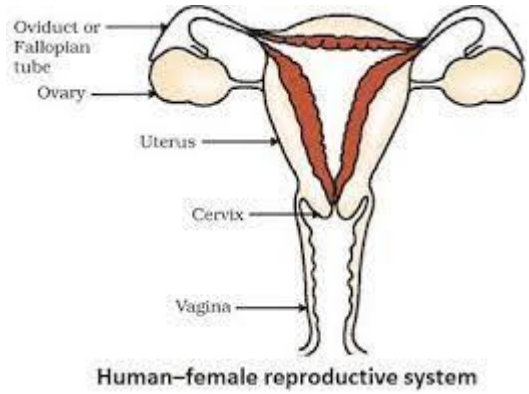
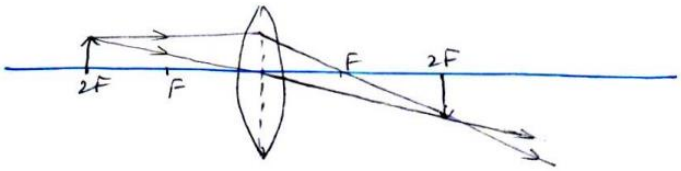
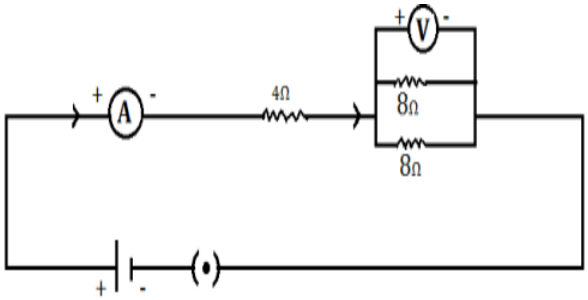
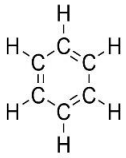
ANSWER KEY – CLASS 10 – SCIENCE – POMT – SET 1 – 2023 – 24

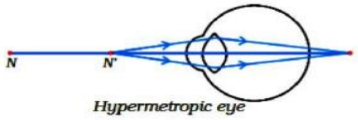
1	(c)$BaCl_2 + Na_2SO_4 \rightarrow BaSO_4 + 2NaCl$	1	1
2	(c) Reaction P is an example of a combination reaction, while reaction Q is an example of a decomposition reaction	1	1
3	(a) H_3O + and Cl^-	1	1
4	(a) Ammonium chloride solution	1	1
5	(b) YZ	1	1
6	(a) electrolysis of their molten chloride	1	1
7	(d) When current is passed, pure copper from anode moves into the electrolytic solution and then deposits at the cathode.	1	1
8	(c) Kidney →ureter →urinary bladder →urethra	1	1
9	(c) By breaking down the nutrients of bread and then absorbing them.	1	1
10	(a) 'A' Plumule and 'B' Radicle	1	1
11	(a) gametes, zygote, embryo, seedling	1	1
12	(d) population of tiger decrease and grass increases	1	1
13	(d) Coinciding with object same size, inverted, real	1	1
14	(b) Scattering and Atmospheric refraction of sunlight.	1	1
15	(c) 9 : 3 : 3 : 1	1	1
16	(d) cytokinin.	1	1
17	(d) A is false but R is true	1	1
18	a) Both A and R are true, and R is the correct explanation of A.	1	1
19	(d) A is false but R is true	1	1
20	c) A is true but R is false.	1	1
21	(i) Combination reaction. (ii) Any one combination reaction.	 (1+1)\	2
22	Relevant definition Sexual and asexual Sexual reproduction confers new characteristics on the offspring due to variation in DNA copying OR unisexual (papaya, watermelon) bisexual (Hibiscus, mustard)	½ ½ + ½ ½ ½ + ½ ½ + ½	2
23	Grass → grasshopper → frog → Snake Working Correct answer	1 ½ ½	2
24	Identifying object distance as -2m Finding out image distance as +1 using magnification formula Calculating the focal length as +2m, using the formula OR	0.5 0.5 1	2

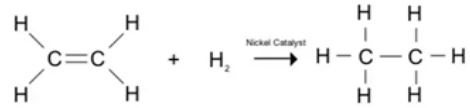
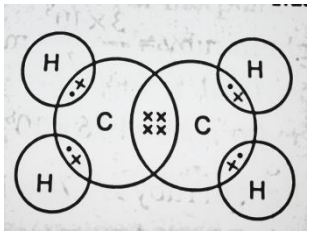
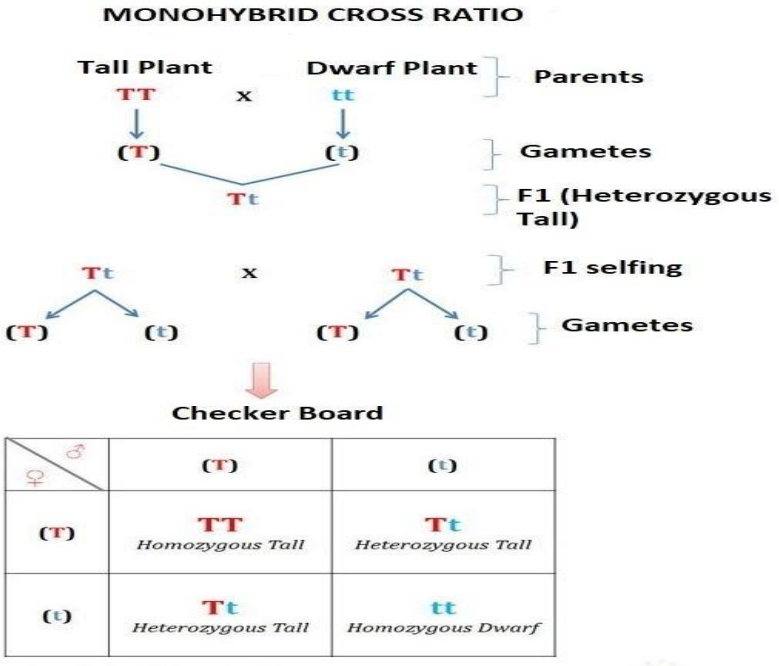
	$f = -20\text{cm}; \quad h_i = 6\text{cm}; \quad v = -15\text{cm}; \quad u = ?$ Lens formula: $\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$ ½ $\Rightarrow u = \frac{vf}{f - v} = \frac{-15\text{cm} \times -20\text{cm}}{-20\text{cm} - (-15\text{cm})}$ 1 $= -60\text{cm}$ *object at 60cm from the lens* ½		
25	Fleming's left hand rule: According to Fleming's left hand rule, stretch the thumb, forefinger and middle finger so that they are mutually perpendicular. If the first finger points in the direction of magnetic field and the second finger in the direction of current, then the thumb will point the direction of force acting on the conductor.  (Statement or for the diagram)	(1+1)	2
26	Biomagnification Definition	1 1	2
27	Electrolytic reduction: - Reduction using electrolysis to extract highly reactive metals from their molten chlorides. Eg:- $NaCl(molten) \rightarrow Na^+ + Cl^-$ At cathode, $Na^+ + e^- \rightarrow Na$(reduction) Reduction using carbon: - Carbon acts as the reducing agent to separate moderately reactive metals from their oxides. Eg:- $ZnO + C \rightarrow Zn + CO$	**1** ½ **1** ½	3
28	Chemical formula- $MgCl_2$  Any one property of ionic compounds. OR (a) (i) Calcination (ii) Reduction (iii) Purification (b) By heating in excess amount of oxygen	1 1 1 1 2	3

	$2HgS(s) + 3O_2(g) \xrightarrow{Heat} 2HgO(s) + 2SO_2(g)$ $2HgO(s) \xrightarrow{Heat} 2Hg(l) + O_2(g)$		
29	 Exchange of gases Assist in transpiration	1 correct diagram ½ X 2 any two correct labels ½ for each correct function	3
30	(a)  Human–female reproductive system (i) Fallopian tube (Oviduct) (ii) Uterus (b) When the egg is not fertilized, it is shredded off from the body and menstrual cycle takes place.	1 for correct diagram ½ mark for each correct label 1	3
31	(a) No, magnified image of an object cannot be formed by a concave lens ever. **(b)** At 2f 	½+½ ½ 1½	3

32	Given: $R_1 = 10\ \Omega$; $R_2 = 20\ \Omega$; $R_3 = 30\ \Omega$ According to Ohm's law, $V = IR$ Given $V = 12$ V a) Current through resistor R_1 : $I_1 = \frac{V}{R_1} = \frac{12}{10} = 1.2$ A Current through resistor R_2 : $I_2 = \frac{V}{R_2} = \frac{12}{20} = 0.6$ A Current through resistor R_3 : $I_3 = \frac{V}{R_3} = \frac{12}{30} = 0.4$ A b) Total circuit resistance, R $\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$ $\frac{1}{R} = \frac{1}{10} + \frac{1}{20} + \frac{1}{30}$ $\frac{1}{R} = \frac{11}{60}$ $R = \frac{60}{11} = 5.45\ \Omega$ c) The total current in the circuit is $I = I_1 + I_2 + I_3$ $= 1.2 + 0.6 + 0.4 = 2.2$ A  Maximum current through 4 Ω resister $= \sqrt{\frac{P}{R}}$ $= \sqrt{\frac{16}{4}} = 2A$ $\therefore$ Maximum current through each 8 Ω resister $= \frac{1}{2} x2 = 1A$	½ ½ ½ ½ ½ 1 1 1	3
33	• Closeness (crowding) of magnetic field lines is directly related to the strength of the magnetic field. • Strength of magnetic field at point 'A' (Pole) is more than at point 'B'. • If the student redraws the diagram and mark the arrows correctly (N to S).	1+1+1	5

34	(a) Isomers are those compounds which have the same molecular formula but different structural formula. (b) • Propanal →CH_3CH_2CHO • Propanone →CH_3COCH_3 (c)   OR (a)• Carbon cannot form C4+ ions as very high energy is required to remove 4 electrons • Carbon cannot gain 4 electrons to form C4- ions as 6 protons cannot hold 10 electrons (i) Co-valent compounds are bad conductor of electricity as they do not have free electrons. (ii) Due to weak forces of attraction between the molecules, thus less energy is required for breaking the bonds (b) 	1 1+1 1+1 1 1 1 1	5
35	a. Growth hormone is one of the hormones secreted by the pituitary. As its name indicates, growth hormone regulates growth and development of the body. If there is a deficiency of this hormone in childhood, it leads to dwarfism. If there is an excessive secretion of the growth hormone, it leads to gigantism extremely tall (giants) b. Auxin stimulates the cells to grow longer Gibberellins which, like auxins, help in the growth of the stem. OR a. (i) A Dendrite and B Axon (ii)Dendrite tip/ receptor (iii) Dendrite → Cyton /cell body → Axon → Nerve endings/ Axon terminal (iv) Electrical impulse	1 + 1 1 + 1 ½ ½ ½ + ½ ½ 1 ½ ½	

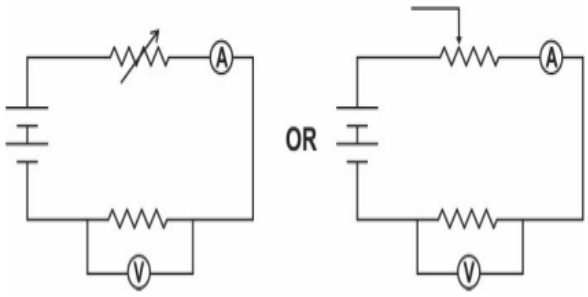
	(v) Nerve endings/ Axon terminal b. Thyroxine hormone Thyroxin regulates carbohydrate, protein and fat metabolism in the body so as to provide the best balance for growth. It is the use of iodised salt advisable because Iodine is necessary for the thyroid gland to make thyroxin hormone.	½ ½ ½	
36	(i) Hypermetropia (ii) This defect arises because either (a) focal length of eye lens is too large or (b) the eyeball becomes too short. (iii)  Hypermetropic eye (iv)  Correction for Hypermetropic eye v. (d) $P(D) = \frac{1}{f(m)}$ $P(D) = \frac{1}{-2.5(m)} = \frac{10}{-25} = \frac{2}{-5} = -0.4D$ (Deduct ½ mark if unit is not mentioned) OR i. Explanation with diagram Refraction, dispersion, internal reflection ii. (a) The Red colour is least scattered by fog or smoke, hence visible from a long distance. (b) Because in the absence of atmosphere there is no scattering of light. (c) Because of atmospheric refraction, the sun appears above the horizon even after actual sunset.	1 1 1 1 ½+½ 1 1 1 1	
37	(a) Alkenes	1 1	4

	Homologous series is a group of organic compounds having similar structures and similar chemical properties in which the successive compounds differ by CH2 unit. (b) By addition reaction (adding hydrogen in presence of nickel or palladium)  Clean blue coloured flame OR  General formula-CnH2n	½ 1 ½ 1 1	
38	Any two reasons	½ + ½	4
	Heredity	1	
	 Genotype ratio 1:2:1 OR	1 ½ Working ½	

	(i) The law of segregation (ii) The law of dominance	1 + 1	
39	(a) (b) Statement (c)	1+1+2	4

(a)
- Meter 2 [0.5 marks]
- because it is connected in series with the unknown resistor through which the current needs to be measured [0.5 marks]

- Correct connections for the cell, the unknown resistor and the rheostat in the diagram [0.5 marks]
- Correct connections for the two meters in the diagram [0.5 marks]
- Use of correct symbols for all components [1 mark]



OR

(i) straight line passing through origin [1 mark]
(ii) curved line with an increasing slope [1 mark]