CBSE Class 10 Science Solution PDF

SUMMATIVE ASSESSMENT - II **Code No. 31/1/1**

MARKING SCHEME - SCIENCE (DELHI)

SECTION - A

31/1/1	Expected Answer / Value point	Marks	Total
Q1.	• Propene	½	
	• C_3H_6	½	1
Q2.	a) To produce sperms	½	
	b) To produce male sex hormone / testosterone	½	1
Q3.	It shields the surface of the earth from ultraviolet rays coming from the Sun.	1	1
Q4.	i) Virtual ii) Erect iii) Same size as the object iv) As far behind the mirror as the object is in front of it. v) Laterally inverted (Any four)	½×4	2
Q5.	• Because large number of life forms / range of life forms (such as bacteria, fungi, fern, nematodes, insects, birds, reptiles, mammals, gymnosperms and angiosperms) are found there. / A region with large biodiversity of endangered species, many of them being highly endemic and such regions being subjected to large scale destruction are designated as "Hot spots" by ecologists.	1	
	• Two ways – i) Not allowing cutting of trees ii) To promote / make people aware about the importance of forests and wild life.		

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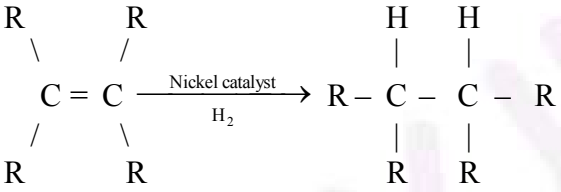
	iii) Not using wild life products / fur coat or any other named product. (any two)	½×2	2
Q6.	• A type of management which encourages utilization of resources that meet current basic human needs while preserving the resources for the needs of future generations.	1	
	• Reuse is better as it does not consume energy.	1	2
Q7.	• Example: 	½	
	• Addition of hydrogen to the molecule of an unsaturated hydrocarbon / compounds is hydrogenation.	½	
	• Essential condition for hydrogenation is the presence of a catalyst like Ni / Pd / Pt.	1	
	• Change observed in the physical property during hydrogenation is the change of the unsaturated compound from the liquid state to the corresponding saturated compound in the solid state / its boiling or melting point will increase.	1	3
Q8.	• Soaps are sodium or potassium salts of long chain carboxylic acids.	½	
	• Detergents are ammonium or sulphonate salts.	½	
	• Cleansing action of soap – One part of soap molecule is ionic / hydrophilic and dissolves in water. The other part is non-ionic / carbon chain / hydrophobic which dissolves in oil.	1	

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	• Thus soap molecules arrange themselves in the form of a micelle / diagram of a micelle.	½	
	• On rinsing with water, soap is washed off, lifting the oily dirt particles with it.	½	3
Q9.	18 groups	½	
	7 periods	½	
	a) • Atomic size increases.	½	
	• Metallic character increases.	½	
	b) • Atomic size decreases.	½	
	• Metallic character decreases.	½	3
Q10.	(i) K / Potassium.	1	
	(ii) Be and Ca.	1	
	• KX or KCl	½	
	• Ionic / Electrovalent.	½	3
Q11.	• A process where a DNA molecule produces two similar copies of itself in a reproducing cell.	1	
	• Importance –		
	(i) It makes possible the transmission of characters from parents to the next generation.	1	
	(ii) It causes variation in the population.	1	3

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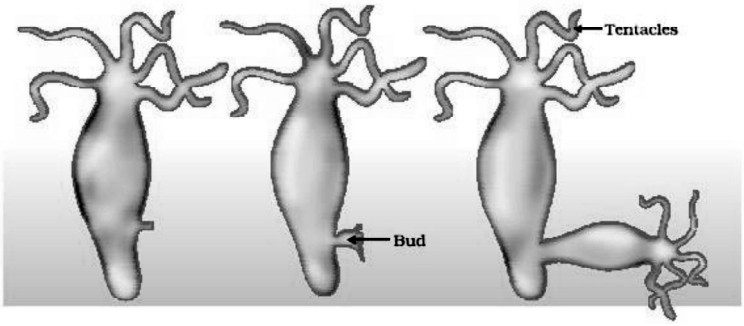
Q12.			
	Drawing	2	
	Two labeling – Bud, Tentacles	½, ½	3
Q13.	• Four methods –		
	(i) Mechanical or barrier method OR Male or female condoms		
	(ii) Use of hormonal preparations OR Oral Pills / i-pill / Saheli		
	(iii) Use of loop OR Copper T OR IUCD		
	(iv) Surgical method OR Tubectomy / Vasectomy	½×4	
	• Effect on health and prosperity:		
	(i) Health of women is maintained		
	(ii) Parents can give more attention to their children		
	(iii) More resources can be made available.		
	(any two)	½×2	3
Q14.	• Acquiring knowledge / skills in one's lifetime such as learning dance, music, physical fitness or any other suitable example.		
	(any two)	½, ½	
	• Reason :		
	(i) Such characters / experiences acquired during one's lifetime do not bring any change in the DNA of the reproducing cell / germ cell.	1	

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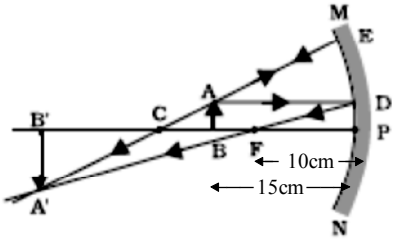
	(ii) Only germ cells are responsible for passing on the characters from the parents to the progeny.	1	3
Q15.	(i) No, the structure of the eye in each of the organisms is different.	½, ½	
	(ii) • Fossils of certain dinosaurs / reptiles show imprints of feathers along with their bones but they could not fly presumably using the feathers for insulation;	1	
	• Later they developed / evolved and adapted feathers for flight, thus becoming the ancestors of present day birds. (OR any other suitable evidence/example)	1	3
Q16.	The candidate may choose any two of the following rays:		
	i) A ray parallel to the principal axis, after reflection, will pass through the principal focus of a concave mirror.		
	ii) A ray passing through the principal focus of a concave mirror after reflection will emerge parallel to the principal axis.		
	iii) A ray passing through the centre of curvature of a concave mirror after reflection is reflected back along the same path.		
	iv) A ray incident obliquely to the principal axis towards the pole of a concave mirror is reflected obliquely, making equal angles with the principal axis.		
	(any two)	1×2	
			
	or a similar representation	1	3
	Note: The candidate must draw the ray diagram as per the two rays chosen by him/her. In the diagram shown above (i) and (iii) rays have been chosen/used.		

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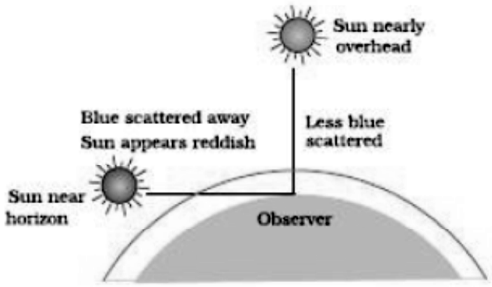
Q17.	• The sun is near the horizon at the sun-rise and also at the sun-set		
		1	
	• Light from the Sun near the horizon passes through thicker layers of air and also covers longer distance	1	
	• Most of the blue light and the shorter wavelengths of sunlight are scattered away by the particles. Light of larger wavelength reaches us giving the reddish appearance	1	3
	Note: If explained by the above diagram (fully labelled), full credit may be given.		
Q18.	(a) No, it pollutes air.	½,½	
	Advantage:		
	Segregation of wastes into biodegradable and non biodegradable wastes at the initial stage of disposal saves time and energy.	1	
	(b) By putting wastes in proper dustbins	1	3
	Or any other		
Q19.	• Carbon has 4 electrons in its outermost shell, and needs to gain or lose 4 electrons to attain noble gas configuration.	1	
	• Losing or gaining 4 electrons is not possible due to energy considerations; hence it shares electrons to form covalent bonds.	1	

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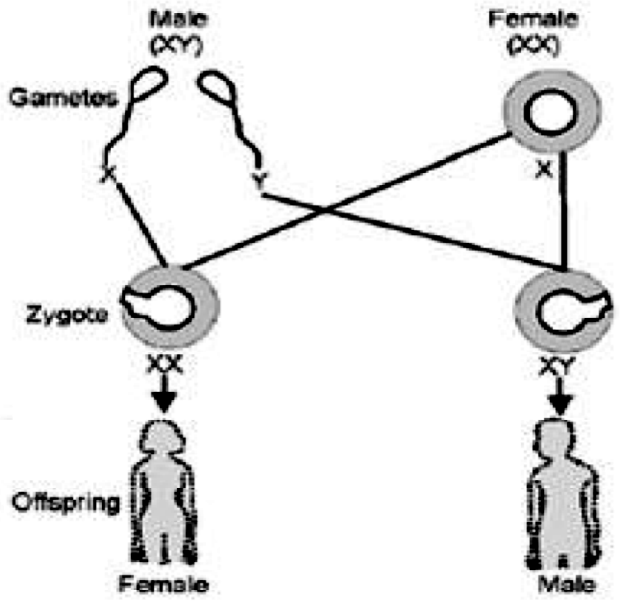
	Two reasons for large number of carbon compounds :		
	• Catenation: The unique ability of carbon to form bonds with other atoms of carbon giving rise to long chains of different types of compounds.	1	
	• Tetravalency : Since carbon has a valency of 4, it is capable of bonding with four other atoms of carbon or atoms of elements like oxygen, hydrogen, nitrogen, sulphur, chlorine, etc.	1	
	The reason for the formation of strong bonds by carbon is its small size which enables the nucleus to hold on to the shared pairs of electrons strongly.	1	5
Q20.	• Functions: -		
	Ovary: (i) Production of female hormone / oestrogen and progesterone.	½	
	(ii) Production of female gamete / egg /germ cell.	½	
	Oviduct: (i) Transfer of female gamete from the ovary.	½	
	(ii) Site of fertilization.	½	
	Uterus: (i) Implantation of zygote / embryo.	½	
	(ii) Nourishment of developing embryo.	½	
	• Placenta is a special disc like tissue embedded in the mother's uterine wall and connected to the foetus / embryo.	1	
	• Placenta provides a large surface area for glucose and oxygen/ nutrients to pass from the mother's blood to the embryo/ foetus.	1	5
Q21.	• 23 pairs of chromosomes	1	
	• One pair, two types	½, ½	
	• Flow chart	½	

31/1/1	Expected Answer / Value point	Marks	Total
	Parents 	½ ½ ½	
	• Justification: Women produce only one type of ovum / (carrying X chromosome) and males produce two types of sperms (carrying either X or Y chromosome) in equal proportions. So, the sex of a child is a matter of chance depending upon the type of sperm fertilizing the ovum.	1	5
Q22.	a) Statement of laws of refraction of light (two laws)	1×2	
	When a ray of light travels from vacuum or air into a given medium, then the ratio of sin i to sin r is called absolute refractive index of the medium.	½	
	Absolute refractive index of a medium = $\frac{\text{Speed of light in vacuum (C)}}{\text{Speed of light in the medium } (C_m)}$	½	
	(b) $n_A = 2.0$; $n_B = 1.5$ $v_B = 2\times10^8$ m/s i) $n_B = \frac{c}{v_B}$	½	
	$\therefore\ c = n_B v_B = 1.5\times2.10^8 \text{ m/s} = 3\times10^8 \text{ m/s}$	½	
	ii) $n_A = \frac{c}{v_A}$ $\therefore\ v_A = \frac{c}{n_A} = \frac{3\times10^8 \text{ m/s}}{2} = 1.5\times10^8 \text{ m/s}$	1	5

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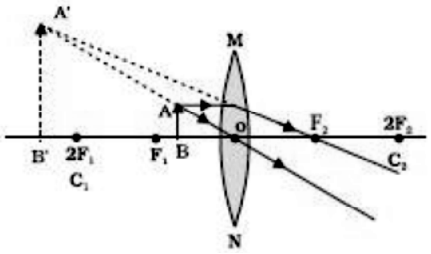
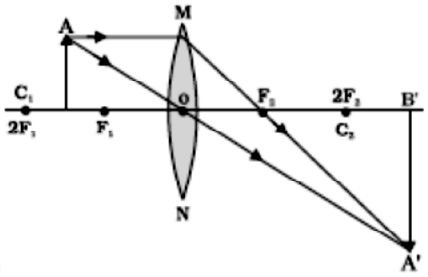
Q23.	• **For magnified erect image** – Object is between the optical centre and principal focus of a convex lens	½	
		1	
	• **For magnified inverted image** – Object between F and 2F of a convex lens	½	
		1	
	• *Here* $u = -20$ cm ; $f = +10$ cm ; $v = ?$		
	$\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$	½	
	$\therefore \frac{1}{v} = \frac{1}{f} + \frac{1}{u}$		
	$\frac{1}{v} = \frac{1}{(+10)} + \frac{1}{(-20)}$	½	
	$\frac{1}{v} = \frac{1}{10} - \frac{1}{20} = \frac{+2-1}{20} = \frac{+1}{20}$		
	$\therefore\ v = +20$ cm	1	5
Q24.	Defect – Myopia / Nearsightedness	1	
	Correction – By using a concave lens of suitable power	1	

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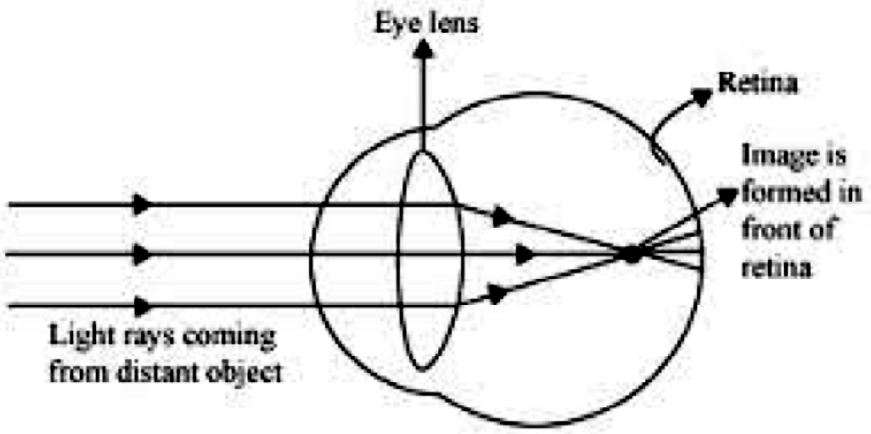
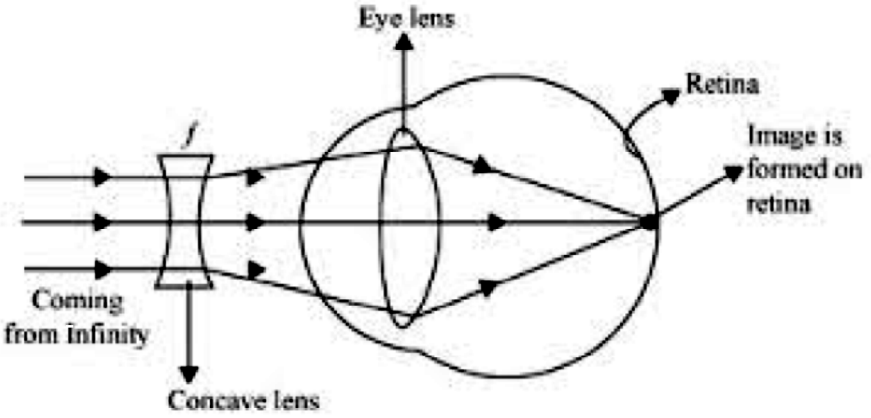
	i) 	1½	
	ii) 	1½	5
	SECTION – B		
	25) A 26) D 27) C 28) B 29) D 30) C 31) B 32) C 33) B	1×9	9
Q34.	Two observations ;		
	• Brisk effervescence	½	
	• Evolution of a colourless/ odourless gas.	½	
	$CH_3COOH + NaHCO_3 \longrightarrow CH_3COONa + H_2O + CO_2$	1	2

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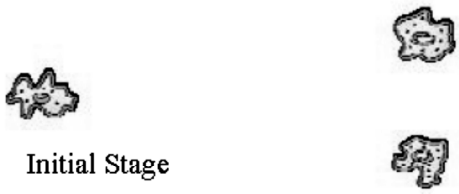
Q35.	Binary Fission	½	
	 Initial Stage Final Stage	½,½	
	Elongation of the nucleus	½	2
Q36.	(a) Away from the lens	½	
	(b) Increases	½	
	(c) No image on the screen	1	2