

**Strictly Confidential- (For Internal and Restricted Use Only) Secondary School Examination**  
**SUMMATIVE ASSESSMENT - II**  
**March 2015**

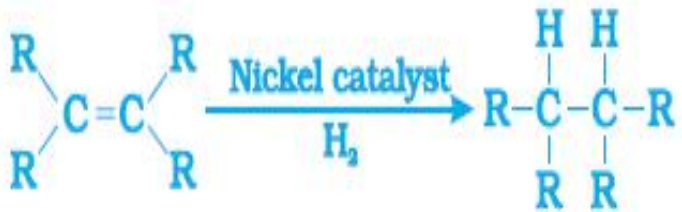
**Marking Scheme – Science (Delhi) 31/1/3**

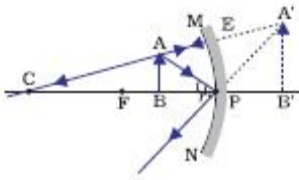
1. The Marking Scheme provides general guidelines to reduce subjectivity in the marking. It carries only suggested value points for the answer. These are only guidelines and do not constitute the complete answer. Any other individual response with suitable justification should also be accepted even if there is no reference to the text.
2. Evaluation is to be done as per instructions provided in the Marking Scheme. It should not be done according to one's own interpretation or any other consideration. Marking Scheme should be strictly adhered to and religiously followed.
3. If a question has parts, please award marks in the right hand side for each part. Marks awarded for different parts of the question should then be totalled up and written in the left hand margin.
4. If a question does not have any parts, marks be awarded in the left hand side margin.
5. If a candidate has attempted an extra question, marks obtained in the question attempted first should be retained and the other answer should be scored out.
6. Wherever only two/three of a 'given' number of examples/factors/points are expected only the first two/three or expected number should be read. The rest are irrelevant and should not be examined.
7. There should be no effort at 'moderation' of the marks by the evaluating teachers. The actual total marks obtained by the candidate may be of no concern of the evaluators.
8. All the Head Examiners / Examiners are instructed that while evaluating the answer scripts, if the answer is found to be totally incorrect, the (X) should be marked on the incorrect answer and awarded '0' marks.
9.  $\frac{1}{2}$  mark may be deducted if a candidate either does not write units or writes wrong units in the final answer of a numerical problem.
10. A full scale of mark 0 to 100 has to be used. Please do not hesitate to award full marks if the answer deserves it.
11. As per orders of the Hon'ble Supreme Court the candidates would now be permitted to obtain photocopy of the Answer Book on request on payment of the prescribed fee. All Examiners/Head Examiners are once again reminded that they must ensure that evaluation is carried out strictly as per value points given in the marking scheme.

**MARKING SCHEME**  
**CLASS X – DELHI**

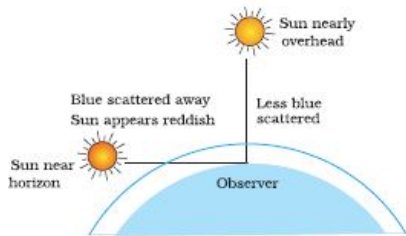
**Code No. 31/1/3**

Expected Answer/ Value point <b>SECTION – A</b>		Marks	Total
Q1.	<ul style="list-style-type: none"> <li>• Propyne</li> <li>• C<sub>3</sub>H<sub>4</sub></li> </ul>	½ ½	1
Q2.	Formation of new species from the pre-existing population	1	1
Q3.	So that the time and energy required in segregation may be saved and waste may be disposed off quickly	1	1
	Or any other	1	1
Q4.	i) Virtual ii) Erect iii) Diminished iv) Object distance more than image distance	½ × 4	2
Q5.	Two advantages: (i) Recharges ground water (ii) Mitigates floods and droughts (iii) Brings rivers and wells back to life and makes more water available (any two)	1,1	2
Q6.	Four activities: i) Reduce excessive use of natural resources like water, fossil fuels, etc.. ii) Reuse of some resources instead of wasting (throwing) them, like empty bottles. iii) Recycle the materials like paper to reduce the pressure on existing natural resources. iv) Changes in lifestyle, personal attitudes and practices.	½ × 4	2
	(or any other)	½ × 4	2
Q7.	Ethene , $  \begin{array}{c}  \text{H} \quad \text{H} \\  \backslash \quad / \\  \text{C} = \text{C} \\  / \quad \backslash \\  \text{H} \quad \text{H}  \end{array}  $	½, ½	
	$  \text{C}_2\text{H}_5\text{OH} \xrightarrow[443 \text{ K}]{\text{Conc. H}_2\text{SO}_4} \text{C}_2\text{H}_4 + \text{H}_2\text{O}  $	1	
	Conc. H <sub>2</sub> SO <sub>4</sub> acts as a dehydrating agent.	1	3

Q8.	<ul style="list-style-type: none"> <li>Example :</li> </ul> 	1/2	
	<ul style="list-style-type: none"> <li>Addition of hydrogen to the molecule of an unsaturated hydrocarbon / compounds is hydrogenation.</li> </ul>	1/2	
	<ul style="list-style-type: none"> <li>Essential condition for hydrogenation is the presence of a catalyst like Ni / Pd / Pt.</li> </ul>	1	
	<ul style="list-style-type: none"> <li>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.</li> </ul>	1	3
Q9.	<ul style="list-style-type: none"> <li>(i) K / Potassium.</li> <li>(ii) Be and Ca.</li> <li>• KX or KCl</li> <li>• Ionic / Electrovalent.</li> </ul>	1	
		1	
		1/2	
		1/2	3
Q10.	No. of periods : 7	1/2	
	Valency across a period increases from 1 to 4 , then decreases from 4 to zero.	1	
	Metallic character of elements across a period decreases.	1/2	
	Valency down a group remains the same.	1/2	
	Atomic size of elements down a group increases.	1/2	3
Q11	<ul style="list-style-type: none"> <li>Four methods –</li> <li>(i) Mechanical or barrier method OR Male or female condoms</li> <li>(ii) Use of hormonal preparations OR Oral Pills / i-pill / Saheli</li> <li>(iii) Use of loop or copper T OR IUCD</li> <li>(iv) Surgical method OR tubectomy / vasectomy</li> </ul>	1/2 x 4	
	<ul style="list-style-type: none"> <li>Effect on health &amp; prosperity:</li> <li>(i) Health of women is maintained</li> <li>(ii) Parents can give more attention to children</li> <li>(iii) More resources can be made available.</li> </ul>		
	(any two)	1/2 x 2	3
Q12.	a) (i) Hyphae / mycelium	1/2	
	(ii) Sporangia	1/2	
	b) Structures protected by thick walls.	1	
	Function: - They germinate into new individuals under favourable conditions.	1	3

Q13.	A – Stigma – receives pollen grains.	1													
	B – Pollen tube – carries male gamete	1													
	C – Female germ cell / egg – formation of zygote	1	3												
Q14.	(i) No, the structure of the eye in each of the organisms is different.	½, ½													
	(ii) <ul style="list-style-type: none"> <li>• Fossils of certain dinosaurs / reptiles show imprints of feathers along with their bones but they could not fly presumably using the feathers for insulation;</li> <li>• Later they developed / evolved and adapted feathers for flight, thus becoming the ancestors of present day birds. (OR any other suitable evidence/example)</li> </ul>	1													
		1	3												
Q15.	<table border="0" style="width: 100%;"> <thead> <tr> <th style="text-align: center;"><u>Acquired Traits</u></th> <th style="text-align: center;"><u>Inherited Traits</u></th> </tr> </thead> <tbody> <tr> <td>(i) Does not bring about change in the DNA of the germ cell.</td> <td>(i) Brings about change in the DNA of the germ cell.</td> </tr> <tr> <td>(ii) Cannot be passed on to the progeny.</td> <td>(ii) Can be passed on to the progeny.</td> </tr> <tr> <td>(iii) Cannot direct evolution.</td> <td>(iii) Can direct evolution.</td> </tr> <tr> <td></td> <td style="text-align: right;">(any two)</td> </tr> <tr> <td>Examples: Acquiring knowledge, loss of weight or any other example</td> <td>Examples: Skin colour, colour of the eye or any other example.</td> </tr> </tbody> </table>	<u>Acquired Traits</u>	<u>Inherited Traits</u>	(i) Does not bring about change in the DNA of the germ cell.	(i) Brings about change in the DNA of the germ cell.	(ii) Cannot be passed on to the progeny.	(ii) Can be passed on to the progeny.	(iii) Cannot direct evolution.	(iii) Can direct evolution.		(any two)	Examples: Acquiring knowledge, loss of weight or any other example	Examples: Skin colour, colour of the eye or any other example.	1,1	
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Examples: Acquiring knowledge, loss of weight or any other example	Examples: Skin colour, colour of the eye or any other example.														
		½ x 2	3												
Q16.	The candidate may choose any two of the following rays: <ol style="list-style-type: none"> <li>A ray parallel to the principal axis, after reflection, will pass through the principal focus of a concave mirror.</li> <li>A ray passing through the principal focus of a concave mirror after reflection will emerge parallel to the principal axis.</li> <li>A ray passing through the centre of curvature of a concave mirror after reflection is reflected back along the same path.</li> <li>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.</li> </ol>	(any two)	1 × 2												
		1	3												

Q17.



- Light from the Sun near the horizon passes through thicker layers of air and longer distance
- Most of the blue light and shorter wavelengths of sunlight are scattered away by the particles. Light of larger wavelength reaches us giving the reddish appearance

1

1

1

3

Q18. (a) No, it pollutes air.

1/2, 1/2

**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

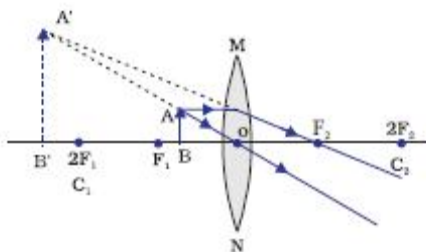
Or any other

1

3

Q19. • **For magnified erect image** – Object is between the optical centre and principal focus of a convex lens

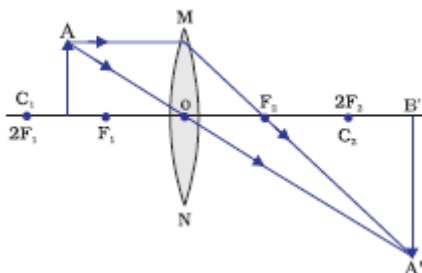
1/2



1

• **For magnified inverted image** – object between F and 2F of a convex lens

1/2



1

•  $u = -20\text{cm}$                        $f = +10\text{cm}$                        $v = ?$

$$\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$$

1/2

$$\therefore \frac{1}{v} = \frac{1}{f} + \frac{1}{u}$$

$$\frac{1}{v} = \frac{1}{(+10)} + \frac{1}{(-20)}$$

$$\frac{1}{v} = \frac{1}{10} - \frac{1}{20} = \frac{+2-1}{20} = \frac{+1}{20}$$

$$\therefore v = +20 \text{ cm}$$

1/2

Q20. a) Statement of laws of Refraction of light (two laws)

1  
1 × 2

When a ray of light travels from vacuum or air into a given medium then ratio of sin i to sin r is called absolute refractive index of the medium.

1/2

$$\text{Absolute refractive index} = \frac{\text{Speed of light in vacuum}}{\text{Speed of light in the medium}}$$

1/2

b)  $n_A = 2.0$ ;  $n_B = 1.5$   $v_B = 2 \times 10^8 \text{ m/s}$

i)  $n_B = \frac{c}{v_B}$

1/2

$$\therefore c = n_B v_B = 1.5 \times 2 \cdot 10^8 \text{ m/s} = 3 \times 10^8 \text{ m/s}$$

1/2

ii)  $n_A = \frac{c}{v_A}$

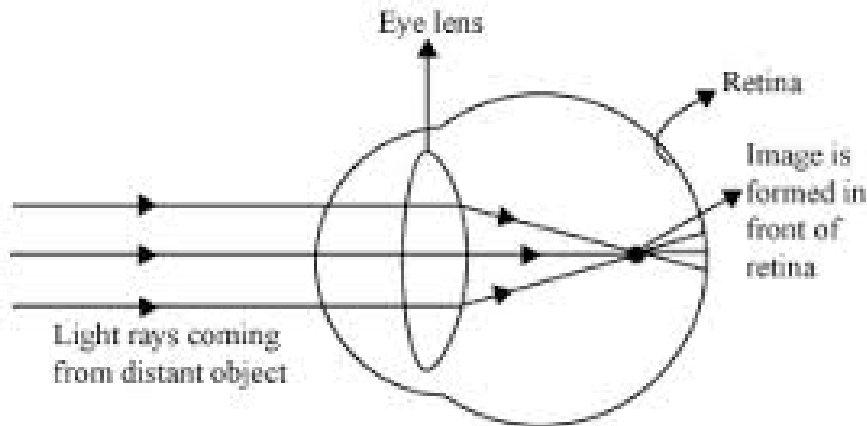
$$\therefore v_A = \frac{c}{n_A} = \frac{3 \times 10^8 \text{ m/s}}{2} = 1.5 \times 10^8 \text{ m/s}$$

1  
5

Q21. Defect – Myopia / Nearsightedness  
Correction – By using a concave lens of suitable power

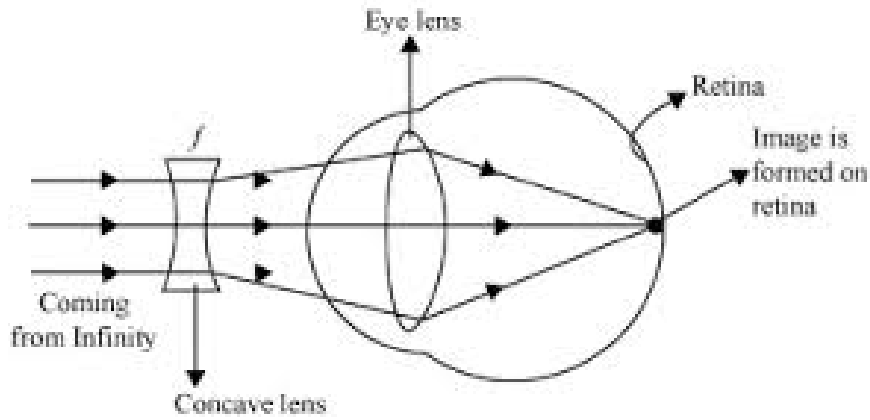
1  
1

i)



1 1/2

ii)



1 ½

5

Q22.

• 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.

• Placenta is a special disc like tissue embedded in the mother's uterine wall and connected to the foetus / embryo.

½

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

Q23.

• 23 pairs of chromosomes

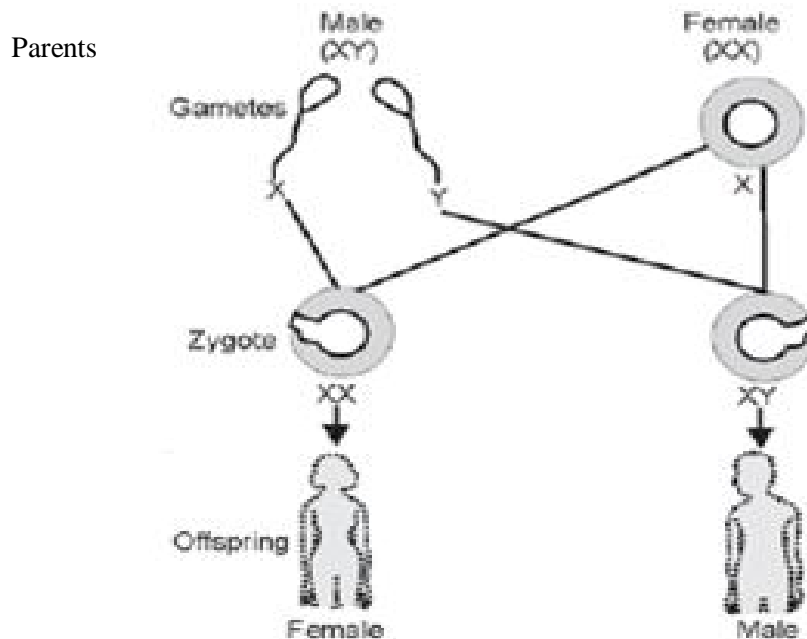
1

• One pair, two types

½, ½

• Flow chart



½



½

½

½

	<ul style="list-style-type: none"> <li>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.</li> </ul>	1	5
Q24.	<ul style="list-style-type: none"> <li>Carbon has 4 electrons in its outermost shell, and needs to gain or lose 4 electrons to attain noble gas configuration.</li> <li>Losing or gaining 4 electrons is not possible due to energy considerations; hence it shares electrons to form covalent bonds.</li> </ul> <p>Two reasons for large number of carbon compounds :</p> <ul style="list-style-type: none"> <li>Catenation: The unique ability of carbon to form bonds with other atoms of carbon giving rise to long chains of different types of compounds.</li> <li>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.</li> </ul> <p>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.</p>	1 1 1 1	
	<b>SECTION – B</b>		
	25) D                      26) B                      27) B 28) C                      29) B                      30) C 31) C                      32) D                      33) A	1x9	9
Q34.	(a) Away from the lens (b) Increases (c) No image on the screen	1/2 1/2 1	2
Q35.	<ul style="list-style-type: none"> <li>Brisk effervescence</li> <li>Evolution of a colorless gas.</li> </ul> $\text{NaHCO}_3 + \text{CH}_3\text{COOH} \longrightarrow \text{CH}_3\text{COONa} + \text{H}_2\text{O} + \text{CO}_2$	1/2 1/2 1	2
Q36.	Binary Fission	1/2	
	 Initial Stage		
	 Final Stage		
	Elongation of Nucleus	1/2, 1/2 1/2	2