

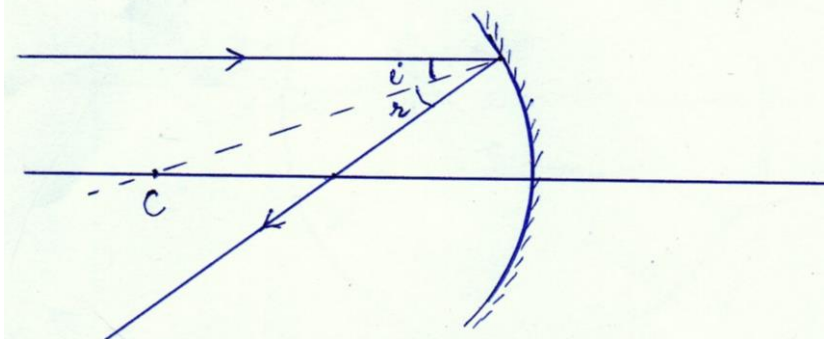
Strictly Confidential- (For Internal and Restricted Use Only) Secondary School Examination
SUMMATIVE ASSESSMENT - II
March 2017

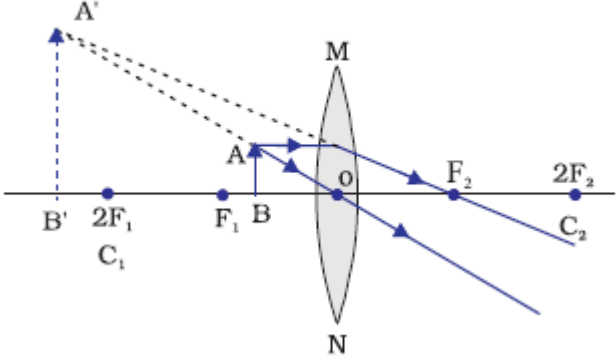
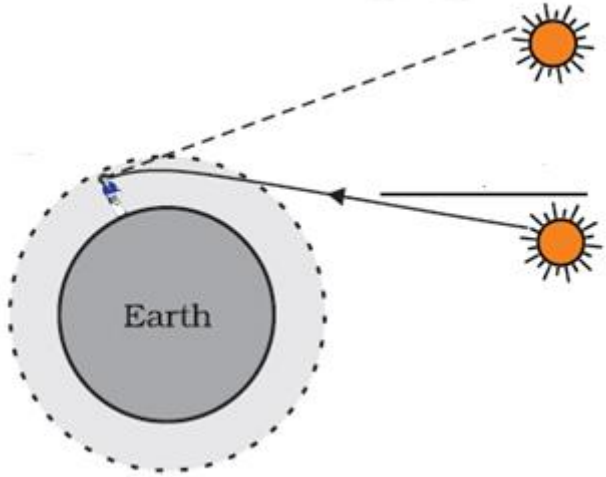
Marking Scheme – Science (Foreign) 31/2/1

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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.

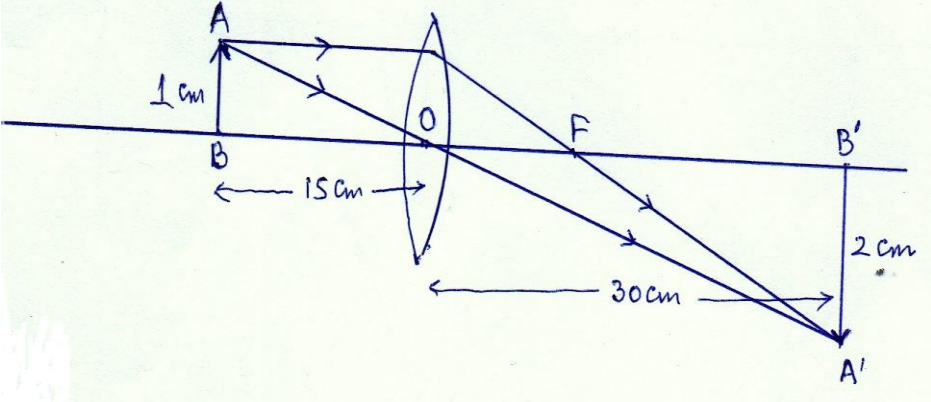
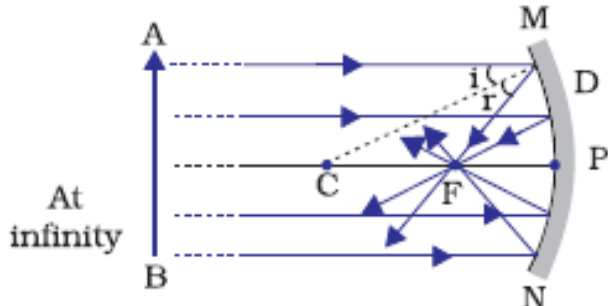
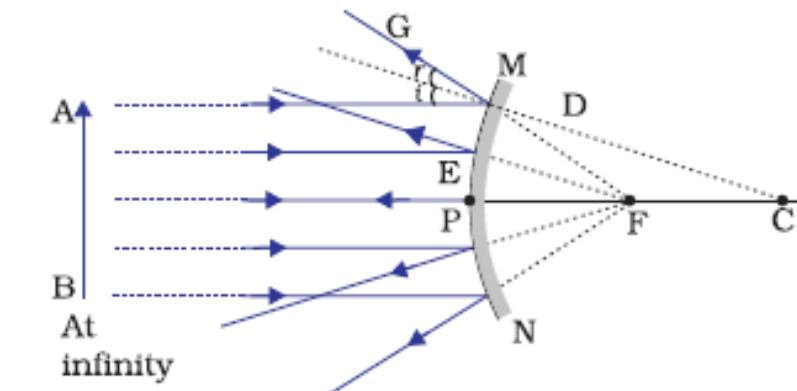
**MARKING SCHEME
CLASS X – FOREIGN**

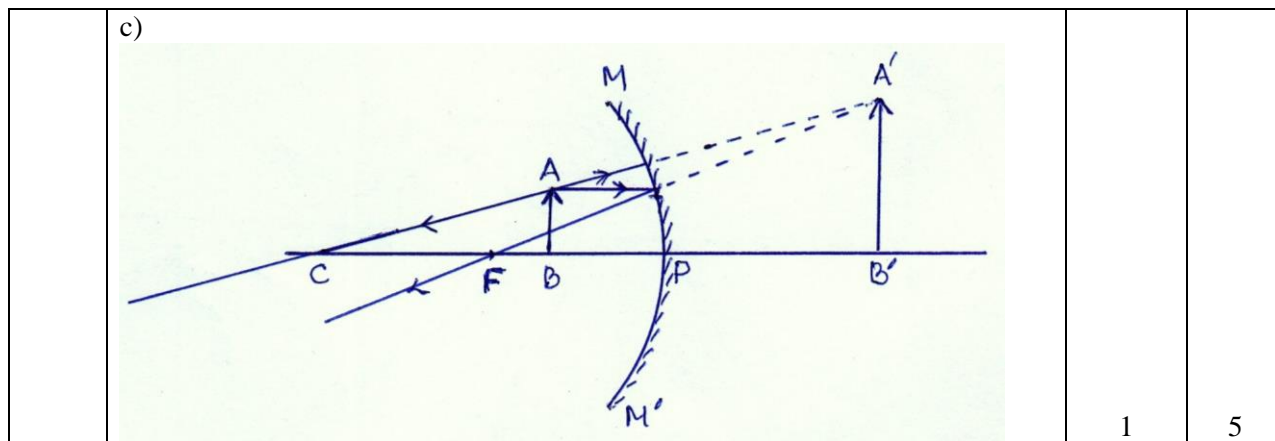
Code No. 31/2/1

	Expected Answer/ Value point	Marks	Total
	SECTION – A		
Q1.	HCOOH; CH ₃ COOH	½ + ½	1
Q2.	Testis and Ovary	½ + ½	1
Q3.	Crop fields/ Gardens/ Aquarium/ Parks/ (any other two)	½ + ½	1
Q4.		1	
	Marking angle <i>i</i> and angle <i>r</i>	½ + ½	2
Q5.	Increase soil temperature/ adverse effect on agricultural products/ land and animals die after consumption/ clog drains, may cause flood like situation/ any other (three only) Alternative- Jute bags/ Paper bags/ Cloth bags/ Biodegradable bags (any one)	½ x 3 ½	2
Q6.	<ul style="list-style-type: none"> Burning of fossil fuel produces CO₂, oxides of Sulphur and nitrogen CO₂ is a greenhouse gas, its excess CO₂ produces greenhouse effect, increasing earth's temperature/ causes global warming. 	1 1	2
Q7.	<ul style="list-style-type: none"> (i) Alkaline KMnO₄ (ii) Acidified K₂Cr₂O₇ Ethanol does not affect litmus paper whereas Ethanoic acid turns <ul style="list-style-type: none"> i) Blue litmus red ii) Ethanol does not react with NaHCO₃ whereas Ethanoic acid gives brisk effervescence with the evolution of colourless gas/CO₂ 	1 1 1	3
Q8.	<p>Carbon cannot lose 4 e⁻ to form C⁺⁴ cations, as very high energy is required to remove 4 e⁻</p> <p>Carbon cannot gain 4 e⁻ to form C⁻⁴ anions as nucleus with 6 protons cannot hold 10 electrons.</p> <p>Carbon can share 4e⁻ to form covalent compounds.</p> <p>Carbon compounds do not conduct electricity being non polar and do not form ions/ charged particles.</p> <p>Due to weak intermolecular forces of attraction, carbon compounds have low melting points and boiling points.</p>	½ ½ ½ 1 ½	3

Q15.	(i) Natural Selection (ii) Mutation (iii) Genetic Drift (iv) Geographical Isolation (any three) (brief description of any three)	3 x ½ 3 x ½	3
Q16.	<ul style="list-style-type: none"> • ($m = -1$, means that the Image is real, inverted and of the same size as the object) \therefore Object distance = image distance = $2f = 25$ cm $\therefore f = \frac{25}{2} = 12.5$ cm • Nature of the lens is convex/ converging • On displacing the object distance by 15 cm, towards the lens, the object distance becomes 10 cm which is less than the focal length. Image formed now is virtual/ same side of lens as the object • 	½ ½ ½ ½ 1	3
Q17	 diagram + labelling	1 ½ 1 ½	3

Q18.	(a) (i) During growing of fruit crops, pesticides are often used which may contaminate the fruit and hence the fruit juices. (ii) by using contaminated ground water for making fruit juices. (b) Bio magnification/ Biological magnification The progressive accumulation of non biodegradable toxic substances/chemicals at each trophic level leading to their maximum concentration at the highest trophic level (human beings) is called biological magnification.	½ ½ 1 1	3
Q19.	<ul style="list-style-type: none"> Esters: Pleasant smelling organic compounds Formed by the reaction of carboxylic acids and alcohols in the presence of acid. Equation : $\text{CH}_3\text{COOH} + \text{C}_2\text{H}_5\text{OH} \xrightarrow{\text{acid}} \text{CH}_3\text{COOC}_2\text{H}_5 + \text{H}_2\text{O}$ (Ester) Sodium ethanoate is formed. $\text{CH}_3\text{COOC}_2\text{H}_5 + \text{NaOH} \rightarrow \text{CH}_3\text{COONa} + \text{C}_2\text{H}_5\text{OH}$ Name of Reaction : Saponification Use : Preparation of soap 	½ 1 1 ½ 1 ½ ½	5
Q20.	Unisexual Flower : Papaya/ Water-melon/ any other (any one) Bisexual Flower : Hibiscus/ Rose/ any other (any one) Self pollination: The pollen grains are transferred from the anther to the stigma of the same flower or to the flower of the same plant Cross pollination: The pollen grains are transferred from the anther to the stigma of a flower of a different plant. <ul style="list-style-type: none"> After pollen lands on a suitable stigma, a pollen tube grows out of pollen grain and travels through the style to reach the ovary The male germ cell fuses with the female germ cell to form a zygote. Zygote divides several times to form an embryo within the ovule The ovule develops tough coat and gradually gets converted into a seed 	½ ½ 1 1 ½ ½ ½ ½	5
Q21.	<ul style="list-style-type: none"> Fossil : Preserved traces of living organisms are called fossils. Fossils are formed when the body parts of the dead organisms do not decompose completely and are caught up in mud and eventually harden to retain the impression of the body parts. Age of the fossil can be determined by: <ol style="list-style-type: none"> Relative method Carbon dating method Importance of fossils in the study of evolution: <ol style="list-style-type: none"> Help us in knowing about the species which are no longer alive. Provide evidence of missing links between two groups of organisms. (any one) 	1 2 ½ + ½ 1	5
Q22.	a) Observation no 3, indicates $u = -20$ cm $v = +20$ cm It suggests that object is at 2F Therefore $f = +10$ cm b) Observation no 6, because, here: $u = -9$ cm Thus object is between 'O' and 'F'	1 ½ ½	

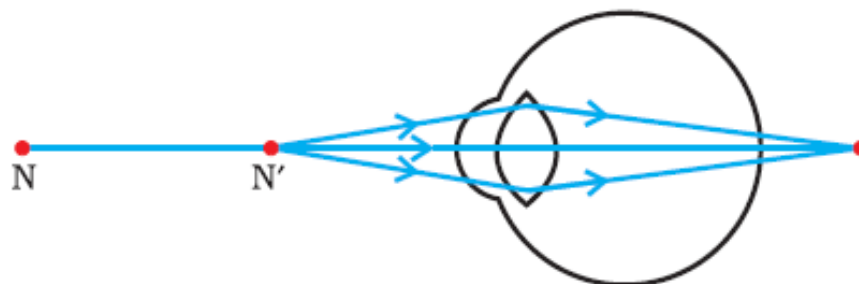
	<p>Hence image distance should be negative NOT positive</p> <p>c)</p>  <p>Magnification is approx = - 2</p>	<p>1 1 ½ ½</p>	<p>5</p>
<p>Q23</p>	<p>Four definitions:</p> <p>a)</p> <p>i) Pole – The centre of the reflecting surface of the spherical mirror.</p> <p>ii) Centre of curvature – The centre of the sphere of which mirror forms a part.</p> <p>iii) Radius of curvature – The radius of the sphere of which mirror forms a part.</p> <p>iv) Principal axis – An imaginary straight line passing through the pole and the centre of curvature of the mirror</p>	<p>½ x 4</p>	
<p>b) (i)</p>		<p>1</p>	
<p>(ii)</p>		<p>1</p>	



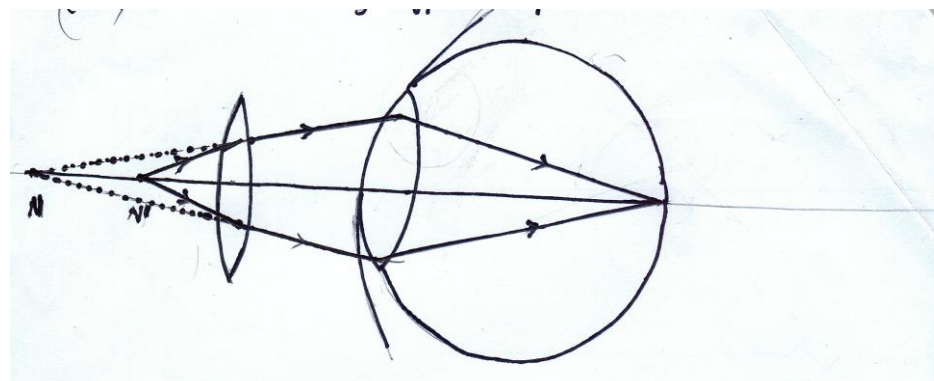
1 5

- Q24
- a) i) Cornea- To refract the light rays falling on the eye
 ii) Iris- To control the amount of light entering the eye.
 iii) Crystalline lens- To focus the incoming rays on the retina.
 iv) Retina- To act as screen and send signal to the brain via optic nerve
- b) Hypermetropia/ Long-sightedness

$\frac{1}{2} \times 4$
1



1



1

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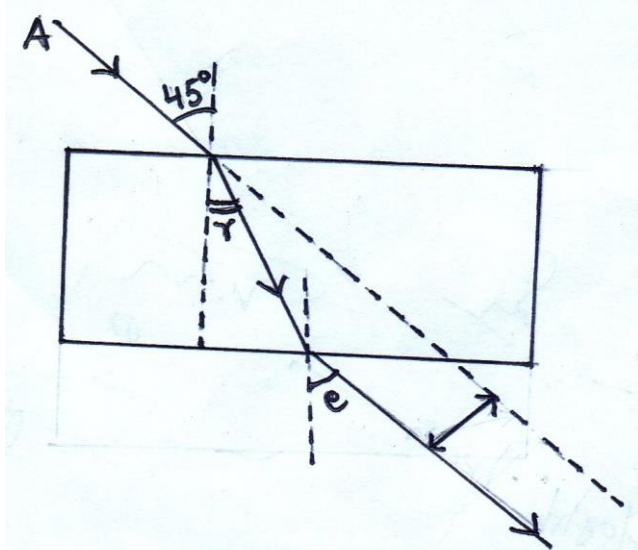
SECTION – B

- | | | |
|-------|-------|-------|
| 25) B | 26) C | 27) D |
| 28) D | 29) D | 30) C |
| 31) B | 32) C | 33) A |

1 x 9 9

- Q34. [a] (i) Smells like vinegar
 (ii) Turns blue litmus red
- [b] (i) brisk effervescence
 (ii) evolution of colourless gas

$\frac{1}{2} \times 4$ 02

Q35.	<p>i) Soak a few seeds of gram/Bengal gram/chana/kidney beans/etc and leave them overnight. ii) Drain the excess water. iii) Cover the seeds with a wet cloth and leave them for a day. iv) Cut open the seed carefully and observe the different parts.</p>	$\frac{1}{2} \times 4$	2
Q36.		Diagram Labelling	1 1 2

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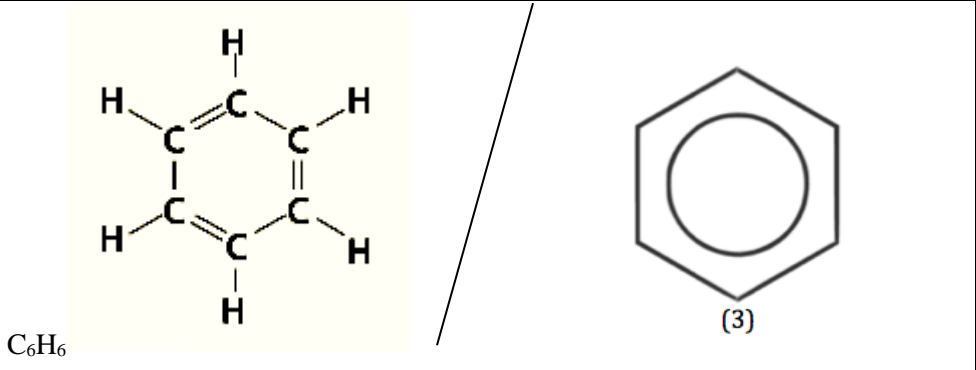
Marking Scheme – Science (Foreign) 31/2/2

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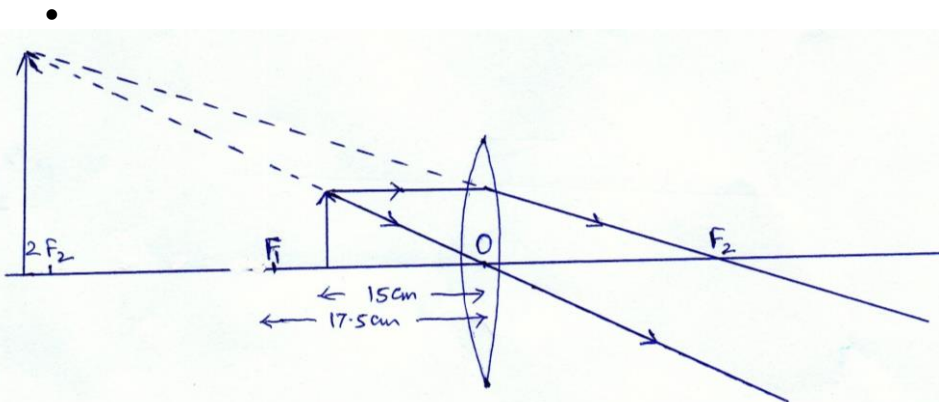
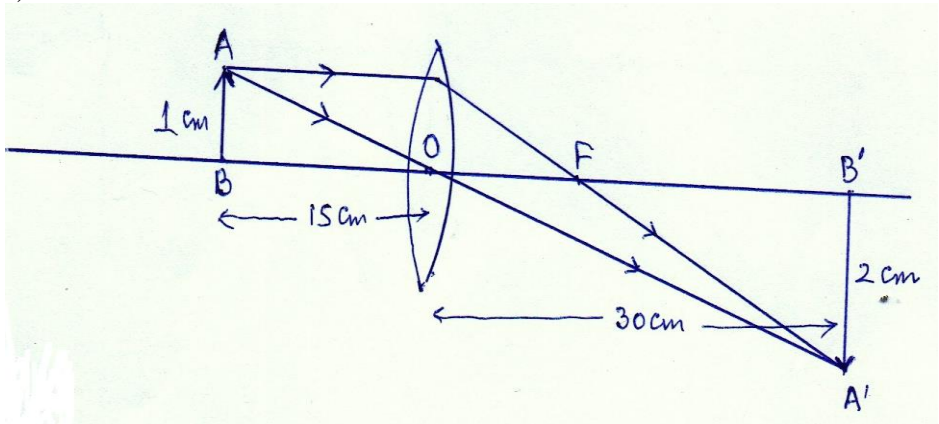
**MARKING SCHEME
CLASS X – FOREIGN**

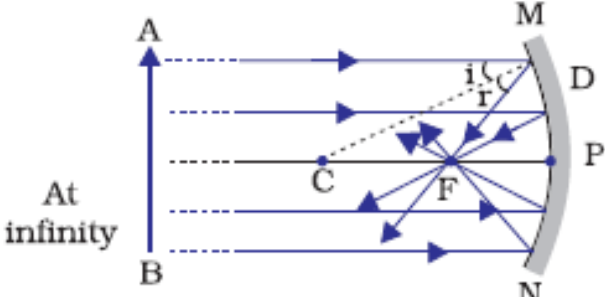
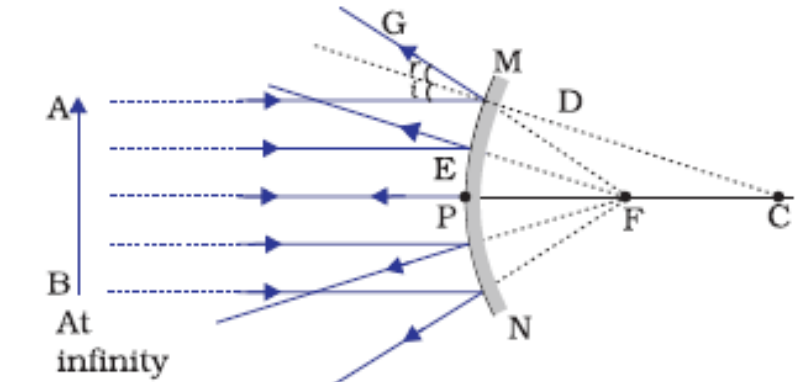
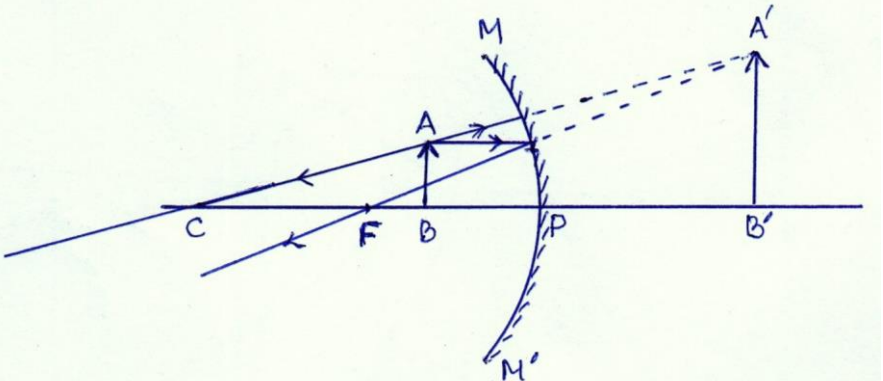
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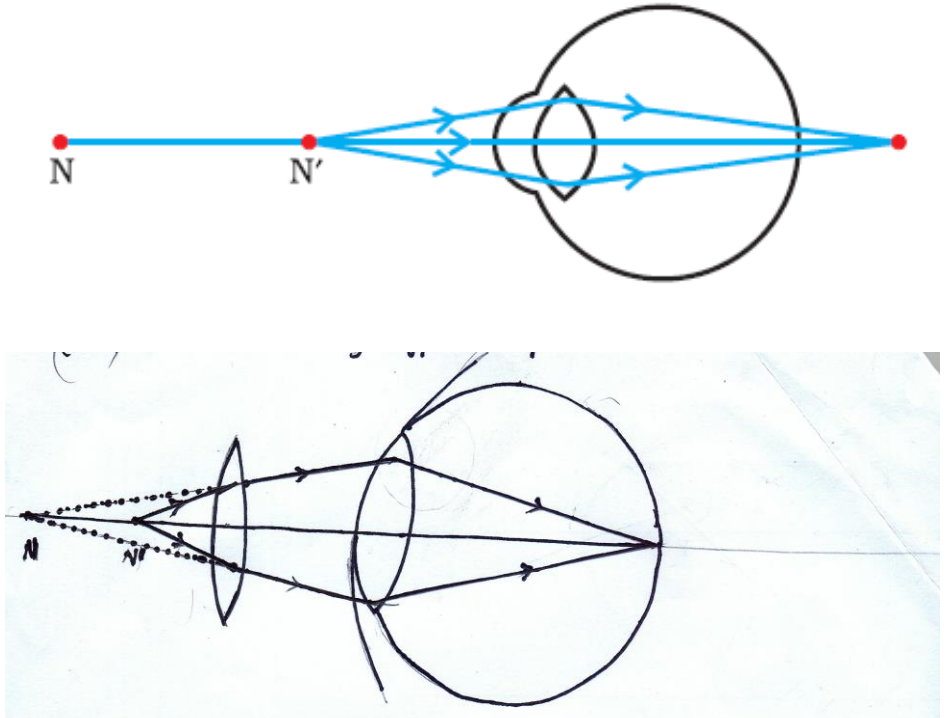
	Expected Answer/ Value point	Marks	Total
	SECTION – A		
Q1.	HCHO; CH ₃ CHO	½, ½	1
Q2.	Testis; Ovaries	½, ½	1
Q3.	Ponds/ Lakes/ Rivers/ Deserts/ Forests (any two)	½, ½	1
Q4.			
	Ray diagram with direction of rays	1	
	Marking $\angle i$ and $\angle r$ correctly.	½ + ½	2
Q5.	<ul style="list-style-type: none"> • Because, in a forest, various species are available • Two ways: <ol style="list-style-type: none"> i) Avoiding cutting of trees and killing of animals/ wildlife ii) Educating people about the importance of forests and wildlife in sustainance of life on the earth 	1 ½ ½	2
Q6.	CO ₂ , water vapours, oxides of sulphur and Nitrogen Harmful Effects; Global warming, pollution, green house effect (any two)	1 1	2
Q7.	a) X(19) : 2,8,8,1 i)Valency: 1 ii)X is a metal b) X ₂ O c) X is more reactive than Na X and Na belong to the same group. But Na is in the third period and X is in the fourth period. Since reactivity increases down the group X is more reactive than Na.	½ ½ 1 ½ ½	3
Q8.	<ul style="list-style-type: none"> • Atomic number is more important parameter than atomic mass as atomic number determines the number of valence electrons which decide the chemical properties of an atom of an element. • Metallic character decreases from left to right in a period, because the 	1 ½ + ½	3

	<p>tendency to lose electrons decreases due to increased attraction between nucleus and valence electrons.</p> <ul style="list-style-type: none"> • Metallic character increases down the group, as the tendency to lose electrons increases, due to decreased attraction between nucleus and valence electrons because outermost electrons are farther away. 	$\frac{1}{2} + \frac{1}{2}$										
Q9.	 <p style="text-align: center;">C_6H_6 (3)</p>	$\frac{1}{2}, \frac{1}{2}$										
	Difference :											
	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th></th> <th>Covalent</th> <th>Ionic</th> </tr> </thead> <tbody> <tr> <td>Electrical conductivity</td> <td>Do not conduct electricity</td> <td>Conducts electricity</td> </tr> <tr> <td>Melting point</td> <td>Low</td> <td>High</td> </tr> </tbody> </table> <p style="text-align: center;">(or any other)</p>		Covalent	Ionic	Electrical conductivity	Do not conduct electricity	Conducts electricity	Melting point	Low	High	1, 1	3
	Covalent	Ionic										
Electrical conductivity	Do not conduct electricity	Conducts electricity										
Melting point	Low	High										
Q10.	<p>Carbon cannot lose 4 e⁻ to form C⁺⁴ cations, as very high energy is required to remove 4 e⁻</p> <p>Carbon cannot gain 4 e⁻ to form C⁻⁴ anions as nucleus with 6 protons cannot hold 10 electrons.</p> <p>Carbon can share 4e⁻ to form covalent compounds.</p> <p>Carbon compounds do not conduct electricity being non polar and do not form ions/ charged particles.</p> <p>Due to weak intermolecular forces of attraction, carbon compounds have low melting points and boiling points.</p>	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ 1 $\frac{1}{2}$	3									
Q11.	<p>(i) Natural Selection (ii) Mutation (iii) Genetic Drift (iv) Geographical Isolation</p> <p style="text-align: right;">(any three) (brief description of any three)</p>	3 x $\frac{1}{2}$ 3 x $\frac{1}{2}$	3									

Q12.	<p>Methods of tracing evolutionary relationships</p> <p>i) Studying homologous organs: Organs having same structural plan or origin but are modified to perform different functions. eg: Forelimbs of vertebrates</p> <p>ii) Studying analogous organs: Organs have different structural plan or origin but are modified to perform same function. Example: Wings of birds and wings of bat/wings of insects and wings of bat (any one)</p> <p>iii) Study of fossils : By studying fossils, we can know about the species which once existed. Example: Dinosaur skull/Invertebrate (Trilobite) (Any other)</p>	<p>½</p> <p>½</p> <p>½</p> <p>½</p> <p>½</p> <p>½</p>	3
Q13.	<ul style="list-style-type: none"> Variations may arise due to small inaccuracies in DNA copying during reproduction; as a result of sexual reproduction where genetic materials from two different organisms combine to form a new organism. During adverse conditions some variations may give survival advantage to the organism e.g. a population of bacteria living in temperate waters. If the temperature of water increases suddenly then most of the bacteria would die but few <u>variant bacteria resistant to heat</u> would survive and grow further. (or any other example) 	<p>2 x 1</p> <p>1</p>	3
Q14.	<ul style="list-style-type: none"> Regeneration- Ability of organisms to give rise to new individual organisms from their body parts. Planaria / Hydra; Amoeba/ Rhizopus/ Banana/ Sugarcane/ any other Regeneration is carried out by <u>specialized cells</u> which are not present in non regenerating organisms. 	<p>1</p> <p>½</p> <p>½</p> <p>1</p>	3
Q15.	<p>Placenta: A specialized tissue embedded in the uterine wall. It contains villi on embryo side and blood spaces which surround villi on the mother's side.</p> <p>Functions:</p> <p>i) Provides large surface area for glucose/nutrients and O₂ to pass from the mother to the embryo.</p> <p>ii) Wastes generated by foetus are transferred into the mother's blood for their removal.</p>	<p>1</p> <p>1</p> <p>1</p>	3
Q16.	<ul style="list-style-type: none"> $m = -1$ i.e. Image is real, inverted and same size as the object and, Object distance = Image distance = $2f = 35$ cm Nature of lens: Convex/ Converging As $2f = 35$ cm $\therefore f = \frac{35}{2}$ cm = + 17.5 cm On displacing the object 20 cm towards the lens, the object distance becomes 15 cm (35 cm – 20 cm) i.e. it lies between F and O of the lens. Image formed now is virtual/ on the same side of lens as the object. 	<p>½</p> <p>½</p> <p>½</p> <p>½</p>	

		1	3
Q17.	<ul style="list-style-type: none"> Phenomenon of spreading of light by small particles in the atmosphere is scattering of light. Blue colour of the sky – The blue colour of sunlight gets scattered more than other colours (due to smaller wavelength) and enters our eye. At sunrise, sunlight passes through the thicker layers of the atmosphere and travels through a large distance. Shorter waves are scattered and longer waves (the red component) reaches us giving reddish appearance of the sun. 	1 1 1	3
Q18.	<p>(a) (i) During growing of fruit crops, pesticides are often used which may contaminate the fruit and hence the fruit juices. (ii) by using contaminated ground water for making fruit juices.</p> <p>(b) Bio magnification/ Biological magnification The progressive accumulation of non biodegradable toxic substances/ chemicals at each trophic level leading to their maximum concentration at the highest trophic level (human beings) is called biological magnification.</p>	½ ½ 1 1	3
Q19.	<p>a) Observation no 3, indicates $u = -20\text{ cm}$ $v = +20\text{ cm}$ It suggests that object is at $2F$ Therefore $f = +10\text{ cm}$</p> <p>b) Observation no 6, because, here: $u = -9\text{ cm}$ Thus object is between 'O' and 'F' Hence image distance should be negative NOT positive</p> <p>c)</p>  <p>Magnification is approx = -2</p>	1 ½ ½ 1 1 ½ ½	5

Q20.	<p>Four definitions:</p> <p>a)</p> <p>i) Pole – The centre of the reflecting surface of the spherical mirror.</p> <p>ii) Centre of curvature – The centre of the sphere of which mirror forms a part.</p> <p>iii) Radius of curvature – The radius of the sphere of which mirror forms a part.</p> <p>iv) Principal axis – An imaginary straight line passing through the pole and the centre of curvature of the mirror</p>	$\frac{1}{2} \times 4$	
b) (i)		1	
(ii)		1	
c)		1	5
Q21.	<p>a) i) Cornea- To refract the light rays falling on the eye</p> <p>ii) Iris- To control the amount of light entering the eye.</p> <p>iii) Crystalline lens- To focus the incoming rays on the retina.</p> <p>iv) Retina- To act as screen and send signal to the brain via optic nerve</p>	$\frac{1}{2} \times 4$	5

	<p>b) Hypermetropia/ Long-sightedness</p> 	1	
Q22.	<ul style="list-style-type: none"> Esters: Pleasant smelling organic compounds Formed by the reaction of carboxylic acids and alcohols in the presence of acid. <p>Equation :</p> $\text{CH}_3\text{COOH} + \text{C}_2\text{H}_5\text{OH} \xrightarrow{\text{acid}} \text{CH}_3\text{COOC}_2\text{H}_5 + \text{H}_2\text{O}$ <p style="text-align: center;">(Ester)</p> <ul style="list-style-type: none"> Sodium ethanoate is formed. $\text{CH}_3\text{COOC}_2\text{H}_5 + \text{NaOH} \rightarrow \text{CH}_3\text{COONa} + \text{C}_2\text{H}_5\text{OH}$ Name of Reaction : Saponification Use : Preparation of soap 	<p>1/2</p> <p>1</p> <p>1</p> <p>1/2</p> <p>1</p> <p>1/2</p> <p>1/2</p>	5
Q23.	<p>Unisexual Flower : Papaya/ Water-melon/ any other (any one)</p> <p>Bisexual Flower : Hibiscus/ Rose/ any other (any one)</p> <p>Self pollination: The pollen grains are transferred from the anther to the stigma of the same flower or to the flower of the same plant</p> <p>Cross pollination: The pollen grains are transferred from the anther to the stigma of a flower of a different plant.</p> <ul style="list-style-type: none"> After pollen lands on a suitable stigma, a pollen tube grows out of pollen grain and travels through the style to reach the ovary The male germ cell fuses with the female germ cell to form a zygote. Zygote divides several times to form an embryo within the ovule The ovule develops tough coat and gradually gets converted into a seed 	<p>1/2</p> <p>1/2</p> <p>1</p> <p>1</p> <p>1/2</p> <p>1/2</p> <p>1/2</p> <p>1/2</p>	5
Q24.	<ul style="list-style-type: none"> Fossil : Preserved traces of living organisms are called fossils. Fossils are formed when the body parts of the dead organisms do not decompose completely and are caught up in mud and eventually harden 	1	5

	<p>to retain the impression of the body parts.</p> <ul style="list-style-type: none"> Age of the fossil can be determined by: <ul style="list-style-type: none"> (i) Relative method (ii) Carbon dating method Importance of fossils in the study of evolution: <ul style="list-style-type: none"> (i) Help us in knowing about the species which are no longer alive. (ii) Provide evidence of missing links between two groups of organisms. (any one) 	2	
		$\frac{1}{2} + \frac{1}{2}$	
		1	
SECTION – B			
	25) d	26) d	27) c
	28) b	29) a	30) c
	31) d	32) b	33) c
			1 x 9
			9
Q34.			
		Diagram Labelling	
		1 1	2
Q35.	[a] (i) Smells like vinegar		
	(ii) Turns blue litmus red		
	[b] (i) brisk effervescence		
	(ii) evolution of colourless gas	$\frac{1}{2} \times 4$	02
Q36.	<p>i) Soak a few seeds of gram/Bengal gram/chana/kidney beans/etc and leave them overnight.</p> <p>ii) Drain the excess water.</p> <p>iii) Cover the seeds with a wet cloth and leave them for a day.</p> <p>iv) Cut open the seed carefully and observe the different parts.</p>		
		$\frac{1}{2} \times 4$	2

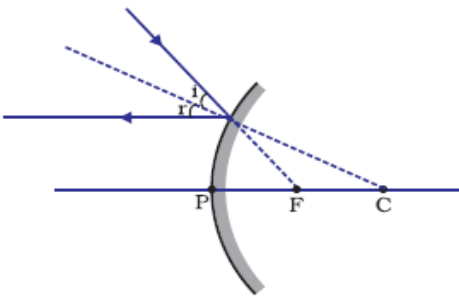
Strictly Confidential- (For Internal and Restricted Use Only) Secondary School Examination
SUMMATIVE ASSESSMENT - II
March 2017

Marking Scheme – Science (Foreign) 31/2/3

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. ½ 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 – FOREIGN

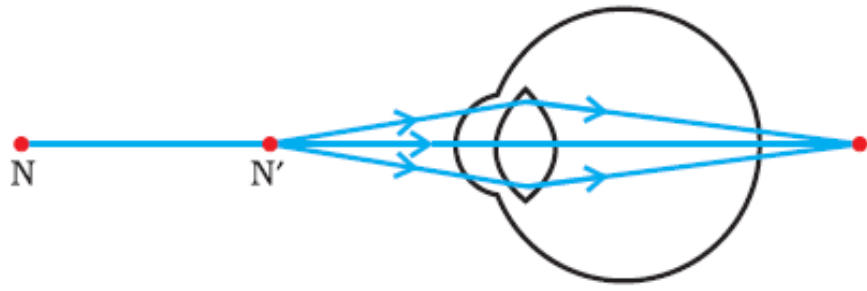
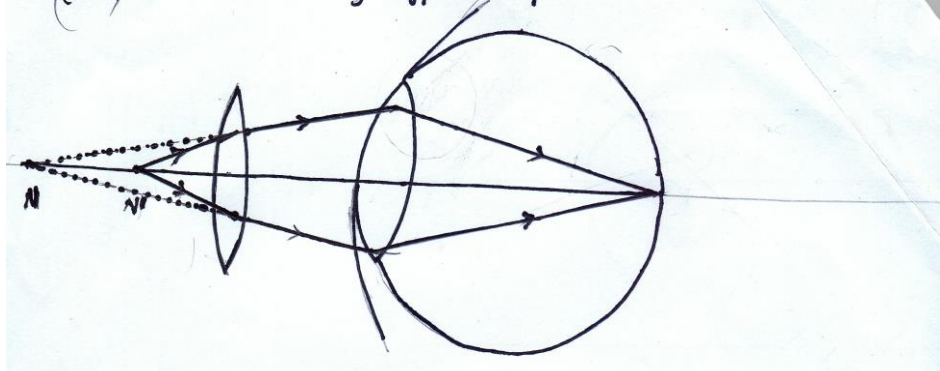
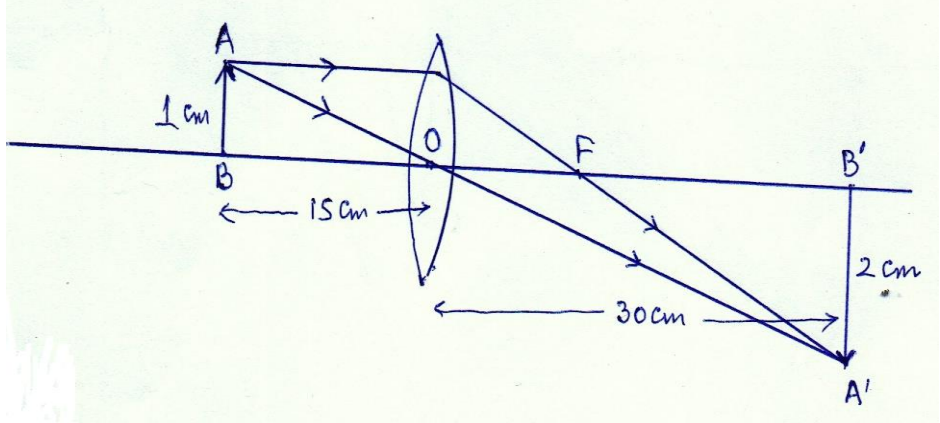
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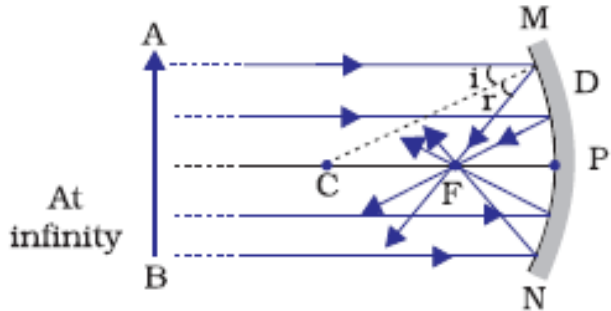
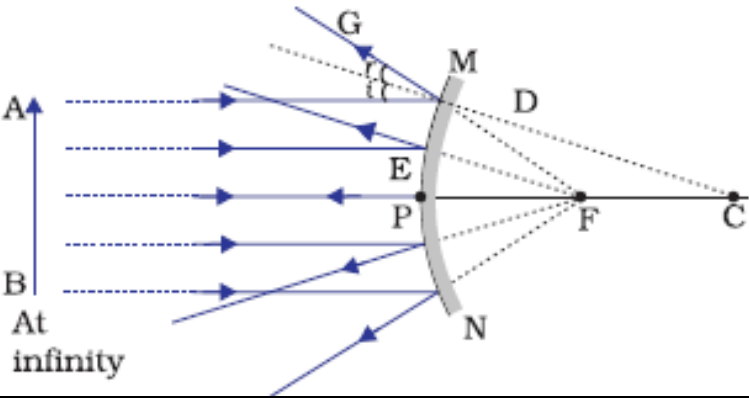
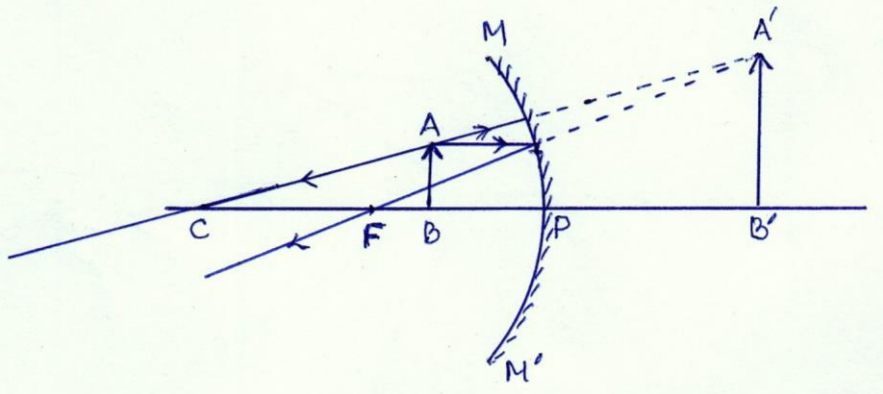
	Expected Answer/ Value point	Marks	Total
SECTION – A			
Q1.	CH ₃ COCH ₃ , CH ₃ COC ₂ H ₅	½, ½	1
Q2.	<ul style="list-style-type: none"> • Fusion of sperm/male gamete and female gamete • Oviduct/ fallopian tube 	½ ½	1
Q3.	Air, Water, Minerals, Sunlight (any two)	½ + ½	1
Q4.	 <p style="text-align: right;">Diagram Marking ∠i and ∠r</p>	1 ½, ½	2
Q5.	Judicious use of forest resources for industrial development Waste water generated by industries should be recycled Alternative resources to conserve natural resources (or any other two)	1, 1	2
Q6.	<p>‘Chipko’ means ‘hug’ and ‘Andolan’ means ‘movement’ This movement was started in Garhwal region or Uttarakhand by hugging tree trunks to prevent the cutting of trees.</p> <p>i) Forest produce was made available to the local population.</p> <p>ii) It benefitted the environment by conserving the quality of soil and the resources.</p>	½, ½ ½ ½	2
Q7.	<p>Carbon cannot lose 4 e⁻ to form C⁺⁴ cations, as very high energy is required to remove 4 e⁻</p> <p>Carbon cannot gain 4 e⁻ to form C⁻⁴ anions as nucleus with 6 protons cannot hold 10 electrons.</p> <p>Carbon can share 4e⁻ to form covalent compounds.</p> <p>Carbon compounds do not conduct electricity being non polar and do not form ions/ charged particles.</p> <p>Due to weak intermolecular forces of attraction, carbon compounds have low melting points and boiling points.</p>	½ ½ ½ 1 ½	3

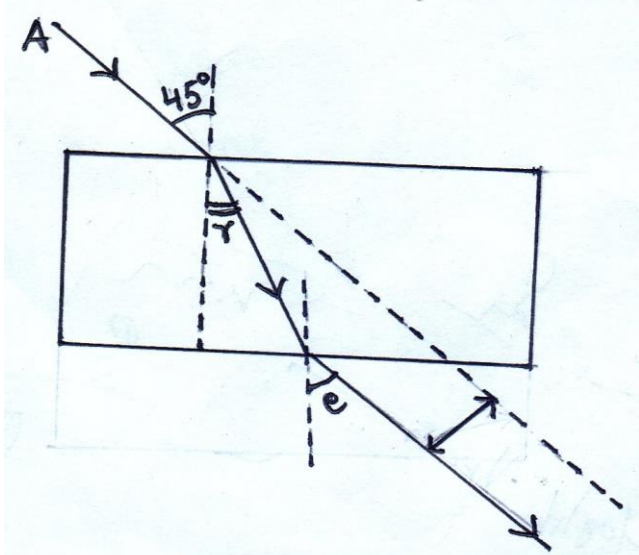
Q8.	Hydrocarbons-Compounds of carbon and hydrogen.	1	
	Saturated Hydrocarbons C_nH_{2n+2}	$\frac{1}{2}$	
	Unsaturated Hydrocarbons C_nH_{2n}/C_nH_{2n-2}	$\frac{1}{2}$	
	Structural formula:		
	Saturated Hydrocarbon: $\begin{array}{c} \text{H} \\ \\ \text{H}-\text{C}-\text{H} \\ \\ \text{H} \end{array}$	$\frac{1}{2}$	
	Unsaturated Hydrocarbon : $\begin{array}{c} \text{H} \quad \text{H} \\ \diagdown \quad / \\ \text{C}=\text{C} \\ / \quad \diagdown \\ \text{H} \quad \text{H} \end{array} \quad / \quad \text{H}-\text{C}\equiv\text{C}-\text{H}$	$\frac{1}{2}$	3
Q9.	<ul style="list-style-type: none"> Atomic number is more important parameter than atomic mass as atomic number determines the number of valence electrons which decide the chemical properties of an atom of an element. Metallic character decreases from left to right in a period, because the tendency to lose electrons decreases due to increased attraction between nucleus and valence electrons. Metallic character increases down the group, as the tendency to lose electrons increases, due to decreased attraction between nucleus and valence electrons because outermost electrons are farther away. 	1 $\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$	3
Q10.	a)X(12) : 2,8,2	$\frac{1}{2}$	
	Valency : 2	$\frac{1}{2}$	
	b)Less reactive than Ca as reactivity increases down the group.	$\frac{1}{2}, \frac{1}{2}$	
	c)It is a metal	$\frac{1}{2}$	
	d)Formula of oxide : XO	$\frac{1}{2}$	3
Q11.	Male gamete : sperm	$\frac{1}{2}$	
	Female gamete :ovum/egg	$\frac{1}{2}$	
	Sperms are motile and produced by male individual	1	
	Ova/eggs are non motile and produced by female individual	$\frac{1}{2}$	
	Sexual reproduction	$\frac{1}{2}$	
	Advantage : Generates more variations	$\frac{1}{2}$	3
Q12.	<ul style="list-style-type: none"> Variations may arise due to small inaccuracies in DNA copying during reproduction; as a result of sexual reproduction where genetic materials from two different organisms combine to form a new organism. During adverse conditions some variations may give survival advantage to the organism e.g. a population of bacteria living in temperate waters. If the temperature of water increases suddenly then most of the bacteria would die but few <u>variant bacteria resistant to heat</u> would survive and grow further. (or any other example) 	2 x 1 1	3
Q13	<ul style="list-style-type: none"> Contraception: Any method which prevents conception/ pregnancy is called contraception. Barrier Method, Chemical Method, Surgical Method (any two) Health of women (mother) is maintained, Parents can give more attention to their children/ family, More resources may be made available for improvement of standard of living (or any other relevant point) (any three) 	$\frac{1}{2}$ $\frac{1}{2}, \frac{1}{2}$ $\frac{1}{2} \times 3$	3

Q14.	(i) Natural Selection (ii) Mutation (iii) Genetic Drift (iv) Geographical Isolation (any three) (brief description of any three)	3 x ½ 3 x ½	3
Q15.	Fossils : The remains or impressions of dead or decayed plants and animals <ul style="list-style-type: none"> Fossils tell us how new species arise from old ones Fossils provide missing links, thus helping in the study of evolution. 	1 1 1	3
Q16.	$m = -1$, Hence the image is real and the lens convex. As $m = -1$, $u = v$ $u + v = 60$ cm (given) i.e. $4f = 60$ cm When object is at $2F$, image is also at $2F$ distance i.e. $f = +15$ cm On displacing the object by 20 cm towards the lens $u = -10$ cm	½	
	As $\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$, $\frac{1}{v} = \frac{1}{f} + \frac{1}{u}$	½	
	Or $\frac{1}{v} = \frac{1}{+15 \text{ cm}} + \frac{1}{-10 \text{ cm}} = \frac{-1}{30 \text{ cm}}$	½	
	Or $v = -30$ cm		
	Nature of the image will be virtual.	½	
		1	3
Q17.	At sunrise, light from the sun near the horizon passes through thicker layers of air and larger distance in the earth's atmosphere before reaching our eye. Hence shorter waves are scattered away and longer (red) waves reach our eye. Hence sun appears red. However, at noon sunlight would travel relatively shorter distance only a little blue and violet colours are reflected and it is nearly the white light which reaches our eye.	1 ½ 1 ½	3
Q18.	(a) (i) During growing of fruit crops, pesticides are often used which may contaminate the fruit and hence the fruit juices. (ii) by using contaminated ground water for making fruit juices. (b) Bio magnification/ Biological magnification The progressive accumulation of non biodegradable toxic substances/ chemicals	½ ½ 1	

	at each trophic level leading to their maximum concentration at the highest trophic level (human beings) is called biological magnification.	1	3
Q19.	<ul style="list-style-type: none"> Fossil : Preserved traces of living organisms are called fossils. Fossils are formed when the body parts of the dead organisms do not decompose completely and are caught up in mud and eventually harden to retain the impression of the body parts. Age of the fossil can be determined by: <ul style="list-style-type: none"> (i) Relative method (ii) Carbon dating method Importance of fossils in the study of evolution: <ul style="list-style-type: none"> (i) Help us in knowing about the species which are no longer alive. (ii) Provide evidence of missing links between two groups of organisms. (any one) 	1 2 $\frac{1}{2} + \frac{1}{2}$ 1	5
Q20.	<p>Unisexual Flower : Papaya/ Water-melon/ any other (any one)</p> <p>Bisexual Flower : Hibiscus/ Rose/ any other (any one)</p> <p>Self pollination: The pollen grains are transferred from the anther to the stigma of the same flower or to the flower of the same plant</p> <p>Cross pollination: The pollen grains are transferred from the anther to the stigma of a flower of a different plant.</p> <ul style="list-style-type: none"> After pollen lands on a suitable stigma, a pollen tube grows out of pollen grain and travels through the style to reach the ovary The male germ cell fuses with the female germ cell to form a zygote. Zygote divides several times to form an embryo within the ovule The ovule develops tough coat and gradually gets converted into a seed 	$\frac{1}{2}$ $\frac{1}{2}$ 1 1 $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	5
Q21.	<ul style="list-style-type: none"> Esters: Pleasant smelling organic compounds Formed by the reaction of carboxylic acids and alcohols in the presence of acid. <p>Equation :</p> $\text{CH}_3\text{COOH} + \text{C}_2\text{H}_5\text{OH} \xrightarrow{\text{acid}} \text{CH}_3\text{COOC}_2\text{H}_5 + \text{H}_2\text{O}$ <p>(Ester)</p> <ul style="list-style-type: none"> Sodium ethanoate is formed. $\text{CH}_3\text{COOC}_2\text{H}_5 + \text{NaOH} \rightarrow \text{CH}_3\text{COONa} + \text{C}_2\text{H}_5\text{OH}$ Name of Reaction : Saponification Use : Preparation of soap 	$\frac{1}{2}$ 1 1 1 $\frac{1}{2}$ 1 $\frac{1}{2}$ $\frac{1}{2}$	5
Q22.	<p>a) i) Cornea- To refract the light rays falling on the eye ii) Iris- To control the amount of light entering the eye. iii) Crystalline lens- To focus the incoming rays on the retina. iv) Retina- To act as screen and send signal to the brain via optic nerve</p> <p>b) Hypermetropia/ Long-sightedness</p>	$\frac{1}{2} \times 4$ 1	

	 	1	
		1	5
Q23.	<p>a) Observation no 3, indicates $u = -20 \text{ cm}$ $v = +20 \text{ cm}$ It suggests that object is at $2F$ Therefore $f = +10 \text{ cm}$</p> <p>b) Observation no 6, because, here: $u = -9 \text{ cm}$ Thus object is between 'O' and 'F' Hence image distance should be negative NOT positive</p> <p>c)</p>  <p>Magnification is approx $= -2$</p>	1 ½ ½ 1 1 ½	5
Q24.	<p>Four definitions:</p> <p>a)</p> <p>i) Pole – The centre of the reflecting surface of the spherical mirror.</p> <p>ii) Centre of curvature – The centre of the sphere of which mirror forms a part.</p> <p>iii) Radius of curvature – The radius of the sphere of which mirror forms a part.</p>		

	iv) Principal axis – An imaginary straight line passing through the pole and the centre of curvature of the mirror	$\frac{1}{2} \times 4$	
	b) (i) 	1	
	(ii) 	1	
	c) 	1	5
SECTION – B			
25) c	26) a	27) c	
28) b	29) c	30) d	
31) b	32) d	33) d	1×9 9
Q34.	i) Soak a few seeds of gram/Bengal gram/chana/kidney beans/etc and leave them overnight. ii) Drain the excess water. iii) Cover the seeds with a wet cloth and leave them for a day. iv) Cut open the seed carefully and observe the different parts.	$\frac{1}{2} \times 4$	2

Q35.			
	Diagram Labelling	1 1	2
Q36.	[a] (i) Smells like vinegar		
	(ii) Turns blue litmus red		
	[b] (i) brisk effervescence		
	(ii) evolution of colourless gas	$\frac{1}{2} \times 4$	2