MARKING SCHEME

GENERAL INSTRUCTIONS

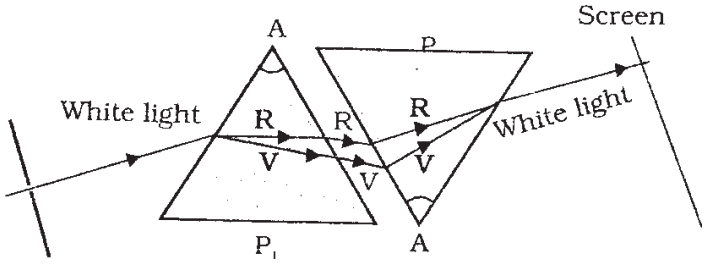
1. The Marking Scheme provides general guidelines to reduce subjectivity in the marking. It carries only suggested value points for the answer. These are only guidelines and do not constitute the complete answer. The candidates can have their own expression and if the expression is correct, the marks may be awarded accordingly.
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. If the answer is found to be totally incorrect the (X) should be marked on the incorrect answer and awarded 'O' mark.
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 hestitate to award full marks if the answer deserves it.
11. <u>As per orders of the Hon'ble Supreme Court,</u> 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 <u>ensure that evaluation is carried out strictly as per value points</u> given in the marking scheme.

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

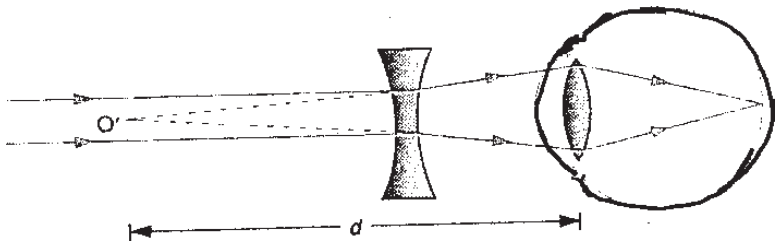
MARKING SCHEME

SECTION - A

31/1/1	Expected Answer / Value point	Marks	Total
1.	i) Halo / Halogen / Chloro	½	
	ii) Alcohol	½	1
2.	Dark / Black	1	1
3.	CFCs	1	1
4.	They breakdown the dead remains and waste products of organisms // complex organic substances into simple substances.	1	1
5.	Valency is equal to number of valence electrons or 8 minus the number of valence electrons.	1	
	Electronic configuration of the element = 2, 7 hence its valency = 8 – 7 = 1	1	2
6.	a) Electronic configuration of X = 2, 8, 3 b) Group 13 c) Metal d) XBr_3 / $AlBr_3$	½x4	2
7.	SPERMS: 2 types, one with X and other with Y type of sex chromosome EGGS: one type, X type of sex chromosome only	½, ½	
	After fertilization XY is responsible for male child , XX is responsible for female child, and thus in a population numbers of males and females are equal	½,½	2
8.	Propagation of orange plants that have lost the capacity to produce seeds / plants produced are genetically similar to the parents (in traits) /Fruits and flowers are produced earlier. (any two)	1, 1	2

31/1/1	Expected Answer / Value point	Marks	Total
9.	i) virtual ii) erect iii) size of image = size of object iv) laterally inverted v) image distance = object distance (any four)	½x4	2
10.	A beam of white light emerges from the other side of the second prism / colours of spectrum recombine and white light emerges from the other side of the second prism.	1	
		1	2
11.	Twinkling effect	½	
	Physical conditions of the earth's atmosphere change continuously, due to atmospheric refraction the apparent position of star fluctuates and the amount of light entering our eyes flickers	1½	2
12.	Does not evaporate / spreads out to recharge wells / provides moisture for vegetation over a wide area / does not provide breeding grounds for mosquitos / is protected from contamination by human or animal waste. (any four)	½x4	2
13.	When fossil fuels are burnt CO_2 is mainly produced along with oxides of sulphur and nitrogen. CO_2 is a green house gas and is responsible for global warming.	1, 1	2
14.	Isomers : Compounds with the same molecular formula but different structures / structural formula. Two isomers of butane :	1	

31/1/1	Expected Answer / Value point	Marks	Total
	$CH_3 - CH_2 - CH_2 - CH_3$	½	
	$CH_3 - \underset{\underset{CH_3}{\|}}{CH} - CH_3$	½	
	The structural formula of the first three members remains unchanged even when the carbon and hydrogen atoms in them are rearranged.	1	3
15.	(i) Bromine — atomic size increases down the group / number of shells increases down the group	½, 1	
	(ii) Fluorine — tendency to gain electrons decreases down the group.	½, 1	3
16.	STD — Diseases which are transmitted from an infected to a healthy person during unsafe sex.	½	
	Bacterial STDs — Gonorrhoea and Syphilis	½, ½	
	Viral STDs – Warts and HIV AIDS	½, ½	
	Preventive measure – using condom	½	3
17.	a) F_1 Generation – Blue	1	
	b) 25%	1	
	c) BB : Bb = 1 : 2	1	3
	(Note – No weighage for correct / incorrect cross)		
18.	Speciation – Formation of new species from existing population	1	
	Factors – Genetic drifts; Natural selection; Gene migration / Gene flow; Change in DNA / Mutation	½x4	3
19.	**Homologous Organs** — **Analogous Organs**		
	• Same structure — Different structure	½	
	• Perform different function — Perform same function	½	
	Wing of a bat and wing of a bird are analogous organs	1	
	Justification: Because the designs of the two wings, their structure and components are different //Wings of bats are skinfolds stretched mainly between elongated fingers but wings of a bird are a feathery covering all along the arm.	1	3

31/1/1	Expected Answer / Value point	Marks	Total
20.	(i) Convex mirror	½	
	Reason : a) Wider field of view	½	
	b) Gives erect, diminished image of the object placed anywhere in front of it	½	
	(ii) Concave mirror	½	
	Reason : Gives <u>large</u> / <u>magnified</u>, <u>erect</u> image of the object placed between its pole and focus so that minute details can be seen.	½, ½	3
21.	Convex lens	½	
	$\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$	½	
	$= \frac{1}{(+90)} - \frac{1}{(-45)}$		
	$\therefore f = +30 \text{ cm}$		
	Correct substitution and result	1	
	$m = \frac{h'}{h} = \frac{v}{u}$		
	$\therefore h' = -4 \text{ cm}$	1	3
22.	Defect – Myopia / Near - sightedness	½	
	Correction – Use of concave lens / diverging lens of suitable power	½	
	i) 	1	
	ii) 	1	3

31/1/1	Expected Answer / Value point	Marks	Total
23.	Soap : Sodium or potassium salt of long chain carboxylic acid.	1	
	Detergent : Ammonium or sulphonate salt of long chain carboxylic acid.	1	
	Cleansing action of soap : Ionic end of soap dissolves in water while the carbon chain dissolves in oil. As a result, miscelles are formed which help in dissolving the dirt.	2	
	Soap reacts with calcium or magnesium ions present in hard water to form insoluble substance (scum) and hence goes waste	1	5

OR

Physical Properties

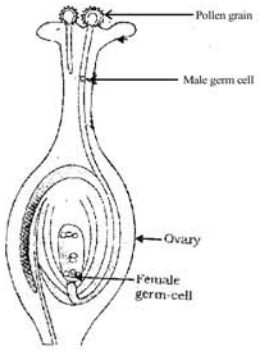
		Ethanol	Ethanoic acid
1.	Smell	pleasant	pungent
2.	Melting point	lower / 156 K	higher / 290 K
3.	Boiling point	lower / 351 K	higher / 391 K

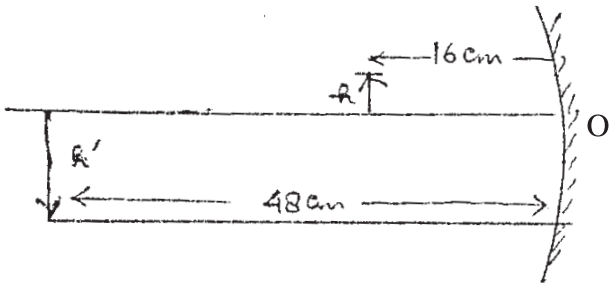
1x3

Chemical Properties

	Ethanol	Ethanoic acid
1.	No action on litmus	turns blue litmus red
2.	Does not react with alkalies	reacts with alkalies to form salt and water
3.	Does not liberate CO_2 with carbonates / bicarbonates	liberates CO_2 with carbonates / bicarbonates

(any two) 1x2

24.	Pollination – Transfer of pollen grain from anther to stigma	1	
	Fertilization – Process of fusion of male and female gametes	1	
			
	Diagram	1	
	Four labellings only if diagram is correct	4x½	5

31/1/1	Expected Answer / Value point	Marks	Total
	OR		
	Testis – formation of sperms, secretion of testosterone	1, 1	
	Seminal vesicle – release secretions to provide medium & nutrition to sperms	1	
	Prostate glands – release secretions to provide medium for transport of sperms	1	
	Vas deferens – delivers sperms from testis to urethra	1	
	Note - No Marks for 'Ureter' as the mark assigned to it has been adjusted in the role of 'testis'		
25.	The conventions are as follows :		
	1. The object is always placed to the left of the mirror.		
	2. All distances parallel to the principal axis are measured from the pole of the mirror.		
	3. All the distances measured to the right of the origin (along + x-axis), i.e., pole are taken as positive while those measured to the left of the origin (along – x-axis), i.e., pole are taken as negative.		
	4. Distances measured perpendicular to and above the principal axis (along + y-axis) are taken as positive.		
	5. Distances measured perpendicular to and below the principal axis (along – y-axis) are taken as negative.	½x5	
		½	

31/1/1	Expected Answer / Value point	Marks	Total
	$m = -3 \quad u = -16$ cm $\quad v = ? \quad f = ?$		
	$m = -\frac{v}{u}$		
	$\therefore v = -48$ cm	½	
	$\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$	½	
	$= \frac{1}{(-48)} + \frac{1}{(-16)}$		
	$\therefore f = -12$ cm		
	Correct substitution and result	1	5
	OR		
	Statement of second law of refraction, i.e., Snell's law	1	
	Mathematical expression : $\frac{\sin i}{\sin r} = \text{Constant}$	½	
	Refractive index of medium B with respect to medium A $\longrightarrow n_{BA}$		
	$n_{BA} = \frac{\text{speed of light in medium A}}{\text{speed of light in medium B}} = \frac{v_A}{v_B}$	1	
	If one of the medium, medium A, is air then this constant is called <u>absolute refractive index</u> or simply <u>refractive index</u>	½	
	i) $n_{ga} = \frac{3}{2} \qquad n_{wa} = \frac{4}{3}$		
	$n_{ga} = \frac{c}{v_g}$		
	$\therefore c = 3 \times 10^8$ m/s	1	
	ii) $n_{wa} = \frac{c}{v_w}$		
	$\therefore v_w = 2.25 \times 10^8$ m/s	1	

31/1/1	Expected Answer / Value point	Marks	Total
	SECTION - B		
26.	D	1	
27.	D	1	
28.	D	1	
29.	C	1	
30.	D	1	
31.	B	1	
32.	B	1	
33.	B	1	
34	C	1	
35.	D	1	
36.	C	1	
37.	C	1	
38.	A	1	
39.	D	1	
40.	D	1	
41.	D	1	

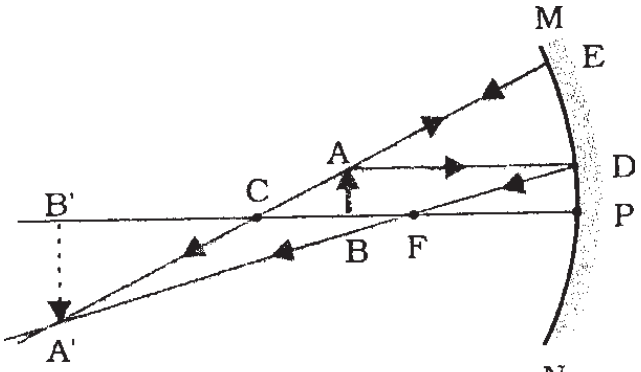
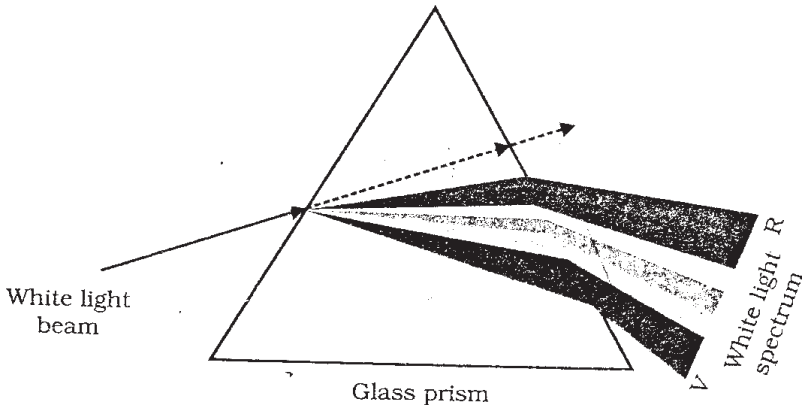
MARKING SCHEME (SA - II)

CLASS X - OUTSIDE DELHI

Code No. **31/1**

SECTION - A

31/1	Expected Answer / Value point	Marks	Total
1.	Ethanol / Ethyl alcohol ; C_2H_5OH	½,½	1
2.	Controls the size of pupil / amount of light entering in the eye.	1	1
3.	(O_3) / Ozone / Free oxygen atoms (O)	1	1
4.	10 joules or 10 J	1	1
5.	i) Na, Si : Third period; they have 3 shells each // C, O, Ne : second period. They have 2 shells each. ii) C, Si : Same group as they have same number of valence electrons / 4 valence electrons	½x4	2
6.	i) 2, 8, 7 as it has 3 shells and 7 valence electrons ii) Valency = 1 as valency = 8 – number of valence electrons	½x4	2
7.	Rhizopus / any other correct example Moisture (moist surface), temperature (favourable), darkness	½ ½x3	2
8.	– Placenta transfers nutrients from mother's blood to the embryo – Provides large surface area for glucose and oxygen to pass from the mother to the embryo – removes waste substances generated by embryo (any two)	1x2	2
9.	i) Ray incident parallel to the principal axis after reflection passes through the focus (for concave mirror) or appears to have diverged from the focus (for convex mirror) ii) Incident ray passing through the principal focus (for concave mirror) or directed towards the focus (for convex mirror) after reflection emerges or appears to emerge parallel to the principal axis.		

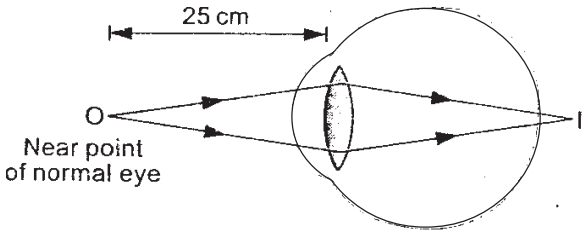
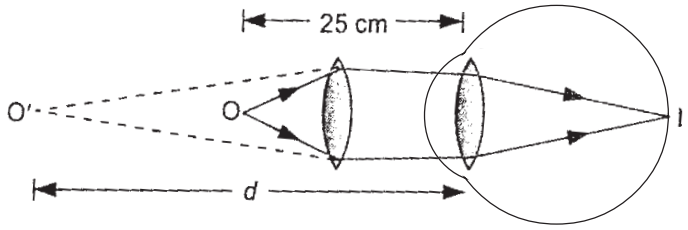
31/1	Expected Answer / Value point	Marks	Total
	iii) Incident ray passing through centre of curvature (for concave mirror) or directed towards the centre of curvature (for convex mirror) is reflected back along the same path		
	iv) A ray incident obliquely to the principal axis towards pole of the mirror is reflected obliquely. The incident ray and the reflected ray make the same angle with the principal axis. (any two)	½x2	
	 (d)		
	Note : A student may take any two of the above rays and construct the ray diagram accordingly	1	2
10.			
	diagram	1	
	direction	½	
	labelling (V – R)	½	2

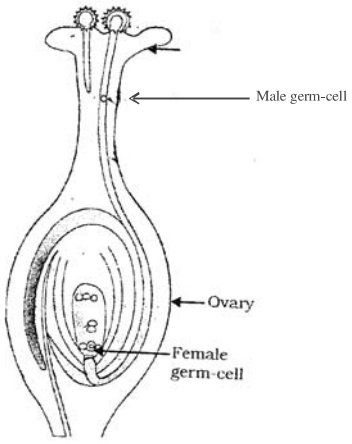
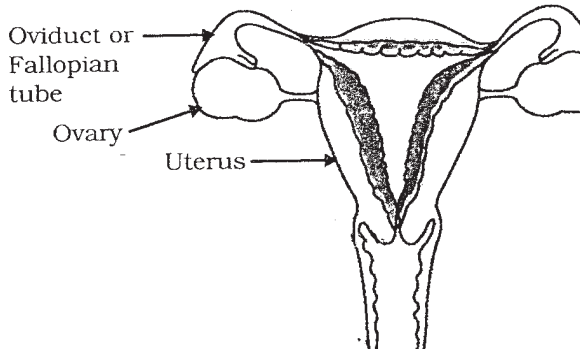
31/1	Expected Answer / Value point	Marks	Total
11.	Due to atmospheric refraction, light coming from star bends towards the normal. Hence the apparent position of the star is slightly different from the actual position	1	
	fig. 11.9 pg. 194		
	diagram	½	
	correct position of image	½	2
12.	– Displaces large number of peasants and tribals without adequate compensation and rehabilitation,		
	– Consumes huge amounts of public money without the generation of proportionate benefits.		
	– Causes deforestation and the loss of biological diversity.	½x3	
	Suggestions -		
	Adequate compensation / Land for rehabilitation / Aforestation	½	2
13.	Carbon dioxide / carbon monoxide / oxides of nitrogen / oxides of sulphur / water vapours (any two products)	½x2	
	Adverse effects		
	Global warming, causes acid rains	½x2	2
14.	Definition of homologous series	1	
	Two examples : CH_3OH and C_2H_5OH (or any other example)		
	Physical properties : molecular mass of the compound / alkyl part	½	
	Chemical properties : functional group	½	3
15.	i) Na	½	
	These elements are of a period and atomic size decreases in a period from left to right.	1	
	ii) Al	½	
	Reactivity of metals decreases from left to right in a period	1	3
16.	– mechanical barrier / use of condoms / use of loop or copper T or any other contraceptive devise – (any one),	½	
	so that sperms do not reach the egg (explanation)	½	

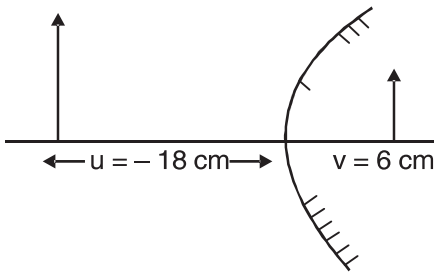
31/1	Expected Answer / Value point	Marks	Total
	– taking oral pills,	½	
	that change hormonal balance so that eggs are not released and		
	fertilization does not occur (explanation)	½	
	– surgical method blocking of fallopian tube / cutting or blocking		
	vas deferens (any one) so that transfer of sperms/egg is prevented	½	
	(explanation)	½	3
17.	– All tall	1	
	– 3:1 (Tall plants : dwarf plants)	1	
	– Dwarf plants	½	
	reason – In F1 generation tall is dominant trait whereas in F2 generation		
	two copies of 'tt' / recessive traits made the plant dwarf	½	3
18.			

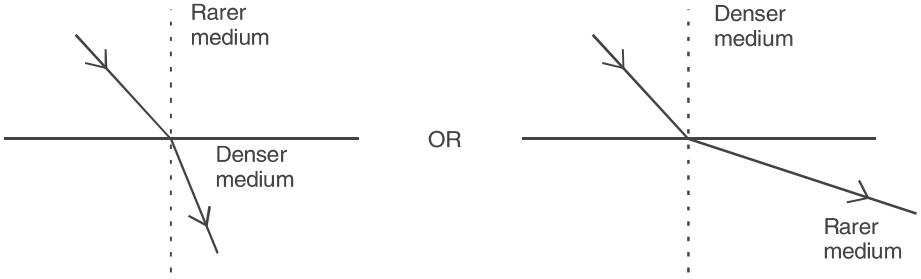
Acquired Traits	Inherited Traits		
– Acquired traits cannot pass on to its progeny / next generation	– Inherted traits can pass to the progeny	½x2	
– cannot direct evolution	– can direct evolution	½x2	
e.g., loss of weight due to starvation, Loss of body part / fractured bones / any other suitable example, (any one)	e.g., skin colour, hair colour or any other suitable example	½x2	3

19.	– The organisms or their body parts, which do not decompose, retain the impression to form fossil.	1	
	– When the earth is dug the fossils found closer to the surface are more recent. (Relative method)	1	
	– By detecting the ratio of different isotopes of the same element in the fossil material (carbon dating)	1	3
20.	i) Concave Mirror.	½	
	Source of light placed at the focus of a concave mirror forms an intense		
	parallel beam of light.	1	
	ii) Convex mirror	½	
	– It always gives erect, virtual and dimnished image of the object.	½	
	– It also has a wider field of view.	½	3

31/1	Expected Answer / Value point	Marks	Total
21.	$\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$	½	
	$\frac{1}{v} - \frac{1}{-16} = \frac{1}{24}$ (correct substitution)	½	
	Position ⟶ $v = -48$ cm (Image is formed 48 cm from the lens on the same side of object)	½	
	Size ⟶ $\frac{h'}{h} = \frac{v}{u}$	½	
	$\therefore h' = 12$ cm	½	
	Nature - Image is virtual / erect and magnified	½	3
22.	Defect – Hypermetropia / long-sightedness / Far-sightedness	½	
	Correction – Using spectacles with convex lens / converging lens of suitable power	½	
	i) 	1	
	ii) 	1	3
23.	Hydrocarbons : Compounds containing carbon and hydrogen atoms only.	1	
	General formula : i) saturated : C_nH_{2n+2} , alkane ,		
1 3	ii) unsaturated : C_nH_{2n} , alkene C_nH_{2n-2} , alkyne } any one	½x4	
	Any structure of <u>one</u> saturated and <u>one</u> unsaturated hydrocarbon	½x2	
	Hydrogenation / addition of hydrogen in presence of catalyst / corresponding equation	1	5

31/1	Expected Answer / Value point	Marks	Total
	OR		
	Definition of detergents	1	
	Any <u>one</u> merit and <u>one</u> demerit	1+1	
	It does not form insoluble substance (scum) with Ca^{2+} or Mg^{2+} ions present in hard water.	2	
24.	Unisexual flowers : Flowers which have either stamens/ male sex organs or carpels (pistils) / female sex organs	½	
	e.g., Papaya / watermelon / any other suitable example	½	
	Bisexual flowers : Flowers which contain both stamens and carpels (Pistils) / male and female sex organs.	½	
	e.g. : Hibiscus / mustard / any other suitable example	½	
	 Diagram	1½	
	Three labelling	1½	5
	OR		
			
	Diagram with correct location of three parts	1½	

31/1	Expected Answer / Value point	Marks	Total
	i) Ovary		
	ii) Fallopian tube / oviduct		
	iii) uterus	½x3	
	The unfertilized egg lives for about one day only,gets removed.	1	
	The process being called as mensuration	1	
25.	The conventions are as follows :		
	1. The object is always placed to the left of the mirror.		
	2. All distances parallel to the principal axis are measured from the pole of the mirror.		
	3. All the distances measured to the right of the origin (along + x-axis), i.e., pole are taken as positive while those measured to the left of the origin (along – x-axis), i.e., pole are taken as negative.		
	4. Distances measured perpendicular to and above the principal axis (along + y-axis) are taken as positive.		
	5. Distances measured perpendicular to and below the principal axis (along – y-axis) are taken as negative.	½x5	
	Indentification of nature – convex / diverging	½	
			
	Diagram	½	
	Calculation of focal length ($f = +9$ cm)	1½	5
	OR		
	For oblique incidence, bending of a light ray from its straight line path as it travels from one medium to another of different optical density.	½	

31/1	Expected Answer / Value point	Marks	Total
			
	Rarer and denser medium to be shown in the diagram	½	
	Direction of ray of light to be shown	½	
	Snell's law : Statement	1	
	Mathematical expression	½	
	$n_{ag} = \frac{\text{speed of light in glass}}{\text{speed of light in air}} = \frac{2}{3}$	½	
	v_a 3×10^8 m/s	½	
	$n_w = \frac{\text{speed of light in air}}{\text{speed of light in water}} = \frac{4}{3}$	½	
	v_w 2.25×10^8 m/s	½	
	SECTION - B		
26.	D	1	
27.	D	1	
28.	A	1	
29.	C	1	
30.	A	1	
31.	B	1	
32.	D	1	
33.	D	1	
34	C	1	
35.	C	1	

31/1	Expected Answer / Value point	Marks	Total
36.	D	1	
37.	A	1	
38.	A	1	
39.	C	1	
40.	B	1	
41.	D	1	1x16