

**MARKING SCHEME
CLASS X – FOREIGN**

Code No. 31/2/1

Expected Answer/ Value point SECTION – A		Marks	Total
Q1.	Carbon, Due to strong C—C bond	½, ½	1
Q2.	Budding / Regeneration Asexual reproduction	1/2 1/2	1
Q3.	It is the physical, chemical and biological conditions of the region.		1
Q4.	Focal length of both the mirrors will be the same / 1: 1 Mirror AB will always form virtual image as it is a diverging / convex mirror	1 ½+ ½	2
Q5.	The development which can be maintained for a long time without undue damage to the environment Two objectives:- i)To provide the economic well being to the present and future generation , ii)To maintain a healthy environment and life support system	1 ½ + ½	2
Q6.	i)By the local people for the fulfilment of their daily needs ii)By industrialists- deforestation for industrial needs iii)Deforestation for developmental projects – building,roads, dams etc. iv)By tourists or in making arrangements for tourists	½ ½, ½ ½	2
Q7.	Ethanol, C ₂ H ₅ OH /C ₂ H ₆ O $C_2H_5OH \rightarrow CH_2 = CH_2 + H_2O$ Ethene Role of conc H ₂ SO ₄ – dehydrating agent	½,1/2 1, ½ ½	3
Q8.	P—Ethanol, Q—Ethanoic acid ,R—Hydrogen $CH_3CH_2OH \xrightarrow{\text{Acidified } K_2Cr_2O_7} CH_3COOH$ $2CH_3COOH + 2Na \longrightarrow 2 CH_3COONa + H_2$	3x ½ 1 ½	3
Q9.	i)Aim of classification--systematic study of the known elements ii)Basic property—Atomic number iii)Properties of the elements are a periodic function of their atomic numbers. iv)Metals on the left v)Non–metals on the right. vi)Metalloids at the border of metals and beginning of non-metals		3
Q10.	X(20)--- 2,8,8,2.It is calcium. Second group,fourth period $CaO + H_2O \longrightarrow Ca(OH)_2$	6x ½ ½, ½ ½, ½ 1	3
Q11.	Pollination – process of transfer of pollen grains from the anther to stigma of the flower Two types – Self pollination and cross pollination Self pollination is the transfer of pollen grains from anther to stigma of the same flower, whereas in cross pollination transfer of pollen grains is from anther of one flower to the stigma of another flower.	1 ½,1/2 1	3

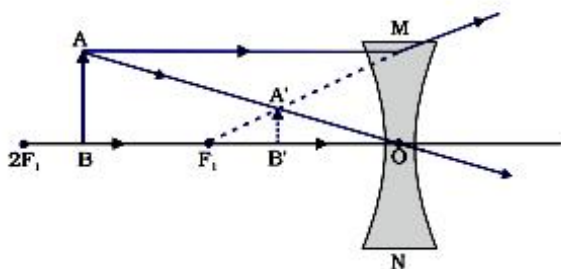
- Q12. i) Each piece regenerates into a new planaria 1
 ii) Its filaments break into smaller pieces/fragments and each fragment gives rise to a new filament. 1
 iii) It releases spores which germinate into new mycelium in moist conditions. 1 3

- Q13. Two major processes namely formation of gametes and fusion of gametes constitute sexual reproduction 1
 Significance—i) Incorporates the process of combining DNA from two different individuals during reproduction.
 ii) Increases genetic variation.
 iii) Promotes diversity in the offsprings.
 iv) Plays a role in the origin of new species. 4x ½ 3

- | | | | | | |
|--|--|---|-------|--|---|
| <p>Q14. • Dominant trait
 i) The trait which appears in the F1 progeny, is dominant
 ii) It appears in more numbers
 • 75% of the plants were with round seeds</p> | | <p>Recessive trait
 i) the trait which remains hidden or which does not appear in the F1 progeny is the recessive trait.
 ii) It appears in less number</p> | | | |
| | | | 2 x 1 | | |
| | | | 1 | | 3 |

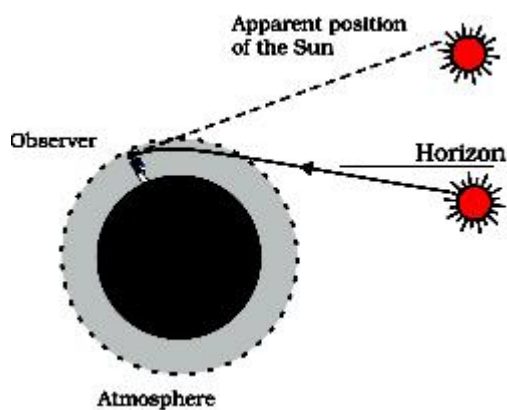
- Q15. Three factors / evidences and their roles
 i) Analogous organs – organisms with similar looking organs may have different origin
 ii) Homologous organs—organisms with apparently different looking organs may have similar origin.
 iii) Fossils—allow us to make estimates of how far back evolutionary relationships go. Fossils when chronologically arranged help in tracing the evolutionary history of an organism. 3x1 3

- Q16. Diverging lens / concave lens ½



Focal length = -20cm (lens is concave, hence f is $-ve$) ½
 Power = $P = 1/f = 100/-20\text{cm} = -5\text{D}$ ½ + ½ 3

- Q17. Advanced sunrise – When the sun is slightly below the horizon light rays coming from the sun travel from the rarer to denser medium layers of air because of atmospheric refraction of light, light appears to come from a higher position above the horizon. Thus the sun appear earlier than actual sun rise 1
 Delayed sun set – Same reason as similar refraction occurs at the sunset / or 1



Twinkling of stars – the light coming from the stars gets refracted several times before reaching the observers eye. Due to change in physical condition of the atmosphere the light sometimes reaches the observer and sometimes it doesn't, hence they appear to twinkle

1 3

- Q18. (i) Fossil fuels take millions of years in their formation, hence are exhaustible/need to be conserved to provide energy for a longer duration / sustainable development
- (ii) Walking short distances/ use of public transport/ where possible switch off unnecessary lights / repair of faulty water taps/use of efficient appliances/ promotion of solar energy/any other correct option (any two)
- (iii) concerned about natural resources /environment /assertive/or any other (any two)

1,1,1 3

Q19. a)

Solution	Blue Litmus Paper	Red Litmus Paper	Sodium Metal	
Ethanol	No change	No change	Hydrogen gas	1
Ethanoic acid	Turns red	No change	Hydrogen gas	1
Soap	No change	Turns blue	Hydrogen gas	1

(full credit may be given to the candidate with the answer showing test only with litmus paper)

- b) Hard water contains calcium ions or magnesium ions or both. These ions on reacting with soap solution forms insoluble substance called scum.

1+1 5

- Q20. • Vegetative propagation is the development of a new plant from the vegetative parts / roots ,stem and leaves of a plant
- Advantages – i) such plants can bear flowers and fruits earlier than those produced from seeds
- ii) Allows propagation of plants (banana, orange etc) that have lost capacity to produce seeds.
- iii) All plants produced are genetically similar to the parent plant and hence have all its characters.
- Jasmine, banana

1
3x1
½, ½ 5

- Q21. a) Reasons – i) Pea plant is small and easy to grow.
- ii) A large number of true breeding varieties of pea plant are available.
- iii) Short life cycle.
- iv) Both self and cross pollination can be made possible (any two reasons)

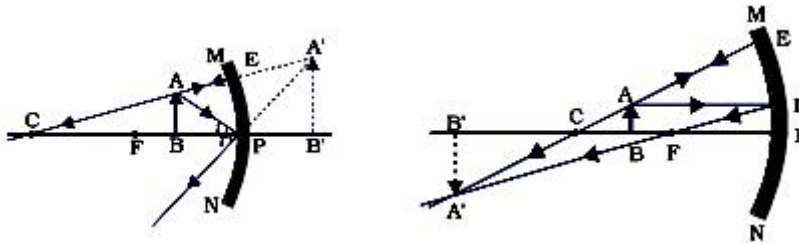
2 x ½

- b) Contrasting characters ; 2 x ½
 Round /Wrinkled seeds
 Tall/Short plants
 White /purple flowers
 Green / yellow seeds (or any other) (any two)
 c) When Mendel crossed two pea plants with a pair of contrasting characters only one character appeared in all the members of F1 progeny, the others remain hidden .

On selfing F1, the hidden characters reappeared in just 25% of the offsprings and the other 75% shared the characters expressed in F1.
 Mendel concluded that the character which expresses itself in F1 and in 75% of the individuals of F2 is dominating while the other is recessive .(or same thing can be explained by using an example)

1,1,1 5

- Q22. $f_a = 10 \text{ cm}; f_b = 15 \text{ cm}; f_c = 20 \text{ cm}$
 $u_1 = 10 \text{ cm}; u_2 = 20 \text{ cm}; u_3 = 30 \text{ cm}$
 a) $m = -1$ means $u = 2f$, for A $\rightarrow u_2$, for B $\rightarrow u_3$ 3 x ½
 b) Mirror B or C – distance should be less than focal length for erect and magnified image, face is generally kept at a distance more than 10 cm 3 x ½
 c)



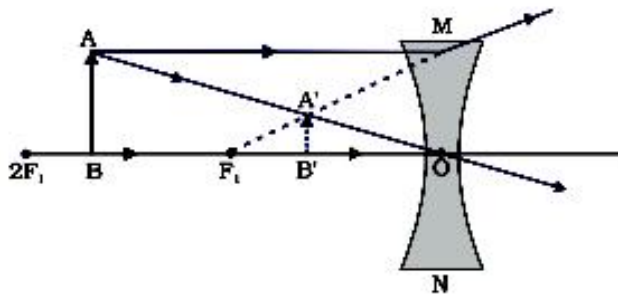
1,1 5

- Q23. $f = -20 \text{ cm}; h_1 = 6 \text{ cm}; v = -15 \text{ cm}; u = ?$

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

$h_2 = \frac{v}{u} \times h_1 = \frac{-15 \text{ cm}}{-60 \text{ cm}} \times 6 \text{ cm} = +1.5 \text{ cm}$ diminished erect 1

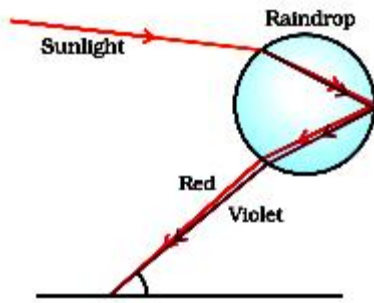


2 5

- Q24. a) Definition of Dispersion: Splitting of white light into seven constituent colors by a prism. 1
 Cause of dispersion – when white light passes through a glass prism, different 1

constituent colors bend through different angles with respect to the incident ray and hence are separated.

b)



Conditions for observing a rainbow – i) after the rainfall/ at a water fountain
ii) sun is at the back of the observer

2

½, ½ 5

SECTION – B

25) b

26) c

27) a

28) d

29) c

30) c

31) d

32) a

33) b

9 x 1 9

Q34. Physical properties– i) smell like vinegar, ii) colourless liquid
Chemical properties – i) turns blue litmus red, ii) gives brisk effervescence with sodium carbonate.

2x ½

2x ½ 2

Q35. Binary fission
Initial stage

final stage ,

½



process starts with elongation of nucleus

2x 1/2,

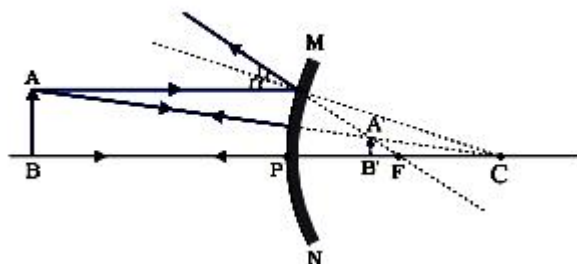
1/2 2

Q36. a) Towards the lens
b) Size decreases gradually
c) Nearly 30 cm from the lens
d) Intensity of the image gradually increases

4 x ½ 2

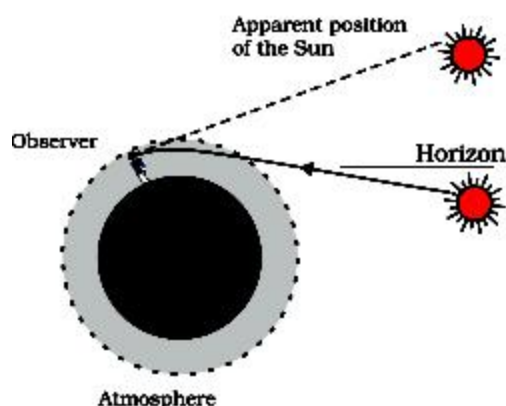
Q10.	i) Aim of classification—systematic study of the known elements ii) Basic property—Atomic number iii) Properties of the elements are a periodic function of their atomic numbers. iv) Metals on the left v) Non–metals on the right. vi) Metalloids at the border of metals and beginning of non-metals	6x ½	3						
Q.11	i) Each piece regenerates into a new planaria ii) Its filaments break into smaller pieces/fragments and each fragment gives rise to a new filament. iii) It releases spores which germinate into new mycelium in moist conditions.	1 1 1	3						
Q.12	i) Stamen and Carpel ii) located in the flower iii) carpel is made of three parts – the bottom swollen part is ovary , middle elongated part is the style ,terminal sticky part is stigma.	½, ½ ½ 3x ½	3						
Q13.	Two major processes namely formation of gametes and fusion of gametes constitute sexual reproduction Significance—i) Incorporates the process of combining DNA from two different individuals during reproduction. ii) Increases genetic variation. iii) Promotes diversity in the offsprings. iv) Plays a role in the origin of new species .	1 4x ½	3						
Q14.	i) Speciation – origin of new species from pre–existing ones. ii) Genetic drift is flow of genes from one population to another by chance factor or randomly .Over generation it will accumulate different changes in different population iii) In addition, natural selection operates differently in different population selecting the fittest /favorable feature in both the population. Over a long period of time the differences in the two population may become so drastic that they no longer reproduce with each other and thus give rise to new species.	1 1 1	3						
Q15.	<table border="0" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%; border-right: 1px solid black; padding: 5px;">• Dominant trait</th> <th style="width: 50%; padding: 5px;">Recessive trait</th> </tr> </thead> <tbody> <tr> <td style="border-right: 1px solid black; padding: 5px;">i) The trait which appears in the F1 progeny, is dominant</td> <td style="padding: 5px;">i) the trait which remains hidden or which does not appear in the F1 progeny is the recessive trait.</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;">ii) It appears in more numbers.</td> <td style="padding: 5px;">ii) It appears in less number.</td> </tr> </tbody> </table>	• Dominant trait	Recessive trait	i) The trait which appears in the F1 progeny, is dominant	i) the trait which remains hidden or which does not appear in the F1 progeny is the recessive trait.	ii) It appears in more numbers.	ii) It appears in less number.	2x1	
• Dominant trait	Recessive trait								
i) The trait which appears in the F1 progeny, is dominant	i) the trait which remains hidden or which does not appear in the F1 progeny is the recessive trait.								
ii) It appears in more numbers.	ii) It appears in less number.								
	• 75% of the plants were with round seeds.	1	3						

Q16. Convex mirror ½



Use of convex mirror—as rear view mirror in vehicles 1
 Why—always gives erect image with large field of view ½

Q17. Advanced sunrise – When the sun is slightly below the horizon light rays coming from the sun travel from the rarer to denser medium layers of air because of atmospheric refraction of light, light appears to come from a higher position above the horizon. Thus the sun appears earlier than actual sunrise 1
 Delayed sun set – Same reason as similar refraction occurs at the sunset / OR



Twinkling of stars – the light coming from the stars gets refracted several times before reaching the observer's eye. Due to change in physical condition of the atmosphere the light sometimes reaches the observer and sometimes it doesn't, hence they appear to twinkle 1

Q18. (i) Fossil fuels take millions of years in their formation, hence are exhaustible/need to be conserved to provide energy for a longer duration / sustainable development 1
 (ii) Walking short distances/ use of public transport/ where possible switch off unnecessary lights / repair of faulty water taps/use of efficient appliances/ promotion of solar energy/any other correct option (any two) 1
 (iii) concerned about natural resources /environment /assertive/or any other (any two) 1 3

Q19. 2

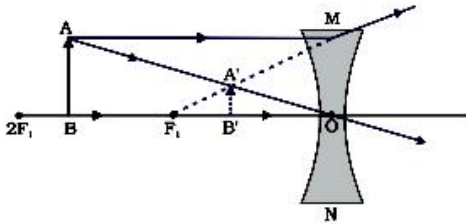
$f = -25\text{cm}; \quad h_1 = 10\text{cm}; \quad v = -20\text{cm}; \quad u = ?$

Lens formula: $\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$ ½

$$\Rightarrow u = \frac{vf}{f-v} = \frac{-20\text{cm} \times -25\text{cm}}{-25\text{cm} - (-20\text{cm})}$$

$$= \frac{500}{-5} = -100\text{cm}$$

$$h_2 = \frac{v}{u} \times h_1 = \frac{-20\text{cm}}{-100\text{cm}} \times 10\text{cm} = +2\text{cm} \text{ erect image}$$



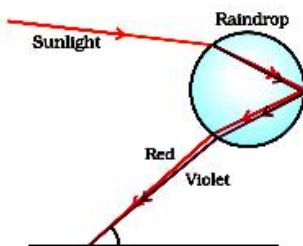
2 5

- Q20. a) Reasons – i) Pea plant is small and easy to grow.
 ii) A large number of true breeding varieties of pea plant are available.
 iii) Short life cycle.
 iv) Both self and cross pollination can be made possible
 (any two reasons) 2x 1/2

- b) Contrasting characters ;
 Round /Wrinkled seeds
 Tall/Short plants
 White /purple flowers
 Green / yellow seeds (or any other) (any two) 2x 1/2

- c) When Mendel crossed two pea plants with a pair of contrasting characters only one character appeared in all the members of F1 progeny, the others remain hidden .
 On selfing F1, the hidden characters reappeared in just 25% of the offsprings and the other 75% shared the characters expressed in F1.
 Mendel concluded that the character which expresses itself in F1 and in 75% of the individuals of F2 is dominating while the other is recessive .(or same thing can be explained by using an example) 1 5

- Q21. a) Definition of Dispersion: Splitting of white light into seven constituent colors by a prism. 1
 Cause of dispersion – when white light passes through a glass prism, different constituent colors bend through different angles with respect to the incident ray and hence are separated. 1
 b)



2

- Conditions for observing a rainbow --- i) after the rainfall/ at a water fountain
 ii) sun is at the back of the observer

1/2, 1/2 5

Q.22

$f_a = 10 \text{ cm}; f_b = 15 \text{ cm}; f_c = 20 \text{ cm}$

$u_1 = 10 \text{ cm}; u_2 = 20 \text{ cm}; u_3 = 30 \text{ cm}$

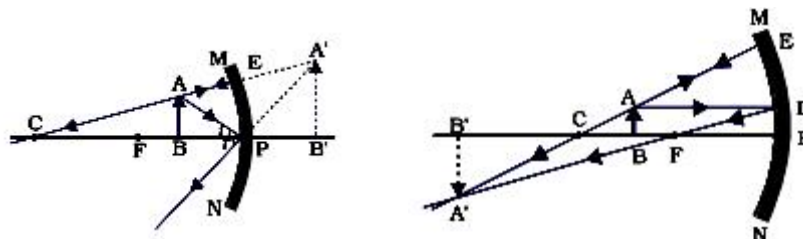
a) $m = -1$ means $u = 2f$, for A $\rightarrow u_2$, for B $\rightarrow u_3$

3 x 1/2

b) Mirror B or C – distance should be less than focal length for erect and magnified image, face is generally kept at a distance more than 10 cm

3 x 1/2

c)



1,1 5

Q23.

- Vegetative propagation is the development of a new plant from the vegetative parts / roots, stem and leaves of a plant
- Advantages– i) such plants can bear flowers and fruits earlier than those produced from seeds
- ii) Allows propagation of plants (banana, orange etc) that have lost capacity to produce seeds.
- iii) All plants produced are genetically similar to the parent plant and hence have all its characters.
- Jasmine, banana

1

3x1
1/2, 1/2 5

Q.24

a)	Solution	Blue Litmus Paper	Red Litmus Paper	Sodium Metal	
	Ethanol	No change	No change	Hydrogen gas	1
	Ethanoic acid	Turns red	No change	Hydrogen gas	1
	Soap	No change	Turns blue	Hydrogen gas	1

(full credit may be given to the candidate with the answer showing test only with litmus paper)

b) Hard water contains calcium ions or magnesium ions or both. These ions on reacting with soap solution forms insoluble substance called scum.

1+1 5

SECTION – B

25)a

26) b

27) c

28) d

29) c

30) d

31) b

32) a

33) c

9x1 9

Q34.

- Towards the lens
- Size decreases gradually
- Nearly 30 cm from the lens
- Intensity of the image gradually increases

4 x 1/2 2

Q35.

Physical properties– i) smell like vinegar, ii) colourless liquid
Chemical properties – i) turns blue litmus red, ii) gives brisk effervescence with sodium carbonate.

2x1/2
2x1/2 2

Q36. Binary fission
Initial stage

final stage ,

$\frac{1}{2}$



process starts with elongation of nucleus

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

$\frac{1}{2}$ 2

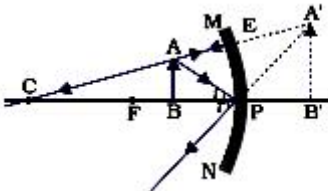
Strictly Confidential- (For Internal and Restricted Use Only) Secondary School Examination
SUMMATIVE ASSESSMENT - II
March 2016

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**

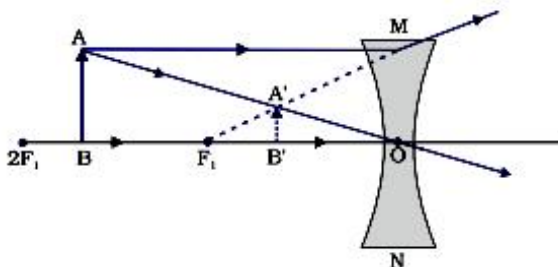
Code No. 31/2/3

	Expected Answer/ Value point	Marks	Total
SECTION – A			
Q1.	A Homologous series is the family of organic compound having the same functional group ,and the successive (adjacent) members of which differ by CH ₂ unit or 14 mass unit.	1	1
Q2.	Pollination allows pollen grains that produce male germ cell to reach the carpel which contain the female germ cell/egg, thus fertilization which involves fusion of male and female germ cells can only occur after pollination .	½, ½	1
Q3.	When CFC'S reach upper layers of the atmosphere ,they cause depletion of ozone layer, and allow harmful UV radiations to reach the surface of the earth to create health hazards .	½+ ½	1
Q4.	i) Concave mirror ii) Between the pole and focus	½ ½	
		1	2
Q5.	i)By the local people for the fulfilment of their daily needs ii)By industrialists- deforestation for industrial needs iii)Deforestation for developmental projects – building,roads, dams etc. iv)By tourists or in making arrangements for tourists	1/2 ½ 1/2 1/2	2
Q.6	The development which can be maintained for a long time without undue damage to the environment Two objectives:- i)To provide the economic well being to the present and future generation , ii)To maintain a healthy environment and life support system	1 ½+1/2	2
Q7.	P—Ethanol, Q—Ethanoic acid ,R—Hydrogen $\text{CH}_3\text{CH}_2\text{OH} \xrightarrow{\text{Acidified K}_2\text{Cr}_2\text{O}_7} \text{CH}_3\text{COOH}$ $2\text{CH}_3\text{COOH} + 2\text{Na} \longrightarrow 2 \text{CH}_3\text{COONa} + \text{H}_2$	3 x ½ 1 ½	3
Q.8	Ethanol, C ₂ H ₅ OH /C ₂ H ₆ O $\text{C}_2\text{H}_5\text{OH} \rightarrow \text{CH}_2 = \text{CH}_2 + \text{H}_2\text{O}$ <p style="text-align: center;">Ethene</p> Role of conc H ₂ SO ₄ – dehydrating agent	½,1/2 1 1/2 ½	3

- Q9. a) Configuration of X (19) = 2,8,8,1 ½
 b) Fourth period , valency =1 ½, ½
 c) Basic oxide (X₂O) ½
 d) X₂O + H₂O \longrightarrow 2 XOH 1 3
- Q10. i) increases down a group ½
 Reason—at each succeeding element down a group the number of shells increases, so the distance of the valence shell from the nucleus increases, the effective nuclear force of attraction decreases on the last shell electrons decreases ,so it becomes easy for the atom to loose electrons. 1
 ii)Decreases in a period left to right. ½
 Reason – As the effective nuclear charge on the valence shell electron increases, the attraction between the valence electron and nucleus increases, so it becomes difficult to lose electrons. 1 3
- Q11. i)Each piece regenerates into a new planaria 1
 ii)Its filaments breaks into smaller pieces/fragments and each fragment gives rise to a new filament. 1
 iii)It releases spores which germinate into new mycelium in moist conditions. 1 3
- Q12. i)Testis – to produce male gametes // sperm or male hormone / testosterone.
 ii)Scrotum – to provide optimal temperature to testis for the formation of sperm.
 iii)Vas deferens--- to deliver the sperms to the urinary bladder.
 iv)Prostrate glands--- to secrete the fluid which provides nutrition and medium for transport of sperms. 4x ½
 b) i)Regulates formation of sperms ,ii) brings about the changes in boys during adolescence ½, ½ 3
- Q13. Pollination – process of transfer of pollen grains from the anther to stigma of the flower 1
 Two types – Self pollination and cross pollination ½,1/2
 Self pollination is the transfer of pollen grains from anther to stigma of the same flower, whereas in cross pollination transfer of pollen grains is from anther of one flower to the stigma of another flower. 1 3
- Q14. Three factors / evidences and their roles
 i) Analogous organs – organisms with similar looking organs may have different origin
 ii) Homologous organs—organisms with apparently different looking organs may have similar origin.
 iii) Fossils—allow us to make estimates of how far back evolutionary relationships go. Fossils when chronologically arranged help in tracing the evolutionary history of an organism. 3x1 3
- Q15. Mendel conducted breeding experiments with garden peas--
 a) He studied (pure) plants of a tall/short varieties.
 b) He crossed them and obtained F1 progeny.
 c) He found that F1 progeny was all tall plants.
 d) He selfed the (hybrid) plants of F1 progeny.
 e) He found that in F2 progeny there were tall as well as short plants.
 f) The three quarter plants were tall and one quarter was short .
 (or any other contrasting character may be taken.) 6x ½ 3

- Q16. i) During morning sun rays travel large distances in the earth's atmosphere, and in this process the shorter wavelengths scatter away and only large wave length (red light) reach us. 1
- ii) At noon sun is overhead and light rays travel comparatively smaller distance and only little of blue / violet light scatter, so sun appears white. 1
- iii) No atmosphere in outer space for scattering, so sky appears dark. 1 3

- Q17. Diverging lens / concave lens 1/2



Focal length = -20cm (lens is concave, hence f is $-ve$)

Power = $P = 1/f = 100/-20\text{cm} = -5\text{D}$

1/2
1/2 + 1/2 3

- Q18. (i) Fossil fuels take millions of years in their formation, hence are exhaustible/need to be conserved to provide energy for a longer duration / sustainable development
- (ii) Walking short distances/ use of public transport/ where possible switch off unnecessary lights / repair of faulty water taps/use of efficient appliances/ promotion of solar energy/any other correct option (any two)
- (iii) concerned about natural resources /environment /assertive/or any other (any two) 1,1,1 3

- Q19. Functions :- Ovary – i) production of female gamete
ii) production of female hormone
Fallopian tube – i) site of fertilization, ii) transfer of female gamete from ovary.
Uterus– i) implantation of zygote /fertilise egg/embryo.
ii) Nourishment to the developing embryo.

6x 1/2

• Menstruation –i) it is the periodic breakdown of uterine lining and its removal along with blood and mucous in (post pubertal stage of a) human female.

1

ii) Uterine lining is required to nourish the embryo that is formed if fertilization takes place. In absence of fertilization, the lining is not required and hence is shed in the form of mensuration

1 5

- Q20. • Soap molecules have two ends – at one end is the hydrocarbon chain which is water repellent, where as at the other end there is the ionic part which is water soluble end. When soap is dissolved in water it forms a group of many molecules, known as micelle. 1
- These micelles are formed because their hydrocarbon chains come together And the polar ends are projected outwards. 1

- micelle formation in ethanol will not occur because the hydrocarbon chain end of the soap will dissolve in ethanol. 1
 - Soaps in the form of micelle are able to clean dirty clothes having oily spots, as the oily dirt is collected in the centre of the micelle, which forms an emulsion in water and on rinsing, the water washes away the micelles with dirt attached to them. 2 5
- Q21.
- Fossils—the remains/impression of dead /decayed plants /animals. 1
 - Formation of fossils --- formed when dead organisms are compressed under high pressure deep under the soil. 1
 - Determination of age of fossil—two methods i) Relative method ii) Carbon dating method ½
½
 - The presence of fossilized remains of the organisms is the evidence of existence of the organisms millions of years ago, out of which some have become extinct.
 - Fossil also helps in the determination of the connecting links between various groups and their origin from the primitive ones. 1+1 5

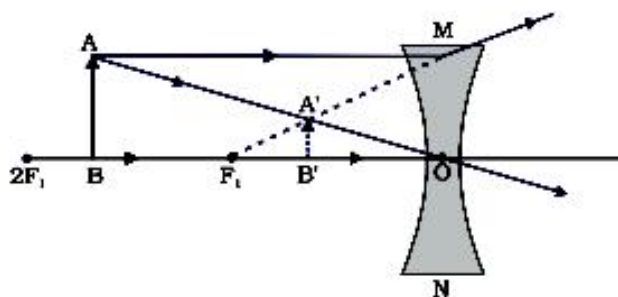
Q22. $f = -20\text{cm}; \quad h_1 = 6\text{cm}; \quad v = -15\text{cm}; \quad u = ?$

Lens formula: $\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$ ½

$$\Rightarrow u = \frac{vf}{f - v} = \frac{-15\text{cm} \times -20\text{cm}}{-20\text{cm} - (-15\text{cm})}$$

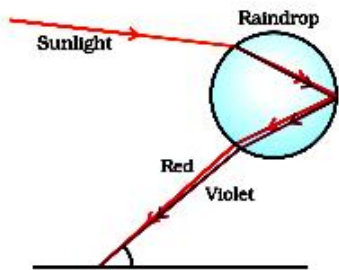
$= -60\text{cm}$ *object at 60cm from the lens* 1
½

$$h_2 = \frac{v}{u} \times h_1 = \frac{-15\text{cm}}{-60\text{cm}} \times 6\text{cm} = +1.5\text{cm} \text{ diminished erect}$$
 1



2 5

- Q23. a) Definition of Dispersion: Splitting of white light into seven constituent colors by a prism. 1
- Cause of dispersion – when white light passes through a glass prism, different constituent colors bend through different angles with respect to the incident ray and hence are separated. 1
- b) 2



Conditions for observing a rainbow --- i) after the rainfall/ at a water fountain
 ii) sun is at the back of the observer

1/2, 1/2 5

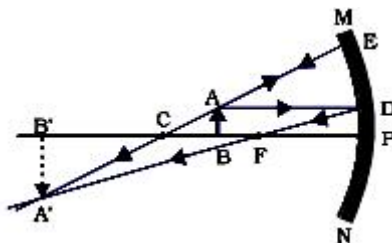
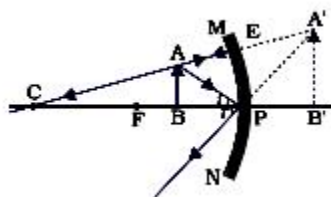
Q24. $f_a = 10 \text{ cm}; f_b = 15 \text{ cm}; f_c = 20 \text{ cm}$
 $u_1 = 10 \text{ cm}; u_2 = 20 \text{ cm}; u_3 = 30 \text{ cm}$

- a) $m = -1$ means $u = 2f$, for A $\rightarrow u_2$, for B $\rightarrow u_3$
 b) Mirror B or C – distance should be less than focal length for erect and magnified image, face is generally kept at a distance more than 10 cm

3 x 1/2

3 x 1/2

c)



1,1 5

SECTION – B

- | | | |
|-------|-------|-------|
| 25) b | 26) d | 27) c |
| 28) a | 29) a | 30) b |
| 31) c | 32) d | 33) c |

9 x 1 9

- Q34. a) Towards the lens
 b) Size decreases gradually
 c) Nearly 30 cm from the lens
 d) Intensity of the image gradually increases

4 x 1/2 2

- Q35. Physical properties– i) smell like vinegar, ii) colorless liquid
 Chemical properties – i) turns blue litmus red, ii) gives brisk effervescence with sodium carbonate.

2x 1/2

2x 1/2 2

- Q36. Binary fission
 Initial stage final stage ,

1/2
 2x 1/2



process starts with elongation of nucleus

1/2 2