

MARKING SCHEME
CLASS X – DELHI

Code No. 31/1/1

Expected Answer/ Value point		Marks	Total
SECTION – A			
Q 1.	(i) C_3H_6	$\frac{1}{2}$	
	(ii) C_5H_8	$\frac{1}{2}$	1
Q2.	Leaf (notches)	1	1
Q3.	Natural ecosystem – Forest/ Lake/ Pond/ River (Any two)	$\frac{1}{2} + \frac{1}{2}$	1
Q4.	<ul style="list-style-type: none"> When the object is placed in front of the mirror – (i) between its pole and focus (ii) between the focus and centre of curvature In case (i) the image is virtual and erect In case (ii) the image is real and inverted 	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	2
Q5.	Advantages of watershed management –		
	(i) mitigates drought and floods		
	(ii) increase the life of the dams and reservoirs downstream		
	(iii) increases the biomass production and thereby the income of the watershed community.		
	(iv) helps in maintaining ecological balance by scientific conservation of soil and water. or any other		
	(Any four)	4 x $\frac{1}{2}$	2
Q6.	<ul style="list-style-type: none"> In West Bengal the Sal forests had been very badly degraded. A forest officer involved villagers in protection of Sal forest and gave them employment in silviculture and harvesting operations. Villagers were allowed to collect firewood and fodder on a nominal payment. Within a period of 10 years the previously worthless forests became valuable. 	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	2
Q7.	<ul style="list-style-type: none"> Covalent compounds are those compounds which are formed by sharing of electrons between two atoms / which contain covalent bonds. Covalent compounds are different from ionic compounds because the ionic compounds are formed by the transference of electrons. Three characteristics of covalent compounds: 	1 $\frac{1}{2}$	

	(i) Generally have low melting and boiling points.		
	(ii) Generally insoluble or less soluble in water but soluble in organic solvents.		
	(iii) Do not conduct electricity. (Or any other characteristic)	(Any three)	3 x ½ 3
Q8.	(i) Esters		½
	<u>Chemical equation –</u>		
	$\text{CH}_3 - \overset{\text{O}}{\parallel} \text{C} - \text{OH} + \text{CH}_3 \text{CH}_2\text{OH} \xrightarrow{\text{Conc. H}_2\text{SO}_4} \text{CH}_3 - \overset{\text{O}}{\parallel} \text{C} - \text{O} - \text{CH}_2 - \text{CH}_3 + \text{H}_2\text{O}$		1
	Product's chemical name – Ethyl ethanoate		½
	(ii) Conc. H ₂ SO ₄ acts as a dehydrating agent (Helps in the removal of water formed in the reaction)		1 3
Q9.	(i) It is a metal		½
	Since it has two electrons in its outermost shell/ two valence electrons, which it can lose easily.		½
	(ii) K (19) is placed before Ca (20) in the same period/ fourth period.		½
	Since the atomic radius decreases along a period, the atomic radius of calcium is smaller than that of potassium.		½
	(iii) The formula of oxide of calcium is CaO, because the valency of calcium as well as that of oxygen is 2.		½+½ 3
Q10.	• The electronic configuration (2, 8, 2) of the element 'M' suggests that it belongs to group 2 and period 3 of the Modern Periodic Table and its valency is 2.		½+½
	• The chemical formula of the compounds are –		
	M (NO ₃) ₂ / Mg (NO ₃) ₂ ; MSO ₄ / MgSO ₄ ; M ₃ (PO ₄) ₂ / Mg ₃ (PO ₄) ₂ .		3x½
	• 'M' will form ionic compounds by losing two electrons.		½ 3
Q11.	• When organisms reproduce asexually, only mitotic divisions are involved and the chromosome number remains the same. // During asexual reproduction the DNA (in the chromosomes) of the cells involved are copied and then equally divided among the two daughter cells formed. Thus, chromosome number remains unchanged.		½
	• In sexual reproduction, organisms produce gametes through a special type of division, meiosis – reductional division, in which the original number of chromosomes becomes half. These two gametes combine to form the zygote and the original number of chromosomes is restored. // In sexual reproduction specialized cells/ germ cells with only half the number of chromosomes are formed. When these germ cells from two individuals combine to form a new individual, the original chromosome number is restored.		½

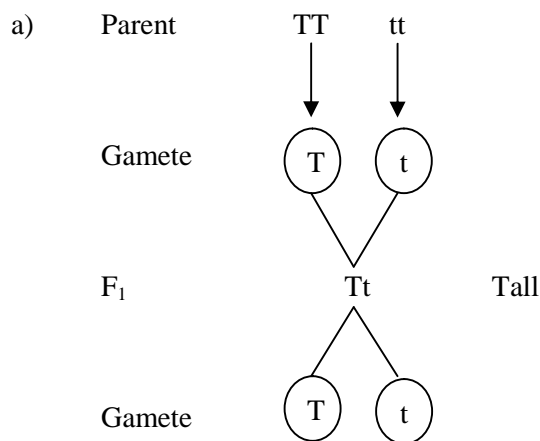
- Example:- In humans, the parents father and mother each have 46 or 23 pairs of chromosomes. In the gametes – the sperm has half the number of chromosomes i.e., 23 and the egg also has 23 chromosomes, when the sperm and the egg fuse, the zygote has 46 or 23 pairs of chromosomes. Thus, the chromosome number remains constant.

- Q12. A Anther – it produces pollen grains $\frac{1}{2}, \frac{1}{2}$
- B Style – it provides the path through which the Pollen tube grows and reaches the ovary $\frac{1}{2}, \frac{1}{2}$
- C Ovary – it contains ovules and each ovule has an egg cell/ female gamete. It develops into fruit after fertilization. $\frac{1}{2}, \frac{1}{2}$ 3

- Q13 Three methods of contraception –
- (i) Barrier method or mechanical method/ Condom/ Diaphragm, to prevent the meeting of sperms and ova.
- (ii) Chemical method/ Oral pills, Changes the hormonal balance of the female partner so that the eggs are not released.
- (iii) Surgical method – to block the vasdeferens in males/ vasectomy or the fallopian tube (oviduct) in females/ tubectomy, to prevent the transfer of sperms or egg and hence no fertilization takes place. $3 \times$
- (iv) IUCDs/ Loop or the copper-T placed in the uterus, to prevent pregnancy $(\frac{1}{2} + \frac{1}{2})$ 3

- Q14. a) The dwarf traits of the plants is not expressed in the presence of the dominant tall trait. 1
- b) In the F_2 generation, both the tall and dwarf traits are present in the ratio of 3:1. This showed that the traits for tallness and dwarfness are present in the F_1 generation, but the dwarfness, being the recessive trait does not express itself in the presence of tallness, the dominant trait. 2 3

OR



b)

F_2	$\begin{pmatrix} T \end{pmatrix}$	TT Tall	Tt Tall
	$\begin{pmatrix} t \end{pmatrix}$	Tt	tt

1

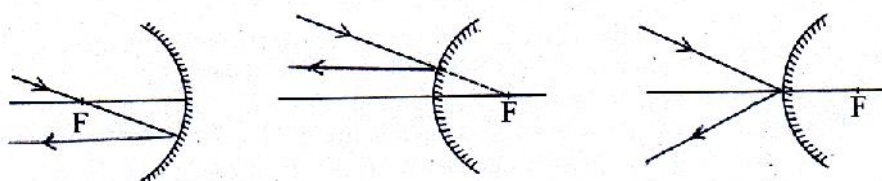
$1 + \frac{1}{2}$

		Tall	Dwarf
		Tall : Dwarf	
		3 : 1	

 $\frac{1}{2}$

Q15.	Acquired traits	Inherited traits		
	Do not bring changes in the DNA of germ cells.	Bring changes in the DNA of germ cells.	1	
	1. Cannot direct evolution	Can direct evolution	1	
	2. Cannot be passed on to the progeny	Can be passed on to the progeny	1	3

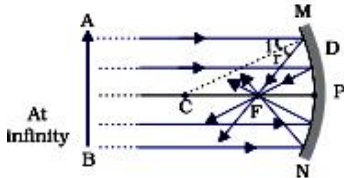
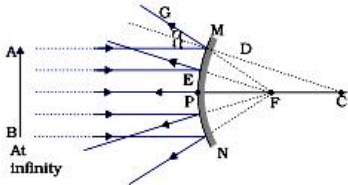
Q16.



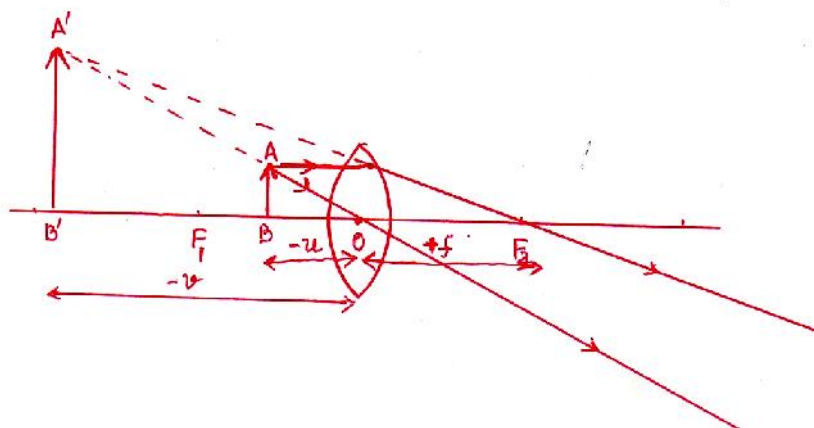
3x1

3

Q17.	Early in the morning, the sun is near the horizon, sunlight reaches us after travelling a longer distance through thick layers of atmosphere. Thus most of the blue light and shorter wavelengths are scattered away by the particles in the atmosphere. The light that reaches us is of longer wavelengths giving a reddish appearance.	2	
	This phenomenon will not be observed by an observer on the moon.	$\frac{1}{2}$	
	Because of the absence of atmosphere on the moon.	$\frac{1}{2}$	3
Q18.	a) The existence of decomposers is essential in a biosphere because they breakdown complex organic substances into simple inorganic substances that can be absorbed by the plants. Thus, decomposers	$\frac{1}{2}$	
	• replenish the soil naturally	$\frac{1}{2}$	
	• helps in removing the biodegradable waste.	$\frac{1}{2}$	
	b) In a food chain the energy moves progressively through the various trophic levels, it is no longer available to the previous level (autotrophs) and the energy captured by the autotrophs does not go back to the solar input. Hence, the flow of energy is unidirectional	1 $\frac{1}{2}$	3
Q19.	Pass the vapours of the given samples of saturated and unsaturated hydrocarbons into bromine water taken in two separate test tubes. The one which discharges the colour of bromine water is that of unsaturated hydrocarbon and the other represents saturated hydrocarbon. (or any other test)	2	
	On burning ethane in air, the products obtained are carbon dioxide and water, along with heat and light.	1	
	$2 \text{ C}_2\text{H}_6 (\text{g}) + 7 \text{ O}_2 (\text{g}) \rightarrow 4 \text{ CO}_2 (\text{g}) + 6 \text{ H}_2\text{O} (\text{l}) + \text{Heat} + \text{Light}$	1	
	It is considered a substitution reaction because the hydrogen atoms of methane (CH_4) are replaced by chlorine atoms one by one.	1	5

- Q20. a) (i) Ovary - (i) Production of female hormone $\frac{1}{2}$
(ii) Production of female gamete $\frac{1}{2}$
(ii) Oviduct - (i) Transfer of female gamete from the ovary $\frac{1}{2}$
(ii) Site of fertilization $\frac{1}{2}$
(iii) Uterus - (i) Implantation of the zygote $\frac{1}{2}$
(ii) Nourishment of the developing embryo/ placenta formation $\frac{1}{2}$
- b) Structure of Placenta – it is a disc like structure embedded in the uterine wall connected to the embryo. It has villi on the embryo's side of the tissue and on the mother side, it has blood spaces, which surround the villi. $\frac{1}{2}$
Function of Placenta – it provides a large surface area for nutrients/ glucose and oxygen to pass from the mother's side to the embryo and waste substances from the embryo's side to mother's blood. $\frac{1}{2}$ 5
- Q21. • Speciation:- The process of formation of a new species from a pre-existing one. 1
• Four factors:
Genetic drift
Mutation / Drastic change in the genes or DNA
Natural selection
Geographical isolation 4 x $\frac{1}{2}$
• Geographical isolation cannot be a major factor in the speciation of a self-pollinating plant species. 1
• Reason:- Physical barrier cannot be created in self-pollinating plants. 1 5
- Q22. a) i) Pole – Centre of the reflecting surface of the mirror.
ii) Centre of curvature – The centre of the hollow sphere of which the reflecting surface of mirror forms a part.
iii) Principal axis – Straight-line passing through the pole and the centre of curvature of a spherical mirror.
iv) Principal focus – Incident rays parallel to principal axis, after reflection, either converge to or appear to diverge from a fixed point on the principal axis called principal focus of the spherical mirror. 4x $\frac{1}{2}$
- b) i)  1
ii)  1
- c) Concave mirror $\frac{1}{2}$
Image formed is virtual $\frac{1}{2}$ 5

Q23. a)



b)

Diagram 1
Marking of u & v $\frac{1}{2}, \frac{1}{2}$

$$\text{Relation : } \frac{1}{f} = \frac{1}{v} - \frac{1}{u}$$

 $\frac{1}{2}$ c) $m = -1$; $u = -20\text{cm}$; $v = ?$ $f = ?$

$$m = \frac{v}{u} \quad \therefore v = +20\text{cm}$$

 $\frac{1}{2}$ Thus object is at $2F$

$$\text{i.e. } 2f = 20\text{cm}$$

$$\therefore f = 10\text{cm} = 0.1\text{m}$$

1

$$P = \frac{1}{f} = \frac{1}{0.1} = +10\text{D}$$

1

5

Q24. a)

- Cornea – Refracts the rays of light falling on the eye $\frac{1}{2}$
- Iris – Controls the size of the pupil $\frac{1}{2}$
- Crystalline lens – Focuses the image of the object on the retina $\frac{1}{2}$
- Ciliary muscles – Holds the eye lens and adjusts its focal length $\frac{1}{2}$

b) i) Objectives – To make people aware and realize their duties towards society. 1

ii) One person can give sight to two people $\frac{1}{2}$ Our eyes can live even after our death $\frac{1}{2}$

iii) Concern for others/ Responsible behavior/ Group work/ or any other

(Any two) $2 \times \frac{1}{2}$ 5**SECTION – B**

25 (b)

26 (a)

27 (c)

28 (d)

29 (a)

30 (c)

31 (c)

32 (d)

33 (a)

 9×1

9

- Q34. (i) No change / or remains colourless
 (ii) No change
 (iii) Turns pink/orange
 (iv) Evolution of a colourless/ odorless gas with brisk effervescence
- 4 x $\frac{1}{2}$ 2

Q35.

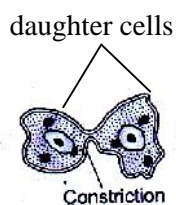


Diagram 1

Labelling $\frac{1}{2}$, $\frac{1}{2}$ 2

- Q36. (i) Lens towards the screen/ screen away from the lens
 (Note: one mark to be awarded for any other answer)
- 1
- (ii) Increase
- $\frac{1}{2}$
- (iii) No image on the screen
- $\frac{1}{2}$ 2