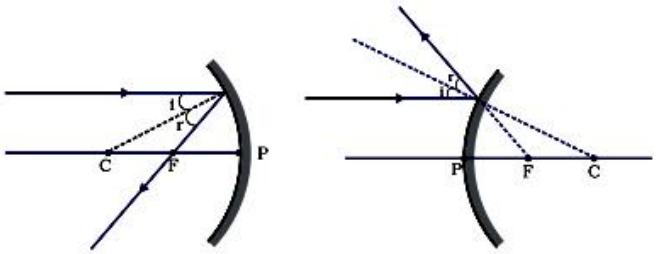
**MARKING SCHEME** **Code No. 31/1/2**
**CLASS X – DELHI**

| | Expected Answer/ Value point | Marks | Total |
|---|---|---|---|
| | **SECTION – A** | | |
| Q 1. | (a) Ethanol (b) Ethanal | ½ + ½ | 1 |
| Q2. | It is the carrier of hereditary information from parents to the next generation. | 1 | 1 |
| Q3. | Producers, consumers, decomposers<br>OR<br>Plants, animals, micro-organisms (Any two) | ½, ½ | 1 |
| Q4. |  <br><br>Tracing the reflected ray<br>Marking ∠i & ∠r | 1<br>½, ½ | 2 |
| Q5. | • In West Bengal the Sal forests had been very badly degraded.<br>• A forest officer involved villagers in protection of Sal forest and gave them employment in silviculture and harvesting operations.<br>• Villagers were allowed to collect firewood and fodder on a nominal payment.<br>• Within a period of 10 years the previously worthless forests became valuable. | ½<br>½<br>½<br>½ | 2 |
| Q6. | Advantages of watershed management –<br>(i) mitigates drought and floods<br>(ii) increase the life of the dams and reservoirs downstream<br>(iii) increases the biomass production and thereby the income of the watershed community.<br>(iv) helps in maintaining ecological balance by scientific conservation of soil and water. or any other (Any four) | 4 x ½ | 2 |
| Q7. | • It is a substance which can give oxygen to other substances.<br>• $CH_3-CH_2-CH_2-OH \xrightarrow[\text{OR Acidified } K_2Cr_2O_7+\text{Heat}]{\text{Alkaline } KMnO_4+\text{Heat}} CH_3-CH_2-\underset{\underset{O}{\|}}{C}-OH$<br>Propanol Propanoic acid<br>• Propanol is oxidised to Propanoic acid. | 1<br>1<br>1 | 3 |
| Q8. | • Covalent compounds are those compounds which are formed by sharing of electrons between two atoms / which contain covalent bonds.<br>• Covalent compounds are different from ionic compounds because the ionic | 1<br>½ | |

compounds are formed by the transference of electrons.

- Three characteristics of covalent compounds:
  (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

Q9.
- 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

Q10.
- Two elements of group 1 are Na, K / sodium, potassium 2 x ½

Electronic configurations Na = 2,8,1; K = 2,8,8,1 2 x ½
- Similarity: Both have one valence electron / One electron in outermost shell ½
- Oxide – $Na_2O$ / $K_2O$ ½ 3

Q11. Functions of testis –
(i) Produce sperms ½
(ii) Produces male hormone/ testosterone ½
- These are located outside the human body, as sperms need lower temperature than the normal body temperature to mature. 1
- Testosterone 1 3

Q12 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.
(iv) IUCDs/ Loop or the copper-T placed in the uterus, to prevent pregnancy (Any three) 3x (½+½) 3

Q13 Multiple fission:- The process of reproduction in which many individuals are formed or produced from the parent cell. 1
In this process, the nucleus divides repeatedly to produce large number of nuclei. Each nucleus gathers a bit of cytoplasm around itself, develops a membrane around each structure. Many daughter cells develop which on liberation grow into adult organism. 1 ½
Plasmodium exhibits this type of fission. ½ 3

Q14. Mendel conducted breeding experiments on Pea plants.
- He selected pure bred tall and dwarf plants. ½
- He cross-pollinated these plants. ½
- In the $F_1$ generation obtained only tall plants. Tallness is the dominant trait. ½
- Then, he produced $F_2$ generation by selfing of hybrids / $F_1$ ½

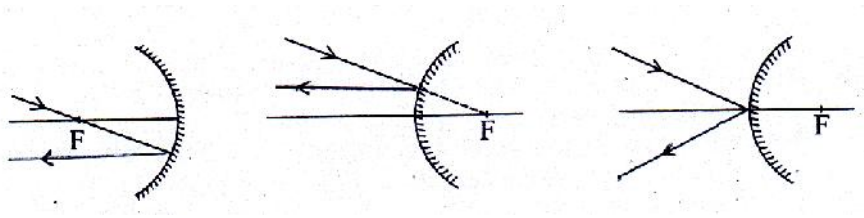
- He found that 3/4$^{th}$ of the plants were tall and 1/4$^{th}$ were dwarf. ½
- The trait which remains hidden in $F_1$ generation plants is the recessive traits. ½ 3

Q15.

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

Q16.
- Scattering of light – Phenomenon of spreading of light (diffused reflection) by minute particles in a medium. 1
- The sky appears blue because the blue colour of sunlight scatters much more strongly than the red colour by particles in atmosphere/ air due to its shorter wave length. 1
- At sun-rise and sun-set most of the blue light and shorter wavelengths are scattered away by the particles in the atmosphere as the light from the sun near the horizon passes through thick layers of air and larger distance. The light that reaches us is of longer wavelength (red colour) giving a reddish appearance. 1 3

Q17.




3x1 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 ½
- replenish the soil naturally ½
- helps in removing the biodegradable waste. ½

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 ½ 3

Q19. a)

| | | | |
|---|---|---|---|
| (i) | Ovary - | (i) Production of female hormone | ½ |
| | | (ii) Production of female gamete | ½ |
| (ii) | Oviduct - | (i) Transfer of female gamete from the ovary | ½ |
| | | (ii) Site of fertilization | ½ |
| (iii) | Uterus - | (i) Implantation of the zygote | ½ |
| | | (ii) Nourishment of the developing embryo/ placenta formation | ½ |

b) <u>Structure of Placenta</u> – 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. ½ ½

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. ½ ½ 5

Q20.
- 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 ½
- 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

Q21. 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
$2\ C_2H_6\ (g) + 7\ O_2\ (g) \rightarrow 4\ CO_2\ (g) + 6\ H_2O\ (l) + \text{Heat} + \text{Light}$ 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

Q22. a)

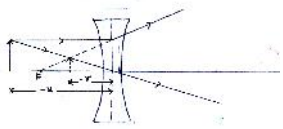


Diagram 1

b) Marking $-u$ and $-v$ ½, ½

Relation :

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

c) As, m = –1 hence, the lens is convex. ½

$\because\ m = \frac{v}{u} \qquad \therefore\ v = -u$

Thus, object is at 2F

$2f = 40$ cm

$\therefore\ f = 20$ cm $= 0.2$ m 1

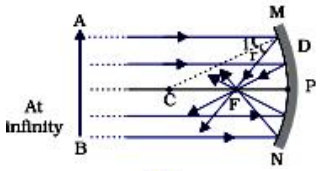
$$P = \frac{1}{f} = \frac{1}{0.2} = +5\text{D} \text{ (convex lens)}$$

1 5

Q23. 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.

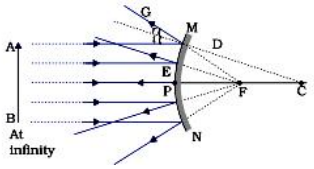
iv) Principal focus – Incident rays parallel to principal axis, after reflection, either converge to or appear to diverge from a fixed point on the principal axis called principal focus of the spherical mirror. 4x ½

b) i)




1

ii)




1

c) Concave mirror ½

Image formed is virtual ½ 5

Q24. a)
- Cornea – Refracts the rays of light falling on the eye ½
- Iris – Controls the size of the pupil ½
- Crystalline lens – Focuses the image of the object on the retina ½
- Ciliary muscles – Holds the eye lens and adjusts its focal length ½

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

ii) One person can give sight to two people ½

Our eyes can live even after our death ½

iii) Concern for others/ Responsible behavior/ Group work/ or any other (Any two) 2x ½ 5

## SECTION – B

| | | | | |
|---|---|---|---|---|
| 25 (a) | 26 (d) | 27 (a) | | |
| 28 (d) | 29 (c) | 30 (c) | | |
| 31 (a) | 32 (b) | 33 (c) | 9 x 1 | 9 |

Q34. (i) Lens towards the screen/ screen away from the lens
(Note: one mark to be awarded for any other answer) 1

(ii) Increase ½

(iii) No image on the screen ½ 2

Q35. (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 ½ 2

Q36.

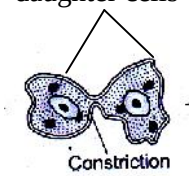



Diagram 1

Labelling ½, ½ 2