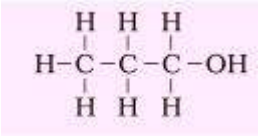
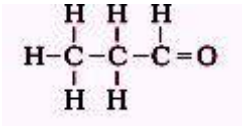
MARKING SCHEME
CLASS X – OUTSIDE DELHI

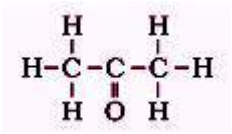
Code No. 31/1

	Expected Answer/ Value point	Marks	Total
	SECTION – A		
Q1.	Propanol,  OR $CH_3CH_2CH_2OH$	½, ½	1
Q2.	Its filament breaks up into smaller fragments or pieces, and each fragment grows into a new filament/individual.	½, ½	1
Q3.	Ultraviolet rays from the sun penetrate down the earth and cause health hazards/skin cancer in human beings	1	1
Q4.	• Concave Mirrors / Converging Mirrors • When a solar furnace is placed at the focus of a large concave mirror/ reflector, it focuses a parallel beam of light on the furnace, consequently a high temperature is achieved after some time.	½ 3 x ½	2
Q5.	• Chipko Andolan (Hug the Trees Movement) – Women of Reni village in Garhwal hugged the tree trunks preventing the contractors from felling the trees. • This Andolan quickly spread to other parts of the country and forced the government to rethink their priorities in the use of forest produce, consequently the local people benefitted. • The environment was saved from permanent damage/ affected the quality of soil and the sources of water.	1 ½, ½	2
Q6.	Burning of fossil fuels produces green house gases(CO , CO_2,water vapour, oxides of nitrogen, sulphur). High concentration of CO_2 causes global warming.	1, 1	2
Q7.	$2CH_3COOH + 2Na \rightarrow 2CH_3COONa + H_2$		
a)	Sodium ethanoate/ Sodium acetate	½, ½	
b)	$CH_3COOH + NaOH \longrightarrow CH_3COONa + H_2O$ Sodium ethanoate/ sodium acetate	½, ½	
c)	$CH_3COOH + C_2H_5OH \longrightarrow CH_3COOC_2H_5 + H_2O$ Ethyl ethanoate/ ester	½, ½	3

Q8. • Propanal (aldehyde) ; ½, ½



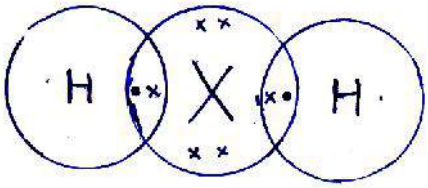
• Propanone(ketone); ½, ½



• Isomers(same molecular formula but different structural formula/different functional group) 1 3

Q9. • Electronic Configuration of X – 2,8,6
Valence electrons – 6
Valency = 8-6= 2 ½, ½

• Formula with hydrogen- H_2X or H_2S



½ , ½

Sulphur ; NonMetal ½, ½ 3

Q10. Atomic number of X = Mass number of X – No of neutrons ½

= 35 – 18 = 17 ½

Therefore Electronic configuration of X = 2,8.7 ½

Group number =17 ½

Period no = 3

Valency = 8-7 = 1 ½ , ½ 3

Q11. Reproduction – It is a (biological) process by which new individuals of the same species are produced by the existing organisms 1

- Populations of organisms live in well defined places called niches in the ecosystem using their ability to reproduce. ½
- Reproduction involves DNA copying which is the source of information for making proteins thereby controlling body design ½
- These body designs allow the organism to use a particular niche for the stability of the population of a species ½
- (Minor) variations may also lead to the stability of the species ½ 3

Q12. Regeneration- It is the ability of an organism to give rise to a new organism/ individual from their body parts 1

Regeneration in hydra-

- When the body of hydra by any means is cut into number of pieces ½
- Each piece contains specialized cells ½
- These cells proliferate and make large number of cells ½
- From this mass of cells different cells undergo changes to become various cell types and tissues finally developing into a new organism ½ 3

Q13.

a) i) Involvement of two different individuals
ii) Creation of new combination of variants ½, ½

b) i) pollen/pollen grain
ii) by pollination/ agents of pollination
iii) It (pollen tube) helps male gamete to reach egg (ovule)
iv) Converts into embryo 4 x ½ 3

Q14.

- When a cross was made between a tall pea plant with round seeds and a short pea plant with wrinkled seeds, the F1 progeny plants are all tall with round seeds: this indicates that tallness and round seeds are the dominant traits. 1
- When the F1 plants are self pollinated the F2 progeny consisted of some tall plants with round seeds and some short plants with wrinkled seeds which are the parental traits 1
- There were also some new combinations like tall plants with wrinkled seeds and short plants with round seeds ½
- Thus it may be concluded that tall and short traits and round and wrinkled seed traits have been inherited independently ½ 3

OR

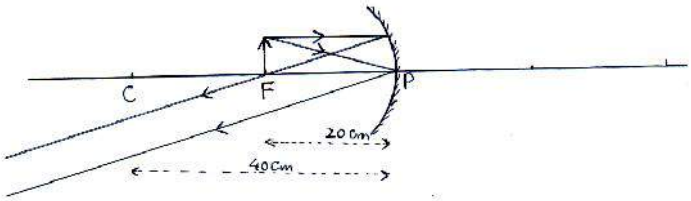
A flow chart depicting the same

Note: Any other contrasting characters can also be taken

Q15.

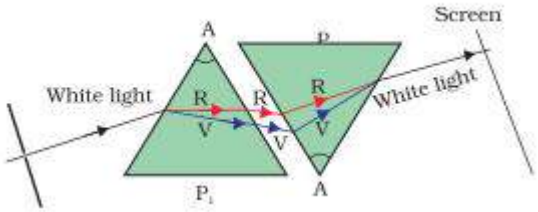
- Different forms of organisms/ life have evolved during the course of evolution, and classification deals with grouping of these organisms into groups and subgroups based on their similarities and differences. ½ , ½
- The more characteristics any two species have in common more closely they are related/ will have a more recent ancestor(and vice versa) 1
- Thus classification helps tracing the evolutionary relationships between the two organisms hence classification and evolution are interlinked. 1 3

Q16. Object position: At C (Centre of curvature) ½
Object distance = 40 cm ½
Position of the image - at infinity ½
Reason – Focal length of the mirror = 20 cm
If the object is moved 20 cm towards the mirror then its new position would be at the focus of the mirror. ½



(deduct ½ mark if arrows are missing/ not marked) 1 3

Q17. Description of activity- When a glass prism is used to obtain a spectrum of sunlight, a second identical prism in an inverted position with respect to the first position will allow all the colours of spectrum to recombine .Thus a beam of white light will emerge from the other side of the second prism. 1 ½



1 ½ 3

Q18 Two reasons for the conservation of the environment:

(a) 1) To save air, water and soil from pollution
2) To maintain ecological balance in nature 2 x ½

(b) Green dustbins- for biodegradable waste, and blue dustbins for non biodegradable waste for proper disposal of waste without wasting time and energy in segregating the biodegradable and non - biodegradable wastes 2 x ½

(c) Values – cooperative spirit, concern about environment, civic sense
Or any other (Any two) 2 x ½ 3

Q19. P= Ethanol/C_2H_5OH Q= Ethene/$CH_2=CH_2$ R=Ethane/ C_2H_6 3x ½

$C_2H_5OH \xrightarrow[443k]{\text{Conc } H_2SO_4} CH_2=CH_2 + H_2O$
Ethane Ethene 1 ½

$CH_2=CH_2 \xrightarrow[H_2]{\text{Nickel Catalyst}} CH_3\text{-}CH_3 / C_2H_6$
Ethane 1

$C_2H_6/ CH_3\text{-}CH_3 + \frac{7}{2} O_2 \longrightarrow 2CO_2 + 3H_2O$

Note: Correct equation even without balancing be given full credit 1 5

Q20. Placenta- A special tissue that helps human embryo in obtaining nutrition from mother's blood 1
Structure- this is a disc which is embedded in the uterine wall which 1,1

contains villi on the embryo side of the tissue, and on the mother's side are blood spaces which surround the villi

Function- This provides a large surface area for glucose and oxygen to pass from the mother to the embryo, and the developing embryo will also generate waste substances which can be removed by transferring them into the mothers blood through the placenta 1, 1 5

Q21. Evolution- The gradual unfolding of organisms from pre-existing organisms through change since the origin of life 1

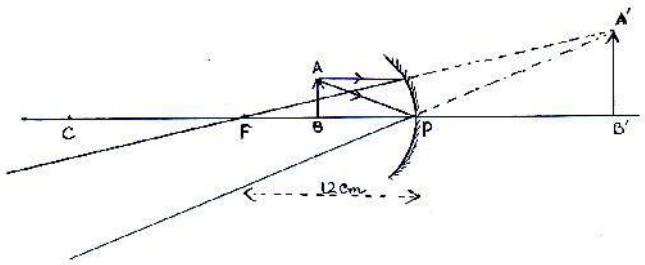
It occurs because there is an inbuilt tendency to variation during reproduction due to errors in DNA copying and as a result of sexual reproduction. 1,1

It is observed that although fossils appeared different from the existing species they may show certain features similar to the existing species thus providing linkages between pre-existing and existing forms 1

Provide information about the extinct species which were different from the existing species. 1 5

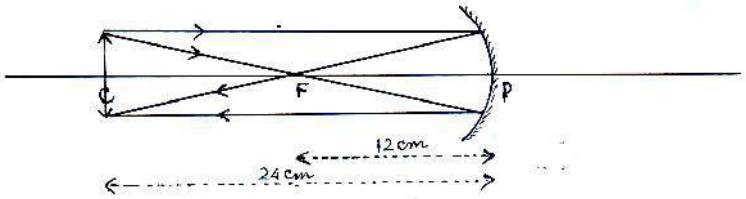
Q22. (i) Range of distance – between 0 cm - < 12 cm 1

ii) larger than the object ½



1 ½

iii) Image also at 24 cm in front of the mirror ½



1 ½ 5

Q23. a) Optical centre- the central point of a lens. 1

b) f= -20 cm ½

h_1 = 4 cm v = -10 u = ? h_2 = ?

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

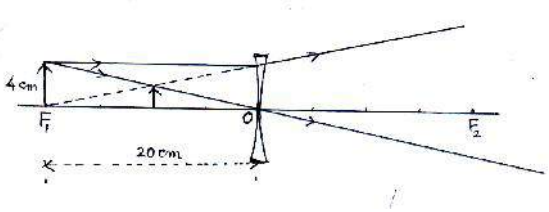
$$= \frac{-1}{-10} - \frac{1}{-20} = \frac{-1}{10} + \frac{1}{20}$$

$$= \frac{-2+1}{20} = \frac{-1}{20}$$

u = -20 cm 1

$$h_i = \frac{v}{u} h_o$$ ½

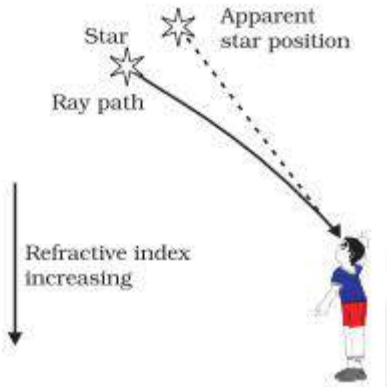
$$= \frac{-10\,\text{cm}}{-20\,\text{cm}} \times 4 = 2\,\text{cm}$$ ½



1 5

Q24 Atmospheric refraction- refraction of light caused by the earth's atmosphere due to change in the refractive indices of different layers 1

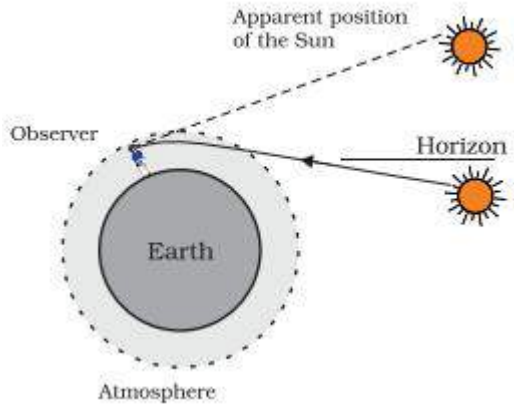
Twinkling of stars- stars are distant point sized source of light. The path of the rays of light coming from the star goes on varying due to atmospheric refraction slightly. Thus apparent position of the stars fluctuates and the amount of star light entering the eye flickers giving the twinkling effect 1



1

Advanced sunrise – when the sun is slightly below the horizon, light rays coming from the sun travel from the rarer to denser layers of air. Because of atmospheric refraction of light, light appears to come from a higher position above the horizon. Thus sun appears earlier than actual sunrise.

Delayed sunset- Same reason as similar refraction occurs at the sunset. 1



1 5

SECTION – B

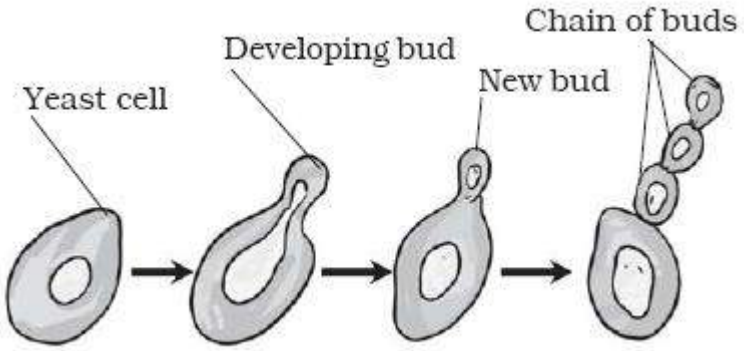
25 (c)	26 (c)	27 (d)		
28 (d)	29 (a)	30 (b)		
31 (a)	32 (a)	33 (d)	1 x 9	9

Q34. Brisk effervescence ½

Evolution of colourless /odourless gas ½

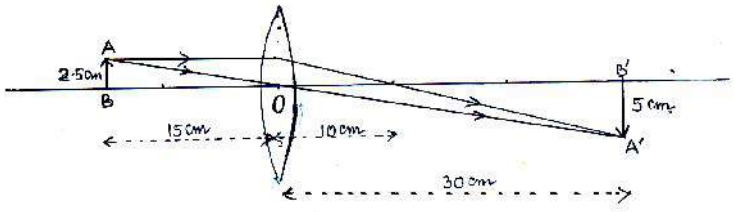
$CH_3COOH + NaHCO_3 \rightarrow CH_3COOONa + H_2O + CO_2$ 1 2

Q35. • Budding ½



(Three/ four diagrams in proper sequence) 1 ½ 2

Q36. 1



Marking of O , F and size of the image 1 2