

**CBSE Secondary School Examination**

**SA – II (Answer tips)**

**Set 3**

**March 2012**

**Science**

**Class X – All India**

**Section A**

1. Methanol/formaldehyde/  $\text{HCOOH}$  ( $\frac{1}{2} + \frac{1}{2}$  m) (1 Mark.)
2. Changes the curvature/focal length/power of eye lens - (1 Mark). 1 Mark.
3. Ozone,  $\text{O}_3$  ( $\frac{1}{2} + \frac{1}{2}$ m) 1 Mark.
4. Aquarium, park, zoo, crop fields, gardens etc Any 2 - ( $\frac{1}{2} + \frac{1}{2}$  m) 1. Mark

5. i) Elements in the same group have similar outer electronic configuration/same number of valence electrons -

(1 mark)

ii) Elements in the same period have different valence electrons /different electronic configuration (1 mark)

2 Marks

6. A. Group 16 B. Third period C. six ( 6 ) D. Two ( 2 ) (  $\frac{1}{2}$  x4)

2 Marks

7. -For growing flowers and fruits quickly/ for growing plants which have lost capacity to produce seeds/to produce plants which are genetically similar ( 1 mark )

- Banana, sugar cane, grapes, rose etc/ any other suitable example. ( Any 2 ) (  $\frac{1}{2}$  mark x 2 )

2 Marks.

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 2 points) ( 1 m x 2 )

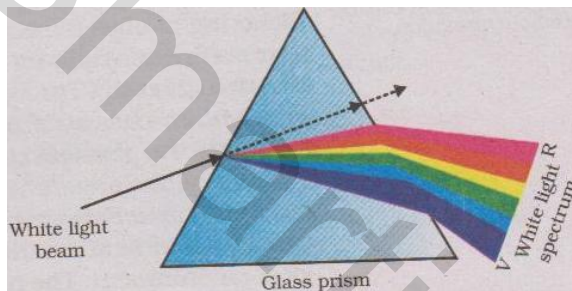
2 Marks

9. a. Ray incident parallel to the principal to the principal axis after reflection passes through the focus ( for concave mirror) or appears to have diverged from the focus ( for convex mirror).



strongly than the red colour. The scattered blue light enters our eyes and we observe the colour of sky as blue. ( $\frac{1}{2} + \frac{1}{2} + \frac{1}{2}$  mark)

(2 Marks)



11. ( 1 m )

Direction – ( $\frac{1}{2}$  m)

Labelling (V – R) ( $\frac{1}{2}$  m)

(2 Marks)

12. Carbon dioxide/carbon monoxide/ oxides of nitrogen/oxides of sulphur/ water vapour ( any 2 product)  
(  $\frac{1}{2} \times 2$  )

Adverse effect,

Global warming, causes acid rains ( $\frac{1}{2} \times 2$ )

2 Marks

13. – displaces large number of peasants and tribal's without adequate compensation benefits.
- Consumes huge amount public money without the generation of proportionate benefits.
  - Causes deforestation and loss of biological diversity (  $\frac{1}{2}$  m x 3 )

Suggestions

Adequate compensation / land for rehabilitation/  
aforestation. (  $\frac{1}{2}$  m)

(2 Marks.)

14. a. Inherited traits are the characters which an individual inherits from the parents. (1 m)

Acquired traits are the characters/ (1 m)  
experiences acquired during one's life time.

b. Acquired characters are not passed to the next generation ( $\frac{1}{2}$  m)

c. Loss of a body part in one generation will not be inherited by the next generation/

Any other suitable example ( $\frac{1}{2} + \frac{1}{2}$  m)

3 Marks

15. – The organisms or their body parts, which do not decompose, retain the impression to form fossil.

( 1 m )

- When the earth is dug the fossils found closer to the surface are more recent.

(Relative method) (1 m)

- By detecting the ratio of the different isotopes of the same element in the fossil material ( carbon dating)

( 1 m )

(3marks)

16. - All tall (1 mark)

- 3:1 (Tall plants: dwarf plants) (1 mark)

- Dwarf plant (1/2 marks)

Reason – In  $f_1$  generation tall is dominant trait where as in  $f_2$  generation two copies of 'tt' \ recessive traits made the plant dwarf. (1/2 marks)

(3 mark)

17.  $\frac{1}{v} = \frac{1}{u} + \frac{1}{f}$  (1/2 marks)

$$\frac{1}{v} - \frac{1}{-8} = \frac{1}{12} \quad (1/2 \text{ marks})$$

Position  $\rightarrow V = - 24$  cm (Image is formed 24 cm on the same side of the object) (1/2 marks)

Size  $\rightarrow \frac{h^1}{h} = \frac{v}{u}$  (1/2 marks)

$\therefore h^1 = + 15 \text{ cm}$  (1/2 marks)

Nature – Virtual / erect (1/2 marks)

(3 marks)

18. 1) Concave mirror (1/2 mark)

Source of light placed at the focus of a concave mirror forms an intense parallel beam of light (1 mark)

2) Convex mirror (1/2 mark)

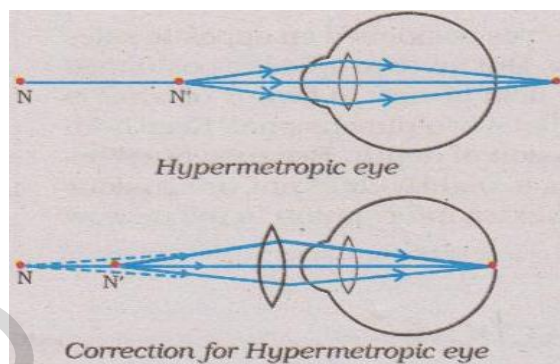
- It is always erect virtual and diminished image of the object (1/2 marks)

- It also has a wider field of view (1/2 marks)

(3 marks)

19. Defect – hypermetropia / long sightedness / far sightedness (1/2 marks)

Correction – using spectacles with concave lens / converging lens of suitable power (1/2 marks)



1) & 2)

1 mark

1 mark

(3 marks)

20. Alkaline  $\text{KMnO}_4$  or acidified  $\text{K}_2\text{Cr}_2\text{O}_7$  (1 mark)

Ethanol

Ethanoic acid

No effect on litmus. (1/2 m)	<ul style="list-style-type: none"> <li>• Turns blue litmus red. (1/2 m)</li> </ul>
No reaction with sodium hydrogen carbonate. (1/2 m)	<ul style="list-style-type: none"> <li>• <math>\text{CO}_2</math> gas is evolved with effervescence. (1/2 m)</li> </ul>

(3 marks)

21. – Mechanical barrier / use of condoms / use of loop or copper T or any other contraceptive device (any one so that sperms do not reach egg – (1/2 mark)

- Taking oral pills (1/2 m)



That change hormonal balance so that eggs are not released and fertilization does not occur (explanation)

- Surgical method / blocking of fallopian tube / cutting or blocking of vas deferens - any 1 (1/2 mark)

So that, transfer of sperms / egg is prevented - (1/2 mark)

(3 marks)

22. 1) Na (1/2 mark)

These elements are of a period and atomic size decreases in a period from left to right. (1 mark)

2) Al (1/2 mark)

Reactivity of metals decreases from left to right in a period (1 mark)

(3 marks)

23. 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) that is pole are taken as positive while those measured to the left of the origin (along - x axis) that is pole are taken as negative.

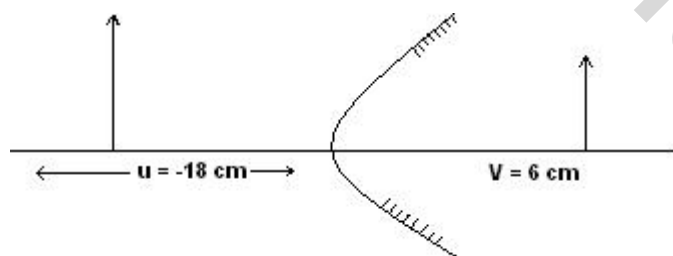
4) Distances measured perpendicular to and above the principal axis (along + y axis) are taken as positive.

5) Distances measured perpendicular to and below the principal axis (along -y axis) are taken as negative. (1/2 x 5 = 2 1/2 marks)

Identification of nature – convex / diverging (1/2 marks)

Calculation of focal length ( $F = +9\text{cm}$ ) (1 1/2 marks)

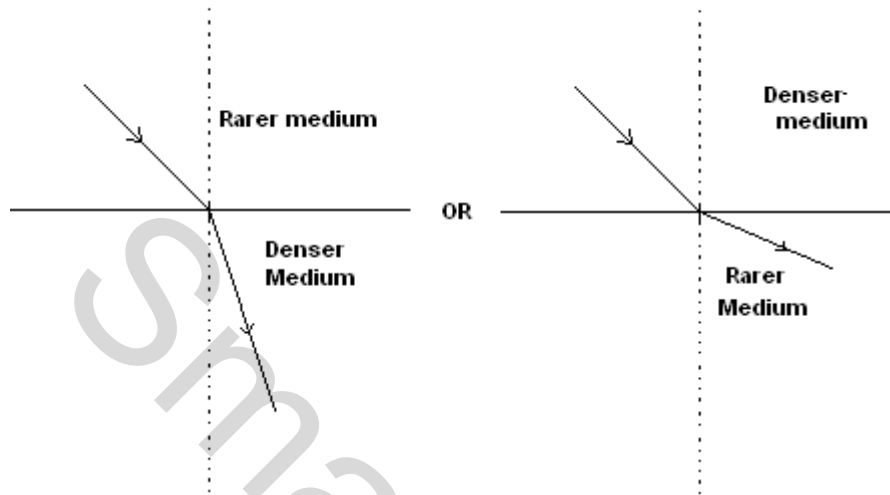
Diagram



(5 marks)

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. (1/2 mark)



Rarer and denser medium to be shown in the diagram (1/2 mark)

Direction of ray of light to shown (1/2 mark)

Snell's law – statement (1 mark)

Mathematical Expression (1/2 mark)

$$n_{ag} = \frac{\text{Speed of light in glass}}{\text{Speed of light in air}} = \frac{2}{3} \quad (1/2 \text{ mark})$$

$$V_a = 3 \times 10^8 \text{ m/s} \quad (1/2 \text{ mark})$$

$$n_w = \frac{\text{Speed of light in air}}{\text{Speed of light in water}} = \frac{4}{3} \quad (1/2 \text{ mark})$$

$$V_w = 2.25 \times 10^8 \text{ m/sec} \quad (1/2 \text{ mark})$$

(5 marks)

24. Hydrocarbons : Compounds containing carbon and hydrogen atoms only (1 mark)

General formula 1) Saturated:  $C_nH_{2n+2}$ , alkane

2) Unsaturated  $C_nH_{2n}$ , alkene

$C_nH_{2n+2}$  alkyne

} any one

(1/2 x 4)

Any structure of one saturated and one unsaturated hydrocarbon (1/2 mark x 2)

Hydrogenation / addition of hydrogen in presence of catalyst / corresponding equation (1 mark)

(5 marks)

OR

Definition of detergents (1 mark)

Any one merit and one demerits. (1 + 1 marks)

It does not form in soluble substance (scum) with  $Ca^{2+}$  or  $Mg^{2+}$  ions present in hard water. (2marks)

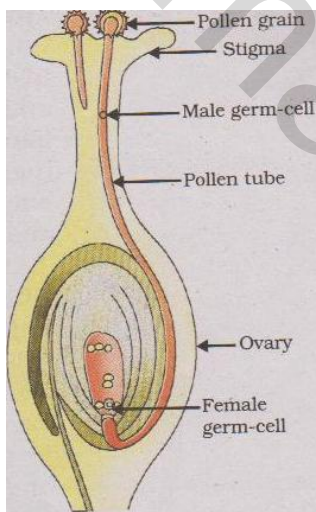
(5 marks)

25. Unisexual flowers – flowers which have either stamens or pistil / carpel (1/2 mark)

For example papaya / water melon/ or any other suitable example (1/2 mark)

Bisexual flowers – flowers which have stamens and pistil / male and female sex organs. (1/2 m)

Example, hibiscus / mustard/ any other suitable example. (1/2 mark)



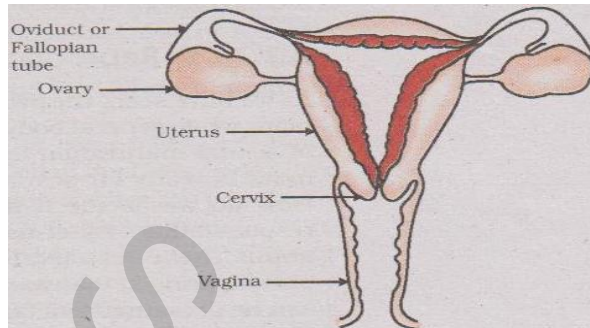
– 1 ½ mark

- |              |                 |          |
|--------------|-----------------|----------|
| 3 labellings | Female germcell | 1/2 mark |
|              | Male germcell   | 1/2 mark |
|              | Ovary           | 1/2 mark |

(5 marks)

OR

## Human female reproductive system



– (1 ½ mark)

- labellings
- Ovary 1/2 mark
  - Fallopian tube / oviduct 1/2 mark
  - Uterus 1/2 mark

The unfertilized egg lives for about one day only, gets removed (1 mark)

The process being called as menstruation (1 mark)

(5 marks)

### Section B

Each question carries one mark each.

26. A – III, II, IV, I

27. C – V, II, III

28. D – I, IV, V

29. A – I
30.  $B - \frac{y-x}{x} \times 100$
31. D – Filter paper
32. A – A clear and transparent solution is formed
33. C – Bubbles of colourless and odourless gas
34. A – It turns blue litmus red and smells like vinegar
35. D - Blue and colourless respectively
36. D – All the three
37. C – III
38. C – III
39. D – a convex lens, a screen, holders for them and a scale
40. D – a highly diminished inverted image of the tree at the focus of the mirror
41. B – a well illuminated distant building