

Series : DPS/ST/ Sc & T/10-11

Code : 086



DELHI PUBLIC SCHOOL :: SURAT
SUBJECT : SCIENCE & TECHNOLOGY(SAMPLE PAPER)

Roll No :

Class : X

Marks : 80

Time Allowed : 3 Hrs

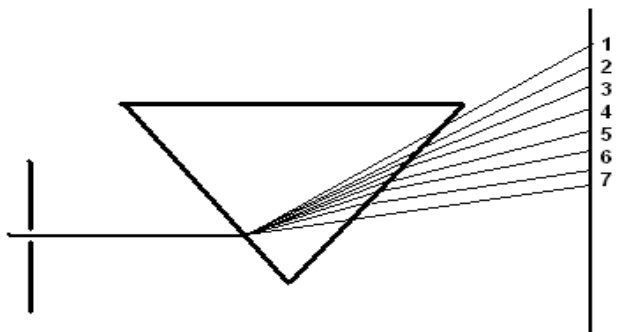
GENERAL INSTRUCTIONS

- i. The question paper comprises of two sections, A and B, you are to attempt both the sections.
- ii. All questions are compulsory.
- iii. There is no overall choice. However internal choice has been provided in all the three questions of five marks category. Only one option in such questions is to be attempted.
- iv. All questions of section A and all question of section B are to be attempted separately.
- v. Question numbers 1 to 4 in section A are one mark questions. These are to be attempted separately.
- vi. Question numbers 5 to 13 are two mark questions, to be answered in about 30 words each.
- vii. Question numbers 14 to 22 are three mark questions, to be answered in about 50 words each.
- viii. Question numbers 23 to 25 are five mark questions, to be answered in about 70 words each.
- ix. Question numbers 26 to 41 in section B are multiple choice questions based on practical skills. Each question is a one mark question. You are to choose out most appropriate response out of the four provided to you.

SECTION A

1. Which defect of vision can be rectified by using bi-focal lenses? [1]
2. Why - CHO group cannot be present in the middle of the carbon atom chain? [1]
3. What is 10% law? [1]
4. Name the chemical that causes the depletion of Ozone layer. [1]

5. A convex lens of focal length 15cm and a concave lens of focal length 22 cm are placed in close contact with one another.
- What is the power of this combination? [2]
 - What is the focal length of this combination? [2]
6. Mickey observes in the given figure that:
- The colour at the position 3 is similar to the colour of the sky [2]
 - The colour at the position 4 is similar to the colour of chlorophyll



State whether his observation in each of the case is correct or not. Justify your answer. Also identify the colour at positions 2 and 5.

7. Explain why, when the sun is overhead at noon, it appears white but when the same sun is near the horizon at sunset, it appears red. [2]
8. An element X (2,8,2) combines separately with NO_3^- , SO_4^{2-} , radicals. Write the formula of the two compounds formed. To which group of the periodic table does the element 'X' belong? [2]
9. Why coal and petroleum are considered as exhaustible resources? How does their use lead to increase in global warming? [2]
10. What are the advantages of water stored underground? [2]
11. An element X of group 15 exists as diatomic molecule and combines with hydrogen at 773K in presence of the catalyst to form a compound, ammonia which has a characteristic pungent smell
- Identify the element X. How many valence electrons does it have? [2]
 - Draw electron dot structure of the diatomic molecule of X. What type of bond is formed in it? [2]
12. Name the type of reproduction in the following organism
Planaria, Leishmania, Rhizopus, Spirogyra [2]
13. Differentiate between self and cross pollination. [2]

- a. Image formation in Convex mirror when the object position is between Centre of Curvature and Principal Focus
- b. Image formation in Convex lens when the object position is beyond Centre of Curvature
- c. Refraction of light while passing from Benzene($\eta = 1.50$) to Kerosene($\eta = 1.44$)

24. Answer the following questions:

- a) With the help of a suitable test for unsaturation, distinguish between ethyl alcohol and acetic acid. Which one of them can be called as unsaturated hydrocarbon?
- b) Draw the structure of Methyl ethanoate.
- c) What do you observe when sodium is added to ethanol. (Write the chemical reaction involved).
- d) Name the functional group of organic compounds that can be hydrogenated. With the help of suitable chemical reaction explain the process of hydrogenation mentioning the reaction conditions. [1+1+1+2]

OR

- A) Explain the following terms with chemical reaction:
 - a) Esterification
 - b) Hydrogenation
- B) Draw electron dot structures for cyclohexane and propanone.
- C) Give the IUPAC name for the following hydrocarbons:
 - a) $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}=\text{CH}_2$
 - b) $\text{CH}_3\text{CH}_2\text{CH}_2\text{COOH}$ [2+2+1]

25. Explain briefly different types of reproduction. [5]

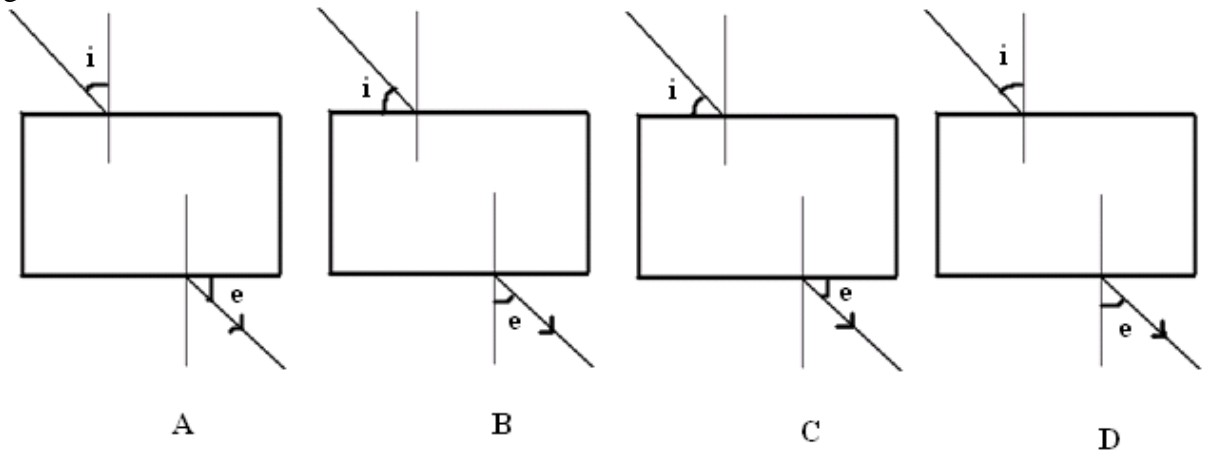
OR

Explain sexual reproduction in plants. [5]

SECTION B

26. A student obtained a sharp image of the grill of a window in the laboratory on a Screen, using a convex lens. For getting better results, her teacher suggested focusing of a distant tree instead of the grill. In which direction should the lens be moved for this purpose to get a sharp image on the screen?
- a. Towards the Screen
 - b. Away from the Screen
 - c. Behind the Screen
 - d. Very far away from the Screen [1]

27. A student does the experiment on tracing the path of a ray of light passing through a rectangular glass slab for different angles of incidence. He can get a correct measure of the angles of incidence and angle of emergence by following the labeling indicated in figure:



- a. A
- b. B
- c. C
- d. D

[1]

28. A student suggested the following guidelines to his friend for doing the experiment on tracing the path of a ray of light passing through a rectangular glass slab for three different angles of incidence:

- i. Draw the 'outline' of the glass slab at three different positions on the drawing sheet.
- ii. Draw 'normals' on the top side of these 'outlines' near their left end.
- iii. Draw the incident rays, on the three 'outlines' in directions making angles of 30° , 45° , 60° with the normals drawn.
- iv. Fix two pins vertically on each of these incident rays at two points nearly 1cm apart.
- v. Look for the images of the 'heads' of these pins while fixing two pins from the other side, to get the refracted rays.

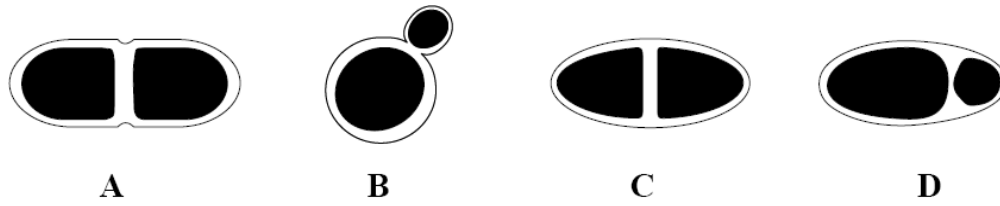
When these 'guidelines' were shown to his teacher, the only ones that were left uncorrected were the 'guidelines' labeled as:

- a. i , ii
- b. i , iii
- c. iv, v
- d. ii , v

[1]

29. A lens of power +2 dioptres is placed in contact with a lens of power -1 dioptres. The combination will behave like:
- Convergent lens of focal length 50cm.
 - Convergent lens of focal length 100cm.
 - Divergent lens of focal length 50 cm.
 - Divergent lens of focal length 100cm.
- [1]
30. A concave mirror produces three times magnified real image of an object placed at 10cm in front of it. Where is the image located?
- 30cm
 - 30cm
 - 40 cm
 - None of the above
- [1]
31. Which of the following cannot distinguish ethanol from ethanoic acid ?
- Blue litmus
 - Sodium hydroxide
 - Sodium hydrogen carbonate
 - Sodium metal
- [1]
32. The odour of acetic acid resembles that of
- rose
 - burning plastic
 - vinegar
 - kerosene
- [1]
33. Which of the following is not a crystalline allotropic form of carbon?
- Diamond
 - Graphite
 - Fullerene
 - Coke
- [1]
34. What is observed when acetic acid and sodium bicarbonate solutions are mixed:
- A colourless gas is liberated
 - The colourless gas turns blue litmus solution red
 - The colourless gas turns lime water milky
 - All the above
- [1]
35. In order to form branching, an organic compound must have a minimum of :
- four carbon atoms
 - three carbon atoms
 - five carbon atoms
 - any number of carbon atoms
- [1]

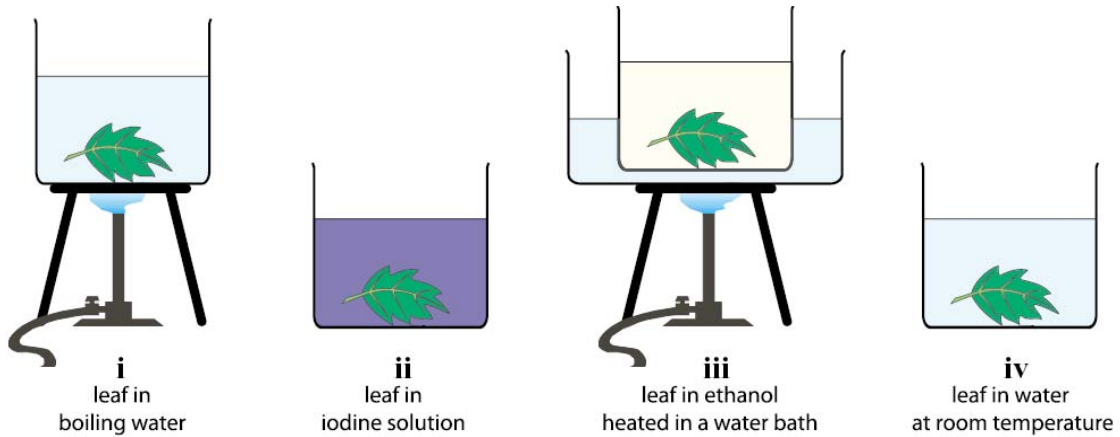
36. The budding in yeast is illustrated by the diagram



- a. A.
- b. B.
- c. C.
- d. D.

[1]

37. A student performed a starch test on a leaf. Some steps involved are shown below



The correct sequence of steps should be

- a. iv; iii; ii; i.
- b. i; ii; iii; iv.
- c. ii; iii; iv; i.
- d. i; iii; iv; ii .

[1]

38. A part of de-starched leaf of a potted plant was covered with black paper strips on both sides and the plant was kept in sunlight for 8 hours. The leaf was then tested with iodine after boiling it in alcohol. Only the uncovered part of the leaf turned blue black. The inference is that

- a. CO₂ is necessary for photosynthesis.
- b. Light is necessary for photosynthesis.
- c. Chlorophyll is necessary for photosynthesis.
- d. Water is necessary for photosynthesis.

[1]

39. A student is given a permanent slide showing binary fission in Amoeba. The following are the steps in focussing the object under the microscope.
- Place the slide on the stage; look through the eye piece and adjust the mirror and diaphragm to get even illumination.
 - Look through the eye piece and raise the objective using coarse adjustment until the object is focused.
 - Make the focus sharp with the help of fine adjustment.
 - Look through the eye piece and move the slide until the object is visible.

The proper sequence of steps is

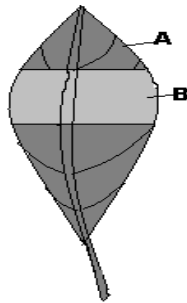
- (i), (iii), (iv), (ii).
- (ii), (iii), (iv), (i).
- (iv), (iii), (ii), (i).
- (i), (iv), (ii), (iii).

[1]

40. Yeast is a type of

- Bacterium
- Fungus
- Alga
- Virus

41. The destarched leaf is clipped with black paper and kept in sunlight and after that iodine test is done. What will be the color of region labeled as A and B?



- A – blue-black, B- pale
- A – green, B- pale
- A – green, B- blue-black
- A – blue black, B- green

[1]