

CBSE
Class X Science
Board Paper – 2016 (Set 3)
Term II

Time allowed: 3 hours

Maximum Marks: 90

General Instructions:

1. The question paper comprises of **two** Sections, **A and B**. You are to attempt both the sections.
2. All questions are **compulsory**.
3. There is no choice in any of the questions.
4. All questions of **Section A** and all questions of **Section B** are to be attempted separately.
5. Question numbers **1 to 3** in Section A are one-mark questions. These are to be answered in one word or in one sentence.
6. Question numbers **4 to 6** in Section A are two-marks questions. These are to be answered in about 30 words each.
7. Question numbers **7 to 18** in Section A are three-marks questions. These are to be answered in about 50 words each.
8. Question numbers **19 to 24** in Section A are five-marks questions. These are to be answered in about 70 words each.
9. Question numbers **25 to 33** in Section B are multiple choice questions based on practical skills. Each question is a one-mark question. You are to select one most appropriate response out of the four provided to you.
10. Question numbers **34 to 36** in Section B are two-marks questions based on practical skills. These are to be answered in brief.

Section A

1. Which gas is present in Bio – gas and CNG? Write its molecular formula. [1]
2. Name two plants that are grown by vegetative propagation. [1]
3. In the following food chain, plants provide 2000 J of energy to rats. How much energy will be available to hawks from snakes? [1]

Plants → Rats → Snakes → Hawks
4. What is the focal length of a plane mirror? Which mirror has larger field of view – concave or convex? Where is this property of the mirror used? [2]

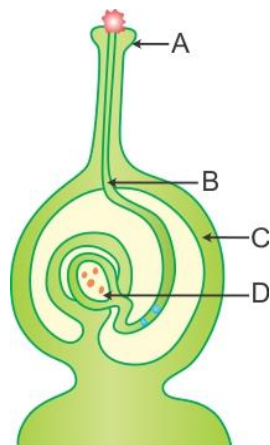
5. State the meaning of "biodiversity". List one advantage each of conserving forests and wild life. [2]
6. List four problems caused by non – biodegradable wastes. [2]
- 7.
- (a) Name the products obtained on complete combustion of hydrocarbons? How is the gas evolved during combustion tested in the laboratory? Explain in brief.
- (b) Write the next higher homologue of :
- (i) C_3H_6
- (ii) C_5H_8 [3]
8. Name the gas liberated when ethanol reacts with Sodium metal? How do we get ethene from ethanol? Write chemical equation to justify your answer. State the role of acid in this reaction [3]
- 9.
- (a) Atomic number is considered to be a more appropriate parameter than atomic mass for classification of elements in modern periodic table. Why?
- (b) How does metallic character of elements vary on moving from
- (i) left to right in a period, and
- (ii) from top to bottom in a group in the modern periodic table
- Give reasons for your answer. [3]
10. Four elements P, Q, R, S have atomic number 12, 13, 14 and 15 respectively. Answer the following questions giving reasons:
- (i) What is the valency of Q?
- (ii) Classify these elements as metals and non-metals
- (iii) Which of these elements will form the most basic oxide? [3]
11. What is reproduction? Explain two advantages of sexual reproduction over asexual reproduction. [3]
- 12.
- (a) What is fragmentation in organisms? Name a multicellular organism which reproduces by this method.
- (b) How does regeneration take place? Why is this process not possible in all animals? [3]

- 13.** [3]
(a) Fertilization is possible if ovulation has taken place during middle of menstrual cycle. Give reasons.
(b) List in tabular form two distinguishing features between a sperm and an ovum.
- 14.** State and describe in brief any three main factors responsible for the rise of new species. [3]
- 15.** The image of a candle flame placed at a distance of 45 cm from a spherical lens is formed on a screen placed at a distance of 90 cm from the lens. Identify the type of lens and calculate its focal length. If the height of the flame is 2 cm, find the height of its image. [3]
- 16.** Which of the two is a better option : [3]
(i) To collect rainwater in ponds or artificial lake or
(ii) To let it recharge groundwater by water harvesting? List four advantages of the option chosen to justify your answer.
- 17.**
(a) Name the part of human eye that helps to focus near and distant objects in quick succession. Explain its functioning.
(b) A person is advised to wear spectacles with concave lenses. What type of defect of vision is he suffering from?
(c) State the function of iris in human eye. [3]
- 18.** A father got his son admitted to a new school. However, after attending the school for two days the boy refused to go to school. Upon enquiry he told his mother that few students of his class tease and harass him for his dark skin colour. You being one of his classmates are fond of him and do not want him to leave the school.

(a) Is it ethical to call someone based on his skin colour? Why?
(b) Is it an inherited or an acquired trait? Justify your answer.
(c) What should the school do to avoid such incidents in future? [3]
- 19.** What are the hydrocarbons? Distinguish alkanes from alkenes and each of them from alkynes giving one example of each. Also draw the structures of each compound cited as example to justify your answer. [5]
- 20.**
(a) What are fossils? How are fossils formed? Describe in brief, two methods of determining the age of fossils.
(b) List any two roles of fossils in tracing evolutionary relationships. [5]

21.

[5]



- (a) Identify A, B, C and D in the given diagram and write their names.
- (b) What is pollination? Explain its significance.
- (c) Explain the process of fertilisation in flowers. Name the parts of the flower that develop after fertilisation into:
 - (i) Seed
 - (ii) fruit

22.

[5]

- (a) What is scattering of light? State the relationship between the colour of the scattered light and the size of the particles causing scattering.
- (b) State the reason for the following observations as recorded from the moon:
 - (i) Sky appears dark;
 - (ii) Rainbow is never formed
- (c) The sun appears white at noon from the earth's surface. Why?

23.

[5]

- (a) Name the lens which can be used as a magnifying glass. For which position of the object a convex lens form:
 - (i) a real and inverted image of the same size as that of the object?
 - (ii) a virtual and erect image?

Draw ray diagram to justify your answer in each case.

- (b) One half of a convex lens is covered with a black paper. Will this lens produce a complete image of the object? Draw ray diagram to justify your answer.

24. An object 4 cm in length is placed at a distance of 20 cm in front of a convex mirror of radius of curvature 20 cm. Use mirror formula to find the position, nature and size of the image. Also draw a ray diagram for the above situation and mark the positions of pole, focus and centre of curvature on it. [5]

Section B

25. Slides of binary fission in Amoeba and budding in yeast were given for observation to a group of students. Some of the observations reported by the group are given below : [1]

- (i) Cytokinesis was observed in the yeast cell.
- (ii) A chain of buds were observed in Amoeba
- (iii) Single cell of Amoeba and single cell of yeast were undergoing binary fission and budding respectively.
- (iv) Elongated nucleus was dividing to form two daughter nuclei in Amoeba.

The correctly reported observations are:

- (a) (i) and (ii)
- (b) (ii) and (iii)
- (c) (iii) and (iv)
- (d) (i) and (iv)

26. Select the correct statements for the process of budding in yeast [1]

- I) A bud arises from a particular region on a parent body
- II) A parent cell divides into 2 daughter cells, here the parental identity is lost
- III) Before detaching from the parent body a bud may form another bud
- IV) A bud when detaches from the parent body grows into a new individual

- (a) I, II, III
- (b) II, III, IV
- (c) III, IV, I
- (d) IV, I, II

27. While determining the focal length of a concave mirror, you try to focus the image of a distant object formed by the mirror on the screen. The image formed on that screen, as compared to the object, should be: [1]

- (a) Erect and highly diminished
- (b) Inverted and enlarged
- (c) Erect and enlarged
- (d) Inverted and highly diminished

28. A student obtained a sharp inverted image of a distant tree on the screen placed behind a convex lens. He then removed the screen and tried to look through the lens in the direction of the object. He would now observe: [1]

- (a) A blurred image on the wall of the laboratory
- (b) An erect image of the tree on the lens
- (c) No image as the screen has been removed
- (d) An inverted image of the tree at the focus of the lens.

- 29.** While tracing the path of a ray of light passing through a rectangular glass slab, a student tabulated his observations as given below: [1]

Sl.No.	$\angle i$	$\angle r$	$\angle e$
I	60°	40°	61°
II	50°	36°	51°
III	40°	26°	40°
IV	30°	20°	31°

The correct observations are :

- (a) (I) and (II)
 (b) (II) and (III)
 (c) (III) and (IV)
 (d) (I), (III) and (IV)
- 30.** During the experiment, to trace the path of ray of light through the glass prism, students reported the following observations: [1]

- (i) The ray of light from air to glass at the first refracting surface bends away from the normal after refraction.
 (ii) At the second refracting surface, light rays entered from air to glass.
 (iii) Light ray suffers two refractions on passing through a prism and in each refraction it bends towards the base of the prism.
 (iv) Light ray suffers two refractions on passing through a prism. In first refraction it bends away from the normal while in the second refraction it bends towards the normal.

The correct observation (s) is / are:

- (a) (i) and (ii) only
 (b) (iii) only
 (c) (ii) and (iv) only
 (d) (i) and (iv) only
- 31.** A student takes about 6 mL of distilled water in each of the four test tubes P, Q, R and S, then dissolves in equal amount four different salts namely sodium chloride in 'P' Potassium Chloride in 'Q', Calcium Chloride in 'R' and magnesium chloride in 'S'. He then adds 10 drop of soap solution to each test tube and shakes its contents. The test tube (s) in which he would observe a good amount of lather is : [1]

- (a) P and Q
 (b) Only P
 (c) R and S
 (d) Only Q

- 32.** What is observed when we pour a drop of acetic acid first on red and then on blue litmus papers? [1]
- (a) Red litmus paper becomes colourless and blue litmus paper remains blue.
(b) Red litmus paper turns blue and blue litmus paper remains blue.
(c) Red litmus paper remains red and blue litmus paper turns red.
(d) Red litmus paper turns blue and blue litmus paper turns red.

- 33.** Hard water is not available for an experiment in the school and its vicinity. However, some salts as given below are available in the school laboratory. [5]
- (I) Sodium Chloride
(II) Sodium Sulphate
(III) Calcium Chloride
(IV) Calcium Sulphate
(V) Potassium Chloride
(VI) Magnesium Sulphate

Select from the following a group of these salts, each member of which may be dissolved in water to make it hard.

- (a) (I), (II), (V)
(b) (I), (III), (V)
(c) (III), (IV), (VI)
(d) (II), (IV), (VI)
- 34.** Out of potato, sweet potato, pea tendril and spinach, which two are analogous structures and why? [2]
- 35.** A 6 cm tall object is placed on the principal axis of a convex lens. The distance of the object from the optical centre of the lens is 15 cm and its sharp image is formed at a distance of 30 cm from it on a screen placed on the other side of the lens. If the object is now moved a little away from the lens, in which direction (towards the lens or away from the lens) will he have to move the screen to get a sharp image of the object on it again? How will the magnification of the image be affected? [2]
- 36.** List two physical and two chemical properties of acetic acid which a student can test in the school laboratory. [2]