CBSE Sample Paper-04
SUMMATIVE ASSESSMENT –II
SCIENCE (Theory)
Class – X

Time allowed: 3 hours   Maximum Marks: 90

General Instructions:

a) All questions are compulsory.
b) The question paper comprises of two sections, A and B. You are to attempt both the sections.
c) Questions 1 to 3 in section A are one mark questions. These are to be answered in one word or in one sentence.
d) Questions 4 to 6 in section A are two marks questions. These are to be answered in about 30 words each.
e) Questions 7 to 18 in section A are three marks questions. These are to be answered in about 50 words each.
f)   Questions 19 to 24 in section A are five marks questions. These are to be answered in about 70 words each.
g) Questions 25 to 27 in section B are 2 marks questions and Questions 28 to 36 are multiple choice questions based on practical skills. Each question of multiple choice questions is a one mark question. You are to select one most appropriate response out of the four provided to you.

Section A

1. Write a food chain in a forest ecosystem.
2. Name the product formed beside soap that is obtained during saponification process.
3. Are the laws of reflection applicable to plane surfaces also valid for curved surfaces?
4. In what S.I. unit is power of lenses rated? A convex lens has a focal length of 50 cm, Calculate its power.
5. What discrepancies were there in Mendeleev's Periodic Table?
6. Name one organ analogous to the wing of the bird. Why are they both analogous? Can you include the wing of bat also with them under the same category? Give reason.
7. An object of size 'l' cm is placed in front of a (i) convex mirror and (ii) concave mirror. With a neat ray-diagram, explain how an erect image is formed.
8. (i) Is the speed of light a constant?
    (ii) Which colour has the greatest speed in the visible region?
    (iii) Is it possible to combine the seven colours in the spectrum to form white?
9. Sheeba studies in grade 9 and is a secretary of school's club. As per practice in the school, all members of science club assemble in Physics lab in last two periods on every Friday.
    Sheeba also extends help to her mother in kitchen. One day she observed that the apparent random wavering or flickering of objects seen through a turbulent stream of hot air rising

above the fire in the kitchen. She discussed about this with her friends and decided to raise the question in school's science club meeting.

Read the given passage and answer the following questions:

(a) Explain the reason behind the observation.

(b) Name the similar phenomenon on a larger scale. Also, draw the ray diagram.

(c) What values are shown by Sheeba?

10. Draw a neat labelled diagram of human eye.

11. "Vegetarian food habits can sustain a larger number of people." Justify the statement in terms of food chain.

12. List any three measures of the projection of wildlife.

13. What is electron affinity? The electron affinity values of three elements A, B and C of a group are 324, 295 and 333 kJ mol^{-1}. Arrange these in increasing order of their atomic numbers.

14. The atomic number of an element is 16. Predict its:
    (a) valency   (b) group number   (c) whether it is a metal of non-metal
    (d) nature of the oxide formed   (e) name of the element.

15. Differentiate between 'Self pollination' and 'Cross pollination'. Describe double fertilization in plants.

16. (i) When does ovulation occur during the menstrual cycle in a normal healthy female?
    (ii) Draw a labelled diagram to show the reproductive system of a human female.

17. How are fossils formed?

18. Explain Mendel's experiment with peas on inheritance of traits considering only one visible contrasting character.

19. Discuss in brief the various modes of reproduction used by single organisms.

Or

Explain with example how characteristics of a population changes over the years for the following situations:

(a) To gain survival advantage.

(b) Due to accidental survival.

(c) Temporary change of characteristics.

20. A square wire of side 3.0 cm is placed 25 cm away from a concave mirror of focal length 10 cm. What is the area enclosed by the image of the wire? The centre of the wire is on the axis of the mirror, with its two sides normal to the axis.

Or

A small candle 2.5 cm in size is placed 27 cm in front of a concave mirror of radius of curvature 0.36 m. At what distance from the mirror should a screen be placed in order to receive a sharp image? Describe the nature and size of the image. If the candle is moved to the mirror, how would the screen have to be moved?

21. Draw a labelled diagram which shows th refraction of light through a triangular glass prism. Mark the:

(i) Angle of deviation   (ii) Angle of emergence   (iii) Angle of prism

Or

Give some points of similarities and dissimilarities between a camera and a human eye.

22. Give five differences between diamond and graphite.

Or

(a) A compound X is formed by the reaction of carboxylic acid having the molecular formula $C_2H_4O_2$ and alcohol (Y) in the presence of conc. H_2SO_4. The same carboxylic acid is obtained by the oxidation of alcohol (Y). Name the compounds X and Y. Give the chemical equation for the reaction.

23. (a) Which hydrocarbons burn with
        (i) non-sooty blue flame   (ii) sooty yellow flame
(b) What happens when methane reacts with chlorine?
(c) What is rectified spirit?
(d) Why does soap not work in hard water?
(e) What is glacial acid?

Or

(a) What is hydrogenation? Give one reaction. What is its industrial application?
(b) What is esterification?

24. Describe the human female reproductive system with the help of a labelled diagram.

Or

 Describe the process of fertilization in the human female.

Section B

25. (i) Which of the following reagents gives brisk effervescene with ethanoic acid and why?
(a) Calcium hydroxide   (b) Sodium chloride
(c) Sodium bicarbonate   (d) Ammonium chloride
(ii) Write the chemical equation.

26. (i) Which is the correct diagram showing an Amoeba undergoing binary fission?
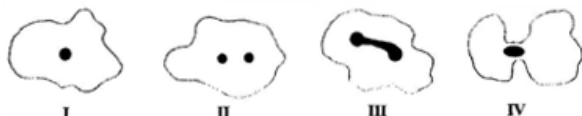
(ii) Justify your answer.

27. Who among the following uses a concave mirror and why?
(a) Automobile rider   (b) Shopkeeper   (c) Dentist   (d) All of these

28. The functional group present in acetic acid:
(a) Carboxylic   (b) Alcohol   (c) Aldehyde   (d) Ketone

29. The physical state of pure acetic acid is:

(a) Solid   (b) Liquid   (c) Aq. Solution   (d) Gaseous state

30. The figure given below shows:

    (a) Amoeba undergoing binary fission   (b) Yeast undergoing binary fission
    (c) Yeast undergoing budding   (d) Amoeba undergoing budding

31. Meosis, Mitosis and Amitosis are the types of:
    (a) Cell division   (b) Cytokinesis   (c) Karyokinesis   (d) All of these

32. How many times the process of budding continuous in the yeast:
    (a) 2-3 times   (b) 3-4 times   (c) 50-70 times   (d) 100-500 times

33. The outgrowth of hydra is termed as:
    (a) Bulb   (b) Bud   (c) Daughter hydra   (d) Tentacles

34. The light from a distant object on passing through the convex lens (f – focal length):

    (a) converges at focus (f).   (b) Appears to diverge from focus.

    (c) Converges at $2f$.   (d) Appears to diverge from $2f$.

35. When red, blue and green light coming parallel to principal axis fall on a convex lens, they will converge on the axis at:
    (a) One point   (b) Two points   (c) Three points   (d) Always at one point

36. The correct formula to calculate the percentage of water absorbed by raisins is:

    (a) $\dfrac{W_2 - W_1}{W_1} = 100$ (b) $\dfrac{W_1 - W_2}{W_2} = 100$ (c) $\dfrac{W_1}{W_2 - W_1} = 100$ (d) $\dfrac{W_2}{W_2 - W_1} = 100$