CBSE Sample Paper-02 (Unsolved)
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.
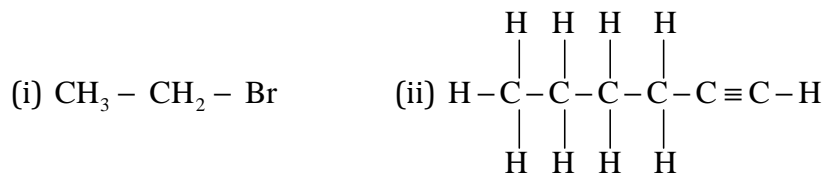
Section A

1. Complete the following reaction:

    $$CH_3CH_3OH + Na \longrightarrow$$
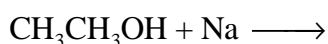
2. A mirror is turned through 15°. By what angle will the reflected ray turn?
3. Name the chemicals that cause depletion of ozone layer.

4. For each of the following pairs, state which one is larger in size:
    (a) Na, Na^+ (b) Be, Mg   (c) Br, I   (d) Cl, Br
5. Name the scientific terms used to represent the following:
    (a) The branch of biology which studies heredity and variation.
    (b) The transmission of traits from parents to offsprings.
    (c) Differences in a trait in human beings.
    (d) A recognizable feature of an organism.
6. Light coming from the bottom of a water tank does not come out of the water. What should be the minimum angle of incident for the same?
7. Electronic configuration of elements X, Y and Z is given below:
    X = 2, 7   Y = 2, 8, 5   Z = 2, 8, 8
    Write the position of elements in the periodic table.

8. On the basis of electronic structure, how will you select:
   (a) The first element in a period.
   (b) The terminating number in a period.
   (c) The chemically similar elements.

9. Describe asexual reproduction in Amoeba.

10. Explain various steps of budding in yeast.

11. On the basis of possibilities of combination of the sex chromosomes, what percentage probability does a couple have having of son or a daughter? Show the same by making a cross.

12. It is a well known fact that pregnant woman's health is a backbone of every family and society.
   Using the above information, answer the following questions:
   (a) Which tissue is responsible for providing nutrition from mother to growing embryo?
   (b) What according to you can be the likely measures to maintain a woman's health during pregnancy?
   (c) What value will the learners infer from this passage?

   [Value Base Question]

13. Monochromatic light of wavelength 589 nm is incident from air on a water surface. What are the wavelength, frequency and speed of:
   (a) reflected light   (b) refracted light?
   (μ of water = 1.33)

14. A girl in the mirror laughing house finds her face appearing highly magnified, lower portion of her body of the same size but laterally inverted and middle portion of the body highly diminished in size. Can you guess the design of the mirror?

15. Find the position of an object which when placed in front of a convex mirror produces a virtual image, which is half of the size of object.

16. What is dispersion? Which colour deviates the most in a prism? Why does it take place?

17. What are the problems caused by the non-biodegradable wastes that we generate?

18. Write a note on conservation of coal and pertroleum.

19. (a) How can we use alcohol as a fuel? What are its advantages?
    (b) How will you prepare soap? Explain the cleansing action of soap.
    (c) Give one use of acetic acid.

Or

   (a) Name two elements of group 13.
   (b) Name most electronegative element in periodic table. Write its atomic number.
   (c) Give limitations of Dobereiner's law of triads.
   (d) Why do ionic compounds not conduct electricity in solid state?
   (e) Name the chief ore of iron. Give its formula.

20. (a) Why does carbon form largest number of compounds?
    (b) Why are some of these called saturated and other unsaturated compounds?
    (c) Which of these two is more reactive?
    (d) Write the names of the following compounds:

    (i) $CH_3 - CH_2 - Br$ (ii) $H-\overset{\displaystyle H}{\underset{\displaystyle H}{\overset{|}{\underset{|}{C}}}}-\overset{\displaystyle H}{\underset{\displaystyle H}{\overset{|}{\underset{|}{C}}}}-\overset{\displaystyle H}{\underset{\displaystyle H}{\overset{|}{\underset{|}{C}}}}-\overset{\displaystyle H}{\underset{\displaystyle H}{\overset{|}{\underset{|}{C}}}}-C \equiv C-H$

Or

Describe one method for the preparation of ethanoic acid. Give two physical properties and three uses.

21. (a) Explain with an example, how evolutionary relationship is liked to classification.
    (b) A study found that children with light coloured eyes are likely to have parents with light coloured eyes. On this basis can we say whether the light eye colour traits to be dominant or recessive. Why or why not?

Or

(a) Why are asexually reproducing organisms capable of showing hereditary features?
(b) If the sperm bearing Y-chromosome fertilizes the egg, the child born will not be entirely like his father. Why is it so?
(c) What is the relation between heredity and variation in asexual and sexual reproduction?

22. (a) How can the pea plant be prevented from self pollination? How is cross pollination carried out?
    (b) A normal pea plant bearing coloured flowers suddenly starts producing white flowers. What could be the possible cause?
    (c) Are Mendelian traits and genes similar?

Or

(a) Why is regeneration considered a method of reproduction?
(b) Is copy of DNA form identical to original cell? If yes or no, How it is beneficial to the species?
(c) Why variation is beneficial to the species but not necessarily for the individual?

23. (a) Draw a ray diagram showing the path of a ray of light when it enters with oblique incidence
    (i) from air into water   (ii) from water into air
    (b) Under what condition in an arrangement of two plane mirrors, incident ray and reflected ray will always be parallel to each other, whatever may be the angle of incident. Show the same with the help of diagram.

(a) What is refraction of light? Give an expression to relate the absolute refractive index of a medium with speed of light in vacuum.

(b) The refractive index of water and glass with respect to air are $\frac{4}{3}$ and $\frac{3}{2}$ respectively. If the speed of light in glass is 2×10^8 ms^{-1}, then find the speed of light in (i) air, (ii) water.

24. (a) A person cannot read newspaper placed nearer than 50 cm from his eyes. Name the defect of vision he is suffering from. Draw a ray diagram to illustrate this effect. List its two possible causes. Draw a ray diagram to show how this defect may be corrected using a lens of appropriate focal length.

(b) We see advertisements for eye donation on television or in newspaper. Write the importance of such advertisements.

Or

(a) An object is placed at a distance of 15 cm from a convex mirror of focal length 20 cm. Find the position and nature of the image.

(b) Define refractive index. Light enters from air to diamond having refractive index 2.42. Find the speed of light in the diamond. The speed of light in vacuum is 3×10^8 ms^{-1},.

Section B

25. (a) Which functional group present in acetic acid?
(b) Write its suffix (notation).

26. A student is given a permanent slide showing binary fission in Amoeba. The following are the steps in focusing the object under the microscope:
(i) Place the slide on the stage; look through the eye piece and adjust the mirror and diaphragm to get even illumination.
(ii) Look through the eye piece and raise the objective using coarse adjustment until the object is focused.
(iii) Make the focus sharp wit the help of the fine adjustment.
(iv) Look through the eye piece and move the slide until the object is visible.
Now give following answers:
(a) What is the proper sequence of steps?
(b) Justify your answer.

27. (a) While performing the experiment with glass slab, what should be the range of incident angle ?
(b) Give reason for your answer.

28. Ethanoic acid was added to Sodium bicarbonate solution and the gas evolved was tested with a burning splinter. The following four observations were reported:
   I. The gas burns with the pop sound and the flame gets extinguished.
   II. The gas does not burn but the splinter burns with a pop sound.
   III. The flame extinguishes and the gas does not burn.
   IV. The gas burns with a blue flame and the splinter burns brightly.
   The correct observation is reported in:
   (a) I   (b) II   (c) III   (d) IV

29. The odour of ethanoic resembles with:
   (a) tomato juice   (b) kerosene   (c) orange juice   (d) vinegar

30. During the budding, division of cell in yeast shows:
   (a) Meiosis cell division   (b) Mitosis cell division
   (c) Both Mitosis and Meiosis cell divisions   (d) No cell division occurs

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

32. Slides A and B show stages of asexual reproduction in two different organisms.
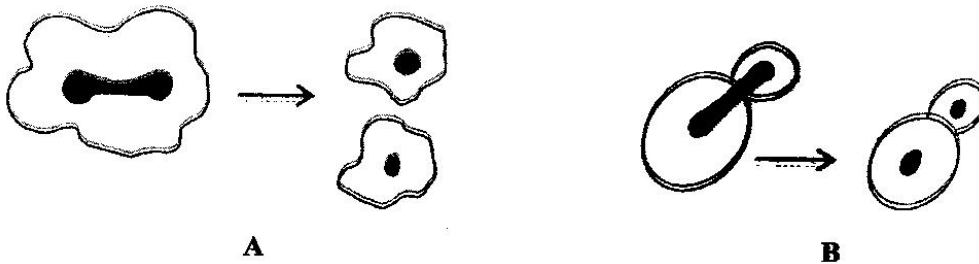
   The slides A and B are depicting:
   (a) Binary fission in both Amoeba and yeast
   (b) Budding in both Amoeba and yeast
   (c) Binary fission in yeast and budding Amoeba
   (d) Binary fission in Amoeba and budding in yeast

33. A cross was made between two plants, one having variegated leaves and the other having green leaves. The F1 generation of this hybrid produced plants all having variegated leaves. What can be the reason?
   (a) Traits of variegated leave is dominant
   (b) Traits of green leaves is receive
   (c) Both (a) and (b)
   (d) None of these

34. Your school laboratory has one large window. To find the focal length of a concave mirror using one of the walls as the screen, the experiment may be performed.
    (a) near the wall opposite to the window.
    (b) on the same wall as the window.
    (c) on the wall adjacent to the window.
    (d) only on the table as per the laboratory arrangement

35. Refraction cannot cause bending as light moves from one surface to another if the incident and refraction angles i and r are related as:
    (a) $i \neq r = 0$ (b) $i = r = 90°$ (c) $i = r = 0$ (d) $i = 90°, r = 0°$

36. The three 'R' rule that will help us to conserve natural resources for long-term use are:
    (a) Recycle, Regenerate, Reuse   (b) Reduce, Regenerate, Reuse
    (c) Reduce, Reuse, Redistribute   (d) Reduce, Recycle, Reuse