CBSE Board Xth STD. 2012

ALL INDIA BOARD

Set 3

Subject - Science

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 questions of Section B are to be attempted separately.
(v) Questions number 1 to 4 in Section A are of one –mark questions. These are to be answered in one word or one sentence.
(vi) Questions number 5 to 13 in section A are of two – mark questions. These are to be answered in about 30 words each.
(vii) Questions number 14 to 22 in Section A are of three – mark questions. These are to be answered in about 50 words each.
(viii) Questions number 23 to 25 in Section A are of five – mark questions. These are to be answered in about 70 words each.
(ix) Questions number 26 to 41 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.

Section A

1. Write the name and formula of the first member of the carbon compounds having functional group – CHO.

2. State one role of ciliary muscles in the human eye.

3. Write the name and formula of a molecule made up of three atoms of oxygen.

4. List two man – made ecosystems.

5. Why do all the elements of the (a) same group have similar properties, (b) same period have different properties?

6. An element E has following electronic configuration :

K	L	M
2	8	6

   a) To which group of the periodic table does element E belong?

   b) To which period of the periodic table does element E belong?

   c) State the number of valence electrons present in element E.

   d) State the valency of the element E.

7. Why is vegetative propagation practiced for growing some types of plants? List two plants which are grown by this method.

8. State the role of placenta in the development of embryo.

9. To construct ray diagram we use two light rays which are so chosen that it is easy to know their directions after reflection from the mirror. List these two rays and state the path of these rays after reflection. Use these rays to locate the image of an object placed between centre of curvature and focus of a concave mirror.

10. What is the colour of the clear sky during the day time? Give reasons for it.

11. Draw a labeled ray diagram to illustrate the dispersion of a narrow beam of white light when it passes through a glass prism.

12. List the products of combustion of fossil fuels. What are their adverse effects on the environment?

13. List three problems which arise due to construction of big dams. Suggest a solution for these problems.

14. State the meaning of inherited traits and acquired traits. Which of the two is not passed on to the next generation? Explain with the help of an example.

15. How are fossils formed? Describe, in brief, two methods of determining the age of fossils.

16. IF we cross pure-bred tall (dominant) pea plant with pure-bred dwarf (recessive) pea plant we will get pea plant of F1 generation. If we now self-cross the pea plant of F_1 generation, then we obtain pea plants of F_2 generation.

a) What do the plants of F1 generation look like?
b) State the ratio of tall plants to dwarf plants in F2 generation.
c) State the type of plants not found in F1 generation but appeared in F2 generation, mentioning the reason for the same.

17. A 5 cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 12 cm. The distance of the object from the lens is 8 cm. Using the lens formula, find the position, size and nature of the image formed.

18. State the types of mirrors used for (i) headlights and (ii) rear view mirrors, in cars and motorcycles. Give reason to justify your answer in each case.

19. An old man cannot see objects closer than 1 m from the eye clearly. Name the defect of vision he is suffering from. How can it be corrected? Draw ray diagram for the (i) defect of vision and also (ii) for its correction.

20. Name the oxidizing agent used for the conversion of ethanol of ethonic acid. Distinguish between ethanol and ethonic acid on the basis of (i) litmus test, (ii) reaction with the sodium hydrogen carbonate.

21. List and explain in brief three methods of contraception.

22. Na, Mg and Al are the elements having one, two and here valence electrons respectively. Which of these elements (i) has the largest atomic radius, (ii) is least reactive? Justify your answer stating reason for each.

23. List the new Cartesian sign convention for reflection of light by spherical mirrors. Draw a diagram and apply these conventions for calculating the focal length and nature of a spherical mirror which forms a 1/3 times magnified virtual image of an object placed 18 cm in front of it.

OR

With the help of a ray diagram, state what is meant by refraction of light. State Snell's law of refraction of light and also express it mathematically.

The refractive indeed of air with respect to glass is 2/3 and the refractive index of water with respect to air is 4/3. If the speed of light in glass is 2×10^8 m/s, find the speed of light in (a) air, (b) water.

24. What are hydrocarbons? Write the name and general formula of (i) saturated hydrocarbons, (ii) unsaturated hydrocarbons, and draw the structure of one hydrocarbon of each type. How can an unsaturated hydrocarbon be made saturated?

OR

What are detergents chemically? List two merits and two demerits of using detergents for cleansing. State the reason for the suitability of detergents for washing, even in the case of water having calcium and magnesium ions.

25. Distinguish between unisexual and bisexual flowers giving one example of each. Draw a diagram showing process of germination of pollen grains on stigma and label the following parts :

(i) Female germ cell
(ii) Male germ cell
(iii) Ovary

OR

Draw a diagram of human female reproductive system and label the parts

(i) That produces eggs.
(ii) Where fusion of egg and sperm takes place.
(iii) Where zygote is implanted.

What happens to human egg when it is not fertilized?

Section B

26. The following figures illustrate binary fission in Amoeba in an incorrect sequence.

I II III IV

The correct sequence is

(A) III, II, IV, I
(B) III, IV, II, I
(C) II, III, IV, I
(D) IV, III, II, I

27. From the following diagrams, select the correct ones showing stages of binary fission in Amoeba :

I II III IV V

(A) I, II, III,
(B) IV, II, III
(C) V, II, III
(D) IV, I, III

28. Following diagrams were drawn by different students on having seen prepared slides of budding in yeast.

I II III IV V

Correct diagrams are

(A) I, II, III
(B) II, III, IV
(C) III, IV, V
(D) I, IV, V

29. In which of the following figures is budding not shown?

I II III IV.

(A) I
(B) II
(C) III
(D) IV

30. A student weighed some raisins and recorded the weight as 'x'. She then soaked the raisins in distilled water. After about 2 hours she removed the raisins, wiped them dry and weighed again and recorded that as 'y'. The percentage of water absorbed by raisins may be determined using the relationship.

(A) $\frac{y-x}{y} \times 100$ (B) $\frac{y-x}{x} \times 100$

(B) $\frac{y-x}{x} \times \frac{1}{100}$ (D) $y-x \times 100$

31. In the experiment for determining the percentage of water absorbed by raisins, we do the final weighing of the raisins after keeping them dipped in water for about one hour. For the accuracy of the result, the extra water from the surface of the soaked raisins is removed by

(A) Rubbing with cotton cloth
(B) Hot air blower
(C) Dry cotton wool
(D) Filter paper

32. On adding 2 ml acetic acid to 2 mL of water in a test tube, it was observed that

(A) A clear and transparent solution is formed
(B) A white precipitate is formed almost immediately
(C) Two separate layers were formed
(D) A colourless and odourless gas is evolved.

33. On adding acetic acid to sodium hydrogen carbonate in a test tube, a student observes

(A) No reaction
(B) A colourless gas with pungent smell
(C) Bubbles of a colourless and odourless gas
(D) A strong smell of vinegar

34. Which one of the following are the correct observations about acetic acid?

(A) It turns blue litmus red and smells like vinegar
(B) It turns blue litmus red and smells like burning sulphur
(C) It turns red litmus blue and smells like vinegar
(D) It turns red litmus blue and has a fruity smell

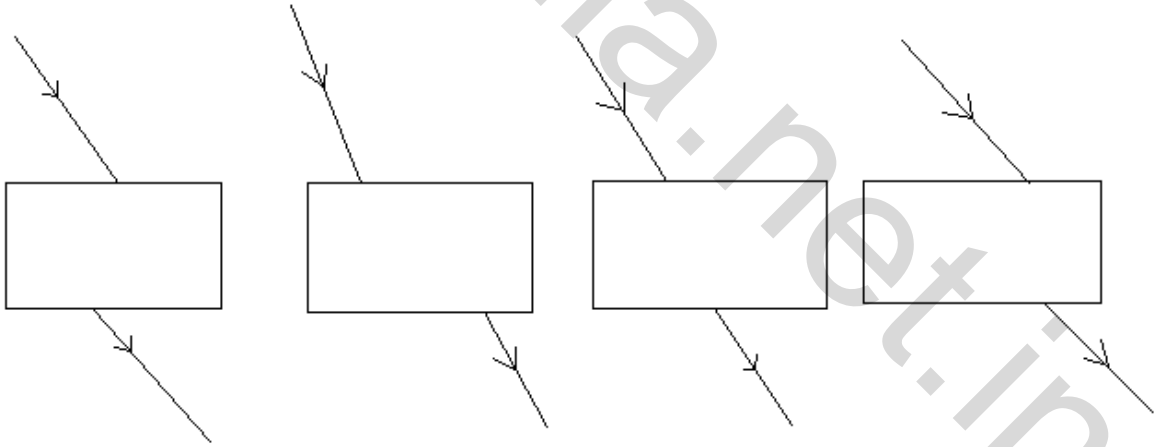
35. The aqueous solutions of copper sulphate and zinc sulphate appear

(A) Blue and green respectively
(B) Green and colourless respectively
(C) Blue and brown respectively
(D) Blue and colourless respectively

36. Solutions of copper sulphate and zinc sulphate are prepared and marked I, II and III respectively. Few pieces of aluminium are added to each solution. After some time a change will be observed in

(A) I and II
(B) II and III
(C) III and I
(D) All the three

37. Four students showed the following traces of the path of a ray of light passing through a rectangular glass slab.



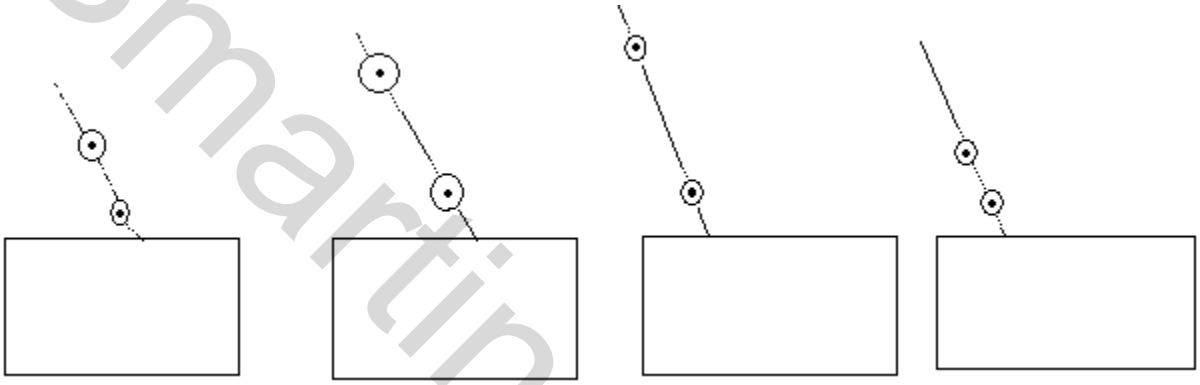
I II III IV

The trace most likely to be correct is that of student.

(A) I
(B) II
(C) III

(D) IV

38. While performing the experiment on tracing the path of a ray of light through a rectangular glass slab, in which of the following experimental set-ups is a student likely to get best results?
P_1 and P_2 are the positions of pins fixed by him.



(A) I
(B) II
(C) III
(D) IV

39. If you are to determine the focal length of a convex lens, you should have
(A) A convex lens and a screen
(B) A convex lens and a lens holder
(C) A lens holder, a screen holder and a scale
(D) A convex lens, a screen, holders for them and a scale

40. A student obtained a sharp inverted image of distant tree on a screen placed in front of the concave mirror. He then removed the screen and tried to look into the mirror. He would now see
(A) A very blurred image on the wall opposite to the mirror
(B) An erect and magnified image of the tree in the mirror

(C) No image as the screen has been removed
(D) A highly diminished inverted image of the tree at the focus of the mirror.

41. A student has to determine the focal length of a concave mirror by obtaining the image of a distant object on a screen. For getting best result he should focus.
(A) A distant tree or an electric pole
(B) A well-illuminated distant building
(C) Well-lit grills of the nearest window
(D) A burning candle placed at the distant edge of the laboratory table