CCE MODEL TEST PAPER 4

SECOND TERM (SA–II)

SCIENCE (*Theory*)

(*For Practice*)

CLASS X

Time Allowed : 3 Hours] [*Maximum Marks* : 90

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*) *All questions of Section A and all questions of Section B are to be attempted separately.*

(*iv*) *Question numbers 1 to 3 in Section A are one mark questions. These are to be answered in one word or one sentence.*

(*v*) *Question numbers 4 to 7 are two marks questions, to be answered in about 30 words.*

(*vi*) *Question numbers 8 to 19 are three marks questions, to be answered in about 50 words.*

(*vii*) *Question numbers 20 to 24 are five marks questions, to be answered in about 70 words.*

(*viii*) *Question numbers 25 to 42 in Section B are multiple choice questions based on practical skills. Each question is a one mark question. You are to choose one most appropriate response out of the four provided to you.*

SECTION A

1. In the formation of spectrum of white light by a prism, which component deviates the (*i*) least, (*ii*) most ? (1)

2. Name the products obtained on complete combustion of ethanol. (1)

3. Name the type of asexual reproduction in *Hydra* and *Planaria*. (1)

4. A convex lens of focal length 10 cm is placed at a distance of 12 cm from a wall. Calculate the distance from the lens where an object be placed so as to form its distinct real image on the wall. (2)

5. A person suffering from short-sightedness can see clearly only upto a distance of 2 metres. Find the nature and power of the lens required to correct his vision. (2)

6. Suggest two methods by which our combustion of coal and petroleum can be reduced. (2)

7. A study found that children with light-coloured eyes are likely to have parents with light-coloured eyes. On this basis, can we say anything about whether the light eye colour trait is dominant or recessive ? Why or why not ? (2)

8. (*a*) Why does the sky appear dark instead of blue to an astronaut ?

(*b*) What happens to image distance in human eye when an object moves away from the eye ? (3)

9. An object 2 cm high is placed at a distance of 16 cm from a concave mirror which produces a real image 3 cm high. Find

(*i*) image distance and (*ii*) focal length of the mirror. (3)

10. (*a*) What is meant by 'Power' of a lens ?

(*b*) State its unit and define it.

(*c*) Which of the two lenses has a greater power :

(*i*) a convex lens of focal length 5 cm ? (*ii*) a convex lens of focal length 50 cm ?

Justify your answer. (3)

11. Draw labelled ray diagrams to illustrate

(*i*) the defect of vision called 'hypermetropia' and

(*ii*) for its correction using an appropriate lens. (3)

12. An organic compound A is widely used as a preservative in pickles and has a molecular formula $C_2H_4O_2$. This compound reacts with ethanol to form a sweet smelling compound B.

(*a*) Identify the compound A.

(*b*) Write the chemical equation for its reaction with ethanol to form compound B.

(*c*) How can we get compound A back from B ? (3)

13. (*i*) The elements of the second period along with their atomic number in parentheses are given below :

B (5), Be (4), O (8), N (7), Li (3), C (6), F (9)

(*a*) Arrange them in the same order as they are in the periodic table.

(*b*) Which element has the (*i*) largest (*ii*) smallest atom ?

(*ii*) Why does the atomic radius change as we move from left to right in a period ? (3)

14. How is ozone formed in the upper atmosphere ? Why is damage to ozone layer a cause of concern to us ? What causes this damage ? (3)

15. Suggest three ways to maintain a balance between environment and development. (3)

16. Study the given data and answer the questions that follow :

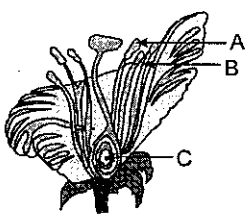
1	2	3
Parental plant cross fertilized and seeds collected	F_1 Generation offspring	F_2 Generation offspring after self pollination of F_1 hybrid
Male parent–Round Green seeds Female parent–Wrinkled Yellow seeds	All seeds–Round Yellow	314 - Round Yellow 110 - Round Green 102 - Wrinkled Yellow 32 - Wrinkled Green

(*a*) What is the term given to this type of cross ?

(*b*) What does the data in column 2 indicate ?

State how did you arrive at this conclusion. (3)

17. Name the parts A, B and C shown in the given diagram and state one function of each part. (3)



18. Explain with the help of flow chart– "What determines the sex of a child genetically ?" (3)

19. What is pollination ? Describe cross pollination. (3)

20. (*a*) Name the kind of lens that can form :

(*i*) an inverted magnified image.

(*ii*) an erect diminished image.

Draw ray diagrams to illustrate your answer in each case.

(*b*) Draw a ray diagram to show the image formed of an object placed between *f* and 2*f* distances from a convex lens. (5)

Or

(*a*) Why do car manufacturers prefer to fix convex mirrors as rear-view mirrors in cars ? State two reasons.

(*b*) Draw a ray diagram to show the formation of image of an object placed between the pole and focus of a concave mirror.

(*c*) State two uses of concave mirrors.

21. (*a*) Write chemical equations along with necessary condition for the following changes to take place :

(*i*) Ethanol to Ethanoic acid.

(*ii*) Ethanoic acid to Sodium acetate.

(*iii*) Methane to Chloromethane.

(*b*) What is a homologous series of organic compounds ? Explain it with an example. (5)

Or

(*a*) Complete the following reactions stating the main products formed in each :

(*i*) $CH_3 - CH = CH_2 + H_2 \xrightarrow{\text{Ni-catalyast}}$

(*ii*) $C_2H_5OH + Na \longrightarrow$

(*iii*) $CH_3COOH + Na_2CO_3 \longrightarrow$

(*b*) Write the next homologue of propanol ($CH_3CH_2CH_2OH$) and Butanal ($CH_3CH_2CH_2CHO$).

22. (*a*) How do we classify elements ?

(*b*) What were the two criteria used by Mendeléev in creating his Periodic Table ?

(*c*) Why did Mendeléev leave some gaps in his Periodic Table ?

(*d*) In Mendeléev's Periodic Table, why was there no mention of noble gases like helium, neon and argon ?

(*e*) Would you place the two isotopes of chlorine, Cl-35 and Cl-37 in different slots because of their different atomic masses or in the same slot because of their chemical properties are the same ? Justify your answer. (5)

Or

(*a*) How many elements are known till date ?

(*b*) List the triads that Döbereiner could identify ?

(*c*) Which scientist believed that no more elements will be discovered in future ?

(*d*) What was the nationality of Mendeléev ? In which year was his Periodic Table published ?

(*e*) How many periods and groups are there in the Modern Periodic Table ?

23. (*a*) What is the role of seminal vesicles and the prostate gland ?

(*b*) What are the three categories of contraception methods ? Write briefly about each. (5)

Or

(*a*) Draw longitudinal section of a flower and label on it the following :

(*i*) Ovary (*ii*) Style

(*iii*) Stigma (*iv*) Anther

(*b*) Why is vegetative propagation practised for growing some plants ? Give two examples of plants grown by this method.

24. Mrs Gayatri is four-month pregnant and is worried whether the child is male or female. One day she reads an advertisement regarding a medicine which if taken for 3 months results in birth of male child. What should she do ?

(*a*) Get the medicine and take it regularly.

(*b*) Visit a doctor and discuss the problem with him/her.

(*c*) What, in your opinion, are chances of having a male child ? **(5)**

SECTION B

25. Salman has to perform the experiment of finding the focal length of a given concave mirror by using a distant object. Which of the following set ups will he choose apart from the mirror and screen provided ? (1)

(*a*) a mirror holder, and a scale. (*b*) a mirror holder, a screen holder and a scale.

(*c*) a screen holder and a scale. (*d*) a mirror holder and a screen holder.

26. A sharp image of a distant object is obtained on a screen by using a convex lens. In order to determine the focal length of the lens, one needs to measure the distance between the (1)

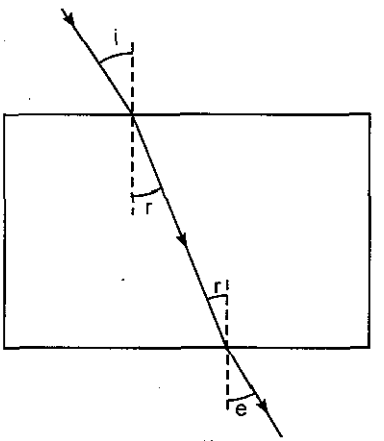
(*a*) lens and the object.

(*b*) lens and the screen.

(*c*) object and the screen.

(*d*) lens and the screen and also object and the screen.

27. While performing the experiment on tracing the path of a ray of light passing through a glass slab as shown in the given diagram, four students interpreted the results as given below. Which one of the four interpretations is correct ? (1)



(*a*) $\angle i > \angle e > \angle r$ (*b*) $\angle i > \angle r > \angle e$

(*c*) $\angle i = \angle e < \angle r$ (*d*) $\angle i = \angle e > \angle r$

28. In an experiment to determine the focal length of a convex lens Amita obtained a sharp inverted image of a distant light house on the screen behind the lens. She then removed the screen and looked through the lens in the direction of the light house. Amita will now observe : (1)

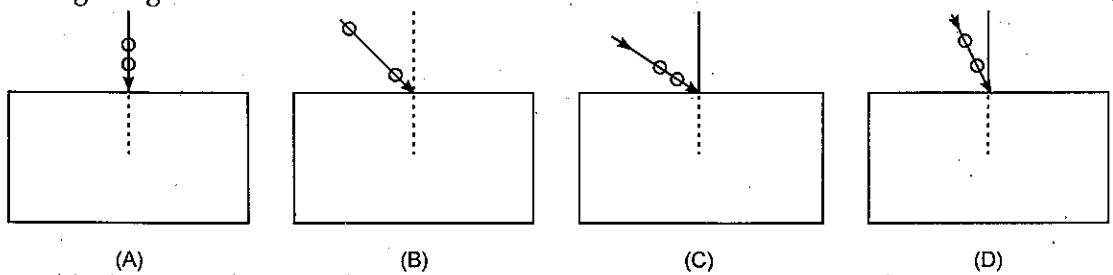
(*a*) no image as the screen has been removed.

(*b*) an erect image of the light house on the lens.

(*c*) an inverted image of the light house at the focus of the lens.

(*d*) a blurred image of the light house on the wall of the laboratory.

29. Which one of the following is the best set up for tracing the path of ray of light through a rectangular glass slab ? (1)



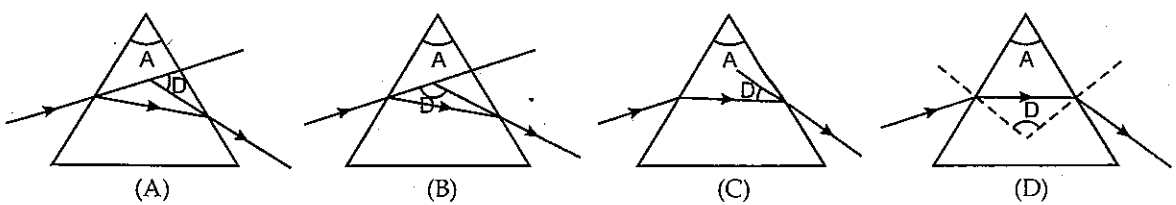
(A) (B) (C) (D)

(*a*) *A* (*b*) *B* (*c*) *C* (*d*) *D*

30. For an equilateral prism the angle of incidence is 40° and the corresponding angle of emergence is 58°. The angle of deviation suffered by light ray while passing through the prism is (1)

(*a*) 18° (*b*) 98° (*c*) 38° (*d*) none of the above

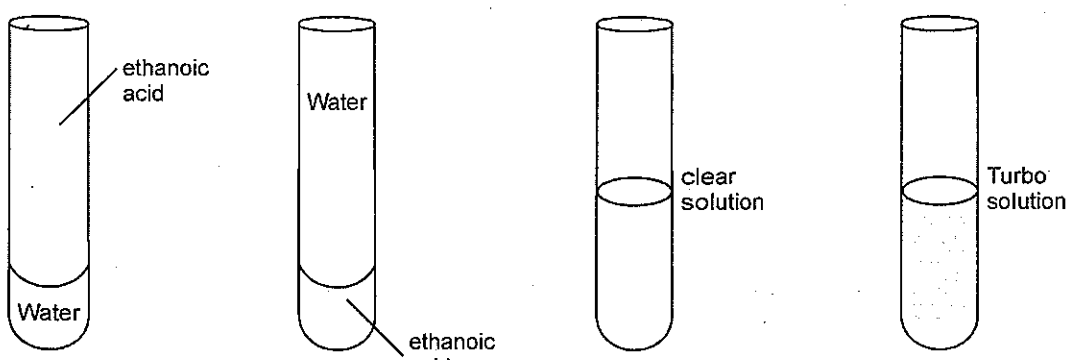
31. A student performed an experiment to draw light ray path through a prism. Correct depiction of angle of deviation suffered by light ray is shown in which of the following figure : (1)



(A) (B) (C) (D)

(*a*) *A* (*b*) *B* (*c*) *C* (*d*) *D*

32. 15 mL each of ethanoic acid and water are mixed together and shaken in a test tube as given below :



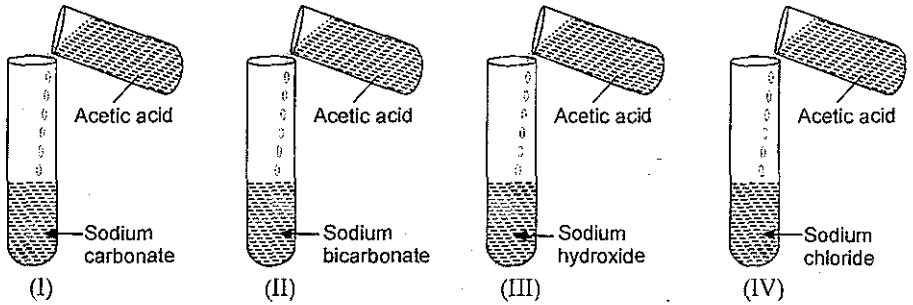
(I) (II) (III) (IV)

The resulting mixture after standing would appear as shown in test tube (1)

(a) I (b) II

(c) III (d) IV

33. A student added acetic acid to test tube I, II, III and IV.

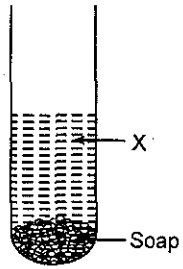


The lighted candle would be extinguished when placed near the mouth of the test tubes : (1)

(a) I and II (b) III and IV

(c) II and III (d) II and IV

34. A saponification reaction was performed in a test test by taking oil and sodium hydroxide solution. The mixture was stirred. After sometime, soap settled down at the bottom of the test tube.



The supernetant liquid X is (1)

(a) Sodium hydroxide (b) Oil

(c) Glycine (d) Glycerol

35. Castor oil was taken in a test tube and agitated alongwith aqueous sodium hydroxide solution, but there was a difficulty in precipitating the soap. Then a substance X was added and after sometime, complete precipitation of soap was achieved. The substance X is (1)

(a) oxalic acid (b) citric acid

(c) sodium chloride (d) depends upon the oil

36. Foaming capacity of different samples of water can be compared by (1)

(a) adding equal volumes of soap solution to equal volumes of water samples.

(b) adding different volumes of soap solution to equal volumes of water samples.

(c) adding equal volumes of soap solution to different volumes of water samples.

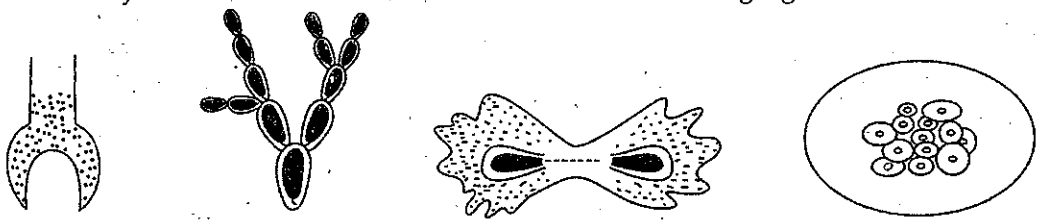
(d) adding different volumes of soap solution to different volumes of water sample.

37. Soap is (1)

(*a*) sodium oxalate (*b*) sodium citrate

(*c*) sodium maleate (*d*) none of the above

38. Binary fission is observed in which one of the following figures ? (1)



(A) (B) (C) (D)

(*a*) A (*b*) B

(*c*) C (*d*) D

39. A student was given two permanent slides, one of binary fission in amoeba and other of budding in yeast. He was asked to identify any one difference in the nucleus of the two. One such difference, he identified correctly was : (1)

(*a*) presence of one nucleus in amoeba, two in yeast cell and one in bud.

(*b*) presence of two nuclei in centrally constricted amoeba, one in yeast cell and one in its bud.

(*c*) presence of two distant nuclei in amoeba, one in yeast cell and two in bud.

(*d*) presence of a single nucleus each in amoeba, yeast cell and its attached bud.

40. The steps involved in observing a slide under a microscope are given below. They are not in proper sequence.

I. Focus the object under high power of the microscope.

II. Place the slide on the stage of the microscope.

III. Arrange the mirror to reflect maximum light to the slide.

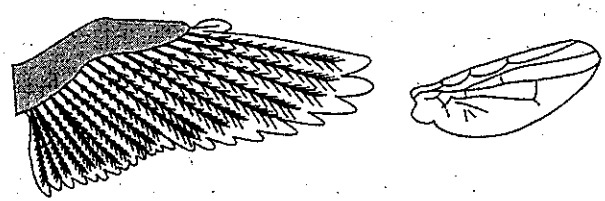
IV. Focus the object under low power of the microscope.

The proper sequence of steps is (1)

(*a*) II, III, IV, I (*b*) I, II, III, IV

(*c*) IV, III, II, I (*d*) III, I, II, IV

41. In the following diagram wings of bird and insect are shown which are analogous. The reason for it is (1)



(*a*) Both perform same function.

(*b*) Both perform different function.

(*c*) They have same origin and function.

(*d*) They have different origin and different function.

42. A student while perfoming experiment to observe embryo of dicot seed saw that the seed kept submerged in a beaker full of water and kept in light failed to germinate the possible reason for it can be (1)

(*a*) seeds did not get oxygen
(*b*) the seeds were kept in light
(*c*) the seeds were not viable
(*d*) Both (*a*) and (*c*)