

# CCE MODEL TEST PAPER 3

## 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. When a beam of white light passes through a glass prism, state the component of white light which deviates the (i) least (ii) most. (1)
2. Draw the structure of ethene molecule ( $C_2H_4$ ). (1)
3. In which part of female reproductive tract fertilisation takes place ? (1)
4. (i) Why does the sun appear reddish early in the morning ?  
(ii) Why does the sky appear dark instead of blue to an astronaut ? (2)
5. An object is placed at a distance of 10 cm from a concave mirror. If its image is observed at 6 cm from the mirror. Calculate focal length of the mirror. (2)
6. What harm has been caused to alpine meadows since nomadic shepherds has stopped from grazing their cattle in such meadows ? (2)
7. Explain the terms :  
(i) Speciation  
(ii) Natural selection. (2)
8. (i) Define power of a lens and write its SI unit.  
(ii) A convex lens of power 4 D is placed at a distance of 40 cm from a wall. At what distance from the lens should a candle be placed so that its image is formed on the wall ? (3)
9. A person is unable to see objects nearer than 50 cm. He wants to read a book placed at a distance of 25 cm. Name the defect of vision he is suffering from. How can it be corrected ? Draw ray diagrams for (i) the defective eye, (ii) its correction using a suitable corrective lens. (3)

10. (a) With the help of a ray diagram show that when light falls obliquely on a side of a rectangular glass slab, the emergent ray is parallel to the incident ray.

(b) The refractive index of water for light going from air to water is 1.33. Find the refractive index of air for a beam of light going from water to air. (3)

11. State the sign convention for image formation by spherical mirrors.

State the formula for magnification of image formed by a spherical mirror. (3)

12. What are soaps ? Explain the mechanism of the cleansing action of soaps. (3)

13. (a) Atomic number is considered to be a more appropriate parameter than atomic mass for classification of elements in a periodic table. Why ?

(b) How does atomic size of elements vary on moving from :

(i) left to right in a period ? (ii) top to bottom in a group ?

Give reasons for your answers. (3)

14. How can you help in the problem of waste disposal ? Give any three methods. (3)

15. What changes can you make in your habits to become more environment-friendly ? (3)

16. What does HIV stand for ? Is AIDS an infectious disease ? List any four modes of spreading AIDS. (3)

17. (a) List two sexually transmitted diseases in each of the following cases :

(i) Bacterial infections

(ii) Viral infections.

(b) How may the spread of such diseases be prevented ? (3)

18. What are fossils ? What do they tell us about the process of evolution ? (3)

19. List two advantages of vegetative propagation. In which two of the following plants is vegetative propagation practised :

Banana, Rice, Tomato, Rose (3)

20. Name the type of lens used to obtain :

(i) an erect, enlarged and virtual image of an object.

(ii) an erect, diminished and virtual image of an object.

Draw labelled ray diagrams to show the formation of image in each case. Which of these lenses could also form a magnified and real image of the object ? State the position of the object for which this could happen. (5)

Or

Draw a ray diagram in each of the following cases to show the position and nature of image formed when the object is placed

(i) between pole and focus of a concave mirror.

(ii) between focus and centre of curvature of a concave mirror.

(iii) at the centre of curvature of a concave mirror.

(iv) between infinity and pole of a convex mirror.

(v) at infinity from a convex mirror.

21. (a) An element has electronic configuration 2, 8, 3. What is the atomic number of this element ? To which group and period does this element belong ?

(b) How does the atomic size vary in a group from top to bottom and in a period from left to right ? (5)

Or

(a) An element belongs to third period and second group of the periodic table.

(i) State the number of valence electrons in it.

(ii) Is it a metal or a non-metal ?

(b) (i) What is common in the elements belonging to the same period of the periodic table ?

(ii) Why are chlorine and bromine kept in the same group in the periodic table ?

22. Ravi and Rohit were preparing for the topic on hydrocarbons. Hydrocarbons are the compounds made up of carbon and hydrogen only. These are all very useful compounds. We can further classify them into alkanes, alkenes and alkynes. Ravi said to Rohit, "Can you reply to my three questions ?" "What are those ?" asked Rohit.

(a) What is the general formula of alkanes and what are their applications ?

(b) An alkene is used for artificial ripening of the fruits. Name that compound.

(c) An alkyne is used in the process of welding. Name that alkyne.

Reproduce the answers given by Rohit.

(5)

23. With the help of suitable diagrams, explain the various steps of budding in Hydra. (5)

Or

What is binary fission in organisms ? With the help of suitable diagrams, describe the mode of reproduction in Amoeba.

24. Draw a neat diagram of male reproductive system and label the parts which produces the sperm, the gland which provides fluid medium to sperm and the duct which carries the sperm from the organ they are formed. (5)

Or

Draw a diagram of female reproductive system, label uterus, ovary, fallopian tube and give one function of each of these.

## SECTION B

25. In an experiment on tracing the path of a ray of light through a rectangular glass slab, four students A, B, C, D used the following values of angle of incidence and the distance between the feet of the two pins (fixed on the incident ray) :

(a) (30°, 45°, 60°) and 1 cm

(b) (30°, 45°, 60°) and 6 cm

(c) (20°, 50°, 80°) and 2 cm

(d) (20°, 50°, 80°) and 5 cm

Out of these the best choice is that of student

(1)

(a) A

(b) B

(c) C

(d) D

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, we need to measure the distance between the (1)

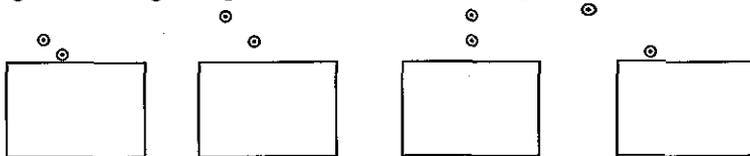
(a) lens and the screen.

(b) lens and the object.

(c) object and the screen.

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

27. Out of the four set ups shown for carrying out the experiment to trace the path of a ray of light through a rectangular glass slab, the best set up is : (1)



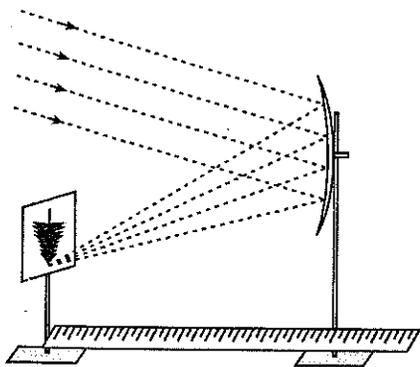
(a) A

(b) B

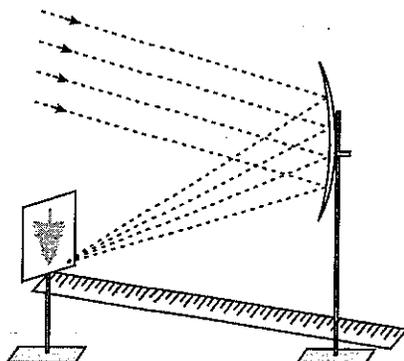
(c) C

(d) D

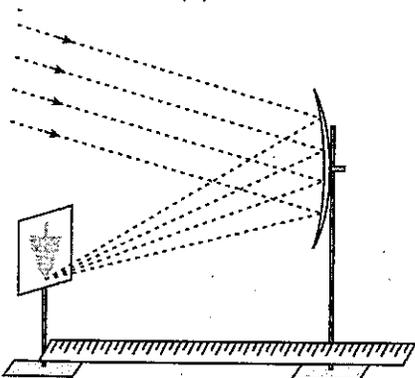
28. Parallel rays, from a distant tree, incident on a concave mirror, form an image on the screen.



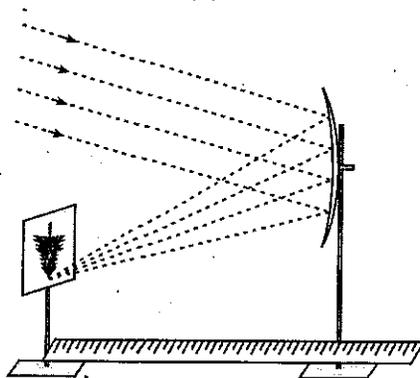
(A)



(B)



(C)



(D)

The correct formation of image on the screen is shown in

(a) A

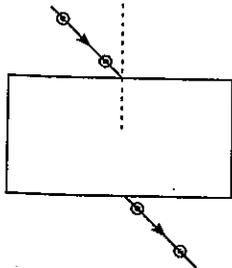
(b) B

(c) C

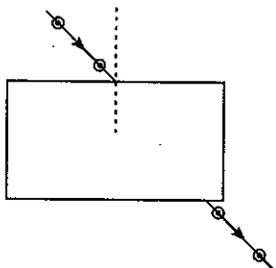
(d) D

(1)

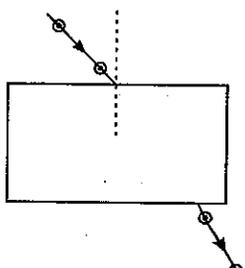
29. Four students A, B, C and D traced the path of a ray of light passing through a rectangular glass slab placed in air. The incident ray and the emergent ray drawn by them are given as below.



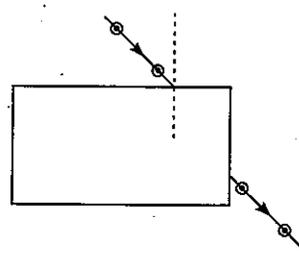
(A)



(B)



(C)



(D)

The student who traced the rays correctly is

(a) A

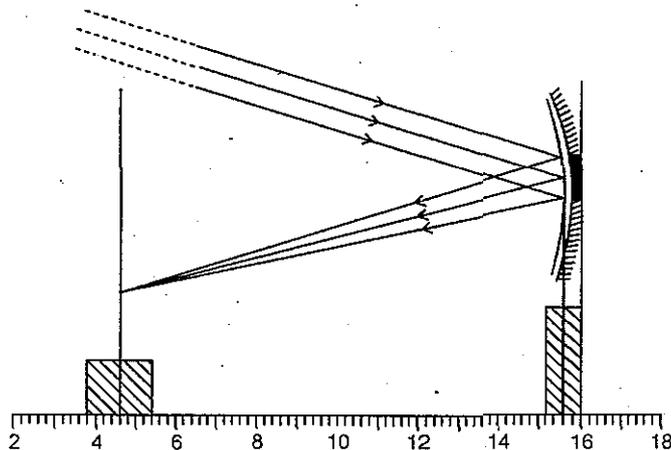
(b) B

(c) C

(d) D

(1)

30. The focal length of the concave mirror in the experimental set up, shown below, equals (1)

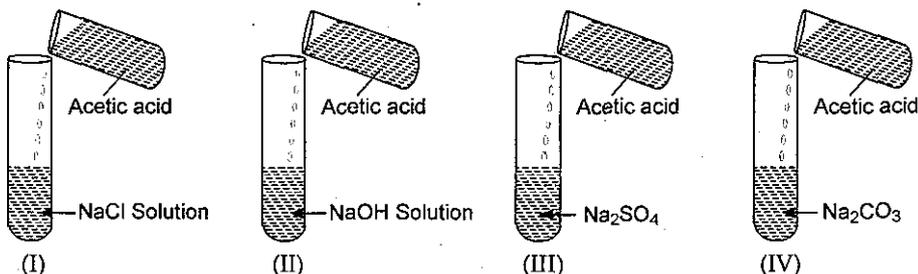


- (a) 10.3 cm (b) 11.0 cm (c) 11.7 cm (d) 12.2 cm

31. The angle of deviation  $D$  suffered by a ray of light passing through a prism is the angle (1)

- (a) subtended by emergent ray from the incident ray.  
 (b) subtended by emergent ray from the refracted ray.  
 (c) subtended by refracted ray from incident ray.  
 (d) subtended by incident ray from refracted ray or refracted ray from emergent ray.

32. In which test tube a student would observe effervescence on pouring acetic acid as shown in the following diagram. (1)



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

33. A student is asked to add a teaspoonful of solid sodium bicarbonate to a test tube containing approximately 3 mL of acetic acid. He observed that the solid sodium bicarbonate : (1)

- (a) floats on the surface of acetic acid.  
 (b) remains suspended in the acetic acid.  
 (c) settles down in the test tube.  
 (d) reacts with acetic acid and a clear solution is obtained.

34. Which of the following cannot be a soap ? (1)

- (a) Sodium stearate (b) Sodium oleate  
 (c) Sodium palmitate (d) Sodium oxalate

35. The side product formed in the saponification is (1)

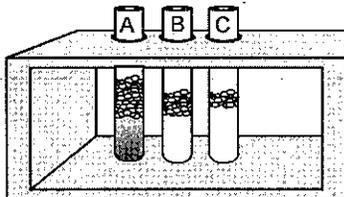
- (a) glycol (b) glycine  
 (c) glycerol (d) none of the above

36. Tick the correct statement :

(1)

- (a) More foam is formed by hard water than soft water.
- (b) More foam is formed by soft water than hard water.
- (c) Hardness of water is due to the presence of calcium hydrogencarbonate only.
- (d) Greater the amount of calcium sulphate in water, greater will be the cleansing capacity of soap.

37. 10 mL of distilled water, underground water and water mixed with calcium chloride were taken in 3 test tubes and 2 mL of soap solution was added to each. After closing the mouth of the test tube, each tube was shaken for 2 minutes. The observation is shown in the Fig. below :

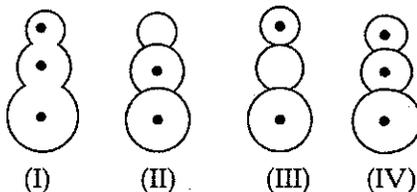


The tube containing the maximum length of foam contains

(1)

- (a) underground water
- (b) distilled water
- (c) water mixed with calcium chloride
- (d) depends upon the quality of soap

38. Following diagrams were drawn by four different students on having seen a prepared slide of budding in yeast :



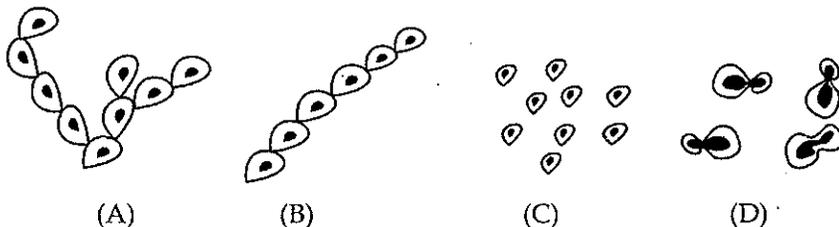
The correct diagram is

(1)

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

39. Which of the following figures does not show budding ?

(1)



(a) B

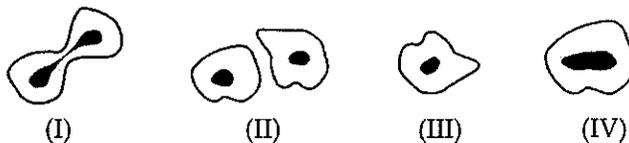
(b) C.

(c) A

(d) D

40. The following figure illustrates binary fission in Amoeba. Choose the option giving the correct sequence.

(1)



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

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

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

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

41. In figure A, B, C, D some modification are shown out of these which are homologous organs ? (1)



A



B



C



D

(a) A and B

(b) A, B and D

(c) A, B and C

(d) A, B, C and D

42. Correct label of A and B part in the given diagram is

(a) A - leaf B - shoot

(b) A - root B - shoot

(c) A - shoot B - root

(d) A and B both are parts of shoot



(1)