

# CCE MODEL TEST PAPER 5

## SECOND TERM (SA-II)

### SCIENCE (Theory)

(For Practice)

CLASS X

Time Allowed : 3 Hours]

[Maximum Marks : 90

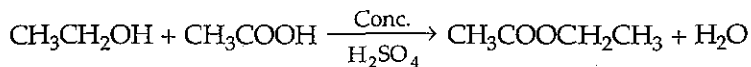
#### General Instructions :

- (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

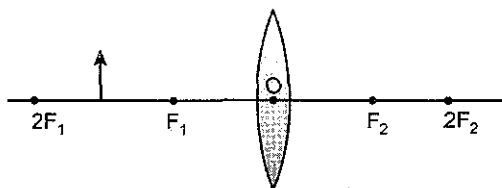
1. Draw a ray diagram to show the Angle of Deviation when a ray of light passes through a glass prism. (1)

2. Name the type of reaction represented by the following equation : (1)



3. What is the average duration of pregnancy ? (1)

4. Complete the diagram in your answer book and write the nature of the image formed. (2)



5. What are the causes of the following defects of vision and how can they be corrected ?

(a) Myopia

(b) Presbyopia.

(2)

6. The construction of large dams lead to (i) social and (ii) environmental problems. List two problems in each case. (2)

7. What are the different ways in which individuals with a particular trait may increase in a population ? (2)

8. Define power of a lens. Two lenses of power  $-2.5\text{ D}$  and  $+1.5\text{ D}$  are placed in contact. Find the total power of the combination of lenses. Calculate the focal length of this combination. (3)

9. A  $2.0\text{ cm}$  tall object is placed perpendicular to the principal axis of a convex lens of focal length  $10\text{ cm}$ . The distance of the object from the lens is  $15\text{ cm}$ . Find the nature, position and size of the image formed. (3)

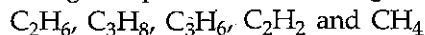
10. A convex lens forms a real and inverted image of a candle at a distance of  $30\text{ cm}$  from it. Where is the candle placed in front of the convex lens if the image is of the same size as the object ? Draw a ray diagram to support your answer. Also find the power of the lens. (3)

11. With the help of a labelled diagram explain the following :

(i) The sun appears reddish during sunrise.

(ii) At noon the sun appears white. (3)

12. (a) Which of the following compounds will undergo addition reaction ?



(b) What is hydrogenation ? State its industrial application. (3)

13. (a) Name an element you would expect to show chemical reactions similar to sodium. State the reason in support of your answer.

(b) Write electronic configuration of the element belonging to 3rd period and 13th group of the periodic table. Predict whether it is a metal or a non-metal. Give reason. (3)

14. (a) What are trophic levels ? Give an example of food chain and state the different trophic levels in it.

(b) What is the role of decomposers in the ecosystem ? (3)

15. Why should we conserve forests ? Suggest any two ways to conserve forests. (3)

16. (a) Draw a flow chart to determine the characteristics of the progeny of a cross between Tall Pea plants with Short Pea plants showing

(i) F1 Generation

(ii) F2 Generation.

(b) List the Dominant and Recessive characters. (3)

17. (a) Differentiate between :

(i) Homologous organs and Analogous organs.

(ii) Pollination and Fertilisation.

(b) What do fossils tell us about the process of evolution ? (3)

18. Explain vegetative propagation with the help of two examples. List two advantages of vegetative propagation. (3)

19. What are sexually transmitted diseases ? Name four such diseases. Which one of them damages the immune system of the body ? (3)

20. (a) State two characteristics which distinguish between real and virtual images.

(b) The magnification produced by a mirror is  $+1$ . What does this indicate ?

(c) What is Lateral Displacement ? State two factors on which it depends. (5)

Or

(a) Light enters from air into diamond which has a refractive index of 2.42. Calculate the speed of light in diamond. The speed of light in air is  $3 \times 10^8 \text{ m s}^{-1}$ .

(b) Draw ray diagrams to show the formation of virtual image in case of the following mirror :

(i) concave mirror

(ii) convex mirror

(c) How can concave mirror help in harnessing Sun's energy ?

21. Answer the following questions :

(a) Describe a chemical test to distinguish between ethanol and ethanoic acid.

(b) Give reason for the following :

(i) Ethanol is used in the preparation of tincture iodine.

(ii) Ethanoic acid is used in the preservation of pickles.

(c) What is Saponification ?

(5)

Or

(a) Draw the structure of Propanoic acid ( $\text{C}_2\text{H}_5\text{COOH}$ ).

(b) Why do the bottoms of cooking vessels get blackened ?

(c) What is a Micelle ? Draw a labelled diagram of a Micelle.

(d) List two factors responsible for the versatile nature of carbon.

22. (a) Complete the following equations :

(i)  $\text{CH}_4 + \text{O}_2 \longrightarrow$

(excess)

(ii)  $\text{CH}_3\text{COOH} + \text{C}_2\text{H}_5\text{OH} \xrightarrow{\text{Acid}}$

(iii)  $\text{CH}_3\text{CH}_2\text{OH} \xrightarrow[443 \text{ K}]{\text{Conc. H}_2\text{SO}_4}$

(b) Write the IUPAC name of the next homologue of  $\text{CH}_3\text{OH}$ ,  $\text{CH}_2 = \text{CH}_2$ .

(5)

Or

(a) Define homologous series of organic compounds. Mention any two characteristics of homologous series.

(b) Name the compound formed on heating ethanol at 443 K with excess of conc.  $\text{H}_2\text{SO}_4$ .

(c) Describe a chemical test to distinguish between ethanol and ethanoic acid.

23. What is placenta ? Describe its structure. State its functions in case of pregnant human female.

(5)

Or

(a) Draw the diagram of a flower to show its male and female reproductive parts. Label the following parts in it :

(i) Ovary

(ii) Anther

(iii) Filament

(iv) Stigma

(b) How does fusion of male and female gametes takes place in plants ?

24. After reading about Mendel's experiment on sweet pea Renu wanted to repeat the same in his kitchen garden. She bought sweet pea seeds and sowed them. After few months when the plants started flowering she observed that all the plants were tall.

(a) Why all plants were tall ?

- (b) Under which condition she could have observed both tall and dwarf plants ?  
 (c) If she collects seeds from her garden and sows them, what type of plants she is expected to get ? (5)

### SECTION B

25. A student recorded the following sets of observations during the experiment of tracing the path of a ray of light passing through a glass slab.

S.No.	$\angle i$	$\angle r$	$\angle e$
I	$30^\circ$	$19^\circ$	$30^\circ$
II	$40^\circ$	$27^\circ$	$40^\circ$
III	$50^\circ$	$37^\circ$	$51^\circ$
IV	$60^\circ$	$35^\circ$	$59^\circ$

The incorrect observation is at the serial number (1)

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

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

- (A) ( $30^\circ$ ,  $45^\circ$ ,  $60^\circ$ ) and 2 cm (B) ( $30^\circ$ ,  $45^\circ$ ,  $60^\circ$ ) and 2 cm  
 (C) ( $20^\circ$ ,  $50^\circ$ ,  $70^\circ$ ) and 8 cm (D) ( $20^\circ$ ,  $50^\circ$ ,  $70^\circ$ ) and 8 cm

Out of these the best choice is that of the student (1)

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

27. A teacher gives a convex lens and a concave mirror of focal length about 12 cm each to her student and asks her to find their focal length by obtaining the image of a distant object. The student uses a distant tower as the object and obtains its sharp image one by one on a white screen. The distances  $l_1$  and  $l_2$  between the lens/mirror and the screen in the two cases and the nature of their respective images are likely to be (1)

- (a) (12 cm, 12 cm) and (erect, erect)  
 (b) (12 cm, 24 cm) and (erect, erect)  
 (c) (12 cm, 24 cm) and (inverted, inverted)  
 (d) (12 cm, 12 cm) and (inverted, inverted)

28. A student obtains a blurred image of an illuminated distant tower on a screen by using a convex lens. In order to obtain sharp image of the tower on the screen, he must shift the lens (1)

- (a) towards the screen.  
 (b) away from the screen.  
 (c) to a position very far away from the screen.  
 (d) either towards or away from the screen depending upon the position of the tower.

29. For determining the focal length of a concave mirror by obtaining sharp and distinct image of a distant object, out of the following options a student should prefer as object (1)

- (a) a burning candle kept at the distant edge of the laboratory table.  
 (b) well lit grill of the laboratory window.

(c) a well lit distant budding.

(d) a distant tree.

30. The two angles of refraction  $r_1$  and  $r_2$  are related to the angle of prism  $A$  as per relation : (1)

(a)  $A = r_1 + r_2$

(b)  $r_1 = A + r_2$

(c)  $r_2 = A + r_1$

(d)  $A = r_1 \cdot r_2$

31. For a prism when a light ray is incident on a refracting surface of prism, the refracted ray (1)

(a) bends towards the normal

(b) bends away from the normal

(c) bends towards the refracting surface

(d) bends away from the prism

32. On adding acetic acid to a solid X kept in a test tube a student observed that a colourless and odourless gas Y evolves which turns lime water milky. On the basis of this information what conclusion would you draw ? (1)

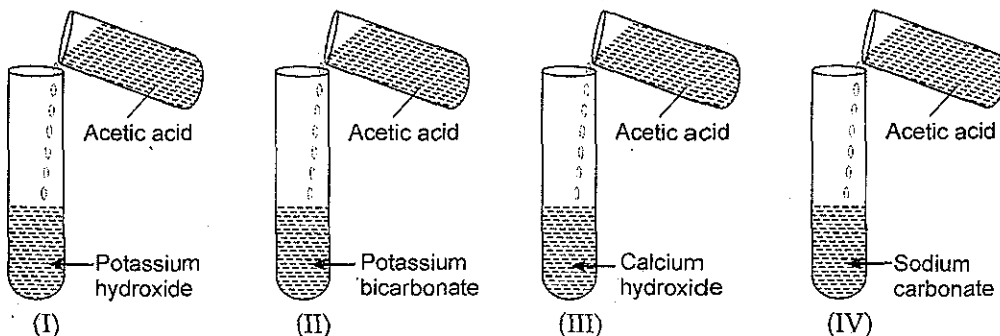
(a) Solid X is sodium hydroxide and the gas Y is carbon dioxide ( $\text{CO}_2$ ).

(b) Solid X is sodium hydrogen carbonate and the gas Y is hydrogen.

(c) Solid X is sodium carbonate and the gas Y is carbon dioxide ( $\text{CO}_2$ ).

(d) Solid X is sodium hydrogen carbonate and the gas Y is carbon monoxide.

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



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

(a) I and II

(b) II and III

(c) II and IV

(d) I and IV

34. On stirring an oil with sodium hydroxide solution, (1)

(a) evolution of heat takes place.

(b) absorption of heat takes place.

(c) depends upon the oil taken.

(d) no heat change happens.

35. Tick the correct statement : (1)

(i) Sodium hydroxide is used in the preparation of washing soap.

(ii) Sodium carbonate is used in the preparation of washing soap.

(iii) Potassium hydroxide is used in the preparation of toilet soap.

(iv) Potassium carbonate is used in the preparation of toilet soap.

(a) (i) and (ii)

(b) (i) and (iv)

(c) (i) and (iii)

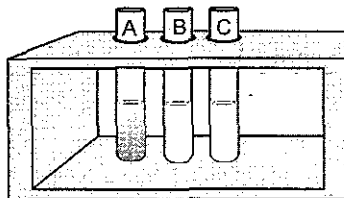
(d) (iii) and (iv)

36. When soap is added to hard water, we observe that

(1)

- (a) soap does not react.
- (b) soap disappears immediately.
- (c) a scum is formed which floats on the surface of water.
- (d) none of the above happens.

37. Three tubes marked A, B and C were filled with 10 mL of water. 1, 2 and 3 g of calcium hydrogencarbonate respectively were added to tubes A, B and C. The solid was completely dissolved by stirring. 2 mL of soap solution was added to each test tube and the tubes were shaken vigorously for 2 minutes each.

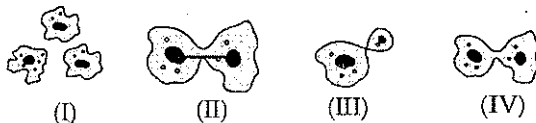


The tube that contains the minimum length of foam is

(1)

- (a) A
- (b) B
- (c) C
- (d) A and B will contain equal length of foam

38. Out of four slides I, II, III, IV whose details are shown below, which one should be focussed under the microscope for showing budding in yeast? (1)



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

39. Binary fission in *Amoeba* starts with the

(1)

- (a) Two *Amoebae* come closer
- (b) *Amoeba* stops feeding
- (c) Elongation of nucleus
- (d) Constriction of cell membrane.

40. The diagram given below illustrates :

(1)



- (a) bud formation in yeast.
- (b) binary fission in *amoeba*.
- (c) formation of daughter cells in yeast.
- (d) pseudopodia formation in *amoeba*.

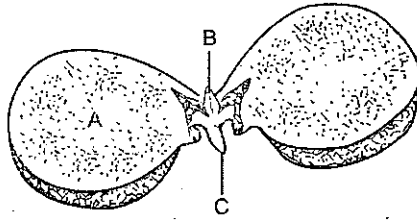
41. Correct definition of homologous organs is

(1)

- (a) different functions, same origin.
- (b) same function, different origin.
- (c) same function or different function, but similar origin.
- (d) same function or different function but different origin.

42. The correct labelling for part A, B and C is

(1)



- (a) A - cotyledon B - radicle C - plumule
- (b) A - leaf B - shoot C - root
- (c) A - leaf B - embryo C - cotyledon
- (d) A - cotyledon B - plumule C - radicle