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SUMMATIVE ASSESSMENT-II [2013]

SCIENCE

Time allowed: 3 hours]

[Maximum marks :90

General Instructions:

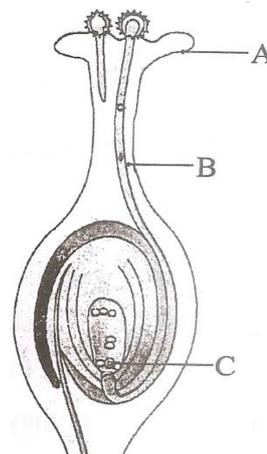
- (i) The question paper comprises of two sections, **A** and **B**. You are to attempt both the sections.
- (ii) All questions are compulsory.
- (iii) All questions of **Section-A** and all questions of **Section-B** are to be attempted separately.
- (iv) Question number **1** to **3** in **section-A** are **one** marks questions. These are to be answered in **one** word or in **one** sentence.
- (v) Question number **4** to **7** in **section-A** are **two** marks questions. These are to be answered in about **30** words each.
- (vi) Question number **8** to **19** in **section-A** are **three** marks questions. These are to be answered in about **50** words.
- (vii) Question number **20** to **24** in **section-A** are **five** marks questions. These are to be answered in about **70** words.
- (viii) Question numbers **25** to **42** in **section-B** are multiple choice questions based on practice 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. How many vertical columns are there in the modern periodic table and what are they called? [1]
2. What is speciation? [1]
3. Why should biodegradable and non-biodegradable wastes be discarded in two separate dust bins? [1]

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4. "The chromosome number of the sexually reproducing parents and their offspring is the same." Justify this statement. [2]
5. "A ray of light incident on a rectangular glass slab immersed in any medium emerges parallel to itself." Draw labelled ray diagram to justify the statement. [2]
6. We often observe domestic waste decomposing in the bylanes of residential colonies. Suggest ways to make people realize that the improper disposal of waste is harmful to the environment. [2]
7. List and explain any two advantages associated with water harvesting at Community level. [2]
8. Write the name and the structural formula of the compound formed when ethanol is heated at 443K with excess of conc.  $H_2SO_4$ . State the role of conc.  $H_2SO_4$  in this reaction. Write chemical equation for the reaction. [3]
9. Why homologous series of carbon compounds are so called? Write chemical formula of two consecutive members of a homologous series and state the part of these compounds that determines their (i) physical properties, and (ii) chemical properties. [3]
10. Given below are some elements of the modern periodic table :  
 ${}_4Be$ ,  ${}_{9}Fe$ ,  ${}_{14}Si$ ,  ${}_{19}K$ ,  ${}_{20}Ca$  [3]
- (i) Select the element that has one electron in the outermost shell and write its electronic configuration.
- (ii) Select two elements that belong to the same group. Give reason for your answer.
- (iii) Select two elements that belong to the same period. Which one of the two has bigger atomic size?
11. Write the number of periods the modern periodic table has. How do the valency and metallic character of elements vary on moving from left to right in a period? How do the valency and atomic size of elements vary down a group? [3]
12. (a) Explain the process of regeneration in Planaria.  
(b) How is regeneration different from reproduction? [3]
13. Write two example each of sexually transmitted diseases caused by  
(a) Virus (B) bacteria.  
Explain how the transmission of such diseases be prevented? [3]
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14. Tabulate two distinguish features between acquired traits and inherited traits with one example of each. **[3]**
15. "The sex of a newborn child is a matter of chance and none of the parents may be considered responsible for it." Justify this statement with the help of flow chart showing determination of sex of a newborn. **[3]**
16. Mention the types of minor used as (i) rear view mirror, (ii) shaving mirrors. List two reasons to justify your answer in each case. **[3]**
17. An object of height 6cm is placed perpendicular to the principal axis of a concave lens of focal length 5cm. use lens formula to determine the position, size and nature of the image if the distance of the object from the lens is 10cm. **[3]**
18. State the difference in colours of the sun observed during sunrise/sunset and noon. Give explanation for each. **[3]**
19. (a) What is an ecosystem? List its two main components.  
(b) We do not clean ponds or lakes, but an aquarium needs to be cleaned regularly. Explain. **[3]**
20. (a) Define the term 'isomers'.  
(b) Draw two possible isomers of the compound with molecular formula  $C_3H_6O$  and write their names.  
(c) Give the electron dot structures of the above two compounds. **[5]**
21. (a) List three distinguishing features between sexual and asexual types of reproduction.  
(b) Explain why variations are observed in the offsprings of sexually reproducing organisms? **[5]**
22. (a) Identify A, B and C in the given diagram and write their functions.  
(b) Mention the role of gamete and zygote in sexually reproducing organisms.



23. (a) State the laws of refraction of light. Give an expression to relate the absolute refractive index of a medium with speed of light in vacuum.
- (b) The refractive indices 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  $2 \times 10^8 \text{ ms}^{-1}$ , find the speed of light in (i) air, (ii) water. **[5]**
24. (a) A person cannot read newspaper placed nearer than 50cm from his eyes. Name the defect of vision he is suffering from. Draw a ray diagram to illustrate this defect. 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 newspapers. Write the importance of such advertisements. **[5]**

### Section-B

25. A student takes 2ml acetic acid in a dry test tube and adds a pinch of sodium hydrogen carbonate to it. He makes the following observations:
- A colourless and odourless gas evolves with a brisk effervescence.
  - The gas turns lime water milky when passed through it.
  - The gas burns with an explosion when a burning splinter is brought.
  - The gas extinguishes the burning splinter that is brought near it.
- The correct observations are:
- (A) I, II and III  
(B) II, III and IV  
(C) III, IV and I  
(D) IV, I and II **[1]**
26. In an experiment to study the properties of acetic acid a student takes about 2ml of acetic in a dry test tube. He adds about 2ml of water to it and shakes the test tube well. He is likely to observe that:
- (A) The acetic acid dissolves readily in water  
(B) The solution becomes light orange  
(C) Water floats over the surface of acetic acid  
(D) Acetic acid floats over the surface of water **[1]**

27. A student prepared 20% sodium hydroxide solution in a beaker containing water. The observation noted by him are given below.

- I. Sodium hydroxide is in the form of pellets.
- II. It dissolves in water readily.
- III. The beaker appears cold when touched from outside.
- IV. The red litmus paper turns blue when dipped into the solution.

The correct observations are:

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

[1]

28. Read the following statements:

- I. When a red litmus paper is dipped into reaction mixture of a saponification reaction, it turns blue and the reaction is exothermic.
- II. When a blue litmus paper is dipped into reaction mixture of a saponification reaction, its colour does not change and the reaction is exothermic.
- III. When a red litmus paper is dipped into reaction mixture of a saponification reaction, its colour does not change and the reaction is endothermic.
- IV. When a blue litmus paper is dipped into reaction mixture of a saponification reaction, its colour does not change and the reaction is endothermic.

Which of the above statement are correct:

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

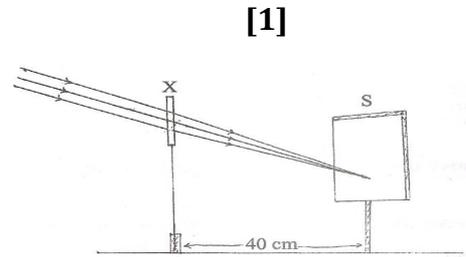
[1]

29. Hard water required for an experiment is not available in a school laboratory. However, following salts are available in the laboratory. Select the salts which may be dissolved in water to make it hard for experiment.

- |                        |                        |
|------------------------|------------------------|
| (1) Calcium Sulphate   | (3) Calcium Chloride   |
| (2) Sodium Chloride    | (4) Potassium Sulphate |
| (6) Magnesium Chloride | (5) Magnesium Chloride |

- (A) 1, 2 and 4
- (B) 1, 3 and 6
- (C) 3, 5 and 6
- (D) 2, 4 and 5

30. A student focused the image of a distant object using a device 'X' on a white screen 'S' as shown in the figure. If the distance of the screen from the device is 40cm, select the correct statement about the device.



- (A) The device X is a convex lens of focal length 20cm.
- (B) The device X is a concave mirror of focal length 40cm.
- (C) The device X is a concave mirror of radius of curvature 40 cm.
- (D) The device X is a convex lens of focal length 40cm.

**[1]**

31. A student obtained a image of a burning candle, placed at the farther end of a laboratory table, on a screen using a concave mirror. For getting better value of focal length of the mirror, the subject teacher suggested him for focusing a well illuminated distant object. What should the student do?

- (A) He should move the mirror away from the screen.
- (B) He should move the mirror slightly toward the screen.
- (C) He should move the mirror as well as the screen toward the newly selected object.
- (D) He should move only the screen toward the newly selected object.

**[1]**

32. After tracing the path of rays of light through a glass slab for three different angles of incidences, a student measured the corresponding values angle of refraction  $r$  and angle of emergence  $e$  and recorded them in the table given below:

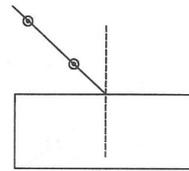
S. No.	$\angle i$	$\angle r$	$\angle e$
I	$30^\circ$	$20^\circ$	$31^\circ$
II	$40^\circ$	$25^\circ$	$40^\circ$
III	$50^\circ$	$31^\circ$	$49^\circ$

The correct observation are:

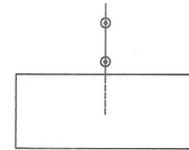
- (A) I and II
- (B) II and III
- (C) I and III
- (D) I, II and III

**[1]**

33. Select from the following the best set-up for tracing the path of a ray of light through a rectangular glass slab:

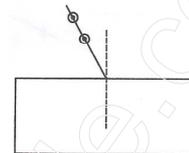


(I)

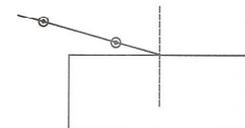


(II)

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

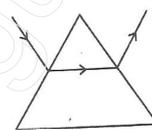


(III)

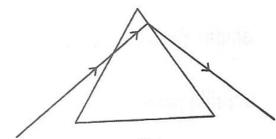


(IV)

34. While performing the experiment to trace the path of a ray of light passing through a glass prism, four students marked the incident ray and the emergent ray in their diagram in the manner shown below:



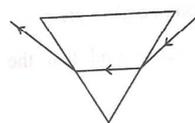
(I)



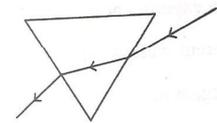
(II)

The correct path of the ray has been shown by:

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



(III)



(IV)

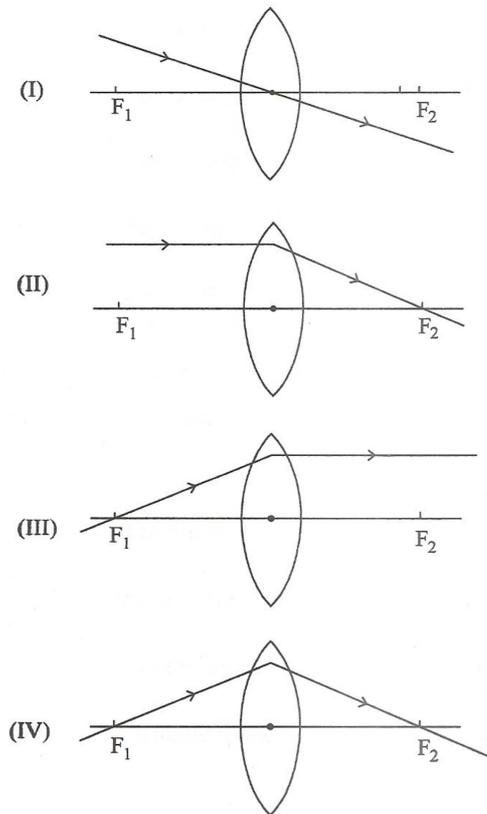
**[1]**

35. In an experiment to trace the path of a ray of light through a glass prism for different values of angle of incidence a student would find that the emergent ray:

- (A) Is parallel to the incident ray
- (B) Perpendicular to the incident ray
- (C) Is parallel to the refracted ray
- (D) Bend at an angle to the direction of incident ray

**[1]**

36. Study the following ray diagram:

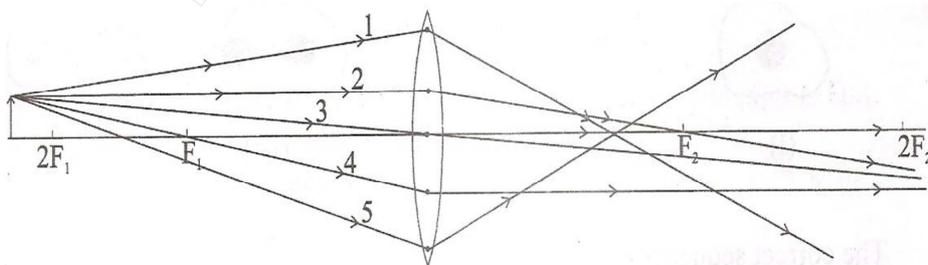


The diagrams showing the correct path of the ray after passing through the lens are:

- (A) II and III only
- (B) I and II only
- (C) I, II and III
- (D) I, II and IV

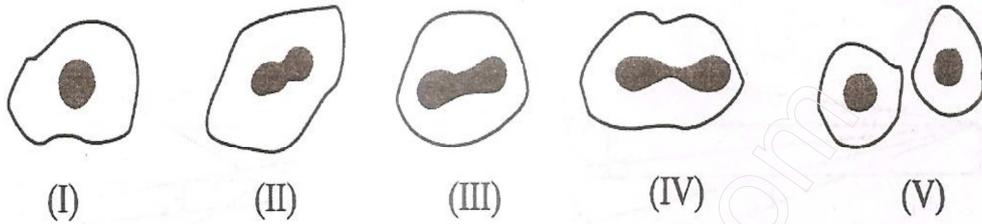
[1]

37. Out of the five incident rays shown in the figure find the three rays that are obeying the laws of refraction and may be used for locating the position of image formed by a convex lens:



- (A) 1, 2 and 3  
 (B) 2, 3 and 4  
 (C) 3, 4 and 5  
 (D) 1, 2 and 4 [1]

38. A student after observing a slide showing different stages of binary fission in Amoeba draws the following diagrams. However these diagrams are not in proper sequence:



The correct sequence is:

- (A) I, V, IV, III, II  
 (B) I, III, IV, V, II  
 (C) I, V, III, IV, II  
 (D) I, IV, V, III, II [1]

39. Select the correct statement for the process of budding in yeast:

- (I) A bud arises from a particular region on a parent body.  
 (II) A parent cell divides into two daughter cells, here the parental identity is lost.  
 (III) Before detaching from the parent body a bud may form another bud.  
 (IV) A bud when detaches from the parent body grows into a new individual.

- (A) I, II and III  
 (B) II, III and IV  
 (C) III, IV and I  
 (D) IV, I and II [1]

40. Study the different conclusion drawn by students of a class on the basis of observation of preserved / available specimens of plants and animals.

- (I) Potato and sweet potato are analogous organs in plants.  
 (II) Wings of insects and wings of birds are homologous organs in animals.  
 (III) Wings of insects and wings of bats are analogous organs in plants.  
 (IV) Thorns of citrus and tendrils of cucurbita are analogous organs in plants.

The correct conclusions are:

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

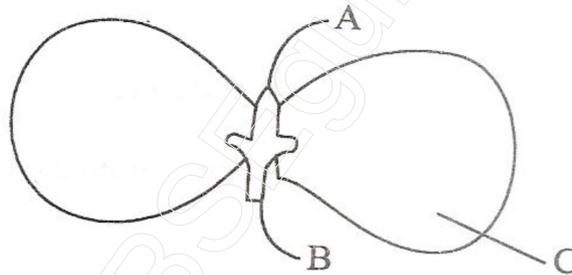
[1]

41. You have potato, carrot, radish, sweet potato, tomato and ginger bought from the market in your jute bag. Identity two vegetables to represent the correct homologous structures.

- (A) Potato and tomato
- (B) Carrot and tomato
- (C) Potato and sweet potato
- (D) Carrot and radish

[1]

42. In the figure, the parts marked A, B and C are sequentially:



- (A) Plumule, Radicle and Cotyledon
- (B) Radicle, Plumule and Cotyledon
- (C) Plumule, Cotyledon and Radicle
- (D) Radicle, Cotyledon and Plumule

[1]