CBSE QUESTION PAPER
CLASS-X

SUMMATIVE ASSESSMENT – II
संकलित परीक्षा – II

SCIENCE
विज्ञान

Time allowed : 3 hours
निर्धारित समय : 3 घण्टे

Maximum Marks : 80
अधिकतम अंक : 80
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 one mark questions. These are to be answered in one word or one sentence.

(vi) Questions number 5 to 13 in Section A are two mark questions. These are to be answered in about 30 words each.

(vii) Questions number 14 to 22 in Section A are three mark questions. These are to be answered in about 50 words each.

(viii) Questions number 23 to 25 in Section A are 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.

सामान्य निदेशः

(i) इस प्रश्न पत्र को दो भागों, भाग अ और भाग ब, में बांटा गया है। आपको दोनों भागों के प्रश्नों के उत्तर लिखने हैं।

(ii) सभी प्रश्न आधिकारिक हैं।

(iii) पूरे प्रश्न पत्र पर कोई चयन प्राप्त नहीं है परंतु पृष्ठ-पृष्ठ अंकों के तीन प्रश्नों में प्रश्न भीतरी चयन दिया गया है। इन प्रश्नों में आप केवल प्रश्न भीतरी एक चयन को उत्तर लिखने के लिए चुन सकते हैं।

(iv) आपको भाग अ और भाग ब के सभी प्रश्नों के उत्तर पृष्ठ-पृष्ठ भाग आधार पर लिखने होंगे।

(v) भाग अ के प्रश्न संख्या 1 से 4 के प्रश्न एक-एक अंक के हैं। इनके उत्तर एक शब्द अथवा एक वाक्य में दे।

(vi) भाग अ के प्रश्न संख्या 5 से 13 के प्रश्न दो-दो अंकों के हैं। इनके उत्तर लगभग 30-30 शब्दों में देने हैं।

(vii) भाग अ के प्रश्न संख्या 14 से 22 के प्रश्न तीन-तीन अंकों के हैं। इनके उत्तर लगभग 50-50 शब्दों में देने हैं।

(viii) भाग अ के प्रश्न संख्या 23 से 25 के प्रश्न पृष्ठ-पृष्ठ अंकों के हैं। इनके उत्तर लगभग 70 शब्दों में देने हैं।

(ix) भाग ब के प्रश्न संख्या 26 से 41 के प्रश्न प्रयोगात्मक कौशल पर आधारित बहुविकल्पी प्रश्न हैं। प्रत्येक प्रश्न एक अंक का है। दिए-गये चार विकल्पों में से आपको केवल एक सबसे उपयुक्त विकल्प चुनना है।
1. Draw the structure for ethanoic acid molecule, CH₃COOH.
एथेनोइक अम्ल अणु, CH₃COOH की संरचना चित्रित कीजिए।

2. Give an example of a phenomenon where Tyndall effect can be observed.
जिस परिघटना में टिंडल प्रभाव को देखा जा सके उसका एक उदाहरण दीजिए।

3. What is meant by biological magnification?
जैविक आवर्धन का क्या अर्थ होता है?

4. Give an example to illustrate that indiscriminate use of pesticides may result in the degradation of the environment.
यह दिखाने के लिए कि पीड़काशकों का असीमित प्रयोग हमारे बातावरण का निम्नीकरण कर सकता है, कोई एक उदाहरण दीजिए।

5. How does the valency of elements vary (i) in going down a group, and (ii) in going from left to right in a period of the periodic table?
आवर्त सारणी में तत्वों की संयोजकता में कैसे परिवर्तन होता है,
(i) किसी वर्ग में ऊपर से नीचे जाने में?
(ii) किसी आवर्त में बाएँ से दाएं जाने में?

6. In the modern periodic table, the element Calcium (atomic number = 20) is surrounded by elements with atomic numbers 12, 19, 21 and 38. Which of these elements has physical and chemical properties resembling those of Calcium and why?
आधुनिक आवर्त सारणी में तत्व कैल्सियम (परमाणु क्रमांक = 20), को घेरने वाले तत्वों के परमाणु क्रमांक 12, 19, 21 और 38 है। इन तत्वों में से किसके भौतिक और रासायनिक गुण कैल्सियम से मिलते-जुलते होते और क्यों?

7. State any four characteristics of the image of an object formed by a plane mirror.
समतल दर्पण द्वारा किसी विषय के बनाए गए प्रतिबिंब की जोई चार विशेषताएं लिखिए।

8. Draw a ray diagram to show the refraction of light through a glass prism. Mark on it (a) the incident ray, (b) the emergent ray and (c) the angle of deviation.
एक कोण के जिस द्वारा प्रकाश के अपवर्तन को दिखाने के लिए एक किरण चित्र बनाइए। इस किरण पर अंकित कीजिए (क) आपत्ति किरण, (ख) निर्गत किरण और (ग) विचलन कोण
9. Explain with the help of a diagram, how we are able to observe the sunrise about two minutes before the sun gets above the horizon.

10. List any four reasons for vegetative propagation being practised in the growth of some type of plants.

11. Describe the role of fallopian tubes in the female reproductive system.

12. List any four disadvantages of using fossil fuels for the production of energy.

13. Give two examples each of the following:
   (i) Renewable sources of energy
   (ii) Non-renewable sources of energy

14. Write chemical equations for what happens when
   (i) sodium metal is added to ethanoic acid.
   (ii) solid sodium carbonate is added to ethanoic acid.
   (iii) ethanoic acid reacts with a dilute solution of sodium hydroxide.
15. The atomic number of an element is 16. Predict
   (i) the number of valence electrons in its atom
   (ii) its valency
   (iii) its group number
   (iv) whether it is a metal or a non-metal
   (v) the nature of oxide formed by it
   (vi) the formula of its chloride

16. An object is placed between infinity and the pole of a convex mirror. Draw a ray diagram and also state the position, the relative size and the nature of the image formed.

17. What is the principle of reversibility of light? Show that the incident ray of light is parallel to the emergent ray of light when light falls obliquely on a side of a rectangular glass slab.

18. What eye defect is myopia? Describe with a neat diagram how this defect of vision can be corrected by using a suitable lens.

20. Describe any three ways in which individuals with a particular trait may increase in population.

21. State the evidence we have for the origin of life from inanimate matter.

22. What are fossils? What do they tell us about the process of evolution?

23. (a) State two properties of carbon which lead to a very large number of carbon compounds.

(b) Why does micelle formation take place when soap is added to water? Why are micelles not formed when soap is added to ethanol?

OR

Explain isomerism. State any four characteristics of isomers. Draw the structures of possible isomers of butane, C₄H₁₀.

24. (a) What is meant by ‘power of a lens’?

(b) State and define the S.I. unit of power of a lens.

(c) A convex lens of focal length 25 cm and a concave lens of focal length 10 cm are placed in close contact with each other. Calculate the lens power of this combination.

OR
(a) Draw a ray diagram to show the formation of image of an object placed between infinity and the optical centre of a concave lens.

(b) A concave lens of focal length 15 cm forms an image 10 cm from the lens.
Calculate
(i) the distance of the object from the lens
(ii) the magnification for the image formed
(iii) the nature of the image formed

25. With the help of suitable diagrams, explain the various steps of budding in Hydra.

OR

What is binary fission in organisms? With the help of suitable diagrams, describe the mode of reproduction in Amoeba.
26. To find the focal length of a concave mirror, Sita should choose which one of the following set-ups?

(A) A mirror holder and a screen holder
(B) A screen holder and a scale
(C) A mirror holder, a screen holder and a scale
(D) A screen, a mirror, holders for them and a scale

27. By using a convex lens, a student obtained a sharp image of his class-room window grill on a screen. In which direction should he move the lens to focus a distant tree instead of the grill?

(A) Towards the screen
(B) Away from the screen
(C) Very far away from the screen
(D) Behind the screen
28. To determine the focal length of a convex lens by obtaining a sharp image of a distant object, the following steps were suggested which are not in proper sequence

I. Hold the lens between the object and the screen.
II. Adjust the position of the lens to form a sharp image.
III. Select a suitable distant object.
IV. Measure the distance between the lens and the screen.

The correct sequence of steps to determine the focal length of the lens is

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

29. In these diagrams, the angle of refraction r has been correctly marked in which diagram?

(A) I
(B) II
(C) III
(D) IV
For a ray of light passing through a glass slab the lateral displacement was correctly measured as

(A) AB  (B) PQ  
(C) CD  (D) PR
31. Iron nails were dipped in an aqueous solution of copper sulphate. After about 30 minutes, it was observed that the colour of the solution changed from

(A) colourless to light green.
(B) blue to light green.
(C) blue to colourless.
(D) green to blue.

कॉपर सल्फेट के जलीय विलयन में लोहे की कोलर को डुबोया गया। लगभग 30 मिनट उपयोग, यह देखा गया कि विलयन का रंग

(A) रंगहीन से हल्का हरा हो गया।
(B) मीले से हल्का हरा हो गया।
(C) मीले से रंगहीन हो गया।
(D) हरे से मीला हो गया।

32. A cleaned aluminium foil was placed in an aqueous solution of zinc sulphate. When the aluminium foil was taken out of the zinc sulphate solution after 15 minutes, its surface was found to be coated with a silvery grey deposit. From the above observation it can be concluded that

(A) aluminium is more reactive than zinc.
(B) zinc is more reactive than aluminium.
(C) zinc and aluminium both are equally reactive.
(D) zinc and aluminium both are non-reactive.

एल्युमिनियम के साफ पत्त को जिक सल्फेट के जलीय विलयन में रखा गया। जब 15 मिनट उपयोग, एल्युमिनियम के पत्त को जिक सल्फेट के विलयन से निकाला गया तो इसके तल को चाँदी जैसे धूसर (मे) रंग के पत्त से ढका पाया गया। इस अवलोकन से यह परिणाम निकाला जा सकता है कि

(A) एल्युमिनियम जिक से अधिक क्रियाशील है।
(B) जिक एल्युमिनियम से अधिक क्रियाशील है।
(C) जिक और एल्युमिनियम दोनों समान रूप से क्रियाशील है।
(D) जिक और एल्युमिनियम दोनों अक्रिय है।
33. Vapours of acetic acid smell

(A) pungent like vinegar.
(B) sweet like rose.
(C) suffocating like sulphur dioxide.
(D) odourless like water.

34. Acetic acid reacts with solid sodium hydrogen carbonate

(A) slowly forming no gas.
(B) vigorously with effervescence.
(C) slowly without effervescence.
(D) vigorously without gas formation.
35. A student added acetic acid to test tubes I, II, III and IV containing the labelled substances and then brought a burning splinter near the mouth of each test tube.

<table>
<thead>
<tr>
<th></th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NaOH</td>
<td>NaCl</td>
<td>NaHCO₃</td>
<td>Ca(OH)₂</td>
</tr>
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The splinter would be extinguished when brought near the mouth of test tube

(A) I  
(B) II  
(C) III  
(D) IV
36. The shape of yeast cell is
(A) only spherical.
(B) only oval.
(C) irregular.
(D) both oval and spherical.

37. 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
(A) II, III, IV, I
(B) I, II, III, IV
(C) IV, III, II, I
(D) III, I, II, IV
38. The given figures illustrate binary fission in Amoeba in improper order.

![Diagram of binary fission stages in Amoeba](image)

The correct order is
(A) III, IV, II, I
(B) IV, III, II, I
(C) II, III, IV, I
(D) I, III, IV, II

39. During the course of an experiment, ‘to determine the percentage of water absorbed by raisins’, raisins are weighed

(A) every half an hour.
(B) every hour.
(C) once – only after completing the experiment.
(D) two times – before soaking and after soaking for three hours.
40. The colour of raisins as used in the experiment, ‘to determine the percentage of water absorbed by raisins’ was
(A) white
(B) yellow
(C) dark brown
(D) pink

41. Following are the steps involved in the experiment ‘to determine the percentage of water absorbed by raisins’. They are not in proper sequence.

I. Soak the raisins in fresh water.
II. Weigh dry raisins.
III. Weigh soaked raisins.
IV. Wipe out soaked raisins.

The correct sequence of steps is
(A) I, II, III, IV
(B) II, I, IV, III
(C) II, I, III, IV
(D) I, II, IV, III