Candidates must write the Code on the title page of the answer-book.

परीक्षार्थी कोड को उत्तर-पुस्तिका के मुख-पृष्ठ पर अवश्य लिखें।

- Please check that this question paper contains 16 printed pages.
- Code number given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.
- Please check that this question paper contains 41 questions.
- Please write down the Serial Number of the question before attempting it.
- 15 minutes time has been allotted to read this question paper. The question paper will be distributed at 10.15 a.m. From 10.15 a.m. to 10.30 a.m., the students will read the question paper only and will not write any answer on the answer script during this period.

**SUMMATIVE ASSESSMENT - II**

**संकलित परीक्षा - II**

**SCIENCE**

विज्ञान

*Time allowed : 3 hours*

निर्धारित समय : 3 घण्टे

*Maximum Marks : 80*

अधिकतम अंक : 80

31/1 1 P.T.O.
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 अनिवार्य हैं।

(iii) पूरे प्रश्न पत्र पर कोई चयन आपस में नहीं है परंतु पाँच-पाँच 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 पृथक-पृथक 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 पाँच-पाँच 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।
SECTION A

1. Draw the structure for ethanoic acid molecule, CH₃COOH.

2. Give an example of a phenomenon where Tyndall effect can be observed.

3. What is meant by biological magnification?

4. Give an example to illustrate that indiscriminate use of pesticides may result in the degradation of the environment.

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?

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?

7. State any four characteristics of the image of an object formed by a plane mirror.

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.
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

एक तत्त्व का परमाणु क्रमांक 16 है। इसके विषय में प्राप्त होने की कीजिए।
(i) इसके परमाणु में संयोजकता इलेक्ट्रॉनों की संख्या
(ii) इसकी संयोजकता
(iii) इसके वर्ग का अंक
(iv) यह धातु होगा अथवा अधातु
(v) इससे प्राप्त ऑक्साइड की प्रकृति
(vi) इसके क्लोराइड का सूत्र

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.

एक विष्क या एक उत्तर दर्पण के अनन्त और ध्वनि (पोल) के बीच रखा गया है। इस स्थिति में दर्पण द्वारा बनाए गए प्रतिकाल के लिए किरण चित्र बनाए और प्रतिकाल के विषय में बताए — इसकी स्थिति, इसका सापेक्ष आकार और इसकी प्रकृति।

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 one side of a rectangular glass slab.

प्रकाश की उत्क्षमतीता (reversibility) का नियम क्या है? दर्शाइए कि जब प्रकाश किरण किसी आयताकार कांचीय स्तंभ के एक तल पर तिक्री आपूर्ति होती है तो आपूर्तिक दृश्य किरण निर्गत प्रकाश किरण के समानार्थ होती है।

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

निकट दृष्टि दोष कीमत नेत्र दोष है? एक स्पष्ट चित्र बनाकर समझाइए कि उचित लेंस का प्रयोग करौ क्या इस दृष्टि दोष का निवारण किया जा सकता है?


HIV क्या सूचित करता है? क्या AIDS एक संक्रामक रोग है? AIDS के फैलने की कोई चार विधियाँ सूचीबद्ध कीजिए।
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, \( \text{C}_4\text{H}_{10} \).

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

एक अवतल दर्पण की फोकस दूरी ज्ञात करने के लिए सीता को निम्न व्यवस्थाओं में से किसको चुनना होगा?

(A) एक दर्पण स्टेंड और एक पद्ध स्टेंड
(B) एक पद्ध स्टेंड और एक स्केल
(C) एक दर्पण स्टेंड, एक पद्ध स्टेंड और एक स्केल
(D) एक पद्ध, एक दर्पण, उनके लिए स्टेंड और एक स्केल

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

उत्तर लेन्स का प्रयोग कर एक छात्र ने अपने कक्ष-कक्ष में लगी खिड़की के ग्रिल का स्पष्ट (तीखा) प्रतिबिम्ब एक पद्ध पर प्राप्त किया। ग्रिल के स्थान पर एक दूरस्थ वृक्ष का प्रतिबिम्ब संकेतित (फोकस) करने के लिए छात्र की लेन्स को किस दिशा में खिसकाना होगा?

(A) पद्ध की ओर
(B) पद्ध से दूर
(C) पद्ध से बहुत दूर
(D) पद्ध के पीछे
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

31/1
30. 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. In which of the figures below, the ray $r$ is correctly identified?

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

30. 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.

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.
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.

NaOH   NaCl   NaHCO₃   Ca(OH)₂

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.

![Binary Fission Figures]

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.

‘किशमिश के दानों द्वारा शोषित जल का प्रतिशत ज्ञात करने’ के प्रयोग में इन दानों को तोला जाता है

(A) हर आधे घण्टे उपरान्त 
(B) हर घण्टे उपरान्त 
(C) प्रयोग पूरा हो जाने पर केवल एक बार 
(D) दो बार, मिशोने से पहले और तीन घण्टे तक मिशोने के उपरान्त 

31/1 15 P.T.O.
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