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

- कृपया जाँच कर लें कि इस प्रश्न-पत्र में मुद्रित पृष्ठ 16 हैं।
- प्रश्न-पत्र में दाहिने हाथ की ओर दिए गए कोड नंबर को छात्र उत्तर-पुस्तिका के मुख-पृष्ठ पर लिखें।
- कृपया जाँच कर लें कि इस प्रश्न-पत्र में 36 प्रश्न हैं।
- कृपया प्रश्न का उत्तर लिखना शुरू करने से पहले, प्रश्न का क्रमांक अवश्य लिखें।
- इस प्रश्न-पत्र को पढ़ने के लिए 15 मिनट का समय दिया गया है। प्रश्न-पत्र का वितरण पूर्वांचल में 10.15 बजे किया जाएगा। 10.15 बजे से 10.30 बजे तक छात्र केवल प्रश्न-पत्र को पढ़ेंगे और इस अवधि के दौरान वे उत्तर-पुस्तिका पर कोई उत्तर नहीं लिखेंगे।
- 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 36 questions.
- Please write down the Serial Number of the question before attempting it.
- 15 minute 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-book during this period.

संकलित परीक्षा – II
SUMMATIVE ASSESSMENT – II
विज्ञान
SCIENCE

निर्धारित समय : 3 घण्टे
Time allowed : 3 hours

अधिकतम अंक : 90
Maximum Marks : 90
सामान्य निर्देश:

(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 में किसी प्रश्न में कोई चयन प्राम नहीं है।

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

(v) भाग अ के प्रश्न संख्या 1 से 3 के प्रश्न एक-एक अंक के हैं। इनके उत्तर एक शब्द अथवा एक वाक्य में दें।

(vi) भाग अ के प्रश्न संख्या 4 से 6 के प्रश्न दो-दो अंकों के हैं। इनके उत्तर लगभग 30 शब्दों में दें।

(vii) भाग अ के प्रश्न संख्या 7 से 18 के प्रश्न तीन-तीन अंकों के हैं। इनके उत्तर लगभग 50 शब्दों में दें।

(viii) भाग अ के प्रश्न संख्या 19 से 24 के प्रश्न पाँच-पाँच अंकों के हैं। इनके उत्तर लगभग 70 शब्दों में दें।

(ix) भाग ब के प्रश्न संख्या 25 से 33 के प्रश्न प्रयोगात्मक कौशल पर आधारित बहुविकल्पी प्रश्न हैं। प्रत्येक प्रश्न एक अंक का है। दिए गए चार विकल्पों में से आपको केवल एक सबसे उपयुक्त विकल्प चुनना है।

(x) भाग ब के प्रश्न संख्या 34 से 36 के प्रश्न प्रयोगात्मक कौशल पर आधारित दो-दो अंकों के प्रश्न हैं। इनके उत्तर संक्षेप में दें।

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 choice in any of the questions.

(iv) All questions of Section A and all questions of Section B are to be attempted separately.

(v) Question numbers 1 to 3 in Section A are one-mark questions. These are to be answered in one word or in one sentence.

(vi) Question numbers 4 to 6 in Section A are two-marks questions. These are to be answered in about 30 words each.

(vii) Question numbers 7 to 18 in Section A are three-marks questions. These are to be answered in about 50 words each.
Question numbers 19 to 24 in Section A are five-marks questions. These are to be answered in about 70 words each.

Question numbers 25 to 33 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.

Question numbers 34 to 36 in Section B are two-marks questions based on practical skills. These are to be answered in brief.

भाग अ

SECTION A

1. किसी ऐसे कार्बन यौगिक का नाम और सूत्र लिखिए जिसमें −OH प्रकार्यात्मक समूह है। 1
Write the name and formula of a carbon compound having −OH functional group.

2. संतुल्प हाइड्रोकार्बन किसे कहते हैं? किसी एक संतुल्प हाइड्रोकार्बन का सूत्र लिखिए। 1
What is a saturated hydrocarbon? Write the formula of any one saturated hydrocarbon.

3. एकलिंगी और उभयलिंगी पुष्पों का एक-एक उदाहरण दीजिए। 1
Give an example each of unisexual and bisexual flowers.

4. कायिक प्रवर्धन किसे कहते हैं? इस विधि द्वारा उगाए जाने वाले किन्हीं दो पौधों के नाम लिखिए। 2
What is vegetative propagation? Write the names of any two plants grown by this method.

5. किसी माध्यम के निरपेक्ष अपवर्तनांक और निर्वांत में प्रकाश की चाल के बीच संबंध लिखिए। यदि निर्वांत में प्रकाश की चाल $3 \times 10^8$ m/s है, तो उस माध्यम का निरपेक्ष अपवर्तनांक ज्ञात कीजिए जिसमें प्रकाश की चाल $1.4 \times 10^8$ m/s है। 2
Write the relationship between absolute refractive index of a medium and the speed of light in vacuum. If the speed of light in vacuum is $3 \times 10^8$ m/s, find the absolute refractive index of the medium in which light travels with a speed of $1.4 \times 10^8$ m/s.
6. Why are coal and petroleum considered as fossil fuels? Why are these not considered as renewable sources of energy? Write the name of a green house gas released on combustion of these fuels.

7. Why is the conversion of ethanol to ethanoic acid an oxidation reaction? How is it different from combustion of ethanol in oxygen? Write the chemical equations for both reactions.

8. Consider the following elements of the Modern Periodic Table:
   Be(4); O(8); Cl(17); K(19); Ca(20)
   (a) Select from these an element having only one valence electron. Write the electronic configuration of this element.
   (b) Select from these, two elements of the same group and state the reason for your answer.
   (c) Select from these, two elements of the same period and state the reason for your answer.

9. Differentiate between pollination and fertilisation. What is cross-pollination? State any two carriers (agents) that carry out this process.
10. List any four methods that are adopted by human beings for contraception. State in brief how the health of a family and prosperity of a nation is affected, if these methods are adopted either by the husband or the wife.

11. How did Mendel interpret the results of his experiments to show that “the traits may be dominant or recessive”? Explain briefly.

12. List in tabular form any three distinguishing features between the acquired traits and the inherited traits.

13. Draw each of the following diagrams on your answer sheet and show the path of ray after reflection.
A student wants to focus the image of a candle flame placed at a distance of 80 cm from the optical centre of a lens on a screen placed at a distance of 20 cm from its optical centre.

(a) What type of lens should he use? Answer stating reason.

(b) Find (i) the distance between the object and its image and (ii) the magnification of the image.

(c) Draw a ray diagram to show the formation of image in this case.

What is myopia? List its two causes. Draw a ray diagram to explain its correction using an appropriate lens.

Describe an activity that demonstrates the scattering of light.

Give reason to justify the following:

(a) The flow of energy in every food web is unidirectional.

(b) The decomposers play an important role in an ecosystem.
18. Mr. Kumar, the incharge of “Eco-Club” of a school felt the need of organising an “Awareness Campaign” for the residents of the nearby areas to make them realise the necessity of segregating the biodegradable and non-biodegradable wastes. He went from door-to-door with his students and gave arguments to explain the people about the importance of disposal of their household waste judiciously. He also informed them about the prosecutional provisions in the cases where garbage is thrown at places other than the specified bins.

(a) List two advantages of disposing the waste after segregating it in two categories.

(b) List two arguments given by Mr. Kumar.

(c) Write two values exhibited by Mr. Kumar.

19. Explain the reasons why carbon forms compounds mainly by covalent bonds. State two main reasons responsible for carbon making a large number of compounds. Also explain why compounds formed by carbon with most other elements are exceptionally stable.
20. (a) Write the number of groups and periods in the Modern Periodic Table. How does the atomic size vary down a group in the periodic table? State its reason.

(b) The electronic configurations of four elements A, B, C and D are as follows:
A – (2, 8, 7); B – (2, 8, 1); C – (2, 8, 2); D – (2, 8, 8, 2)

(i) Which amongst these elements will form acidic oxide and why?

(ii) Which amongst these elements has the smallest atomic radius and why?

(iii) Out of these select those two elements which have same valency and form compounds by ionic bonds.

21. उभरती पुष्प की अनुदैर्घ्य-काट का आरेख खींचकर निम्नलिखित को नामांकित कीजिए:
अण्डाशय, परागकोश, वर्तिका, वर्तिकाग्र, तन्त्र
इनमें से मादा जननांगों को पहचानिए तथा प्रत्येक का एक-एक कार्य लिखिए।

Draw a diagram of longitudinal section of a bisexual flower and label the following:

Ovary, anther, style, stigma, filament

Identify from these the female reproductive organs and state one function of each.
22. How many pairs of chromosomes are present in human beings? Out of these, how many are sex-chromosomes? How many types of sex-chromosomes are found in human beings? “The sex of a newborn child is a matter of chance in human beings and none of the parents (mother-father) may be considered responsible for it.” Justify this statement by drawing a flow chart showing the process of sex-determination.

23. (a) Draw a flow chart showing the process of sex-determination.

(b) Draw a flow chart showing the process of sex-determination.
(a) Explain with the help of diagrams the following terms in the context of spherical mirrors:

(i) Pole

(ii) Centre of curvature

(iii) Principal axis

(b) Consider the following diagram. In this M is a mirror, P is an object and Q is the image of the object formed by the mirror:

(i) State the type of mirror M.

(ii) If the numeric value of focal length of the mirror is 15 cm, what must be the range of distance of the object from the mirror?

(iii) Draw a ray diagram to show the formation of image in this case.

24. श्वेत प्रकाश के विक्षेपण की प्रकाश किरण आरेख खींचकर व्याख्या कीजिए। श्वेत प्रकाश के स्पेक्ट्रम का पुनर्योजन किस प्रकार किया जा सकता है, इसे नामांकित किरण आरेख की सहायता से दर्शाइए।

Draw a ray diagram to explain the dispersion of white light. With the help of a labelled ray diagram, show how a spectrum of white light may be recombined.
25. Select the correct pair of properties of acetic acid.

(A) Smell-like vinegar; turns red litmus to blue
(B) Smell-like vinegar; turns blue litmus to red
(C) Smell-like orange; turns blue litmus to red
(D) Smell-like orange; turns red litmus to blue

26. A student gently adds distilled water to a test tube filled $\frac{1}{4}$th with acetic acid and observes that

(A) a separate layer of water is formed in the test tube.
(B) a white precipitate is formed in the test tube.
(C) a clear solution is formed in the test tube.
(D) bubbles of a colourless and odourless gas are released from the test tube.
27. A student while studying a saponification-reaction on adding 20% NaOH solution to a colourless vegetable oil taken in a beaker observes that
(A) the outer surface of the beaker becomes cold.
(B) the colour of the mixture becomes brown.
(C) there is a brisk effervescence in the beaker.
(D) the outer surface of the beaker becomes hot.

28. A student observes the following stage of binary fission in Amoeba in a focussed slide under a microscope. Select the correct observation in this regard.
(A) First stage of binary fission
(B) Final stage of binary fission
(C) That stage of binary fission in which the cytoplasm divides but the nucleus does not
(D) That stage of binary fission in which the nucleus divides but the cytoplasm does not
29. Select from the following a group of seeds, whose any seed may be used to study the embryo of a dicot seed.
   (A) Ground-nut, Kidney bean, Pea
   (B) Gram, Pea, Maize
   (C) Maize, Wheat, Kidney bean
   (D) Gram, Wheat, Ground-nut

30. Select the pair of analogous organs from the following.
   (A) Limbs of birds and reptiles
   (B) Limbs of reptiles and amphibians
   (C) Limbs of birds and human beings
   (D) Wings of birds and bats

31. यदि आप अवतल दर्पण द्वारा किसी दृश्य बिच्छ, जिसकी आकृति 🕶️ है, को फोकसित करते हैं, तो प्राप्त प्रतिबिम्ब की आकृति कैसी होनी चाहिए?
   (A) 🕶️
   (B) 🕶️
   (C) 🕶️
   (D) 🕶️
If you focus a distant object of the shape \( \square \) using a concave mirror, the image obtained must be of the shape

(A) \( \square \)  \hspace{2cm} (B) \( \square \)

(C) \( \square \)  \hspace{2cm} (D) \( \square \)

32. In which of the following diagrams has the protractor (D) been correctly placed to measure the angle of incidence and the angle of emergence?

(A) I, III  \hspace{2cm} (B) I, IV  \hspace{2cm} (C) II, III  \hspace{2cm} (D) II, IV

In which of the following diagrams has the protractor (D) been correctly placed to measure the angle of incidence and the angle of emergence?
In which of the following diagrams is the path of a ray of light passing through a glass prism shown correctly?

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

34. निम्नलिखित विंदु आरेख का अध्ययन कीजिए और इसे खींचिए समय छात्र द्वारा की गई किन्हीं दो त्रिकों का उल्लेख कीजिए। इन त्रिकों को दूर करके बिंदु की स्थिति के तदनुसार प्रतिबिंब की वास्तविक स्थिति को दर्शाने के लिए सही विंदु आरेख खींचिए।
Study the following ray diagram and state any two mistakes committed by the student while tracing it. Rectify these mistakes and draw the correct ray diagram to show the real position of the image corresponding to the position of the object.

![Ray Diagram]

35. उस समय आप क्या प्रेक्षण करते हैं जब आप ऐसीटिक अम्ल की कुछ बूंदें उस परखनली में मिलती हैं जिसमें भरा है?
(A) आसुत जल?
(B) लाल लिटमस बिल्यान?
(C) नीला लिटमस बिल्यान?
(D) सार्वत्रिक सूचक?

What do you observe when you pour a few drops of acetic acid to a test tube containing
(A) Distilled water?
(B) Red litmus solution?
(C) Blue litmus solution?
(D) Universal indicator?

36. यीस्ट में मुक्तल की प्रक्रिया की व्याख्या इस प्रक्रिया के विभिन्न चरणों के सही रूप में
नामांकित आरेख खींचकर कीजिए।

Explain the process of budding in yeast by drawing labelled diagrams of different stages of the process in a correct sequence.