SUMMATIVE ASSESSMENT – II

SCIENCE

Time allowed: 3 hours

Maximum Marks: 90
Samaanya Nirdesh:

(i) Iss prashn-pat ko do bhagon, bhag A aur bhag B, mein banta gaba hai | Aapko dono bhagon ke prashno ke uttar likhne hain |

(ii) Sabhi prashn anivarch hai |

(iii) Poor prashn-pat mein kisi prashn mein koi chang pram nahi hai |

(iv) Aapko bhag A aur bhag B ke sabhi prashno ke uttar prasthank-prasthank bhag ke aadhar par likhne hain |

(v) Bhag A ke prashn sanskha 1 se 3 ke prashn ek-ek ank ke hain | Inke uttar ek shabd anvanya ek vachya mein dena |

(vi) Bhag A ke prashn sanskha 4 se 6 ke prashn do-do ankon ke hain | Inke uttar lagabha 30 shabdon mein dena |

(vii) Bhag A ke prashn sanskha 7 se 18 ke prashn tee-niin ankon ke hain | Inke uttar lagabha 50 shabdon mein dena |

(viii) Bhag A ke prashn sanskha 19 se 24 ke prashn paach-paanch ankon ke hain | Inke uttar lagabha 70 shabdon mein dena |

(ix) Bhag B ke prashn sanskha 25 se 33 ke prashn prabhaogatmak koshal pr par aadharia bhuvikulpi prashn hain | Prastek prashn ek ank ka hai | Diye gane char vikalpy mein se aapko keval ek sabse upyukh vikalpy chuna hai |

(x) Bhag B ke prashn sanskha 34 se 36 ke prashn prabhaogatmak koshal pr par aadharia do-do ankon ke prashn hain | Inke uttar sanskram mein dena |

General Instructions:

(i) The question paper comprises 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.

(viii) Question numbers 19 to 24 in Section A are five marks questions. These are to be answered in about 70 words each.

(ix) 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.

(x) 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. उस प्रक्रिया का नाम लिखिए जिसके द्वारा असंतुष्ट वसाओं को संतुष्ट वसाओं में परिवर्तित किया जाता है।
   Name the process by which unsaturated fats are changed to saturated fats. 1

2. “कालाजार” रोग के कारक रोगाणु तथा इसकी अलंगिक जनन की विधि का नाम लिखिए।
   Name the causative agent of the disease “Kala-azar” and its mode of asexual reproduction. 1

3. निम्नलिखित जीव कोई आहार शृंखला बनाते हैं। इनमें से किस जीव में अजैव-निम्नीकरणीय रसायनों की सर्वाधिक सांद्रता होगी? इससे सम्बन्धित परिपटन का नाम भी लिखिए।
   The following organisms form a food chain. Which of these will have the highest concentration of non-biodegradable chemicals? Name the phenomenon associated with it.
   Insects, Hawk, Grass, Snake, Frog. 1

4. तारे टिमटिमाते क्यों प्रतीत होते हैं? स्पष्ट कीजिए।
   Why do stars appear to twinkle? Explain. 2
5. What is meant by three types of ‘R’ (3-R’s) to save the environment? Explain with examples how would you follow the 3-R’s in your school to save the environment.

6. List four advantages of water stored in the ground as “ground water”.

7. Write the molecular formula of the following compounds and draw their electron-dot structures:
   (i) Ethane
   (ii) Ethene
   (iii) Ethyne

8. What is meant by functional group in carbon compounds? Write in tabular form the structural formula and the functional group present in the following compounds:
   (i) Ethanol
   (ii) Ethanoic acid

9. What is meant by functional group in carbon compounds? Write in tabular form the structural formula and the functional group present in the following compounds:
   (i) Ethanol
   (ii) Ethanoic acid
Write the main aim of classifying elements. Name the basic property of elements used in the development of Modern Periodic Table. State the Modern Periodic Law. On which side (part) of the Modern Periodic Table do you find metals, metalloids and non-metals?

10. किसी तत्त्व 'X' का परमाणु क्रमांक 20 है।
   (i) तत्त्व 'X' की आवर्त सारणी में स्थिति निर्धारित कीजिए।
   (ii) तत्त्व 'X' की तत्त्व 'Y' (परमाणु क्रमांक 8) से अभिक्रिया/संयोग द्वारा बने यौगिक का नाम लिखिए।
   (iii) इस प्रकार बने यौगिक की प्रकृति अम्लीय होगी अथवा भास्करीय? आपके उत्तर की पुष्टि कीजिए।

The atomic number of an element 'X' is 20.
   (i) Determine the position of the element 'X' in the periodic table.
   (ii) Write the formula of the compound formed when 'X' reacts/combines with another element 'Y' (atomic number 8).
   (iii) What would be the nature (acidic or basic) of the compound formed? Justify your answer.

11. अलैंगिक जनन और लैंगिक जनन के बीच एक प्रमुख अंतर लिखिए। लैंगिक जनन करने वाली अथवा अलैंगिक जनन करने वाली स्पीशियल में से किसके द्वारा जनित स्पीशिज की उत्तरजीविता के अपेक्षाकृत और अधिक अच्छे संयोग हो सकते हैं? अपने उत्तर की पुष्टि कीजिए।

Write one main difference between asexual and sexual mode of reproduction. Which species is likely to have comparatively better chances of survival — the one reproducing asexually or the one reproducing sexually? Justify your answer.

12. प्लानेयरिया में पुनरुद्धारन (पुनर्जनन) की प्रक्रिया को स्पष्ट कीजिए। यह प्रक्रिया जनन से किस प्रकार भिन्न है?

   Explain the process of regeneration in Planaria. How is this process different from reproduction?

13. प्लैसेन्टा क्या है? मानवों में इसके कार्य की व्याख्या कीजिए।

   What is placenta? Explain its function in humans.

14. “किसी गुलाल के शिशु का नर अथवा मादा होना मात्र संयोग है।” एक प्रवाह आरेख खोजकर इस कथन की पुष्टि कीजिए।

   “It is a matter of chance whether a couple will have a male or a female child.” Justify this statement by drawing a flow chart.
15. “ऐसा संभव है कि कोई लक्षण बंशानुगत तो हो जाए परन्तु व्यक्ति न हो पाए।” इस कथन की पुष्टि एक उपयुक्त उदाहरण देकर कीजिए।

“It is possible that a trait is inherited but may not be expressed.” Give a suitable example to justify this statement.

16. निम्नलिखित प्रत्येक प्रकरण में परावर्तित किरण का पथ दर्शाने के लिए एक किरण आरेख खींचिए। प्रकाश की कोई किरण किसी उत्तल दर्पण के

(a) ध्रुव पर दर्पण के मुख्य अक्ष से कोण $\theta$ पर आपत्ति है।
(b) मुख्य फोकस की ओर निर्देशित है।
(c) मुख्य अक्ष के समान्तर है।

Draw a ray diagram to show the path of the reflected ray in each of the following cases. A ray of light incident on a convex mirror

(a) strikes at its pole making an angle $\theta$ from the principal axis.
(b) is directed towards its principal focus.
(c) is parallel to its principal axis.

17. अग्रिम सूर्योदय तथा विलंबित सूर्यास्त से क्या तात्पर्य है? इन परिस्थितियों को नामांकित आरेख खींचकर स्पष्ट कीजिए।

What is meant by advance sunrise and delayed sunset? Draw a labelled diagram to explain these phenomena.

18. ओज़ोन क्या है? यह वायुमण्डल में किस प्रकार और कहाँ बनती है? स्पष्ट कीजिए की यह किसी परितत्त्र को किस प्रकार प्रभावित करती है।

What is ozone? How and where is it formed in the atmosphere? Explain how does it affect an ecosystem.

19. आयनिक यौगिक बनाने वाले तत्व अपने संयोजकता कोश से इलेक्ट्रॉन प्राप्त करके अथवा उनका हास करके उत्कृष्ट गैस इलेक्ट्रॉनिक विन्यास प्राप्त करते हैं। कारण देते हुए स्पष्ट कीजिए कि कार्बन अपने यौगिकों के निर्माण में इस प्रकार का विन्यास इस विधि से क्यों नहीं प्राप्त कर सकता। आयनिक यौगिकों में बनने वाले आबंध और कार्बन यौगिकों में बने आबंध के प्रकारों के नाम लिखिए। कारण सहित यह भी स्पष्ट कीजिए कि कार्बन यौगिक सामान्यतः विद्युत के कुचलक क्यों होते हैं।

Elements forming ionic compounds attain noble gas electronic configuration by either gaining or losing electrons from their valence shells. Explain giving reason why carbon cannot attain such a configuration in this manner to form its compounds. Name the type of bonds formed in ionic compounds and in the compounds formed by carbon. Also explain with reason why carbon compounds are generally poor conductors of electricity.
20. (a) Identify A, B, C and D in the given diagram and write their names.

(b) What is pollination? Explain its significance.

(c) Explain the process of fertilisation in flowers. Name the parts of the flower that develop after fertilisation into
   (i) seed,
   (ii) fruit.
21. What is speciation? List four factors that could lead to speciation. Which of these cannot be a major factor in the speciation of a self-pollinating plant species? Explain.

22. A student has focused the image of a candle flame on a white screen using a concave mirror. The situation is as given below:
- Length of the flame = 1.5 cm
- Focal length of the mirror = 12 cm
- Distance of flame from the mirror = 18 cm

If the flame is perpendicular to the principal axis of the mirror, then calculate the following:
(a) Distance of the image from the mirror
(b) Length of the image

If the distance between the mirror and the flame is reduced to 10 cm, then what would be observed on the screen? Draw ray diagram to justify your answer for this situation.
23. What is meant by the power of a lens? What is its S.I. unit? Name the type of lens whose power is positive.

The image of an object formed by a lens is real, inverted and of the same size as the object. If the image is at a distance of 40 cm from the lens, what is the nature and power of the lens? Draw ray diagram to justify your answer.

24. State the function of each of the following parts of the human eye:

(i) Cornea
(ii) Iris
(iii) Pupil
(iv) Retina

Millions of people of the developing countries are suffering from corneal blindness. This disease can be cured by replacing the defective cornea with the cornea of a donated eye. Your school has organised a campaign in the school and its neighbourhood in order to create awareness about this fact and motivate people to donate their eyes after death. How can you along with your classmates contribute in this noble cause? State the objectives of organising such campaigns in schools.
25. A student puts a drop of acetic acid first on a blue litmus paper and then on a red litmus paper. He would observe that

(A) the red litmus paper turns colourless and there is no change in the blue litmus paper.
(B) the red litmus paper turns blue and the blue litmus paper turns red.
(C) there is no change in the red litmus paper and the blue litmus paper turns red.
(D) there is no change in the blue litmus paper and the red litmus paper turns blue.

26. साबुनकरण अभिक्रियाओं का अध्ययन करते समय छात्रों द्वारा नोट की गई कुछ टिप्पणियाँ नीचे दी गई हैं:

(I) साबुन वसीय अम्लों का लवण है।
(II) अभिक्रिया मिश्रण की क्षारीय प्रकृति है।
(III) इस अभिक्रिया में ऊष्मा का अवशोषण होता है।
(IV) यह अभिक्रिया उदासीनकरण अभिक्रिया नहीं है।

इनमें से सही टिप्पणियाँ कौन-सी हैं?

(A) केवल I और III
(B) I, II और III
(C) II, III और IV
(D) केवल I और II
While studying saponification reactions, the following comments were noted down by the students:

(I) Soap is a salt of fatty acids.
(II) The reaction mixture is basic in nature.
(III) In this reaction heat is absorbed.
(IV) This reaction is not a neutralisation reaction.

Which of these are the correct comments?

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

27. कोई छात्र चार पर्यावरणों I, II, III और IV में, प्रत्येक में 4 mL आयुक्त जल लेकर उनमें चार भिन्न लवण – पर्यावरण I में NaCl, पर्यावरण II में CaCl₂, पर्यावरण III में MgCl₂ और पर्यावरण IV में KCl की समान मात्रा घोलता है। इसके पश्चात् वह प्रत्येक पर्यावरण में दिए गए सापन के घोल की 8 बूंद मिलाकर पर्यावरण की सामग्री को 10 बार घिलाता है। किन पर्यावरणों में भरपूर झाग बनेगा?

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

A student takes 4 mL of distilled water in each of four test tubes I, II, III and IV, and then dissolves an equal amount of four different salts namely NaCl in I, CaCl₂ in II, MgCl₂ in III and KCl in IV. He then adds 8 drops of the given soap solution to each test tube and shakes the contents of the test tube 10 times. In which test tubes will enough lather (foam) be formed?

(A) I and II
(B) II and III
(C) I and IV
(D) III and IV
A student is asked to study the different parts of an embryo of pea seeds. Given below are the essential steps for the experiment:

(I) Soak the pea seeds in plain water and keep them overnight.

(II) Cut open the soaked seed and observe its different parts.

(III) Take some pea seeds in a petri dish.

(IV) Drain the excess water. Cover the seeds with a wet cotton cloth and leave them as it is for a day.

The correct sequence of these steps is

(A) III, I, IV, II

(B) III, IV, I, II

(C) III, I, II, IV

(D) III, II, I, IV
In a class, students were asked to observe the models/slides/pictures of the skeletons of forelimbs and wings of different organisms. After the observations the students made the following groups of homologous structures. Select the correct group:

(A) Wings of a bird and a butterfly
(B) Wings of a pigeon and a bat
(C) Wings of a butterfly and a bat
(D) Forelimbs of a cow, a duck and a lizard

30. A student obtained on a screen the sharp image of a candle flame placed at the farther end of laboratory table using a concave mirror. For getting better value of focal length of the mirror, the teacher suggested to him to focus the sun. What should the student do?

(A) Should move the mirror away from the screen.
(B) Should move the mirror towards the screen.
(C) Should move the mirror and screen both towards the sun.
(D) Should move only the screen towards the sun.
While determining the focal length of a convex lens, you try to focus the image of a distant object formed by the lens on the screen. The image formed on the screen, as compared to the object, should be

(A) erect and highly diminished
(B) erect and enlarged
(C) inverted and enlarged
(D) inverted and highly diminished

32. काँच के आयताकार स्लेब से गुजरने वाली प्रकाश किरण का पथ अनुरूपित करने के लिए नीचे दर्शायी गई चार प्रायोगिक व्यवस्थाओं में से सर्वश्रेष्ठ व्यवस्था कौन-सी है?

Which of the following is the best experimental set-up out of the four shown for tracing the path of a ray of light passing through a rectangular glass slab?
In which of the following four diagrams is the correct path of a ray of light passing through a glass prism shown?
34. A student is studying the properties of acetic acid. List two physical properties of acetic acid he observes. What happens when he adds a pinch of sodium hydrogen carbonate to this acid? Write any two observations.

35. A student is viewing under a microscope a permanent slide showing various stages of asexual reproduction by budding in yeast. Draw diagrams of what he sees (in proper sequence).

36. A student places a 8.0 cm tall object perpendicular to the principal axis of a convex lens of focal length 20 cm. The distance of the object from the lens is 30 cm. He obtains a sharp image of the object on a screen placed on the other side of the lens. What will be the nature (inverted, erect, magnified, diminished) of the image he obtains on a screen? Draw ray diagram to justify your answer.