Series HRK

SET-1

कोड नं.
Code No. **31/1/1**

रोल नं.
Roll No.

परीक्षार्थी कोड को उत्तर–पुस्तिका के मुख–पृष्ठ पर अवश्य लिखें।
Candidates must write the Code on the title page of the answer-book.

- कृपया जाँच कर लें कि इस प्रश्न–पत्र में मुद्रित पृष्ठ **6** हैं।
- प्रश्न–पत्र में दाहिने हाथ की ओर दिए गए कोड नम्बर को छात्र उत्तर–पुस्तिका के मुख–पृष्ठ पर लिखें।
- कृपया जाँच कर लें कि इस प्रश्न–पत्र में 30 प्रश्न हैं।
- **कृपया प्र□न का उत्तर लिखना भुरू करने से पहले, प्र□न का क्रमांक अव□य लिखें।**
- इस प्रश्न–पत्र को पढ़ने के लिए 15 मिनट का समय दिया गया है। प्रश्न–पत्र का वितरण पूर्वाह्न में 9.00 बजे किया जाएगा। 9.00 बजे से 9.15 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 6 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 30 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 09:00 a.m. From 09:00 a.m. to 09:15 a.m., the students will read the question paper only and will not write any answer on the answer-book during this period.

विज्ञान

SCIENCE

निर्धारित समय : 3 घण्टे *अधिकतम अंक : 80*

Time allowed : 3 hours *Maximum marks : 80*

General Instructions:

- The question paper comprises of **three** sections—A, B and C. You are to attempt all the sections.
- **All** questions are **compulsory**.
- Internal choice is given in each section.
- All questions in Section A are one mark questions comprising MCQ, VSA type and assertion-reason type questions. They are to be answered in one word or in one sentence.
- All questions in Section B are three marks, Short answer type questions. These are to be answered in about 50–60 words each.
- All questions in Section C are five marks, Long answer type questions. These are to be answered in about 80–90 words each.

- This question paper consists of a total of 30 questions.

SECTION - A

1. There is change in the length of the wire. Will the wire's resistance change?

2. State the chemical property in the following case, on which the following use of baking soda based : Applied on an ant stung area.

3. Answer question number (a)-(d) on the basis of your understanding of the following paragraph and the related studied concepts:

The human lifestyle in many developed countries is also causing another serious problem in the form of depletion of ozone layer. The use of refrigerators and air conditioners, fire extinguishers, aerosol sprays like deodorants etc. results in release of CFCs and N_2O in the atmosphere which is responsible for depletion of ozone layer. This results in ultraviolet radiations entering the atmosphere unobstructed causing damage to all kinds of life on Earth. The oxygen-ozone balance in atmosphere is maintained by continuous formation and dissociation of ozone. The UV light needed for this purpose is absorbed from sunlight. In this way ozone layer is helpful in protecting the earth from UV-rays which can otherwise cause variety of skin problems and damage the DNA mutation. The pioneer work of researchers discovered the depletion of ozone layer.

(a) Expands CFSs.

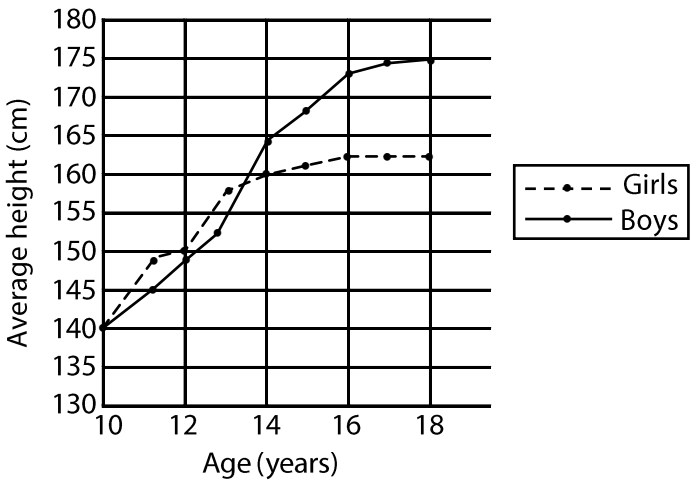
(b) What is ozone depletion?

(c) How ozone is formed?

(d) State the importance of ozone layer.

4. Question numbers (a)-(d) are based on the graphs given below. Study the graphs and answer the questions that follow:

The average height in boys and girls between the ages of 10 and 18 years.



(a) Name the hormone is responsible for the increase in height of boys and girls.

(b) Name the gland that secretes this hormone.

(c) Which of the following statements is correct? (refer above graph)

(i) Height of the girls increases at faster rate at initial years of puberty.

(ii) Height of the boys is always more than the girls.

(iii) Height of the girls is always more than the boys.

(iv) Height is not related to any hormone.

(d) Which of the following statement is incorrect? (refer the graph)

(i) Average height of boys at 18 years is 174 cm.

(ii) Average height of girls at 18 years is 162 cm.

(iii) Height increases due to endocrine gland activity.

(iv) Height increases due to exocrine gland activity.

Direction: (Q. 5 - Q. 7) these questions consist of two statements labelled as assertion and reason. Examine carefully both the statements and make the correct choice by using the codes given below:

(A) If both assertion and reason are correct and reason is the correct explanation of the assertion.
(B) If both assertion and reason are correct and reason is not the correct explanation of the assertion.
(C) If assertion is true but reason is false.
(D) If assertion is false but reason is true.

5. **Assertion :** Abdominal pain during indigestion is relieved by antacids.

Reason : During indigestion the stomach produces too much acid which causes abdominal pain and this is neutralized by antacid.

(a) A (b) B (c) C (d) D

6. **Assertion :** Fe reacts with HCl to produce H_2 gas.

Reason : Fe is a better reducing agent than H_2 .

(a) A (b) B (c) C (d) D

7. **Assertion :** Highly electropositive metals are extracted by electrolysis of their fused salts.

Reason : Highly electropositive metals cannot be reduced by chemical reduction methods.

(a) A (b) B (c) C (d) D

8. Voltage is a form of ..... .

(A) kinetic energy (B) potential energy

(C) both potential and kinetic energy (D) none of these

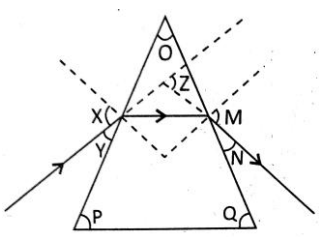
9. Which of the following optical phenomenon is used in cinematography or movie projectors?

(A) Accommodation (B) Persistence of vision

(C) Interference (D) Short sightedness

Or

The path of a ray of light passing through a glass prism is shown below:



In this diagram the angle of prism, angle of incidence, angle of emergence and angle of deviation respectively:

(A) O, Y, Z and N (B) P, Y, M and Z (C) O, X, M and Z (D) P, X, Z and N

10. The frequency of alternating current in India is:

(A) 0 Hz (B) 50 Hz (C) 60 Hz (D) 100 Hz

11. The device used for the production of electric current is:

(A) generator (B) galvanometer (C) ammeter (D) meter

Or

A TV set consumer an electric power of 230 watt and runs on 230 volt main supply. The correct fuse for TV set is:

(A) 5 A (B) 3 A (C) 1 A (D) 2 A

12. The direction of current in the coil at one end of an electromagnet is clockwise. This end of the electromagnet will be:

(A) north pole (B) east pole (C) south pole (D) west pole

13. Identify the type of chemical reaction : $Pb(NO_3)_2 + 2KI \rightarrow PbI_2 + 2KNO_3$.

(a) Combination reaction (b) Displacement reaction

(c) Double displacement reaction (d) Oxidation reaction

14. **Assertion (A) :** Silver is not used to make electric wires.

Reason (R) : Silver is a bad conductor.

SECTION - B

15. Define reproduction. How does it help in providing stability to the population of species?

16. Due to gradual weakening of ciliary muscles and diminishing flexibility of the eye lens a certain defect of vision arises. Write the name of this defect. Name the type of lens required by such persons to improve the vision. Explain the structure and function of such a lens.

17. **(a)** Why is respiration considered an exothermic reaction?

(b) Define the terms–oxidation and reduction.

(c) Identify the substance that is oxidized and reduced in the reaction:

$CuO(s) + Zn(s) \longrightarrow Cu(s) + ZnO(s)$

18. Write one example of each of the following:

(a) A metal and a non-metal which are liquids at room temperature.

(b) A metal which is very soft and a non-metal which is very hard.

(c) A metal which has very low melting point and a non-metal which has very high melting point.

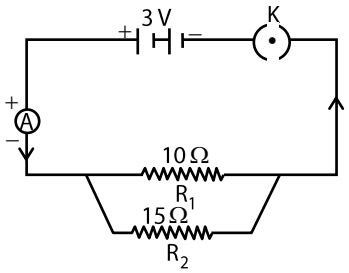
19. Write balanced chemical equations for the following reactions:

(a) Dilute sulphuric acid reacts with aluminium powder.

(b) Dilute hydrochloric acid reacts with sodium carbonate.

(c) Carbon dioxide is passed through lime water.

20. Study the following circuit and answer the following questions:



(a) State and define the type of combination of the two resistors in the circuit.

(b) How much current would flow through:

(i) 10 Ω resistor? **(ii)** 15 Ω resistor?

(c) What will be the ammeter reading?

21. Draw ray diagrams showing the image formation by a convex lens when an object is placed:

(a) between optical centre and focus of the lens.

(b) between focus and twice the focal length of the lens.

(c) at twice the focal length of the lens.

Or

"A convex lens can form a magnified erect as well as magnified inverted image of an object placed in front of it." Draw ray diagrams to justify this statement stating the position of the object with respect to the lens in each case.

An object of height 4 cm is placed at a distance of 20 cm from a concave lens of focal length 10 cm. Use lens formula to determine the position of image formed.

22. Quote any three instances where human intervention saved the forests from deforestation.

23. What are the different methods of contraceptions?

24. Define the following terms:

(i) Genetics **(ii)** Sex chromosomes **(iii)** Analogous organs

Or

(i) Why the flow of energy is unidirectional?

(ii) Why maximum accumulation of harmful chemicals occurs in human beings?

(iii) Define food web.

SECTION - C

25. The electrons in the atoms of four elements A, B, C and D are distributed in three shells having 1, 3, 5 and 7 electrons respectively in their outermost shells. Write the group numbers in which these elements are placed in the Modern Periodic Table. Write the electronic configuration of the atoms of B and D and the molecular formula of the compound formed when B and D combine.

26. An organic compound 'A' of molecular formula $C_2H_4O_2$ is widely used as preservative in pickles. This compound reacts with ethanol to form a sweet smelling compound 'B'.

(i) Identify the compound 'A'.

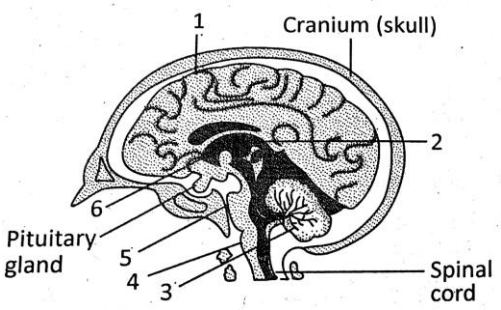
(ii) Write the chemical equation for the reaction involved.

(iii) Name the reaction.

(iv) Name the gas produced when compound 'A' reacts with washing soda. Write chemical equation for the reaction.

27. What are the different steps that take place in the process of nutrition? Explain each of them.

28. Label part 1 to 6 in the given figure and write the functions of the parts labelled 3 and 4.



Or

(a) Write the name of the male reproductive organ that produces sperms and secrete a hormone. Name the hormone secreted and state its function.

(b) Write the site of fertilization and the part where the zygote gets implanted in the human female.

(c) State, in brief, how an embryo gets its nourishment inside the mother's body.

29. **(a)** With the help of a labelled diagram, explain the following:

(i) The sun appears reddish during sunrise.

(ii) At noon, the sky appears blue.

(b) Draw a ray diagram each showing (i) Myopic eye and (ii) Hypermetropic eye.

30. **(a)** Write four differences between DC and AC.

(b) State the frequency of AC supply in India and mention the potential difference between live and neutral wire in domestic circuit. How many times does AC change its direction in one second?

Or

Draw the pattern of magnetic field lines through and around a current-carrying solenoid. What does the magnetic field pattern inside the solenoid indicate? State how the field be utilized to make an electromagnet. List two ways by which strength of this electromagnet can be increased.