



Series Z1XYW/6

SET ~ 2

प्रश्न-पत्र कोड

Q.P. Code

31/6/2

रोल नं.

Roll No.

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

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

- कृपया जाँच कर लें कि इस प्रश्न-पत्र में मुद्रित पृष्ठ 31 हैं।
- प्रश्न-पत्र में दाहिने हाथ की ओर दिए गए प्रश्न-पत्र कोड को परीक्षार्थी उत्तर-पुस्तिका के मुख-पृष्ठ पर लिखें।
- कृपया जाँच कर लें कि इस प्रश्न-पत्र में 39 प्रश्न हैं।
- कृपया प्रश्न का उत्तर लिखना शुरू करने से पहले, उत्तर-पुस्तिका में प्रश्न का क्रमांक अवश्य लिखें।
- इस प्रश्न-पत्र को पढ़ने के लिए 15 मिनट का समय दिया गया है। प्रश्न-पत्र का वितरण पूर्वाह्न में 10.15 बजे किया जाएगा। 10.15 बजे से 10.30 बजे तक परीक्षार्थी 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 31 printed pages.
- Q.P. Code 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 39 questions.
- Please write down the serial number of the question in the answer-book 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 candidates 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

Time allowed : 3 hours

अधिकतम अंक : 80

Maximum Marks : 80



31/6/2

112 B

— 1 —

P.T.O.



General Instructions :

Read the following instructions carefully and strictly follow them :

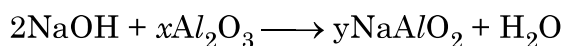
- (i) *This question paper contains **39** questions. **All** questions are compulsory.*
- (ii) *Question paper is divided into **FIVE** sections viz. Section **A, B, C, D** and **E**.*
- (iii) *In section **A** - question number **1** to **20** are Multiple Choice Questions (MCQs) carrying **1** mark each.*
- (iv) *In section **B** - question number **21** to **26** are Very Short Answer (VSA) type questions carrying **2** marks each. Answer to these questions should be in the range of **30** to **50** words.*
- (v) *In section **C** - question number **27** to **33** are Short Answer (SA) type questions carrying **3** marks each. Answer to these questions should be in the range of **50** to **80** words.*
- (vi) *In section **D** - question number **34** to **36** are Long Answer (LA) type questions carrying **5** marks each. Answer to these questions should be in the range of **80** to **120** words.*
- (vii) *In section **E** - question number **37** to **39** are of 3 source-based/case-based units of assessment carrying **4** marks each with sub-parts.*
- (viii) *There is no overall choice. However, an internal choice has been provided in some Sections.*



SECTION – A

Select and write **one** most appropriate option out of the four options given for each of the questions **1 – 20**.

1. To balance the following chemical equation the values of x and y should respectively be : 1



- (a) 1, 4 (b) 1, 2
(c) 2, 4 (d) 2, 3
2. A solution turns the colour of turmeric to reddish brown. If the same solution is poured on universal indicator, its colour would change to – 1
- (a) violet (b) blue
(c) red (d) green
3. The magnetic field inside a long straight current carrying solenoid : 1
- (a) is zero.
(b) decreases as we move towards its end.
(c) increases as we move towards its end.
(d) is same at all points.
4. Bronze is an alloy of 1
- (a) Copper and Zinc (b) Aluminium and Tin
(c) Copper, Tin and Zinc (d) Copper and Tin



5. Given below are two columns, Column I shows enzymes secreted by the glands in the alimentary canal of human beings and Column II indicates the components of food on which enzymes act. Choose the options showing correct matching :

1

Column I (Enzymes)	Column II (Component)
(a) Pepsin	Starch
(b) Trypsin	Proteins
(c) Lipase	Proteins
(d) Amylase	Emulsified fat

6. Metal oxides generally react with acids, but few oxides of metal also react with bases. Such metallic oxides are :

1

I. MgO

II. ZnO

III. Al_2O_3

IV. CaO

(a) I and II

(b) II and III

(c) III and IV

(d) I and IV

7. To obtain a magnification of + 2 with a concave mirror of radius of curvature 60 cm the object distance must be

1

(a) - 90 cm

(b) - 45 cm

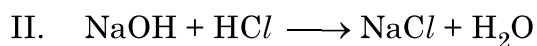
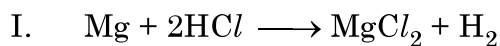
(c) - 30 cm

(d) - 15 cm



8. Consider the following chemical equation I and II

1

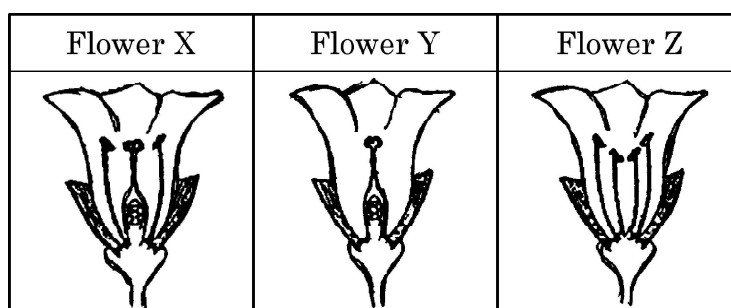


The correct statement about these equations is –

- (a) 'I' is a displacement reaction and 'II' is a decomposition reaction.
- (b) 'I' is a displacement reaction and 'II' is double displacement reaction.
- (c) Both 'I' and 'II' are displacement reactions.
- (d) Both 'I' and 'II' are double-displacement reactions.

9. Consider the following three flowers namely X, Y and Z. Which flower(s) would develop into a fruit ?

1



- (a) 'X' only
- (b) 'Z' only
- (c) 'X' and 'Y' only
- (d) 'Y' and 'Z'

10. Two salts 'X' and 'Y' are dissolved in water separately. When phenolphthalein is added to these two solutions, the solution 'X' turns pink and the solution 'Y' does not show any change in colour, therefore 'X' and 'Y' are

1

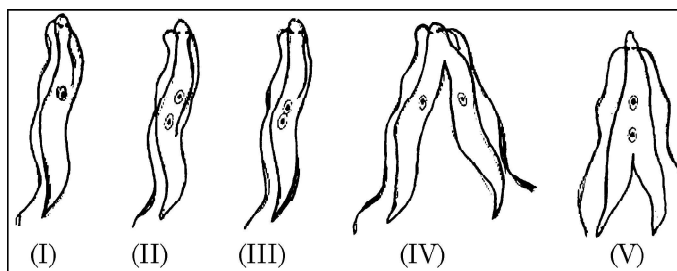
	(X)	(Y)
(a)	Na_2CO_3	NH_4Cl
(b)	Na_2SO_4	NaHCO_3
(c)	NH_4Cl	Na_2SO_4
(d)	NaNO_3	Na_2SO_4



11. In human eye the part which allows light to enter into the eye is – 1

- (a) Retina (b) Pupil
(c) Eye lens (d) Cornea

12. Choose the correct order of the stages of binary fission in Leishmania. 1



- (a) I, II, III, IV, V (b) I, III, II, V, IV
(c) I, III, V, II, IV (d) I, II, III, V, IV

13. The phenomena of light involved in the formation of rainbow are 1

- (a) Refraction, dispersion and scattering.
(b) Refraction, reflection and dispersion.
(c) Refraction, dispersion and internal reflection.
(d) Reflection, dispersion and total internal reflection.

14. In an experiment with pea plants, a pure tall plant (TT) is crossed with a pure short plant (tt). The ratio of pure tall plant to pure short plants in F_2 generation will be 1

- (a) 1 : 3 (b) 3 : 1
(c) 1 : 1 (d) 2 : 1



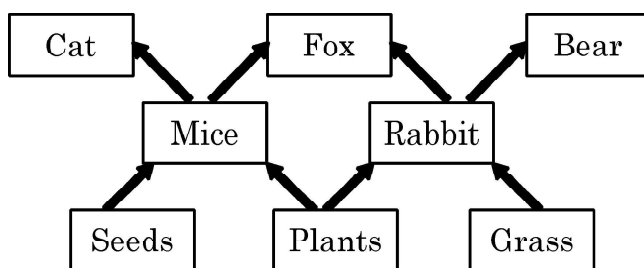
15. Walking in a straight line and riding a bicycle are the activities which are possible due to a part of the brain. Choose the correct location and name of this part from the given table :

1

	Part of the Brain	Name
(a)	Fore brain	Cerebrum
(b)	Mid brain	Hypothalamus
(c)	Hind brain	Cerebellum
(d)	Hind brain	Medulla

16. Study the given figure of a Food web and identify the primary consumer in the food web:

1



- (a) Mice and Bear (b) Rabbit and Cat
(c) Rabbit and Fox (d) Mice and Rabbit

Q. No. 17 to 20 are Assertion – Reasoning based questions.

These consists of two statements –

Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below :

- (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of (A).
(b) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of (A).
(c) Assertion (A) is true, but Reason (R) is false.
(d) Assertion (A) is false, but Reason (R) is true.



17. **Assertion (A) :** Melting point and boiling point of ethanol are lower than that of sodium chloride. 1
Reason (R) : The forces of attraction between the molecules of ionic compounds are very strong.
18. **Assertion (A) :** An ecosystem consists of biotic components and abiotic components. 1
Reason (R) : Biotic and abiotic components play important roles for the sustenance of life and work independently in all ecosystems.
19. **Assertion (A) :** It is advised that while diluting an acid one should add water to acid and not acid to water keeping the solution continuously stirred. 1
Reason (R) : The process of dissolving an acid into water is highly exothermic.
20. **Assertion (A) :** Amoeba takes in food using finger like extensions of the cell surface. 1
Reason (R) : In all unicellular organisms, the food is taken in by the entire cell surface.

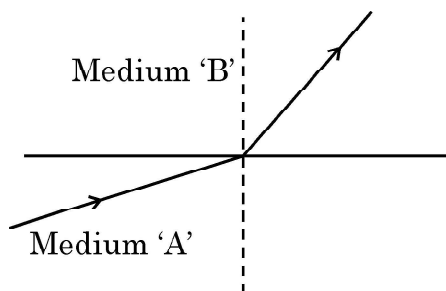
SECTION – B

Q. No. 21 to 26 are Very Short Answer Questions.

21. A metal nitrate 'A' on heating gives a metal oxide along with evolution of a brown coloured gas 'B' and a colourless gas, which helps in burning. Aqueous solution of 'A' when reacted with potassium iodide forms a yellow precipitate.
- (a) Identify 'A' and 'B'
- (b) Name the types of both the reactions involved in the above statement. 2



22. A light ray enters from medium A to medium B as shown in the figure.



- (a) Which one of the two media is denser w.r.t. other medium ? Justify your answer. 1
- (b) If the speed of light in medium A is v_a and in medium B is v_b , what is the refractive index of B with respect to A. 1

OR

- (a) A ray of light starting from diamond is incident on the interface separating diamond and water. Draw a labelled ray diagram to show the refraction of light in this case. 1
- (b) Absolute refractive indices of diamond and water are 2.42 and 1.33 respectively. Find the value of refractive index of water w.r.t. diamond. 1

23. State the rule to determine the direction of a (a) magnetic field produced around a straight conductor carrying current and (b) force experienced by a current carrying straight conductor placed in a magnetic field which is perpendicular to it. 2



24. Three resistors of $6\ \Omega$, $4\ \Omega$ and $4\ \Omega$ are connected together so that the total resistance is $8\ \Omega$. Draw a diagram to show this arrangement and give reason to justify your answer. 2
25. Give the name of the enzyme present in the fluid in our mouth cavity. State the gland which produces it. What would happen to the digestion process if this gland stops secreting this enzyme ? 2
26. (a) List two differences between the movement of leaves of a sensitive plant and the movement of a shoot towards light. 2

OR

- (b) What happens at synapse between two neurons ? State briefly. 2

SECTION – C

Q. No. 27 to 33 are Short Answer Questions.

27. What is a solenoid ? When does a solenoid behave as a magnet ? Draw the pattern of the magnetic field produced inside it showing the directions of the magnetic field lines. 3
28. State reasons for Myopia. With the help of ray diagrams, show the
- (a) image formation by a myopic eye, and
- (b) correction of myopia using an appropriate lens. 3



29. (a) Some plants like pea plants have tendrils which help them to climb up other plants. Explain how is it done. Name the plant hormone responsible for this movement. 3

OR

- (b) Name the phenomenon occurring in plants which are under the control of gravity, water and chemicals with one example each that shows the movement involved. 3
30. Explain the process of transport of oxygenated and deoxygenated blood in a human body. 3
31. A reddish brown metal used in electrical wires when powdered and heated strongly turns black. When hydrogen gas is passed over this black substance, it regains its original colour. Based on this information answer the following questions – 3
- (a) Name the metal and the black substance formed.
- (b) Write balanced chemical equations for the two reactions involved in the above information.
32. (a) A substance 'X' is used as a building material and is insoluble in water. When it reacts with dil. HCl, it produces a gas which turns lime water milky. 3
- (i) Write the chemical name and formula of 'X'.
- (ii) Write chemical equations for the chemical reactions involved in the above statements.

OR



- (b) A metal 'M' on reacting with dilute acid liberates a gas 'G'. The same metal also liberates gas 'G' when reacts with a base. 3
- (i) Write the name of gas 'G'.
- (ii) How will you test the presence of this gas ?
- (iii) Write chemical equations for the reactions of the metal with
(1) an acid and (2) a base.
33. If a harmful chemical enters in a food chain comprising peacock, plants, rats and snakes, which of these organisms is likely to have the highest concentration of the chemical in its body. Justify your answer. Name the process involved and define it. 3

SECTION – D

Q. No. 34 to 36 are Long Answer Questions.

34. (a) (i) What are isomers ? Write the structures of two compounds having molecular formula C_3H_6O and give their names.
- (ii) What are soaps ? How are they chemically different from detergents ? Why do soaps not work effectively in hard water ? 5

OR

- (b) (i) What is a homologous series of carbon compounds ? Write general formula for alkynes. Name and draw the electron dot structure of first homologue of this series.
- (ii) State the meaning of the functional group in an organic compound. Write the formula of the functional group present in alcohols and carboxylic acids. 5



35. (a) (i) What is meant by resistance of a conductor ? Define its SI unit.
- (ii) List two factors on which the resistance of a rectangular conductor depends.
- (iii) How will the resistance of a wire be affected if its
- (1) length is doubled, and
- (2) radius is also doubled ?

Give justification for your answer.

5

OR

- (b) In an electric circuit three bulbs of 100 W each are connected in series to a source. In another circuit set of three bulbs of the same wattage are connected in parallel to the same source.
- (i) Will the bulb in the two circuits glow with the same brightness ? Justify your answer.
- (ii) Now, let one bulb in both the circuits get fused. Will the rest of the bulbs continue to glow in each circuit ? Give reason for your answer.

5

36. Give reason for the following :

- (a) During reproduction inheritance of different proteins will lead to altered body designs.
- (b) Fertilization cannot take place in flowers if pollination does not occur.
- (c) All multicellular organisms cannot give rise to new individuals through fragmentation or regeneration.
- (d) Vegetative propagation is practised for growing only some type of plants.
- (e) The parents and off-springs of organisms reproducing sexually have the same number of chromosomes.

5



SECTION – E

Q. No. 37 to 39 are case based / data based questions with 2 to 3 short sub-parts. Internal choice is provided in one of these sub-parts.

37. A student took three concave mirrors of different focal lengths and performed the experiment to see the image formation by placing an object at different distances with these mirrors as shown in the following table. 4

Case No.	Object-distance	Focal length
I	45 cm	20 cm
II	30 cm	15 cm
III	20 cm	30 cm

Now answer the following questions :

- (a) List two properties of the image formed in Case I.
- (b) In which one of the cases given in the table, the mirror will form real image of same size and why ?
- (c) Name the type of mirror used by dentists. Give reason why do they use such type of mirrors.

OR

- (c) Look at the table and identify the situation (object distance and focal length) which resembles the situation in which concave mirrors are used as shaving mirrors ? Draw a ray diagram to show the image formation in this case.



38. On the basis of reactivity metals are grouped into three categories –

4

- (i) Metals of low reactivity
- (ii) Metals of medium reactivity
- (iii) Metals of high reactivity

Therefore metals are extracted in pure form from their ores on the basis of their chemical properties.

Metals of high reactivity are extracted from their ores by electrolysis of the molten ore.

Metals of low reactivity are extracted from their sulphide ores, which are converted into their oxides. The oxides of these metals are reduced to metals by simple heating.

- (a) Name the process of reduction used for a metal that gives vigorous reaction with air and water both.
- (b) Carbon cannot be used as a reducing agent to obtain aluminium from its oxide ? Why ?
- (c) Describe briefly the method to obtain mercury from cinnabar. Write the chemical equation for the reactions involved in the process.

OR

- (c) Differentiate between roasting and calcination giving chemical equation for each.



39. All human chromosomes are not paired. Most human chromosomes have a maternal and a paternal copy, and we have 22 such pairs. But one pair called the sex chromosomes, is odd in not always being a perfect pair. Women have a perfect pair of sex chromosomes. But men have a mismatched pair in which one is normal sized while the other is a short one.

4

- (a) In humans, how many chromosomes are present in a Zygote and in each gamete ?
- (b) A few reptiles rely entirely on environmental cues for sex determination. Comment.
- (c) "The sex of a child is a matter of chance and none of the parents are considered to be responsible for it". Justify it through flow chart only.

OR

- (c) Why do all the gametes formed in human females have an X chromosome ?
-

