Central Board of Secondary Education

(CBSE)

Board Examination - (March)

Series : EPC20

Set C

Code No. - SCI -086

Roll No. | | | | | | | |

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

- Please check that this question paper contains 4 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 27 questions.
- Please write down the Serial Number of the question before attempting it.

FINAL EXAMINATION

SCIENCE

Time allowed : 3 hours **Maximum Marks : 80**

General Instructions :

1) The question paper comprises three sections – A, B and C. Attempt all the sections.
2) All questions are compulsory.
3) Internal choice is given in each section.
4) 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.
5) All questions in Section B are three-mark, short-answer type questions. These are to be answered in about 50 - 60 words each.
6) All questions in Section C are five-mark, long-answer type questions. These are to be answered in about 80 – 90 words each.
7) This question paper consists of a total of 30 questions.

Published by - Educare Plus Publication **Developed by - Resource Person of CBSE Board**

Section - A

1) Why do alkanes burn with blue or clean flame ? (1)

2) What is meant by periodicity in properties of elements with reference to periodic table ? (1)

3) **Answer Q.Nos. 3 (a) to 3 (d) on the basis of your understanding of the following paragraph and the related studied concepts.**

CFCs are being added to the environment in steadily increasing amounts. These compounds are chemically inert and may persist in the atmosphere for 40-150 years and are expected to reach 10-30 times the present levels. The photodissociation of the CFCs in the stratosphere produces a large number of chlorine atoms which leads to destruction of atmospheric ozone. NASA began measuring the earth's stratospheric ozone layer via satellite in 1979. By the time Montreal protocol came into effect in 1989, ozone levels had significantly declined over the Antartic region, creating what we know as the ozone hole. According to NASA the levels of ozone have since then stabilised due to the efforts of UNEP and other organisations but recovery is still decades away.

(a) Write the full form of CFCs. (1)
(b) Explain why CFCs are considerd harmful for the atmosphere. (1)
(c) What would happen if the ozone layer in the atmosphere disappears completely ? (1)
(d) Based on the information provided, can you elaborate the role of UNEP in reduction or prevention of damages incurred by the ozone layer. (1)

4) **Answer Q.Nos. 4(a) - 4(d) on the basis of your understanding of the following paragraph and the related studied concepts :**

Rohan made a model of electric bell. He connected the coil in the circuit and switched it ON. However, the magnetism produced in the coil was not strong enough. When he made some changes in the coil the circuit started working properly. He also found out other ways of producing a strong magnetism.

(a) What changes did Rohan make in the coil ? (1)
(b) What do you mean by magnetic effect of electric current ? (1)
(c) What other ways did Rohan found for increasing the strength of magnet ? (1)
(d) State the rule to determine the direction of a force experienced by a current carrying straight-wire placed in magnetic field which is perpendicular to it ? (1)

5) The focal length of a convex mirror is 20 cm. The value of radius of curvature of the convex mirror is (1)
(a) 5 cm (b) 30 cm (c) 40 cm (d) 10 cm

OR

An object is placed on the principal axis of a convex lens beyond centre of curvature C_1. The position of image formed by convex lens will be
(a) between second focus F_2 and centre of curvature C_2
(b) between first focus F_1 and optical centre
(c) between second focus F_2 and optical centre
(d) away from centre of curvature C_2

6) When the ciliary muscles are relaxed, focal length of eye lens is (1)
(a) maximum (b) minimum
(c) Neither maximum nor minimum (d) equal to least distance of distinct vision

7) Which vestigial organ in man suggests that he is a descendant of herbivorous mammals ? (1)
(a) Wisdom teeth (b) Nictitating membrane
(c) Coccyx (d) Vermiform appendix

8) Which of the following enzymes is the second enzyme to be mixed with food in the digestive tract ? (1)
(a) Pepsin (b) Cellulose (c) Amylase (d) Trypsin

OR

What are the products obtained by alcoholic fermentation ?
(a) Ethanol + Lactic acid + Energy (b) Lactic acid + Carbon dioxide + Energy
(c) Ethanol + Water + Energy (d) Ethanol + Carbon dioxide + Energy

9) A flower can self-pollinate only, if it contains (1)
(a) only anther (b) only ovary (c) Both (a) and (b) (d) Either (a) or (b)

OR

Which of the following substances is exchanged between mother and foetus through the placenta ?
(a) Glucose (b) Oxygen (c) Carbon dioxide (d) All of these

10) In the reaction $xNH_3 + yO_2 \rightarrow zNO + pH_2O, x, y, z$ and p respectively are (1)
(a) 2, 5, 2, 6 (b) 4, 5, 4, 6 (c) 1, 2, 1, 3 (d) 4, 3, 4, 6

11) An acid can react with
(a) AgCl (b) Na_2CO_3 (c) $PbSO_4$ (d) Na_2SO_4 (1)

OR

An aqueous solution with pH-zero is
(a) acidic (b) alkaline (c) neutral (d) amphoteric

12) Choose the correct general formula of alkane. (1)
(a) C_nH_{2n-2} (b) $C_{2n}H_{2n+2}$ (c) C_nH_{2n} (d) C_nH_{2n+2}

OR

How many triads did Dobereiner identify from the existing elements during his time ?
(a) Three (b) Two (c) Six (d) One

For question numbers 13 and 14, two statements are given- one labelled *Assertion* (A) and the other labelled *Reason* (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below :
(a) Both Assertion and Reason are true and Reason is correct explanation of the assertion.
(b) Both Assertion and Reason are true but Reason is not the correct explanation of the assertion.
(c) Assertion is true but Reason is false.
(d) Both Assertion and Reason are false.

13) **Assertion :** Branched chain alkanes have lower boiling points.
Reason : As molecular size decreases, boiling point increases. (1)

14) **Assertion :** The light of violet colour deviates the most and the light of red colour the least, while passing through a prism.
Reason : For a prism material, refractive index is highest for violet light and lowest for the red light. (1)

Section - B

15) An element 'X' belongs to 3rd period and group 16 of the Modern Periodic Table
a) Determine the number of valence electrons and the valency of 'X'.
b) Write the molecular formula of the compound when 'X' reacts with hydrogen and write its electron dot structure.
c) Name the element 'X' and state whether it is metallic or non-metallic. (3)

16) A metal nitrate 'A' on heating gives yellowish brown coloured metal oxide along with brown gas 'B' and a colourless gas 'C'. Aqueous solution of 'A' on reaction with potassium iodide forms a yellow precipitate of compound 'D'. Identify 'A, B, C, D'. Also identify the types of both the reactions. Metal present in 'A' is used in alloy which is used for soldering purposes.

OR (3)

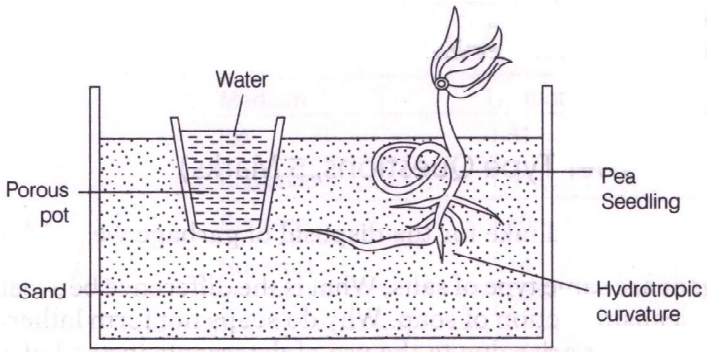
Explain how plaster of paris is manufactured. State two uses of plaster of paris.

17) a) Why curd or sour substances should not be kept in brass and copper vessels ?
b) Aqueous solution of HCl shows acidic character, whereas aqueous solution of glucose does not. Why ?
c) What will you observe when a small amount of copper oxide is added in a beaker containing dilute hydrochloric acid ?(3)

18) (a) Do the freshwater animals reabsorb water through their excretory system like marine animals ? Justify your answer.

(b) During summer season we drink a lot of water in comparison to winter, yet we pass urine fewer times in summer than in winter. What is the reason behind this fact ? (3)

19) (a) Consider the given image showing hydrotropic movement in a pea seedling. (3)



Recompile the information provided above and write a note on hydrotropism

20) Describe the events that occurs after the fertilisation of germ cells in plants. (3)

OR

Explain the following methods of contraception by giving one example of each.
(i) Barrier method (ii) Chemical method (iii) Surgical method

21) Differentiate between biodegradable and non-biodegradable substances with the help of one example each. List two changes in habit that people must adopt to dispose non-biodegradable waste, for saving the environment. (3)

22) (a) Define sustainable development. (1 + 2)

(b) Name four gases commonly present in biogas. State advantages of using this gas over fossil fuels.

23) A household uses the following electric appliances.
(i) A heater of rating 1000 W for 5 hours in each day.
(ii) 5 electric bulbs of rating 100 W each for 5 hours in each day (given, cost of electrical energy ` 2.5 per unit.)
Find the electricity bill for the household for the month of April. (3)

24) Explain the working of an electric motor with the help of a labelled diagram.

OR

(i) Name a device that helps to maintain a potential difference across a conductor.
(ii) What are the advantages of connecting electrical appliances in parallel with the battery instead of connecting them in series ? (3)

Section - C

25) (a) Define the following terms :
1. Mineral 2. Ore 3. Gangue

(b) What are two chemical processes used for obtaining a metal from its oxide ? Write equations.

OR (5)

(a) A student was given Mn, Zn, Fe and Cu metals. Identify which of them
(i) will not displace H_2 from dil. HCl.
(ii) will react only with steam to give $H_2(g)$
(iii) will give H_2 with 5% HNO_3.
Write the chemical reactions involved.

(b) (i) Show the formation of Na_2O by the transfer of electrons between the combining atoms.
(ii) Why are ionic compounds usually hard ?

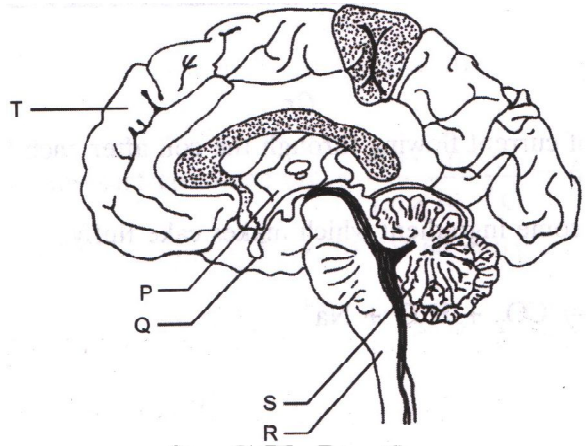
26) (a) Complete the following equations :

(i) $CH_4 + O_2 \rightarrow$ (ii) $C_2H_5OH \xrightarrow{\text{Hot Conc. } H_2SO_4}$ (iii) $CH_3COOH + NaOH \rightarrow$

(b) Name the functional group present in each of the following organic compounds.

(i) CH_3COCH_3 (ii) C_2H_5COOH (5)

27) (a) Given below is a diagram of human brain. Label the parts P, Q, R, S and T.



(b) Write the main function of each part.

(c) One of the hormones produced by Q regulates growth and development of reproductive organs. Name that hormone. (5)

28) (a) 'The sex of the children is determined by what they inherit from their father and not the mother'. Justify.

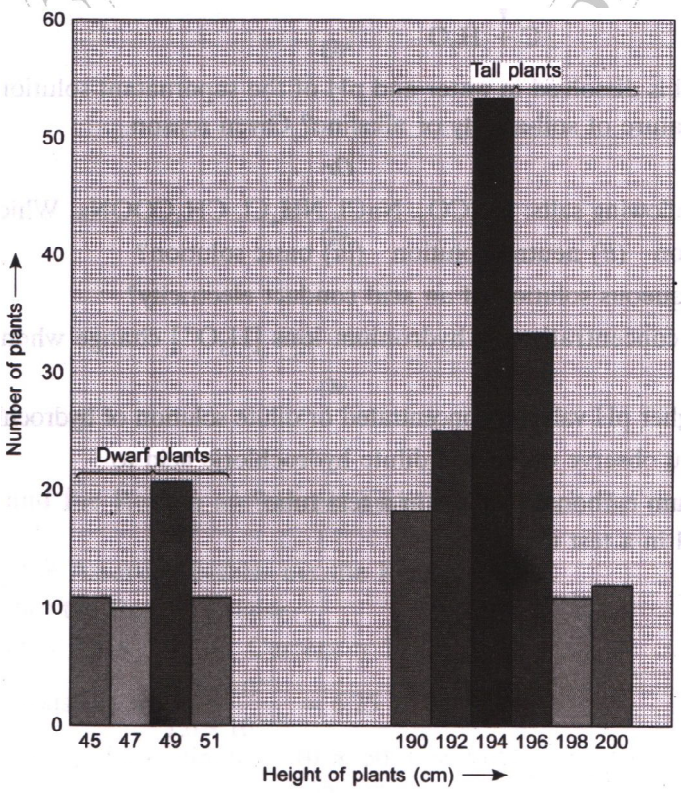
(b) How is chromosome number restored in the zygote ?

(c) 'Fossils are related to Evolution.' Justify.

OR

In garden pea plant, height of stem is controlled by a pair of alleles. The allele for tallness (T) is completely dominant over that for dwarfness (t).

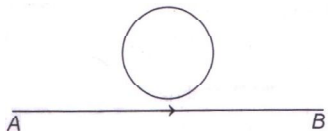
The flower of a tall plant (195 cm) were self-pollinated, the height variation in the plants produced is shown in the chart below.



(a) With reference to the above chart,
(i) Deduce the genotype of the parent plant and give one reason to support your answer.
(ii) State the total number of dwarf and tall plants.
(iii) Construct a genetic diagram to illustrate this cross, and hence work out the genotypic ratio of the F_1 generation.

(b) How would you show whether the tall plants are all homozygous or heterozygous ? (5)

29) (i) A circular metallic loop is kept above the wire AB as shown below :



What is the direction of induced current produced in the loop, if the current flowing in the straight wire
(a) is steady, i.e., does not vary ?
(b) is increasing in magnitude ?
Justify your answer in each case.

(ii) A copper coil is connected to a galvanometer. What would happen, if a bar magnet is
(a) pushed into the coil with its South-pole entering first (b) held at rest inside the coil ? (5)

30) (i) The following table shows object distance and focal length of three concave mirrors, answer the following qestions :

S.No.	Object distance (m)	Focal length (m)
1.	0.30	0.20
2.	0.10	0.15
3.	0.20	0.10

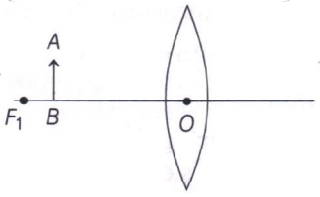
(a) Out of three, in which part the mirror will form the image having same size as an object ?
(b) Which mirror is being used as a make up mirror ?

(ii) No matter how far you stand from a mirror, your image appears erect and diminished. Identify whether this mirror is concave or convex.

(iii) How does the observation of images formed help in identifying the type of mirror ? (5)

OR

(i) In an experiment, the formation of image of an object AB placed infront of a convex lens is shown, with an incomplete ray diagram. Complete the rays diagram and state position and nature of the image formed.



(ii) At what distance should an object be placed from convex lens of focal length 9 cm to obtain an image at 18 cm from it ? What will be the magnification produced in this case ?

~0~0~0~ Best of Luck ~0~0~0~