DELHI PUBLIC SCHOOL, BANGALORE- EAST

PRE BOARD – 1 – (2019 – 2020)

SUBJECT: SCIENCE (SET – 1)

CLASS: X
DATE: 09/12/2019

MAX – MARKS: 80
TIME: 3 HOURS
NAME:

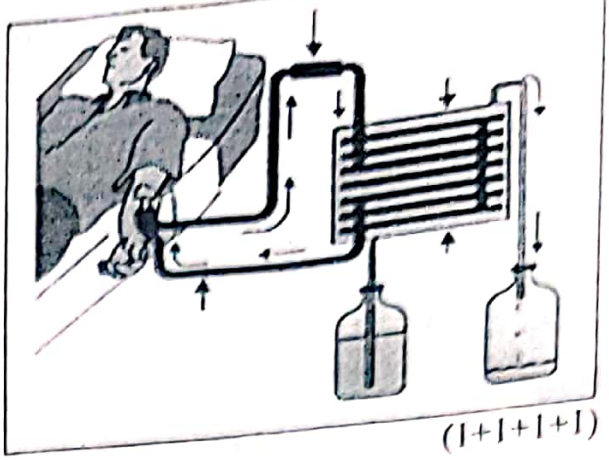
GENERAL INSTRUCTIONS:

- *The question paper comprises three sections – A, B and C. 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-mark, short-answer type questions. These are to be answered in about 50 – 60 words each.*
- *All questions in Section C are five-mark, 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. The pH of soil A is 7.5 while that of soil B is 4.5. Which of the two soils A or B should be treated with powdered chalk to adjust its pH and why? (1)
2. Based on the group valency of element, write the molecular formula of the following compounds.
   a) Oxide of first group elements
   b) General formula of the compound formed when element A of group 2 combines with an element B of group 17 (1)
3. Two children went to the park with their grandfather. On reaching the park the park, the children joined others to play, while the grandfather after taking three rounds, sat on the chair, took out newspaper from his bag and began to read with the help of his spectacle. After sometime, he realized that he was too far to see the children. He looked around, but though he had worn spectacle, he couldn't see anything. He then realized that he had forgotten his other spectacle, which he used to see the faraway places, He began calling them by their names, but due to the large distance, his voice was not reaching the children. Another man sitting beside him realized the problem and helped him to reach the children.
   a) Name the eye defect the grandfather was suffering from.
   b) Which type of spectacles should he wear, so as to avoid calling the other?
   c) List the causes of disease.
   d) What is the range of vision of normal human eye? (1+1+1+1)

4. a) What do you think the given picture indicates? Name it.



b) State the functional dissimilarity between the given machine and the organ instead of which it works.

c) How much of initial filtrate does the mentioned organ produce in normal conditions.

d) State any one circumstance that lead to the usage of the given machine.

(1+1+1+1)

5. A piece of wire of resistance R is drawn to double its length. The resistance is:
(a) R (b) 2R (c) 4R (d) R/4

(OR)

To get 2Ω resistance using only 6Ω resistors, the number of them required are: (1)
(a) 2 (b) 3 (c) 4 (d) 6

6. A soft iron bar is introduced inside the current carrying solenoid. The magnetic field inside the solenoid:
(a) Will decrease (c) Will increase
(b) Will remains same (d) Will become zero (1)

7. Which among these are the main characters of fuse element?
(a) High resistance (c) Do not burn due to oxidation
(b) Low melting point (d) All of the above (1)

8. In the experimental set up to show that CO_2 is given out during respiration name the substance taken in small test tube kept in the conical flask.
(a) KOH (b) NaOH (c) $Ca(OH)_2$ (d) H_2O

(OR)

The first product formed due to the breakdown of glucose which is common to both aerobic and anaerobic respiration is.
(a) Lactic acid (b) Pyruvate (c) Ethanol (d) Carbon dioxide (1)

9. A man with blood group A marries a woman with blood group O. Various combinations possible in offsprings due to the above parental genes are.
(a) Only group A (b) Only group O (c) Both group A and O (d) None of the above (1)

10. Identify acid, base and the nature of the sodium nitrate from the following options:
(a) NaOH, HNO_3, neutral (c) NaOH, HNO_3, basic
(b) NaOH, HNO_3, acidic (d) Na_2CO_3, HNO_3, acidic (1)

11. NaOH is obtained by the electrolysis of:
(a) Aq. Solution of NaCl (c) Aq. $NaHCO_3$
(b) Aq. Na_2CO_3 (d) Molten NaCl (1)

12. The Functional group present in a propanal is:
(a) – OH (b) – COOH (c) – CO – (d) – CHO

(OR)

The molecular formula of a homologue of butane is:
(a) C_4H_8 (b) C_3H_6 (c) C_4H_6 (d) C_3H_8 (1)

For question numbers 13 and 14, two statements are given- one labeled *Assertion* (A) and the other labeled *Reason* (R). Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below

i) Both A and R are true and R is correct explanation of the assertion.

ii) Both A and R are true but R is not the correct explanation of the assertion.

iii) A is true but R is false.

iv) A is false but R is true.

13. Assertion: AgBr is used in black and white photography.

Reason: AgBr is photosensitive and decomposes to silver and bromine in the presence of sunlight. (1)

14. Assertion: When the direction of velocity of moving change is perpendicular to the magnetic field, it experience a maximum force.

Reason: Force on the moving change does not depends on the direction of magnetic field in which it moves. (1)

SECTION – B

15. Na, Mg and Al are the elements of the 3rd period of the Modern Periodic Table having group number 1, 2 and 13 respectively. Which one of these elements has the:

a) highest valency b) largest atomic radius c) maximum chemical reactivity

Justify your answer stating the reason for each. (3)

16. A compound of calcium which is a yellowish white powder is used for disinfecting drinking water. Write its name and formula. How is it manufactured? Write the chemical equation for the reaction involved. List two other uses of the compound.

(OR)

a) What is the common name of sodium hydrogen carbonate?

b) What happens when a solution of sodium hydrogen carbonate is heated? Write the equation. (3)

17. A small amount of quick lime is added to water in a beaker.

i) Name and define the type of reaction.

ii) Write balanced equation for the reaction and name the product formed.

iii) List two main observations of the same reaction. (3)

18. a) What do you mean by Molecular Phylogeny?

b) Name any three tools used for studying human evolution

(OR)

Define the following terms:

a) Homologous structures

b) Analogous structures

c) Natural selection (3)

19. a) Categorise the following into biodegradable and non biodegradable substances. Kitchen waste, medic bottles, animal waste, milk packets.

b) How do decomposers help the environment? [any 2 points]

c) Use of 'kulhads' made of clay though very common in trains were later discontinued. Why?

d) Name the synthetic chemicals linked to the rapid drop of ozone in the atmosphere. (3)

20. a) Differentiate between sensory neurons and motor neurons.

b) How is the brain protected in our body?

c) Name the part of the brain responsible for precision of voluntary activities and maintaining body posture and balance. (3)

21. What are sexually transmitted diseases? Name four such diseases. Which one of them damages the immune system of the human body? (3)

22. A student wants to project the image of a candle flame on a screen 80 cm in front of a mirror by keeping the candle flame at a distance of 20 cm from its pole.

(a) Which type of mirror should the student use?

(b) Find the magnification of the image produced.

(c) Find the distance between the object and its image.

(d) Draw a ray diagram to show the image formation in this case and mark the distance between the object and its image. (3)

23. Explain the function of the following parts of an electric motor. (3)

(a) Armature (b) Brushes (c) split ring

24. Series arrangement are not used for domestic circuits. List any three reasons:

(OR)

List in a tabular form three difference between a voltmeter and an ammeter. (3)

SECTION – C

25. An organic compound 'A' is a constituent of wine and beer. Oxidation of 'A' yields an organic acid 'B' which is present in vinegar. Name the compound 'A' and 'B' and write their structural formula. What happens when A and B react in the presence of an acid catalyst? Write the chemical equation for the reaction. Mention any two uses of compound 'A'.

(OR)

State reasons for the following:

a) Micelle formation takes place when soap is added to water.

b) Use of synthetic detergents cause pollution of water.

c) Air holes of a gas burner have to be adjusted when the vessels being heated get blackened by the flame.

d) Alkanes are excellent fuels.

e) Conversion of ethanol to ethanoic acid is an oxidation reaction. (5)

26. A metal 'M' which is good conductor of heat and electricity, used in making electric wires, is found in nature as sulphide ore M_2S?

a) Name the metal 'M'.

b) Which process will be suitable for extraction of this metal 'M' from its ore M_2S?
Write the balanced chemical equations involved in the process of extraction.

c) With the help of labelled diagram explain the process of electrolytic refining of the metal. (5)

27. a) How do Mendel's experiments show that traits may be dominant or recessive?

b) Elaborate on the experiment conducted by Urey and Miller to explain 'Origin of life on Earth'

c) State any two factors responsible for speciation. (5)

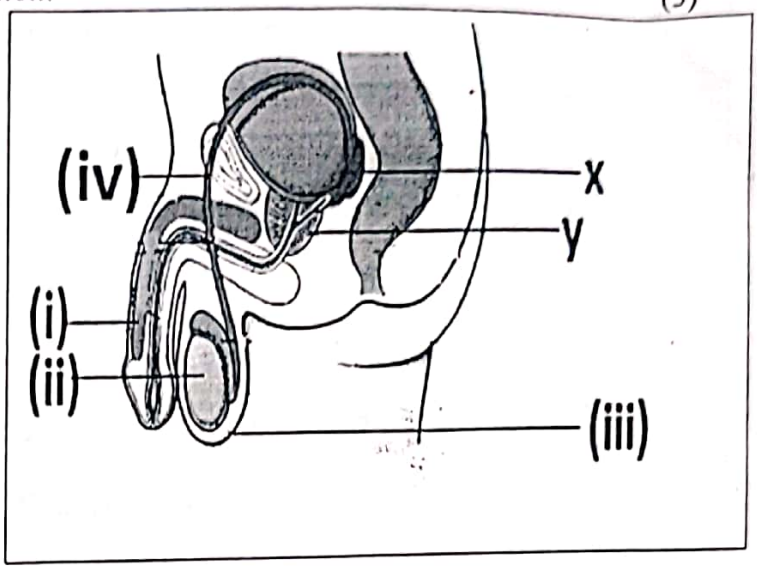
28. a) Label the parts (i) (ii) (iii) and (iv).

b) What is the collective term used for parts X & Y put together?

c) State the function of part (iii)

d) Name the hormone and the gamete produced by part (ii)

e) Which structure serves as a common passage for urine and gametic cells in the human male reproductive system?



(OR)

a) Write one example each for the following:

i) Binary fission

ii) Multiple fission

iii) Spore formation

iv) Regeneration

b) How do organisms restore the normal number of chromosomes during the process of sexual reproduction?

c) Write one example of vegetative propagation that happens through leaves. (5)

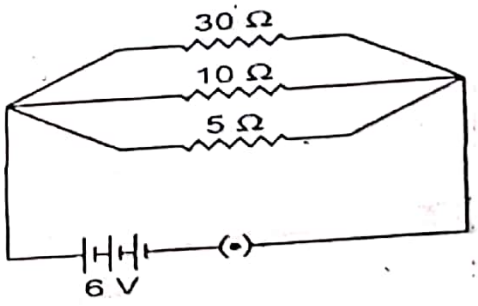
29. a) Two wires A and B are of equal length and have equal resistance. If the resistivity of A is more that of B which wire is thicker and why?

b) For the electric circuit given figure calculate:

i) Current in each resistors

ii) Total current drawn from the battery and

iii) Equivalent resistance of the circuit.



(5)

30. An object is placed at a distance of 60 cm from concave lens of focal length 30 cm.

a) Use lens formula to find the distance of the image from lens.

b) List four characteristics of the image formed by lens in this case.

c) Draw ray diagram to justify your answer of part (b).

(OR)

a) If the image formed by a lens is diminished in size and erect, for all position of the object. What type of lens is it?

b) Name the point on the lens through which a ray of light passes un-deviated.

c) An object is placed 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. Find (i) the position (ii) the magnification and (iii) the nature of the image formed. Draw a ray diagram for the above situation. (5)

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