Pre-Board Examination, February 2018

SCIENCE

CLASS: X | Max. Marks:80

DATE | SET A | Time: 3 Hrs

General instructions:

(i) The question paper comprises of two sections, A and B. You are to attempt both the sections.

(ii) All questions are compulsory. However, an internal choice will be provided in three questions of 3 marks each, two questions of five marks each and one question (for assessing the practical skills) of two marks.

(iii) 1-2 questions of section A carry one mark each. These are to be answered in one word or in one sentence.

(iv) 3-5 question of section A carry two marks each. These are to be answered in about 30 words each.

(v) 6-15 questions of section A carry three marks each. These are to be answered in about 50 words each.

(vi) 16-21 questions of section A carry five marks each. These are to be answered in about 70 words each

(vii) Section B contains questions based on practical skills of two marks each

SECTION-A

1) Why is it advised to use iodised salt in our diet? (1)

2) Name the intermediate and the end products of glucose breakdown in aerobic respiration. (1)

3) What kind of mirrors are used in big shopping stores to watch activities of customers? Explain with the help of a ray diagram. (2)

4) a) An element 'X' exists in two different forms and on reaction with oxygen forms an oxide XO_2. The oxide when dissolved in water turns blue litmus red. State whether element 'X' is a metal or a non-metal. Give the electron dot structure of this oxide.
b) Name the metal which is alloyed with copper to make bronze. (2)

5) Construct an aquatic food chain showing four trophic levels. "Energy flow in a food chain is unidirectional. "Justify. (2)

6) a) State the essential condition for electric current to flow between two points of a circuit.
b) Define an electric current. How is potential difference maintained in an electric circuit? (3)

7) Name the three common defects of vision. What are their causes. Name the type of lens used to correct each of them. (3)

8) State the cause of release of energy in a nuclear fission reaction. List two demerits of nuclear power generation. (3)

9) a) Describe an activity to trace magnetic field lines around a bar magnet with the help of a compass.

b) Mention the direction of magnetic field lines (i) inside a bar magnet and (ii) outside a bar magnet.

OR

When does a current carrying conductor kept in a magnetic field experience a maximum force? List the factors on which this force depend. State the rule which may be used to determine the direction of this force. (3)

10) a) Why do we need to balance a chemical equation?

b) Write balanced chemical equations for the following reactions.

(i) Carbon disulphide burns in air to give carbondioxide and sulphur dioxide.

(ii) Aluminium hydroxide reacts with sulphuric acid to form aluminium sulphate and water. (3)

11) a) What is chlor alkali process? Write the chemical reaction taking place in the form of a balanced chemical equation.

b) If a solution change the colour of the litmus from red to blue what can you say about its p^H?

OR

a) Define indicators. Name two natural indicators from plants.

b) Write balanced equation for the reaction that takes place when sodium oxide reacts with water. How will this solution behave towards phenolphthalein and red litmus paper. (3)

12) a) What are groups and periods in the periodic table?

b) Two elements M and N belong to groups I and II respectively and are in the same period of the periodic table. How do the following properties of M and N vary?

(i) Sizes of their atoms

(ii) Their metallic characters

(iii) The molecular formula of their oxides

(iv) Molecular formulae of their chlorides. (3)

13) (a) Draw the structure of neuron and label cell body and axon.

(b) Name the part of neuron :

(i) where information is acquired

(ii) through which information travel as an electrical impulse

OR

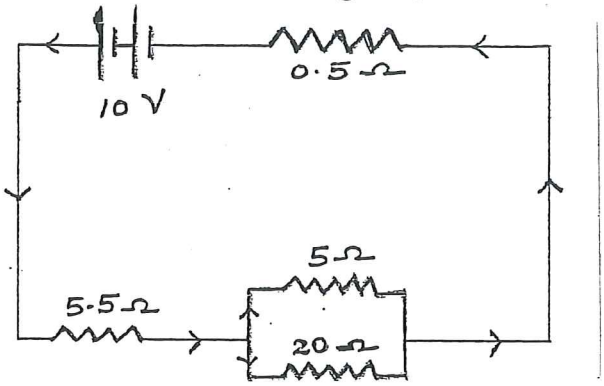
Name any three endocrine glands in human body and briefly write the function of each of them. (3)

14) List three factors with examples that provide evidences in favour of evolution in organisms and state the role of each in brief. (3)

15) An organ donation camp was organized by Government in your locality to encourage people for organ donation. But the camp was not very successful and hardly received any response.

(a) What values are possessed by people who wish to donate their organs?
(b) Will organ donation agreement affect the donor?
(c) Why did the organ donation camp failed? (3)

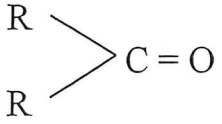
16) (a) Two metallic wires A and B are connected in parallel. Wire A has length' l' and radius' r' and wire B has length' 2l' and radius' 2r'. Compute the ratio of the total resistance of parallel combination and resistance of wire A.
(b) For the circuit shown in this diagram,

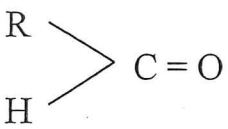


Calculate (i) the resultant resistance
(ii) the total current
(iii) the voltage across 0.5 Ω resistor. (5)

17) (a) What is meant by power of a lens ? Define its S.I unit .
(b) A real image 4/5 size of the object is formed 18cm from a lens.
Draw a ray diagram showing the image formation.
Calculate the power of the lens.
(c)Calculate the speed of light in water of refractive index 4/3. (5)

18) (a)Write the names of the functional groups in :

(i) 

(ii) 

(b) (i)Mention the experimental conditions involved in obtaining ethene from ethanol
(ii) Write the chemical equation for the above reaction.
(c) Write two differences between soaps and detergents. (5)

19) (a) How do the metals Potassium, Magnesium and Aluminum differ in their reaction with water? Give necessary chemical equations .

(b) Account for the following :

(i) Fe the most widely used metal is never used in its pure state.

(ii) From dilute hydrochloric acid zinc can liberate hydrogen gas but copper cannot.

OR

(a)Most of the metals acquire a dull surface when exposed to air. Name the chemical phenomenon responsible for this process.

(b) State the conditions under which iron articles rust. Design an activity with diagram to investigate the conditions necessary for rusting . Suggest two methods to prevent rusting of iron. (5)

20) (a)Name one organ each in human female and male reproductive system which plays a role of endocrine gland along with production of germ cells. Name one hormone secreted by each of them

(b)State two advantages to the development of the embryo in the mother's womb.

(c)Where does fertilization occur in case of human female and name the place where fertilized egg gets implanted.

OR

(a) Give one example each of a unisexual and a bisexual flower.

(b)How is the number of chromosomes of the parent cells maintained in the cells of the offspring's of sexually reproducing organisms?

(c)Mention the changes the flower undergoes after fertilization (5)

21) (A)Distinguish between homologous organs analogous organs. In which category would you place wings of a bird and wings of bat? Justify your answer giving a suitable reason.

(B)A cross was carried out between a pure bred tall pea plant and a pure bred dwarf pea plant and F_1 progeny was obtained. Later, the F_1 progeny was selfed to obtain F_2 progeny.

(i)What is the phenotype of the F_1 progeny and why?

(ii) Give the phenotypic ratio of F_2 progeny (5)

SECTION -B

22) In the experiment to trace the path of a ray of light through a triangular glass prism.
(a) if the emergent ray makes an angle of 35^0 with the second face of prism, then what is the angle of emergence?
(b) can the angle of deviation be zero and why?

OR

In the experiment to trace the path of a ray of light through a glass slab.
(a) if the angle of incidence is increased, how does the angle of refraction change?
(b) what relationship students work out when they measure the angle of incidence and angle of emergence? (2)

23) (a)What is the shape of the graph obtained by plotting potential difference applied across a conductor against the current flowing through it ?
(b) What does the slope of this V – I graph at any point represent? (2)

24) How does acetic acid react with sodium bicarbonate? Give chemical equation for this chemical change. (2)

25) An iron nail is dipped in the solution of copper sulphate for about 30 minutes, state the change in colour observed. Give the reason for the change. (2)

26) A student observed a permanent slide showing asexual reproduction in yeast. Draw labelled diagrams of the observation he must have made from the slide. Name the process also. (2)

27) What are the four materials required for the experiment to show that CO_2 is given out during respiration in plants (2)