

INTERNATIONAL INDIAN SCHOOL DAMMAM
SECOND TERM EXAMINATION, DECEMBER 2017

CLASS: X

SCIENCE

SET A



TIME: 3Hrs

General instructions:

- (i) The question paper comprises two sections, A and B. you are to attempt both the sections.
- (ii) All questions are compulsory.
- (iii) All questions of section A and B are to be attempted separately.
- (iv) There is an internal choice in two questions of three marks and two questions of five marks.
- (v) Question numbers 1 and 2 in section A are one mark question. They are to be answered in one word or in one sentence.
- (vi) Question numbers 3 to 5 are in section A are two marks questions. These are to be answered in 30 words each.
- (vii) Question numbers 6 to 15 in section A are three marks questions. These are to be answered in about 50 words each.
- (viii) Question numbers 16 to 21 in section A are 5 marks questions. These are to be answered in 70 words each.
- (ix) Question numbers 22 to 27 in section B are based on practical skills. Each question is a two marks question. These are to be answered in brief.

SECTION- A

- | | | |
|-----------|---|---|
| 1 | What are villi? Mention the function. | 1 |
| 2 | In the following food chain 2J energy was available to the hawks. How much energy could have been present in the plants?
Plants → Rats → Snakes → Hawks | 1 |
| 3 | (a) Why is respiration considered an exothermic reaction?
(b) Identify the substance that is oxidized and reduced in the reaction
$CuO + Zn \rightarrow Cu + ZnO$ | 2 |
| OR | | |
| | What is rancidity? Mention any two ways to prevent it. | |
| 4 | (a) State Snell's law of refraction.
(b) The refractive index of carbon disulphide is 1.63. What is the meaning of this statement in relation to speed of light? | 2 |
| 5 | How would the digestion of food be affected if the bile duct of a human is completely blocked? Explain. | 2 |

- 6 Two resistors with resistances 5Ω and 10Ω are to be connected to a battery of 6V so as to obtain : 3
 (i) minimum current (ii) maximum current
 (a) How will you connect the resistors in each case?
 (b) Calculate the strength of the total current in the circuit in the two cases.
- OR**
- An electric geyser rated 1500W is connected to 250V line mains. Calculate
 (i) the electric current drawn by it
 (ii) the energy consumed by it in 8 hours
 (iii) Cost of energy if each unit costs Rs. 6.00.
- 7 (a) Define the following terms in the context of spherical mirrors. 3
 (i) pole (ii) centre of curvature
 (b) Draw ray diagrams to show the principal focus of a ,
 (i) convex lens
 (ii) concave lens.
- 8 (a) At ordinary temperature the surface of metals such as magnesium, aluminium, zinc etc. is covered with a thin layer? What is the composition of this layer? State its importance. 3
 (b) Hydrogen gas is not evolved when a metal reacts with nitric acid. Why?
 (c) Ionic compounds have high melting and boiling points. Why?
- 9 In the electrolysis of water, 3
 (i) Name the gas collected at anode and cathode
 (ii) Why is the volume of gas collected at one electrode is double than the other?
 (iii) What would happen if dil. H_2SO_4 is not added to water?
- 10 a) What are trophic levels? Give an example of a grassland food chain and mention the various trophic levels in the food chain. 3
 b) What are acquired traits? Give one example.
- 11 a) How do we calculate the age of fossils? 3
 b) What is the importance of fossil studies?
 c) What is speciation ?
- 12 An object 2cm in size is placed 30cm in front of a concave mirror of focal length 15cm. At what distance from the mirror should a screen be placed in order to obtain a sharp image. What will be the size of the image? Draw a **ray diagram** to show the formation of the image in this case. 3
- 13 (a) Write the molecular formula of benzene and state the number of double bonds in its structure. 3
 (b) What are structural isomers? Draw the structures of any two isomers of hexane.
- OR**
- (a) Write the name and formula of the first member of the series of alkenes.
 (b) Define homologous series of organic compounds. List its two characteristics.

- 14 Although solar cooker has many advantages, yet not many families use solar cooker for cooking food . However , it is very good to know that solar water heater is widely used in India . Kapil was feeling proud after installation of solar water heater on his roof top. He knows that he has contributed towards the conservation of environment. Now ,answer the following questions: 3
- Give one advantage and one limitation of solar energy.
 - How has kapil contributed towards the conservation of environment?
 - State the values that prompted Kapil's action.
- 15 a) List any two functions of the following parts of the human reproductive system. 3
- Testes
 - ovaries
- b) Pre- natal sex determination is prohibited by law . Give reason.
- OR**
- Explain the mechanism of opening and closing of stomata.
 - What are the components of bio gas ?
- 16 (a)What is meant by power of a lens? 5
- (b)If the image formed by a lens for all positions of the object placed in front of it is always virtual, erect and diminished, state the type of lens. Draw ray diagrams to support your answer. If the numerical value of focal length of such a lens is 20 cm, find its power in new Cartesian sign conventions.
- 17 (a)An organic compound A is an essential 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 to show the reaction. Also name the reaction. 5
- (b)Explain the cleansing action of soaps.
- OR**
- (a)An ester has the molecular formula $C_4H_8O_2$. Write its structural formula. What happens when this ester is heated in the presence of sodium hydroxide solution? Write the chemical equation for the reaction and name the products.
- (b)Explain the cleansing action of soaps.
- 18 a)Draw the figure showing fertilization in a flowering plant and label the following parts 5
- pollen tube
 - the part that later develops to the seed
 - the part that later develops to the fruit
 - the part where pollen grains land.
- b) If we cross breed tall(dominant) pea plants with dwarf (recessive) pea plants
- State the phenotype of plants we would expect in the F1 progeny.
 - State the expected phenotypic ratio of tall and short plants in the F2 generation.

- 19 (a) List two advantages of connecting electrical devices in parallel with the battery. 5
(b) Two wires of equal lengths, one of copper and the other of manganin (an alloy) have the same thickness. Which one can be used for electrical heating devices? Why?
(c) State Ohm's law. What will be the nature of the graph between potential difference and current for a conductor?

- 20 (a) Define activity series of metals. 5
(b) Write the chemical name of the coating that forms on silver and copper articles when these are exposed to moist air.
(c) What is galvanization? What purpose is served by it?
(d) How the metals at the top of the reactivity series can be obtained from their ores. Explain with an example.

- 21 a) Explain the process of break down of glucose in a cell 5
i) In the presence of oxygen
ii) In the absence of oxygen.
b) What is vegetative propagation? Give any one advantage .
c) Give any two methods of contraception.

OR

- a) Draw a sectional view of human female reproductive system and label the parts where :
i) Eggs develop
ii) Fertilization take place
iii) Fertilized egg gets implanted
iv) The passage through which the sperms enter.
- b) Describe in brief , the changes that the uterus undergoes
i) To receive the zygote
ii) If the egg is not fertilised

SECTION -B

- 22 Riya performs two set of experiments to study the length of the foam formed which are 2
as follows:
Set I :she takes 10 ml of distilled water in test tube A and adds 5-6 drops of liquid soap in it and shakes the test tube vigorously
Set II :she takes 10 ml of distilled water in test tube B and adds 5-6 drops of liquid soap with half spoonful of CaSO_4 in it and shakes the test tube vigorously
Write your observation and reason.
- 23 A pinch of baking soda was added to dilute acetic acid, when a lot of effervescence took 2
place with the formation of a sodium salt, a gas and water.
(i) Name the sodium salt and write its molecular formula.
(ii) Name the gas evolved and a method to test it.

- 24 The rays of sun are allowed to fall on a concave mirror. A cardboard is held in front of the mirror and then moved backward or forward, till a sharp image of the sun is formed on it. 2
Answer the following:
(i) What is the nature of the image?
(ii) What is the name of the point where the sharp image is formed?
- 25 A ray of light travelling in air strikes the surface of glass slab at an angle of 30° . What is the angle of incidence? Will the angle of refraction be bigger or smaller than the angle of incidence? 2
- 26 Give various steps of binary fission in amoeba with the help of a labelled diagram. 2
- 27 What are the parts of a germinating dicot seed? 2
