CHENNAI SAHODAYA SCHOOL COMPLEX

CLASS: X **SCIENCE** **TIME: 3 HRS**

SET 3 **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 sentences.
5. All questions in section B are 3marks, short answer type questions. These are to be answered in about 50 to 60 words each.
6. All questions in section C are 5 marks, long answer type questions. These are to be answered in about 80 to 90 words each.
7. The question paper consists of total of 30 questions.

SECTION A

1.How many covalent bonds are there in a compound having molecular formula C_5H_{12}

a) 5 b)12 c)16 d)17

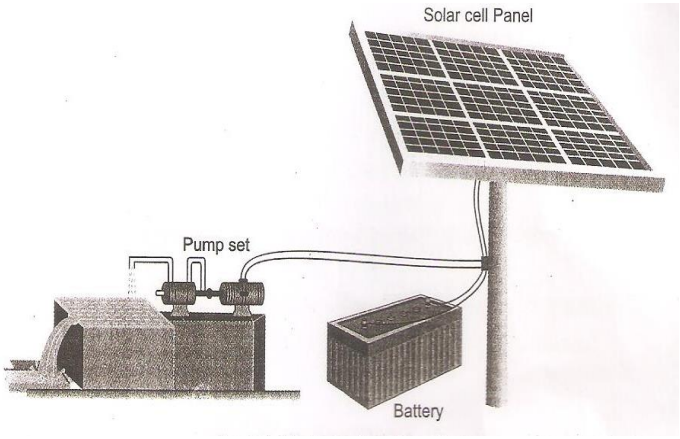
2.A Student takes 5 ml distilled water in 3 test tubes marked I, II, III. He dissolves Calcium Chloride in test tube I. Magnesium Chloride in test tube and II. Sodium Chloride in test tube III. In which test tubes will water behave as hard water?

a.I b. II c. I & II d. III

3. Answer question numbers 3(a) – 3(d) on the basis of your understanding of the following paragraph and the related studied concepts.

A device which gets heated by the heat energy of the sun is called a solar heating device. All solar heating devices are designed to facilitate the collection of sunlight as much possible. A black surface absorbs more heat as compared to a white or a reflecting surface under identical condition. A solar cell is a device which converts solar energy into electricity. A solar cell produces very small current at a small potential difference. So for practical use, a large number of such solar cells are connected together. A combination of a large number of solar cells is called a solar panel. A solar panel can provide stronger currents under high potential difference. In solar power plants, the solar energy with the help of concave reflectors focused at black painted pipes filled with water which gets heated and starts boiling to produce electricity. A 5 kilowatt capacity solar power plant is being installed at Gurgaon in Haryana. Gujarat is the first state to develop solar power generation in India. The solar power generation is 1637 megawatt. Kamuthi solar power project is the largest single location, solar plant in the world, located in Tamil Nadu.

Kamuthi solar plant is the second largest solar park with a capacity of 648 megawatt commissioned by Adani power.



3(a) What is the principle of solar heating device?

3(b) How A.C generator can be converted to DC?

3(c) Name the largest solar power plant in Tamil Nadu. How much power is generated by this solar power park?

3(d) Write two advantages of using solar cells.

4. Question 4a to 4d is based on the table given below. Study the table related to height of students and answer the questions that follow.

TABLE

CLASS	STUDENT X	STUDENT Y	STUDENT Z
STD VI	5 FEET	2 FEET	4 FEET 8 INCHES
STD VII	5 FEET 6 INCHES	2 FET 2 INCHES	5 FEET
STD VIII	6 FEET	2 FEET 4 INCHES	5 FEET 2 INCHES
STD IX	6FEET 10 INCHES	2 FEET 8 INCHES	5 FEET 4 INCHES

a. What do you infer from the above table?
b. Identify the hormone responsible for the height of children.
c. Which gland secretes this hormone?
d. What is the term used to describe the condition of student X and student Y?

5. The change in the focal length of human eye is caused due to

a) Ciliary muscles b) pupil c) cornea d) iris

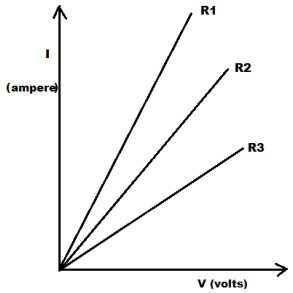
(OR)

The colour of the sky is blue during day time, red during sunset and black at night.

This is due to

a) Scattering of light b) small particles present in atmosphere c) atmospheric refraction d) all of the above.

6. A student carries out an experiment and plots the V – I graph of three samples of nichrome wire with resistances R_1, R_2 and R_3 respectively. Which of the following is true?



a) $R_1 = R_2 = R_3$ b) $R_1 > R_2 > R_3$ c) $R_3 > R_2 > R_1$ d) $R_2 > R_3 > R_1$

7. Which of the following represents voltage.

a) Workdone X charge b) $\frac{\text{work done X time}}{\text{current}}$

c) work done x charge x time d) $\frac{\text{work done}}{\text{current x time}}$

8. Which is the traditional water harvesting system of Madhya Pradesh

a. pynes b. bundhis c. kattas d. nadis

(OR)

Amrita Devi Bishnoi's effort was to save
(i)sal trees (ii)khejri trees (iii)teak trees (iv)pine trees

9.The product formed when quick lime reacts with water is

a) Calcium Hydride b) Calcium bicarbonate c) Calcium Carbonate Calcium hydroxide

10. Name two important characteristic features of carbon.

11. What is roasting?

12. Identify the Unsaturated Compounds from the following.

i) Propane (ii) Cyclopropane (iii) Propyne (iv) Propene

(a) i & ii (b) ii & iii (c) iii & iv (d) i & iv

(OR)

Solder is an alloy of

a) Zinc and Lead b) Lead and Tin c) Copper and Zinc d) Tin and Carbon

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 (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 (A) Halides (chloride, bromide and iodide) of silver are kept in dark brown or black bottle

Reason(R) The halides of silver on absorbing sunlight decompose to form silver metal and halogen.

14.Assertion(A): silver is not used to make electrical wires.

Reason(R): silver is a bad conductor.

SECTION-B

15.Give Reason for the following

(a) Platinum, Gold, Silver, are used to make jewellery
(b) Sodium, Potassium, Lithium are stored under oil
(c) Carbonate and sulphide ores are usually converted to oxides during the process of extraction

16)A mixture of oxygen and ethyne is burnt for welding. Can you tell why a mixture of ethyne and air is not used?

b)Draw the electron dot structure of simplest alkyne.

c) Give the general formula for Alkyne

(OR)

(a)What happens when an iron nail is dropped in copper sulphate solution?
(b)What is the reaction called?
(c) Write the Chemical equation.

17.a)Explain double displacement reaction.

b) Write a balanced Chemical equation for the above reaction.

c) Name the precipitate formed.

18. a.Draw a diagram showing flow of energy in an ecosystem.
b. Mention two points that you infer from this diagram.

OR

How is ozone formed? Why is damage to the ozone layer a cause for concern? What steps are being taken to limit this damage?

19. In pea plant the trait of yellow seeds (YY) is dominant over green seed (yy). Explain the inheritance pattern of F1 and F2 generation with the help of a cross following the rules of inheritance of traits. Show the visible characters of F1 and F2 progenies and write the genotypic ratio and percentage.

20. a. What are the events that occur during photosynthesis?

b. How does it differ in desert plants?

21. Through an activity explain the process of Hydrotropism.

22.a) A ray of light falls normally on a face of a glass slab. What are the values of angle of incidence and angle of refraction?
b) State the laws of refraction.
c) For the same angle of incidence 45®, the angle of refraction in two transparent media I and II is 20®and 30® respectively. Out of I and II which medium is optically denser and why?

23. a) Name the electric device that converts mechanical energy into electrical energy.
b) Draw the labelled diagram of that electric device.
c) State the principle and the rule involved in this device.

24. a) Name the phenomenon occurring in nature due to dispersion of light. Write two conditions for the phenomenon.
b) Name the three phenomenon of light responsible for its formation.
c) Draw the diagram to show its formation.

(OR)

A student cannot see clearly a chart hanging on a wall placed at a distance of 5m from his eye.
a) Name the defect of vision he is suffering from.
b) List its two possible causes.
c) Draw ray diagram showing the i) defective eye ii) correction for this defect.

SECTION-C

25.A carbon compound 'P' with two carbon atoms on heating with excess conc. H_2SO_4forms another compound 'Q' which on addition of hydrogen in the presence of nickel catalyst forms a saturated compound 'R'. 'P' on combustion forms carbondioxide and water.
Identify 'P' 'Q' 'R'
Write the equation for the reactions involved.

(OR)

A compound X has molecular formula C_2H_6O reacts with Na metal to produce hydrogen gas.

(a)Identify the compound and functional group present in the compound.

(b)Give its chemical reaction with excess concentrated H_2SO_4at 443 K.

(c)What is the reaction called?

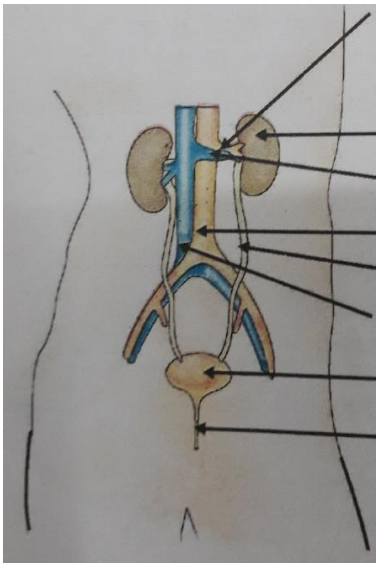
(d) What is the role of H_2SO_4?

26.a) Soaps and detergents are both same type of salts.State the differences between the two.

b)Describe the cleansing action of soap with a diagram

c) Why is excessive use of detergents discouraged?

27.



(i) Name the duct which carries urine from kidney to urinary bladder.

(ii) Name the duct which passes urine outside the body.

(iii) Explain the process of urine formation

28. a. Describe the various steps involved in the process of budding in Hydra. Support your answer with a diagram.

b. What is the importance of DNA copying in reproduction?

c. How is the amount of DNA maintained in sexually reproducing organism?

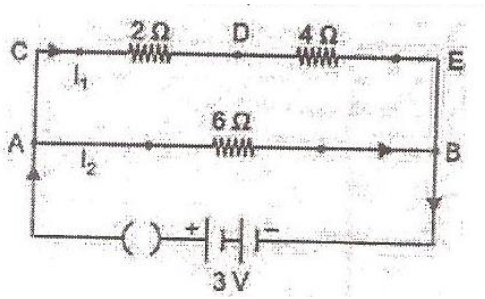
OR

a. Name two sexually transmitted bacterial and viral disease.
b. Explain any three contraceptive methods.

29. a) What is meant by resistance of conductor. Name and define its SI Unit.

b) How is the resistance of wire affected if its i) length is doubled ii) Radius is doubled

c) In the circuit shown below calculate:
i) total resistance in arm CE,
ii) total current drawn from the battery
iii) current in each arm, i.e.,AB and CE of the circuit.



c) Why parallel arrangement is used for connecting domestic electric appliances in a circuit.

30. a) Name the type of mirror used in the following
i) Solar furnace ii) rear view mirror of a vehicle.

b) Draw a labelled ray diagram to show the formation of image in each of the above two cases.

c) An object is placed 18cm in front of a spherical mirror. If the image is formed at 4cm to the right of the mirror, calculate its focal length .Is the mirror convex or concave? What is the nature of the image? What is its magnification? Is the image diminished or enlarged?

(OR)

a) A thin converging lens forms a real, magnified image and virtual, magnified image of an object placed in front of it. Write the position of object in each case.
b) Draw a labelled diagram to show the image formation in each case.
c) The image of a needle placed 10cm from a lens is formed on a wall 20cm on the other side of the lens. Find the focal length of the lens. Is the lens converging or diverging? Calculate the size of image formed if the size of object needle is 2.5cm.

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