

## CHENNAI SAHODAYA SCHOOL COMPLEX

**CLASS: X**

**SCIENCE**

**TIME: 3 HRS**

**SET 1**

**MARKS: 80**

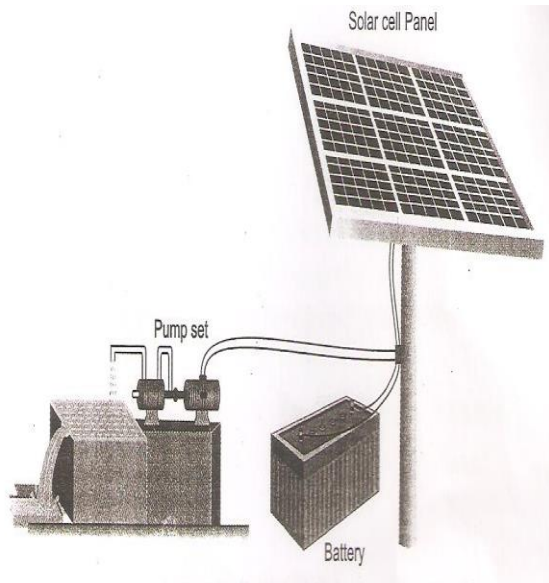
### General instructions

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 Care 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. When Sodium bicarbonate powder is added to acetic acid a gas evolves, which one of the following statements isNOT true about the gas.
  - a) Turns lime water milky
  - b) Colourless and odourless
  - c) Extinguishes a burning splinter
  - d) Burns with a pop sound.
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 II and Sodium Chloride in test tube III. In which test tubes will water behave as hard water
  - a) I
  - b) II
  - c) I and 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?  
 (b) How A.C generator can be converted to DC?  
 (c) Name the largest solar power plant in Tamil Nadu. How much power is generated by this solar power park?  
 (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

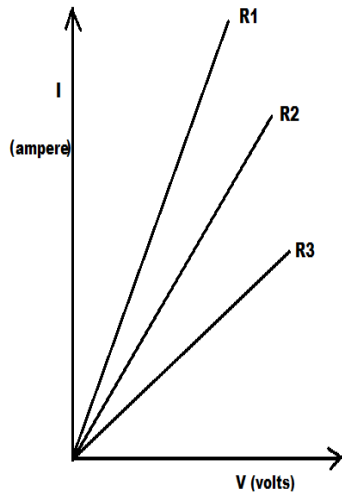
- a. What do you infer from the above table?  
 b. Identify the hormone responsible for the height of children.  
 c. Which gland secretes this hormone?  
 d. What is the term used to describe the condition of student X and student Y?
5. The change in the focal length of human eye is caused due to  
 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) Work done 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)

Out of the five R's choose the one which requires spending of some energy to save environment.

- a. Reuse b. recycle c. reduce d. repurpose

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

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

10. Define roasting.

11. Name two important characteristic features of carbon.

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: silver is not used to make electrical wires.

Reason: silver is a bad conductor.

### SECTION B

15. a) Explain double displacement reaction  
b) Write a balanced Chemical equation for the above reaction  
c) Name the precipitate formed.
16. a) 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. 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
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. a) What are the events that occur during photosynthesis?  
b) How does it differ in desert plants?

20. 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.

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  $45^\circ$ , the angle of refraction in two transparent media I and II is  $20^\circ$  and  $30^\circ$  respectively. Out of I and II which medium is optically denser and why?

23. a) what is a solenoid? Draw the magnetic field lines around a solenoid carrying current.

b) List two factors on which the strength of magnetic field produced by it depends.

c) How can it be used as an electromagnet?

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.  $H_2SO_4$  forms another compound 'Q' which on addition of hydrogen in the presence of nickel catalyst forms a saturated compound 'R'. One molecule of 'P' on combustion forms carbon dioxide and water.

Identify 'P' 'Q' 'R'. Write the equation for the reactions involved.

(OR)

25. 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  $H_2SO_4$  at 443 K.

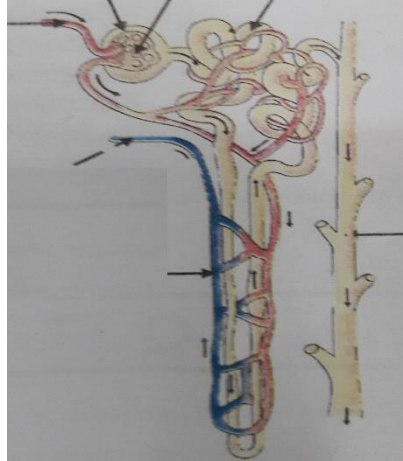
(c) What is the reaction called?

(d) What is the role of  $H_2SO_4$  ?

26. An element X (atomic number 17) reacts with an element Y (atomic no 20) to form a divalent halide.

- (a) where in the periodic table are elements X and Y placed ?
- (b) Classify X and Y as metals, non metals, or metalloids.
- (c) What will be the nature of the oxide of element Y?
- (d) Identify the nature of bonding in the compound formed.
- (e) Draw the electron dot structure of the divalent halide.

27.



- (i) Identify the part where blood gets filtered in the nephron
- (ii) Identify the blood vessel which carries nitrogenous waste into the nephron.
- (iii) Identify the part where selective reabsorption takes place
- (iv) What is the composition of urine?
- (v) On what factor does reabsorption of water depend on?

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?

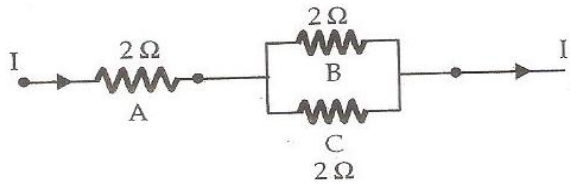
OR

a) Name two sexually transmitted bacterial and viral disease.

b) Explain any three contraceptive methods.

29. a) Name and State the law relating heat dissipated in an electric circuit with the current, resistance and time. Also write its mathematical form.

b) Three  $2\Omega$  resistors A, B and C are connected as shown below. Each of them dissipates energy and can withstand a maximum power of  $18W$  without melting. Find the maximum current that can flow through the three resistors.



- c) i) What material is used in making the filament of an electric bulb and why?  
 ii) Why less heat is generated in long cables than in filament of electric bulbs?

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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