

# Super series MODEL TEST PAPER- 2010 Class – X

## SCIENCE (Theory)

Time allotted : 2 h 30 min

Maximum marks : 60

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### General Instructions:

- 1.** The question paper comprises of two sections A and B. You are to attempt both the sections.
- 2.** All questions are compulsory.
- 3.** There is no overall choice. However internal choice has been provided in all the three questions of five marks category. Only one option in such questions is to be attempted.
- 4.** Questions 1 to 6 in section A and 17 to 19 in section B are short questions. These carry one mark each.
- 5.** Questions 7 to 10 in section A and 20 to 24 in section B are short answer type questions and carry two marks each.
- 6.** Questions 11 to 14 in section A and 25 to 26 in section B are also short answer type questions and carry three marks each.
- 7.** Questions 15 and 16 in section A and question 27 in section B are long answer type questions and carry five marks each.

### SECTION 'A'

- Q.1** Why are 'danger' signal lights red in colour?
- Q.2** Why AC is preferred over DC ?
- Q.3** A girl in the mirror laughing house finds her face appearing highly magnified, lower portion of her body of the same size but laterally inverted and middle portion of her body highly diminished in size. Guess the design of the mirror?
- Q.4** Although silver is uncreative metal, but it becomes blackish after sometime Why?
- Q.5** Why do metals generally not evolve  $H_2$  gas when reacted with  $HNO_3$ ? Name 2 metals which liberate  $H_2$  gas with very dil.  $HNO_3$ .
- Q.6** Why are electric bulbs usually filled with chemically inactive gases such as nitrogen and argon?
- Q.7** Draw the electron dot structure of cyclohexane. With which homologous series does cyclohexane share its general formula?
- Q.8** Give reasons why:  
I. All the elements of a group have similar chemical properties.  
II. All the elements in a period have different chemical properties.copper metal?
- Q.9** Two resistors of same materials has been connected in series first and then in parallel. Draw a V – I graph to distinguish these connection.
- Q.10** Draw the pattern of magnetic field lines through and around a current carrying solenoid. How will the strength of the magnetic field be affected on?  
(i) Decreasing the number of turns in the coil.  
(ii) Increasing the electric current passing through the coil.
- Q.11** What defect is shown in the given figure?  
(i) What is the cause of this defect?  
(ii) How is this defect corrected by using spectacles?

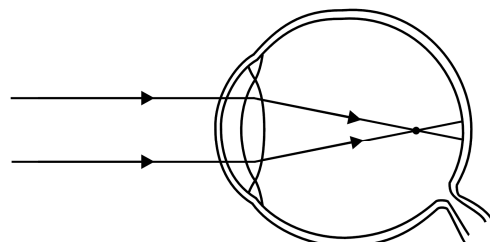


Figure for Q. No. 11

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Q.12 With the help of chemical reactions, explain, in brief, what happens when:

- (i) Cinnabar is roasted?
- (ii) Zinc carbonate undergoes calcination?
- (iii) Steam is passed over iron metal?

Q.13 Given below are the electronic configurations of the atoms of some elements:

Element s	Electronic configuration				
	K	L	M	N	O
X	2	8	3		
Y	2	8	18	5	
Z	2	8	7		
E	2	8	18	8	1
G	2	8	2		
L	2	5			
Q	2	8	18	8	

Letters X, Y, Z, E, G, L, Q, R, and T. These letters are not the symbols for the elements concerned. By reference to the table answer the following questions:

- (a) Which is a noble gas?
- (b) Out of X, Z and G, which has the largest atomic size?
- (c) To which period does E belong?
- (d) Which elements belong to the same group?
- (f) Write the formula of the compounds formed when  
(i) G reacts with Y and (ii) X reacts with Z

Q.14 The image of a needle placed at 45 cm from a lens is formed on a screen placed at 90 cm on the other side of the lens. Find the displacement of the image when the object is moved 5cm from the lens and state the characteristics of image formed.

- Q.15 (i) Write the common name of substance X that is used in cough syrup & antifreeze.  
(ii) Name two substances which converts X into aldehyde and Y which react with each other to form sweet smelling substance Z.  
(iii) What happens (Give chemical equation) when sodium reacts with ethanol?  
(iv) What happens (Give chemical equation) when ethanol is heated at 443K with excess of concentrated sulphuric acid?  
(v) What is denatured alcohol?

**Or**

- (a) Explain the cleansing action of soaps? **(2)**
- (b) What is addition reaction? What is its industrial application? **(2)**
- (c) What type of fatty acids are considered to be healthy and why? **(1)**

Q.16 (i) State the law that governs the strength of the current passing through a metallic conductor when a potential difference is applied across its ends. Illustrate this law graphically and make circuit for same.

- (ii) An electric lamp has resistance of 400 ohms. It is connected to a supply of 250V. If the price of electric energy is Rs.1.20 per unit, calculate the cost of lighting the lamp for 20 hours.

**Or**

- (i) State the law that governs the amount of heat produced in a metallic conductor when electric current is passed through it for a given time. Express this law mathematically.
- (ii) Two resistors of resistances 2  $\Omega$  and 4  $\Omega$  are, in turn, connected  
(a) In series and (b) In parallel to a given battery for the same time interval.  
Compute the ratio of the total quantity of heat produced in the combination in the two cases.

### SECTION 'B'

Q.17 Expand UNEP. What is Silviculture.

Q.18 Name the site of light & dark reaction of photosynthesis.

Q.19 What are considered 'biodiversity hotspots'?

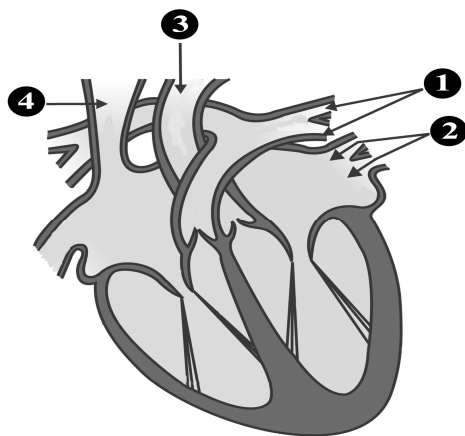
Q.20 Draw a neat and labelled diagram of a box type solar cooker. Why is it painted in black?

Q.21 What is meant by rainwater harvesting? Mention the advantage of following this practice.

Q.22 If pituitary gland stops functioning at age of 18, mention two effects that will take place

Q.23 Describe the characteristics of flow of energy in an ecosystem? What will happen if decomposers are removed from nature ?

Q.24 (i) Label the four parts indicated by 1, 2, 3 and 4 in the diagram given below:



(ii) Mention the functioning of 1, 2, 3 and 4 in the above diagram.

Q.25 (i) Name the hormones secreted by thyroid gland and give the effect of its hypersecretion & hyposecretion.

(ii) What is the role of sex hormones in the process of reproduction?

Q.26 Which component of sunlight is regarded as harmful to us? How is it normally prevented from reaching us? What can destroy this natural protection?

Q.27 With the help of a neat and labeled diagram, explain the structure and functioning of human digestive system.

**Or**

The gene type of green stemmed tomato plants is denoted as GG and that of purple stemmed tomato plants as gg when these two are crossed.

i. What colour of stem would you expect in F<sub>1</sub> progeny?

ii. Give the percentage of purple stemmed plants if F<sub>1</sub> are self pollinated.

iii. In what ratio would you find the gene types Gg and gg in the F<sub>2</sub> progeny?