## BLUE PRINT : CLASS X

<table>
<thead>
<tr>
<th>UNIT</th>
<th>Chapter</th>
<th>MCQ  (1 mark)</th>
<th>VSA  (1 mark)</th>
<th>SA   (3 marks)</th>
<th>LA   (5 marks)</th>
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<tr>
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<td>30(10)</td>
<td>30(6)</td>
<td>80(36)</td>
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Note: * - Internal Choice Questions of same chapter.
AR – Assertion, Reason based question
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 sentence.
5. All questions in Section B are three-marks, short-answer type questions. These are to be answered in about 50 - 60 words each.
6. All questions in Section C are five-marks, long-answer type questions. These are to be answered in about 80 – 90 words each.
7. This question paper consists of a total of 30 questions.

SECTION – A

1. When we enter a dark room coming from outside, immediately the things inside the room do not appear clear to our eyes. This is because:
   (a) pupils do not open at all in the dark.  
   (b) pupils take time to adjust.  
   (c) light travels slower in a dark room.  
   (d) pupils open very quickly in the dark.

   OR

   The phenomena of light responsible for the working of the human eye is:
   (a) reflection  
   (b) refraction  
   (c) power of accommodation  
   (d) persistence of vision

2. When a 4V battery is connected across an unknown resistor there is a current of 100 mA in the circuit. The value of the resistance of the resister is:
   (a) 4 Ω  
   (b) 40 Ω  
   (c) 400 Ω  
   (d) 0.4 Ω

3. Unit of electric power may also be expressed as:
   (a) volt-ampere  
   (b) kilowatt-hour  
   (c) watt-second  
   (d) joule-second

4. It was found that water from a river was contaminated with Coliform bacteria. Which one of the following pollutant might have got mixed with the water?
   (a) Fertilizer run off  
   (b) Industrial waste  
   (c) Pesticides  
   (d) Human faecal matter

   OR

   Which one of the following stakeholders of forests causes the maximum damage to forest?
   (a) People who live in or around the forest  
   (b) The forest department of the government  
   (c) The wildlife and native enthusiasts  
   (d) The industrialists

5. Which one of the following green house gases is a contributor due to incomplete combustion of coal and petroleum?
   (a) Oxides of nitrogen  
   (b) Methane  
   (c) Carbon monoxide  
   (d) Carbon dioxide

6. Which of the following reactions is an endothermic reaction?
   (a) Burning of coal.  
   (b) Decomposition of vegetable matter into compost.  
   (c) Process of respiration.  
   (d) Decomposition of calcium carbonate to form quick lime and carbon dioxide.
7. Identify the basic salt from the following salts:
   (a) Na$_2$CO$_3$  (b) NH$_4$Cl  (c) NaNO$_3$  (d) KCl

8. Answer question numbers 8(i) - 8(iv) on the basis of your understanding of the following paragraph and the related studied concepts.

Renewable energy sources such as wind energy are vital for the Indian economy, not only from the point of view of supply, but also from the perspective of environmental and social benefits. India is the world’s fifth largest wind-power producer and the largest windmill facilities in India are installed in Tamil Nadu. Muppandal is a small village of Tamil Nadu and one of the most important sites of wind-farm in the state. It uses wind from the Arabian Sea to produce renewable energy. The suitability of Muppandal as a site for wind farms stems from its geographical location as it has access to the seasonal monsoon winds.

The electrical generators used on wind turbines in sites like Muppandal, produce an output AC of 240 V and a frequency of 50 Hz even when the wind speed is fluctuating. A transformer may be required to increase or decrease the voltage so it is compatible with the end usage, distribution or transmission voltage, depending on the type of interconnection.

8(i) State the principle behind electric generator.
8(ii) The output frequency of wind turbine is 50 Hz. What is meant by this statement?
8(iii) Why do you think Muppandal is at an advantageous position for this project?
8(iv) Based on the data represented in the graph below, which of the two cities A or B would be an ideal location for establishing a wind-farm and why?

9. The positions of four elements A, B, C and D in the modern periodic table are shown below. Which element is most likely to form an acidic oxide?

```
   A
  B
   C
  D
```

(a) A  (b) B  (c) C  (d) D
10. Question numbers 10(i) - 10(iv) are based on the two tables given below. Study these tables related to blood sugar levels and answer the questions that follow.

**Table A (Blood glucose chart)**

<table>
<thead>
<tr>
<th>Remark</th>
<th>Mean Blood Glucose Level (mg/dL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctor’s advice needed</td>
<td>380</td>
</tr>
<tr>
<td></td>
<td>350</td>
</tr>
<tr>
<td></td>
<td>315</td>
</tr>
<tr>
<td></td>
<td>280</td>
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<tr>
<td></td>
<td>250</td>
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<tr>
<td></td>
<td>215</td>
</tr>
<tr>
<td>Good</td>
<td>180</td>
</tr>
<tr>
<td></td>
<td>150</td>
</tr>
<tr>
<td>Excellent</td>
<td>115</td>
</tr>
<tr>
<td></td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>50</td>
</tr>
</tbody>
</table>

**Table B (Blood Report of Patient X and Y)**

<table>
<thead>
<tr>
<th>Time of check</th>
<th>Blood Glucose ranges (mg/dL)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Patient X</td>
</tr>
<tr>
<td>Before breakfast (Fasting)</td>
<td>&lt; 100</td>
</tr>
<tr>
<td>Before lunch, supper and snack</td>
<td>&lt; 110</td>
</tr>
<tr>
<td>Two hours after meals</td>
<td>&lt; 140</td>
</tr>
<tr>
<td>Bedtime</td>
<td>&lt; 120</td>
</tr>
</tbody>
</table>

10(i) Refer to Table B showing the blood report of the levels of glucose of patients X and Y. Infer the disease which can be diagnosed from the given data.

10(ii) Identify the hormone whose level in the blood is responsible for the above disease.

10(iii) Which one of the following diets would you recommended to the affected patient?

(a) High sugar and low fat diet. (b) Low sugar and high protein diet.
(c) High Fat and low fiber diet. (d) Low sugar and high fiber diet.

10(iv) Refer to the Table A and suggest the value of the mean blood glucose level beyond which doctor’s advice is necessary:

(a) 180 mg/dL (b) 115 mg/dL (c) 50 mg/dL (d) 80 mg/dL

11. Define catenation.

12. How does valency of an element vary across a period?
For question numbers 13 and 14, two statements are given— one labeled Assertion (A) and the other labeled 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):** Following are the structural isomers of butane.
   ![Structural isomers of butane]

   **Reason (R):** Structural isomers have the same molecular formula but they differ in their structures.

14. **Assertion (A):** A fuse wire is always connected in parallel with the mainline.
    **Reason (R):** If a current larger than the specified value flows through the circuit, fuse wire melts.

SECTION – B

15. Differentiate between the arrangement of elements in Mendeleev’s periodic table and Modern periodic table.

16. Give one example each of the following decomposition reactions. Write one balanced chemical equation in each case:
   (a) The reaction which occurs on passing electric current.
   (b) The reaction which occurs in the presence of sunlight.
   (c) The reaction which occurs on heating of a substance.

17. A compound ‘X’ is a constituent of baking powder. It is used as an antacid. When ‘X’ is heated it gives out a gas ‘Y’ which, when passed through lime water turns it milky and salt ‘Z’ is formed which is the main constituent of washing powder. Identify X, Y and Z. Write the balanced chemical equations for the reactions involved.

   **OR**

   (a) A solution turns red litmus paper to blue. What can be pH of this solution?
   (b) 10mL of sodium hydroxide solution is completely neutralized by 8 mL of solution of hydrochloride acid. If we take 20 mL of the same solution hydroxide, what will be the amount of hydrochloride acid solution required to neutralized it?
   (c) What type of medicine is used for the treatment of indigestion?

18. Draw a neat diagram of human brain and label on it the following parts: (i) Midbrain (ii) Pituitary gland (iii) Cerebellum (iv) Cerebrum
19. Draw a diagram of human respiratory system and label on it: (a) Diaphragm (b) Larynx

20. (a) Name the defects of vision when a person cannot see clearly: (i) the nearby objects (ii) the distant objects
(b) A person suffering from a defect of vision uses a corrective lens of power – 2D. Find the nature and focal length of the corrective lens.
(c) Why does power of eye to see clearly nearby as well as far off object diminishing with age? Name the defects that are likely to arise in eye in such a condition.

OR
What is a spectrum? How can we recombine the components of white light after a glass prism has separated them? Illustrate it by drawing a diagram.

21. (a) A positively charged particle (alpha) projected towards west is deflected towards north by a magnetic field. State the direction of magnetic field. State the rule used by you to find the direction.
(b) Mention the factors on which the strength of forces experienced by a current carrying conductor placed in a magnetic field depend.

22. (a) What are monohybrid and dihybrid cross?
(b) How Mendel proved that tallness is the dominant trait and dwarfness is recessive in a pea plant?

23. “Damage to the ozone layer is a cause for concern.” Justify this statement. Suggest any two steps to limit this damage.

OR
Why are bacteria and fungi called decomposers? List any two advantages of decomposers to the environment.

24. Rohit wants to have an erect image of an object, using a converging mirror of focal length 40 cm.
(a) Specify the range of distance where the object can be placed in front of the mirror. Give reason for your answer.
(b) Will the image be bigger or smaller than the object?
(c) Draw a ray-diagram to show the image formation in this case.

SECTION – C

25. (a) How the metals at the top of the reactivity series can be extracted from their ores? Explain with an example.
(b) Name any one alloy made from
(i) a metal and a non-metal, and (ii) two metals.

OR
(a) Differentiate between roasting and calcination. Explain the two with the help of suitable chemical equations. How is zinc extracted from its ore?
(b) Name two metals that can be used to reduce metal oxides to metals.

26. (a) Draw a diagram to show the nutrition in Amoeba and label the parts used for this purpose. Mention any other purpose served by this part other than nutrition.
(b) Name the glands associated with digestion of starch in human digestive tract and mention their role.
(c) How is required pH maintained in the stomach and small intestine?
27. At what distance from a concave lens of focal length 20 cm, a 6 cm tall object be placed so as to
to obtain its image at 15 cm from the lens? Also calculate the size of the image formed. Draw a ray
 diagram to justify your answer for the above situation and label it.

OR

A student wants to project the image of a candle flame on the walls of school laboratory by using
a lens.
(a) Which type of lens should he use and why?
(b) At what distance in terms of focal length ‘f ’ of the lens should he place the candle flame so
as to get (i) a magnified, and (ii) a diminished image respectively on the wall?
(c) Draw ray diagram to show the formation of the image in each case.

28. (a) Write the functions of the following parts in human female reproductive system:
(i) Ovary (ii) Oviduct (iii) Uterus
(b) Describe the structure and function of placenta.

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
offsprings of sexually reproducing organisms?
(c) Mention the changes the flower undergoes after fertilization.

29. Two wires A and B are of equal length and have equal resistance. If the resistivity of A is more
than that of B which wire is thicker and why?
For the electric circuit given below calculate:
(i) Current in each resistor,
(ii) Total current drawn from the battery, and
(iii) Equivalent resistance of the circuit.

![Electric Circuit Diagram]

30. Give reasons for the following:
(i) Element carbon forms compounds mainly by covalent bonding.
(ii) Diamond has a high melting point.
(iii) Graphite is a good conductor of electricity.
(iv) Acetylene burns with a sooty flame.
(v) Kerosene does not decolorise bromine water while cooking oils do.

----------------------------------------
Prepared by: M. S. KumarSwamy, TGT(Maths)  Page - 7 -