

P-653

**CHEMISTRY PAPER-X**  
(A-I-KT-26)



VERSION: C

Sign &amp; Stamp of Supdt:

Roll No. \_\_\_\_\_

C No.172

Name: \_\_\_\_\_

Time Allowed: 20 Minutes

**SECTION-A**

Marks:12

- Sodium zeolite can be regenerated by treating it with a strong solution of:
  - NaCl
  - KCl
  - NaOH
  - KOH
- Matte is a molten mixture of: 1217234
  - $\text{Cu}_2\text{O}$  &  $\text{FeS}$
  - $\text{CuS}$  &  $\text{FeO}$
  - $\text{FeO}$  &  $\text{FeS}$
  - $\text{Cu}_2\text{S}$  &  $\text{FeS}$
- Which element has the highest percentage in urea?
  - Oxygen
  - Carbon
  - Nitrogen
  - Hydrogen
- Which of the following reactions can establish equilibrium?
  - Combustion of methane
  - Rusting of iron
  - Formation of ammonia from nitrogen and hydrogen
  - Neutralization of acid and base
- Which compound releases  $\text{OH}^-$  ions in aqueous solution?
  - $\text{HNO}_3$
  - NaCl
  - KOH
  - $\text{CO}_2$
- The closed-chain structure of carbon compounds is known as:
  - Branched chain
  - Straight chain
  - Ring structure
  - Open chain
- A carbon chain without any side groups is known as:
  - Branched chain
  - Cyclic chain
  - Straight chain
  - Unsaturated chain
- Which of the following represents pentene ( $\text{C}_5\text{H}_{10}$ )?
  - $\text{CH}_3-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{CH}_3$
  - $\text{CH}=\text{CH}-\text{CH}_2-\text{CH}_2-\text{CH}_3$
  - $\text{CH}\equiv\text{C}-\text{CH}_2-\text{CH}_2-\text{CH}_3$
  - $\text{CH}_3-\text{CH}=\text{CH}-\text{CH}_2-\text{CH}_3$
- Proteins that act as biological catalysts in the body are called:
  - Hormones
  - Enzymes
  - Antibodies
  - Vitamins
- Temperature increases with height in the stratosphere due to:
  - High pressure
  - Presence of clouds
  - Absorption of UV rays by ozone
  - Strong wings
- Acid rain damages building made of: 1217234
  - Plastic
  - Glass
  - Limestone and marble
  - Wood
- Soft water is generally preferred for:
  - Making tea and coffee
  - Industrial boilers and washing clothes
  - Irrigation
  - Drinking only

Write Roll No. in the boxes and shade the appropriate circle.

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Shade the correct answers for each question below.

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Section "B"

Marks: 32

Attempt any EIGHT parts. All parts carry equal marks.

What is chemical equilibrium? Explain physical and chemical methods of recognizing the equilibrium state of a reaction.

2+2

Identify the following in the reaction:  $\text{H}_2\text{PO}_4^- + \text{H}_2\text{O} \rightleftharpoons \text{HPO}_4^{2-} + \text{H}_3\text{O}^+$   
according to Bronsted-Lowry theory:

1+1+1+1

(a) acid (b) base (c) proton donor (d) proton acceptor

Q.3. Distinguish between saturated and unsaturated hydrocarbons with respect to their homologous series and functional groups.

2+2

Q.4. Differentiate between an alcohol and a carboxylic acid on the basis of their functional groups and general formulas.

2+2

Q.5. Define a dehydrohalogenation reaction. Write its complete balanced equation and give an example. Also mention reaction conditions.

1+1+1+1

Q.6. Distinguish between disaccharides and trisaccharides on the basis of:

2+2

(a) number of glycosidic bonds (b) example of each

Q.7. Write any four dietary sources and two deficiency symptoms of vitamin-D.

2+1+1

Q.8. What are chlorofluorocarbons (CFCs)? Name their four sources and two environmental effects.

1+2+1

Q.9. Write the complete balanced chemical reactions of water with the following:

1+1+1+1

(a) sodium (b) iron (c) carbon (d) silicon

Q.10. Write two uses each of the following fractions of petroleum:

1+1+1+1

(a) gasoline (b) diesel oils (c) fuel oil (d) asphalt

Q.11. Describe briefly the steps involved in the formation of petroleum according to the organic origin theory.

1+1+1+1

Section "C"

Marks: 21

Note: Attempt any THREE of the following questions. All questions carry equal marks.

Q.12 a). Write the following four formulae of nonane:

1+1+1+1

i). molecular ii). condensed iii). structural iv). dot-cross

b). Write the equilibrium constant expression for:  $\text{PCl}_5(\text{g}) \rightleftharpoons \text{PCl}_3(\text{g}) + \text{Cl}_2(\text{g})$ .

2+1

Identify reactants and products in the expression.

Q.13 a). Define ozone depletion. Name the two oxides of sulphur found in atmosphere. Which of these oxides contribute to ozone depletion and how?

1+1+1+1

b). Define Lewis acid and base. Identify the Lewis acid and base in the reaction:

1+1+1

$\text{H}^+ + \text{NH}_3 \rightarrow \text{NH}_4^+$

Q.14 a). Describe the importance of water in:

1+1+1+1

(i) Flushing out of waste (ii) Power generation (iii). Automobiles (iv). Irrigation

b). What is dehydrohalogenation? Differentiate between dehydrohalogenation of adjacent dihalides and dehalogenation of tetrahalides.

1+1+1

Q.15 a). Describe the following in Solvay's process:

2+2

i). calcination (ii). Recovery of ammonia

b). What are polyunsaturated oils? How are polyunsaturated oils reduced to saturated solid fats? Support your answer with complete balanced chemical equation.

1+1+1