APPENDIX IV A

Criterion Referenced Test in Chemistry

Instructions:

1. No time limit is prescribed for the test. The purpose of the test is not to measure your speed, but to determine the extent to which you have mastered the topics in Chemistry taught to you during the last three months.

2. If you do not know the answer for a particular question, do not guess. Leave that question and proceed to the next one.

3. For each question four options are given. Choose the correct answer and indicate your choice by drawing a circle around the letter (i.e. A or B or C or D) corresponding to the correct answer on the Response Sheet.

4. Rough work, if any, may be done in the margin against the corresponding question.

5. After completing the test, return this question book and the Response Sheet to the Supervisor.
1. 81 parts by weight of Aluminium displaces 3 x 1.008 parts by weight of Hydrogen from Hydrochloric acid. The Equivalent weight of Aluminium is equal to

A. $81 \times 3$
B. $81 \times 1.008$
C. $\frac{81}{3}$
D. $\frac{81}{1.008}$

2. The amount of Hydrogen liberated from dilute acid by 4 gram equivalent of a metal is equal to

A. $4 \times 1.008 \text{g}$
B. $\frac{1.008}{4} \text{g}$
C. $4 \times 8 \text{g}$
D. $\frac{8}{4} \text{g}$

3. 0.1 g of a metal displaced from dilute acid 96 ml of Hydrogen collected over water at 23°C and 743 mm pressure (Aqueous tension at 23°C = 21 mm). The corresponding volume of Hydrogen at N.T.P. is equal to

A. $\frac{743 \times 96 \times 273}{23 \times 760}$
B. $\frac{743 \times 96 \times 273}{296 \times 760}$
C. $\frac{722 \times 96 \times 273}{23 \times 760}$
D. $\frac{722 \times 96 \times 273}{296 \times 760}$

* In the code, two digits on the left of the point stand for the Topic and the digit on the right indicates the Objective within it.
150 ml of Hydrogen at N.T.P. is liberated by 0.25 g of a metal. The equivalent weight of the metal is equal to:

A \( \frac{0.25}{150} \times 11200 \)

B \( \frac{150}{0.25} \times 11200 \)

C \( \frac{0.25}{150} \times 1.008 \)

D \( \frac{150}{0.25} \times 1.008 \)
1 3 g of a metal on oxidation gave 3.5 g of its oxide. The equivalent weight of the metal is equal to
   A \( \frac{3 \times 8}{3.5} \)
   B \( \frac{3 \times 8}{0.5} \)
   C \( \frac{3 \times 0.5}{8} \)
   D \( \frac{8 \times 3.5}{3} \)

2 1.5 g of a metallic oxide on reduction gave 1.2 g of the metal. The equivalent weight of the metal is equal to
   A \( \frac{1.5 \times 8}{1.2} \)
   B \( \frac{1.5 \times 8}{0.3} \)
   C \( \frac{1.2 \times 8}{0.3} \)
   D \( \frac{1.2 \times 0.3}{8} \)

3 An oxide of Sulphur contains 50% of oxygen by weight. The equivalent weight of Sulphur in that oxide is
   A 8
   B 16
   C 32
   D 40

4 The equivalent weight of Copper in Cu₂O is 63.54. The equivalent weight of Copper in CuO is
   A 31.77
   B 63.54
   C \( \frac{95.31}{2} \)
   D 87.08
C.R.T. No.3  
(Code No.01.3)

1. On passing the same quantity of electricity through two cells containing CuSO₄ solution and AgNO₃ solution connected in series 7 g of copper and 24 g of silver are deposited. If the equivalent weight of silver is 108, the equivalent weight of copper is equal to

A. \( \frac{24 \times 108}{7} \)
B. \( \frac{7 \times 108}{24} \)
C. \( \frac{7 \times 24}{108} \)
D. \( 7 \times 24 \times 108 \)

2. On passing the same quantity of electricity through two cells (connected in series) containing Magnesium chloride and Zinc sulphate, 60 g of Magnesium and 163 g of Zinc are deposited. If the equivalent weight of Magnesium is 12, the equivalent weight of Zinc is equal to

A. \( \frac{163}{5} \)
B. \( \frac{163}{12} \)
C. \( 163 \times 5 \)
D. \( 163 \times 12 \)

3. On passing the same quantity of electricity through two cells (connected in series) containing Antimony chloride and Nickel chloride, 4.07 g of Antimony and 2.94 g of Nickel are deposited. If the equivalent weight of Antimony is 40.7, the equivalent weight of Nickel is

A. 2.94
B. 5.88
C. 29.4
D. 58.8
A copper Voltameter and Water Voltameter are connected in series. On passing the same quantity of electricity through them, .202 g of copper and 0.006 g of Hydrogen are liberated. The equivalent weight of copper is equal to

\[
\begin{align*}
\text{A} & : \frac{.006 \times 1.008}{.202} \\
\text{B} & : \frac{.202 \times 1.008}{.006} \\
\text{C} & : \frac{.006 \times .202}{1.008} \\
\text{D} & : \frac{.202 \times .196}{1.008}
\end{align*}
\]
C.R.T. No.4
(Code No.01.4)

1 When Ferrous sulphate serves as a reducing agent it gets oxidised to Ferric sulphate. Oxidation No. of Iron in Ferrous and Ferric sulphates are +2 and +3 respectively. Equivalent weight of Ferrous Sulphate is equal to its

A Molecular Weight
B Molecular Weight
C Molecular Weight
D Molecular Weight

2 When KMnO₄ functions as an oxidising agent in acidic medium it gets reduced to Mangenese salt. Oxidation No. of Mangenese in KMnO₄ and Mangenese salt are +7 and +2 respectively. Equivalent weight of KMnO₄ = Molecular Weight, where the value of 'x' is equal to

A 2
B 5
C 7
D 9

3 When oxalic acid serves as a reducing agent, one molecule of it loses two electrons. Molecular weight of oxalic acid is 90. Its equivalent weight is

A 45
B 180
C 88
D 92
4. When Potassium dichromate serves as an oxidising agent, one molecule of it gains six electrons. Molecular weight of Potassium dichromate is 294. Its equivalent weight is equal to

A. $294 \times 6$

B. $\frac{294}{6}$

C. $294 + 6$

D. $294 - 6$

5. When Iodine serves as an oxidising agent it gets reduced to iodide ion. During this reaction the oxidation number of Iodine changes from 0 to -1. Equivalent weight of Iodine is equal to its

A. Molecular weight

B. $\frac{\text{Molecular weight}}{2}$

C. Molecular weight $\times 2$

D. Molecular weight $-2$

6. When Sodium thiosulphate serves as a reducing agent one molecule of it loses one electron. Molecular weight of Sodium thiosulphate is 158. Its equivalent weight is

A. 15.8

B. 157

C. 158

D. 159
C.R.T. No.5
(Code No.01.5)

1 Equivalent weight of Sulphuric acid is equal to its
   A Molecular weight
   B Molecular weight
   C Molecular weight x 2
   D Molecular weight x 4

2 Equivalent weight of Sodium hydroxide is equal to
   A its molecular weight
   B one half of its molecular weight
   C twice its molecular weight
   D thrice its molecular weight

3 The basicity of an acid is 3 and its molecular
   weight is 98. Its equivalent weight is
   A 95
   B 101
   C 32.67
   D 294

4 Two equivalents of Hydrochloric acid combine with one
   molecular weight of Sodium carbonate. Hence the
   equivalent weight of Sodium carbonate is equal to
   A one half of its molecular weight
   B one fourth of its molecular weight
   C twice its molecular weight
   D four times its molecular weight
1 A and B are the isotopes of an element with mass numbers 12 and 13 respectively. A is present to the extent of 20%. The average atomic weight of the element is equal to

\[ \frac{(12 \times 20) + (13 \times 80)}{100} \]

\[ \frac{(12 \times 80) + (13 \times 20)}{100} \]

\[ \frac{(12/20) + (13/80)}{100} \]

\[ \frac{(12/80) + (13/20)}{20} \]

2 The isotopic composition of Magnesium is as follows: Mg\textsuperscript{24} = 79%, Mg\textsuperscript{25} = 10% e Mg\textsuperscript{26} = 11%. The atomic weight of Magnesium is equal to

\[ \frac{24 + 25 + 26}{3} \]

\[ \frac{79 + 10 + 11}{3} \]

\[ \frac{(24 \times 3) + (25 \times 2) + (26 \times 1)}{100} \]

\[ \frac{(24 \times 79) + (25 \times 10) + (26 \times 11)}{100} \]

3 The two isotopes of a metal having mass numbers 107 and 109 are present in the ratio of 2:1 respectively. The atomic weight of the metal is equal to

\[ \frac{107 + 109}{2} \]

\[ \frac{107 + 109}{3} \]

\[ \frac{(107 \times 2) + (109 \times 1)}{3} \]

\[ \frac{(107 \times 1) + (109 \times 2)}{3} \]
The two isotopes of an element having mass numbers 79 and 81, are present in the ratio of 1 : 1. The average atomic weight of the element is

A 80
B 160
C 79.5
D 80.5
1. The specific heat of an element is 0.5. Its approximate atomic weight is equal to
   A. $6.4 - 0.5$
   B. $6.4 + 0.5$
   C. $6.4 \times 0.5$
   D. $\frac{6.4}{0.5}$

2. The approximate atomic weight of an element is 199.6. Its equivalent weight is 50. The valency of the element is
   A. 2
   B. 4
   C. 5
   D. 7

3. The equivalent weight of an element is 28.12. Its valency is 2. The correct atomic weight of the element is
   A. 56.24
   B. 14.06
   C. 26.12
   D. 30.12

4. The approximate atomic weight of a metal is 112. Its equivalent weight is 37. The accurate atomic weight of the metal is equal to
   A. $37 + 112$
   B. $37 \times 3$
   C. $112 + 3$
   D. $112 - 3$
1. In the long form of periodic table the classification of elements is based upon their:
   A. Atomic weight
   B. Mass number
   C. Atomic number
   D. Group number

2. The elements present in a group show similarities in chemical behaviour because all of them:
   A. form ions by gaining electrons
   B. form ions by losing electrons
   C. have similar electronic configuration
   D. have the same Atomic number

3. The elements present in a period have the same:
   A. number of valency electrons
   B. valency
   C. number of electron shells
   D. atomic number

4. All the elements present in the VII group have:
   A. One electron in their outermost shell
   B. Seven electrons in their outermost shell
   C. One electron in their penultimate shell
   D. Seven electrons in their penultimate shell

ptc.,
5 As we pass from left to right in a period
A the metallic character increases
B the non-metallic character increases
C the electropositive character increases
D the electronegative character decreases

6 From the position of an element in the Periodic Table we can predict its
A melting point
B density
C chemical nature
D colour
1. The elements having their outermost as well as penultimate shell incomplete are called
   A. normal elements
   B. transition elements
   C. inner-transition elements
   D. inert elements

2. The general electronic configuration of 'd' block elements is
   A. \( n^1 \text{ to } 2(n - 1) d^1 \text{ to } 10 \)
   B. \( n^1 \text{ to } 2(n + 1) d^1 \text{ to } 10 \)
   C. \( n^1 \text{ to } 2(n - 1) d^1 \text{ to } 5 \)
   D. \( n^1 \text{ to } 2(n + 1) d^1 \text{ to } 5 \)

3. Which of the following is not a characteristic property of 'd' block elements?
   A. They show variable valency
   B. They form coloured ions
   C. They have high density
   D. They have very low melting points

4. The similarity in the properties of 'd' block elements is due to the presence of distinguishing electrons in their
   A. innermost shell
   B. antipenultimate shell
   C. penultimate shell
   D. outermost shell
1. The electronic configuration of an element is
   \(1s^2, 2s^2, 2p^6, 3s^1\). Its valency is
   A. 1
   B. 3
   C. 4
   D. 7

2. The electronic configuration of an element is
   \(1s^2, 2s^2, 2p^6\). Its valency is
   A. Zero
   B. Two
   C. Six
   D. Eight

3. The electronic configuration of an element is
   \(1s^2, 2s^2, 2p^6, 3s^2, 3p^1\). Its valency is
   A. 5
   B. 3
   C. 2
   D. 1

4. The electronic configuration of an element is
   \(1s^2, 2s^2, 2p^5\). Its valency is
   A. 7
   B. 5
   C. 2
   D. 1
1. Which of the following has an ionic bond?
   A. Chlorine
   B. Oxygen
   C. Sodium chloride
   D. Carbon dioxide

2. Which of the following is an example for a covalent compound?
   A. Water
   B. Sodium sulphide
   C. Calcium bromide
   D. Potassium chloride

3. Which of the following is an example for an electrovalent compound?
   A. Methane
   B. Ethylene
   C. Magnesium oxide
   D. Sulfur dioxide

4. Which of the following has a coordinate covalent bond?
   A. Ammonia
   B. Ammonium ion
   C. Oxygen
   D. Oxide ion
1 The half-life period of Tritium is $12\frac{1}{2}$ years. If we start with 1 g of Tritium, its amount after 25 years will be

A 4.0 g  
B 2.0 g  
C 0.5 g  
D 0.25 g

2 The half-life period of a radioactive isotope is 3 seconds. If we start with 'n' atoms, the number of atoms remaining after 12 seconds will be equal to

A $n/4$  
B $n/8$  
C $n/12$  
D $n/16$

3 The half-life period of a radioactive isotope is 100 days. If one starts with 1000 g of this isotope, its amount at the end of 300 days will be

A 250 g  
B 500 g  
C 125 g  
D 333.3 g

4 The half-life period of a radioactive isotope is 2 years. If we start with 400 g of this isotope on 1.1.1985, its amount on 1.1.1993 will be

A 100 g  
B 50 g  
C 25 g  
D 12.5 g
C.R.T. No.13  
(Code No.05.2)

1. When an atom of Uranium (Atomic No.92 and Mass No.238) loses an alpha particle it changes to an atom whose atomic number and mass number respectively are:
   A. 94 and 234
   B. 90 and 234
   C. 90 and 236
   D. 93 and 238

2. When an atom of Actinium (Atomic No.89 and Mass No.225) loses two alpha particles it changes to an atom whose atomic number and mass number respectively are:
   A. 87 and 221
   B. 87 and 217
   C. 85 and 221
   D. 85 and 217

3. When an atom of Thorium (Atomic No.90 and Mass No.234) emits a beta particle it changes to an atom whose atomic number and mass number respectively are:
   A. 91 and 234
   B. 91 and 235
   C. 88 and 230
   D. 88 and 234

4. When an atom of Thallium (Atomic No.81 and Mass No.209) emits two beta particles it changes to an atom whose atomic number and mass number respectively are:
   A. 82 and 209
   B. 83 and 209
   C. 81 and 211
   D. 79 and 205
1 The molecular weight of Ethyl alcohol is 46. The molarity of a solution of Ethyl alcohol in water containing 23 g of Ethyl alcohol in 500 ml of the solution is
   A 0.5
   B 1.0
   C 2.0
   D 4.0

2 The molecular weight of Potassium hydroxide is 56. The molarity of a solution containing 5.6 g of Potassium hydroxide in 500 ml of the solution is
   A 0.1
   B 0.2
   C 2.8
   D 11.2

3 3.645 g of Hydrochloric acid (Mol. wt. = 36.45) are present in 100 ml of a solution. The molarity of the solution is
   A 1
   B 0.1
   C 0.01
   D 0.001

4 The molarity of a solution of Glucose (Mol. wt. = 180) containing 900 g of it in 5 litres is
   A 0.1
   B 1.0
   C 5
   D 10
5. The molarity of a solution of Sodium chloride (Mol. wt. = 58.5) containing 585 g of it in 2 litres is
   A  1
   B  2
   C  5
   D  10

6. The molarity of a solution of Sodium carbonate (Mol. wt. = 106) containing 530 g of it in 10 litres is
   A  2
   B  0.2
   C  5
   D  0.5
1. In a solution of Copper sulphate in water the molefraction of Copper sulphate is 0.4. The molefraction of water in the solution is equal to
   A. 0.6
   B. 1.4
   C. \frac{1}{0.6}
   D. \frac{1}{0.4}

2. In a solution of Oxalic acid in water the molefraction of water is 0.7. The molefraction of Oxalic acid in the solution is equal to
   A. \frac{0.3}{0.7}
   B. \frac{0.7}{0.3}
   C. 1.7
   D. 0.3

3. 2 moles of Potassium permanganate and 8 moles of water are present in a solution. The molefraction of water in the solution is equal to
   A. \frac{2}{8}
   B. \frac{2}{10}
   C. \frac{8}{10}
   D. \frac{8}{4}
4. Three moles of sulphuric acid and 12 moles of water are present in a solution. The mole fraction of sulphuric acid in the solution is equal to

A \( \frac{3}{12} \)

B \( \frac{3}{15} \)

C \( \frac{12}{3} \)

D \( \frac{15}{3} \)

5. Molecular weights of ethyl alcohol and water respectively are 46 and 18. The mole fraction of water in a solution containing 92 g of ethyl alcohol in 360 g of water is equal to

A \( \frac{20}{22} \)

B \( \frac{2}{22} \)

C \( \frac{2}{20} \)

D \( \frac{22}{20} \)

6. Molecular weight of NaOH and water respectively are 40 and 18. The mole fraction of NaOH in a solution containing 40 g of NaOH in 180 g of water is equal to

A 10

B 11

C \( \frac{1}{10} \)

D \( \frac{1}{11} \)
1. The vapour pressure of a solvent at room temperature is 450 mm. The vapour pressure of a solution containing 10 g of solute in 500 g of the solvent is 420 mm. The molecular weight of the solvent is 74. The molecular weight of the solute is equal to

A. $\frac{450 \times 10 \times 74}{420 \times 500}$
B. $\frac{420 \times 10 \times 74}{450 \times 500}$
C. $\frac{30 \times 10 \times 74}{450 \times 500}$
D. $\frac{450 \times 10 \times 74}{30 \times 500}$

2. 0.3 g of a substance when dissolved in 250 g of water (Mol. wt. = 18) lowered the vapour pressure from 17.5 to 17.3 mm. The molecular weight of the solute is equal to

A. $\frac{17.5 \times 0.3 \times 18}{0.2 \times 250}$
B. $\frac{0.2 \times 0.3 \times 18}{17.5 \times 250}$
C. $\frac{17.5 \times 250 \times 18}{17.3 \times 0.3}$
D. $\frac{17.3 \times 250 \times 18}{17.5 \times 0.3}$

3. When 0.4 g of a solute was dissolved in 300 g of a solvent (Mol. wt. = 96), the relative lowering of vapour pressure was found to be 0.2. The molecular weight of the solute is equal to

A. $\frac{0.4 \times 300}{0.2 \times 96}$
B. $\frac{0.4 \times 0.2}{300 \times 96}$
C. $\frac{0.4 \times 96}{0.2 \times 300}$
D. $\frac{300 \times 96}{0.2 \times 0.4}$
4 A solution containing 0.8 g of Camphor in 32 g of Acetone boils at 56.5°C. Boiling point of Acetone is 56.3°C and its molal elevation constant \( K_b \) is 1.7°C. The molecular weight of Camphor is equal to

\[
A \quad \frac{1.7 \times 0.8 \times 1000}{0.2 \times 32} \\
B \quad \frac{1.7 \times 32 \times 1000}{0.2 \times 0.8} \\
C \quad \frac{1.7 \times 0.8 \times 1000}{56.5 \times 32} \\
D \quad \frac{1.7 \times 32 \times 1000}{56.5 \times 0.8}
\]

5 2 g of a solute when dissolved in 150 g of water raised the boiling point of water by 0.3°C. The molal elevation constant \( K_b \) for water is 0.513°C. The molecular weight of the solute is equal to

\[
A \quad \frac{0.513 \times 150 \times 1000}{100.3 \times 2} \\
B \quad \frac{0.513 \times 2 \times 1000}{100.3 \times 150} \\
C \quad \frac{0.513 \times 150 \times 1000}{0.3 \times 2} \\
D \quad \frac{0.513 \times 2 \times 1000}{0.3 \times 150}
\]

6 1.2 g of a solute when dissolved in 100 g of a solvent produced a freezing point depression of 0.5°C. The molal depression constant \( K_f \) for the solvent is 5°C. The molecular weight of the solute is equal to

\[
A \quad \frac{5 \times 100 \times 1000}{0.5 \times 1.2} \\
B \quad \frac{5 \times 1.2 \times 1000}{0.5 \times 100} \\
C \quad \frac{0.5 \times 1.2 \times 1000}{5 \times 100} \\
D \quad \frac{0.5 \times 100 \times 1000}{5 \times 1.2}
\]
C.R.T. No. 17
(Code No. 07.1)

1. In the Chromium-plating of a spanner made of Iron, the spanner will function as the
   A. anode
   B. cathode
   C. electrolyte
   D. coat metal

2. In the Nickel-plating of an Iron rod, Nickel will function as the
   A. anode
   B. cathode
   C. electrolyte
   D. base metal

3. For silver-plating a copper spoon, the electrolyte to be used is
   A. solution of a silver salt
   B. solution of a copper salt
   C. pure silver
   D. pure copper

4. For plating Zinc on an object made of Iron, the electrolyte to be used is
   A. pure Zinc
   B. pure Iron
   C. solution of a Zinc salt
   D. solution of an Iron Salt
1. Conjugate base of Sulphuric acid is
   A. $\text{HSO}_4^-$
   B. $\text{SO}_4^{2-}$
   C. $\text{H}_2\text{SO}_4$
   D. $\text{H}_3\text{SO}_4^-$

2. Conjugate base of Hydrochloric acid is
   A. $\text{H}_2\text{Cl}^+$
   B. $\text{H}_3\text{Cl}^{+2}$
   C. $\text{Cl}^-$
   D. $\text{HCl}_2^-$

3. Conjugate acid of water is
   A. $\text{OH}^-$
   B. $\text{O}_2\text{H}^-$
   C. $\text{H}^+$
   D. $\text{H}_3\text{O}^+$

4. Conjugate acid of Ammonia is
   A. $\text{NH}_5^{+2}$
   B. $\text{NH}_4^+$
   C. $\text{NH}_2^-$
   D. $\text{NH}^{-2}$
1. A solution has a Hydrogen ion concentration of $10^{-2}$ gram ions per litre. The pH of the solution is
   A. -0.5
   B. -2.0
   C. 0.5
   D. 2.0

2. $10^{-13}$ gram ions of Hydrogen are present in one litre of a solution. The pH of the solution is
   A. -13
   B. 13
   C. -1
   D. 1

3. The concentration of Hydrogen ions in a solution of Hydrochloric acid is 0.001 gram ions per litre. The pH of the solution is
   A. -3.0
   B. 3.0
   C. -0.33
   D. 0.33

4. The concentration of Hydrogen ions in a solution of Nitric acid is 0.00001 gram ions per litre. The pH of the solution is
   A. 0.2
   B. -0.2
   C. 5.0
   D. -5.0
1. What is the IUPAC name of the following compound?
   \( \text{H}_2\text{C} = \text{CH}_2 \)
   A. Ethane  
   B. Ethene  
   C. Acetylene  
   D. Ethyne

2. What is the IUPAC name of the following compound?
   \( \text{HC} = \text{CH} \)
   A. Ethane  
   B. Ethene  
   C. Ethyne  
   D. Ethylene

3. What is the IUPAC name of the following compound?
   \( \text{H}_3\text{C} - \text{CH}_2 - \text{CH}_2 - \text{CH}_3 \)
   A. n-butane  
   B. iso-butane  
   C. n-butene  
   D. iso-butene

4. What is the IUPAC name of the following compound?
   \( \text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CH} - \text{CH}_2 - \text{CH}_3 \)
   A. 4 methyl hexane  
   B. 3 methyl hexane  
   C. 4 methyl heptane  
   D. 3 methyl heptane
5. What is the IUPAC name of the following compound?

\[
\begin{align*}
&\text{CH}_3 - \text{CH} - \text{CH} - \text{CH}_3 \\
&\text{CH}_3 \quad \text{C}_2\text{H}_5
\end{align*}
\]

A. 2-ethyl, 3-methyl butane
B. 2-methyl, 3-ethyl butane
C. 2-ethyl, 3-methyl hexane
D. 2-methyl, 3-ethyl hexane

6. What is the IUPAC name of the following compound?

\[
\begin{align*}
&\text{NH}_2 \quad \text{OH} \\
&\text{CH}_3 - \text{CH} - \text{CH} - \text{CH}_3
\end{align*}
\]

A. 2-aminobutanol
B. 3-aminobutanol
C. 2-aminobutan-2-ol
D. 3-aminobutan-2-ol
1. Which of the following reacts with ammoniacal Silver nitrate solution?
   A. Methane
   B. Ethyl alcohol
   C. Ethylene
   D. Acetylene

2. Which of the following polymerises to give Benzene?
   A. Ethyl alcohol
   B. Acetylene
   C. Ethylene
   D. Methane

3. Which of the following undergoes substitution reaction with chlorine?
   A. Methane
   B. Ethylene
   C. Acetylene
   D. Ethyl alcohol

4. Which of the following reacts with Organic acids to form esters?
   A. Methane
   B. Ethylene
   C. Ethyl alcohol
   D. Acetylene
1. 'Light oil' fraction obtained during the fractional distillation of Coal tar contains mainly
   A. Benzene, toluene and xylene
   B. Naphthalene and Phenol
   C. Cresols and Phenol
   D. Anthracene and Phenanthracene

2. Which of the following fractions obtained by the fractional distillation of Coal tar contains Phenol as one of its main constituents?
   A. Light oil
   B. Middle oil
   C. Heavy oil
   D. Green oil

3. Which of the following fractions obtained by the fractional distillation of Coal tar contains Benzene as one of its main constituents?
   A. Light oil
   B. Middle oil
   C. Heavy oil
   D. Green oil

4. 'Heavy oil' fraction obtained during the fractional distillation of Coal tar contains mainly
   A. Pitch
   B. Cresol
   C. Anthracene
   D. Benzene
C.R.T. No.23
(Code No.10.1)

1 Which of the following is an ore of Titanium?
   A Carnotite
   B Magnetite
   C Ilmenite
   D Sonabite

2 Which of the following is an ore of Uranium?
   A Siderite
   B Pitch plende
   C Garniorite
   D Rutile

3 Haematite is an ore of
   A Chromium
   B Nickel
   C Iron
   D Titanium

4 Crocoisite is an Ore of
   A Uranium
   B Titanium
   C Nickel
   D Chromium
C.R.I. No.24
(Code No. 10.2)

(THE ITEMS FROM 1 to 6 PERTAIN TO THE EXTRACTION OF NICKEL (BY MOND'S PROCESS) FROM THE ORE "PENTLANDITE")

1. The Pentlandite ore is concentrated by
   A. Gravity separation
   B. Electromagnetic separation
   C. Froth flotation process
   D. Electrolytic process

2. The process of roasting the concentrated ore results in the removal of
   A. Sulphur
   B. Carbon
   C. Phosphorus
   D. Silicon

3. The 'slag' formed during smelting of the roasted ore consists of
   A. Ferrous Oxide
   B. Ferric Oxide
   C. Ferric sulphide
   D. Ferrous silicate

4. The bessemerised ore contains the sulphides of
   A. Cobalt and Iron
   B. Copper and Nickel
   C. Nickel and Iron
   D. Cobalt and Copper
5 Heating the fused mass containing the oxides of Copper and Nickel with Water gas at 250 - 350°C results in the formation of:

A Copper and Nickel Carbonyls
B Nickel and Copper Carbonyls
C Nickel and Iron Carbonyls
D Iron and Nickel Carbonyls

6 Decomposition of Nickel carbonyl into Nickel is effected by the application of:

A heat
B electricity
C magnetic forces
D pressure
1. The alloy containing LEAD as one of its components is
   A. German silver
   B. Solder
   C. Gun metal
   D. Bell metal

2. The alloy containing TIN as one of its components is
   A. Cartridge brass
   B. German silver
   C. Muntz metal
   D. Bell metal

3. Zinc is present in
   A. Bronze
   B. Brass
   C. Solder
   D. Bell metal

4. Nickel is present in
   A. Brass
   B. Solder
   C. German silver
   D. Gun metal
5 Which one of the following alloys does **NOT** contain Copper?
   A Solder
   B Duralumin
   C Bell metal
   D Gun metal

6 Which one of the following alloys does **NOT** contain Iron?
   A Nichrome
   B Invar
   C Muntz metal
   D Delta metal
C.R.T. No.26
(Code No.12.1)

1. The amount of hardness producing salts present in 1000 g of a sample of water is equivalent to 0.02 g of Calcium carbonate. The degree of hardness (in ppm) of the sample of water is equal to
   A \( \frac{0.02 \times 100}{1000} \)
   B \( \frac{0.02 \times 1000}{100} \)
   C \( \frac{0.02 \times 10^6}{100} \)
   D \( \frac{0.02 \times 10^6}{1000} \)

2. The amount of hardness producing salts present in 500 ml of a sample of water is equivalent to 0.015 g of Calcium carbonate. The degree of hardness (in ppm) of the sample of water is equal to
   A \( \frac{0.015 \times 10^6}{500} \)
   B \( \frac{0.015 \times 10^6}{100} \)
   C \( \frac{0.015 \times 100}{500} \)
   D \( \frac{0.015 \times 500}{100} \)

3. 12 parts of Calcium sulphate are present in one million parts of a sample of water. (Mol. wt. of CaSO\(_4\) is 136 and that of CaCO\(_3\) is 100). The degree of hardness (in ppm) of the sample of water is equal to
   A \( \frac{12 \times 136}{100} \)
   B \( \frac{12 \times 100}{136} \)
   C \( \frac{136 + 100}{12} \)
   D \( \frac{136 \times 100}{12} \)
4 9.5 g Magnesium chloride is present in one million grams of a sample of water. (Molecular weight of MgCl₂ is 95 and that of CaCO₃ is 100). The degree of hardness (in ppm) of the sample of water is

A 0.1
B 9.5
C 10
D 100

5 A sample of water contains 292 parts of Magnesium bicarbonate (Mol. wt. = 146) and 222 parts of Calcium chloride (Mol. wt. = 111) in one million parts of it. (Molecular weight of Calcium carbonate = 100). The degree of hardness (in ppm) of the sample of water is

A 800
B 400
C 200
D 50

6 A sample of water contains 68 parts of Calcium sulphate (Mol. wt. = 136) and 60 parts of Magnesium sulphate (Mol. wt = 120) in one million parts of it. (Molecular weight of CaCO₃ = 100). The degree of hardness (in ppm) of the sample of water is

A 25
B 50
C 100
D 200
Cation exchange resins contain
A Carboxyl groups
B Carbonyl groups
C Nitro groups
D Hydroxyl groups

Anion exchange resins contain
A Carboxyl groups
B Carbonyl groups
C Nitro groups
D Hydroxyl groups

3 A sample of hard water is sent through a Cation exchanger. The water coming out of the Cation exchanger will contain
A Ca$^{+2}$ and Mg$^{+2}$ ions
B Na$^{+}$ ions
C H$^{+}$ ions
D no ions

4 A sample of hard water was first sent through a Cation exchanger and then through an anion exchanger. The water that comes out of the anion exchanger will contain
A no ions
B H$^{+}$ ions
C OH$^{-}$ ions
D Ca$^{+2}$ and Mg$^{+2}$ ions
5 The exhausted cation exchange resin is regenerated using
A a concentrated solution of Sodium hydroxide
B a dilute solution of Sodium hydroxide
C concentrated Hydrochloric acid
D dilute Hydrochloric acid

6 The exhausted anion exchange resin is regenerated using
A a concentrated solution of Sodium hydroxide
B a dilute solution of Sodium hydroxide
C concentrated Hydrochloric acid
D dilute Hydrochloric acid
1. The coagulant used in the treatment of water for drinking purpose is
   A. Alum
   B. Lime
   C. Chloramine
   D. Soda ash

2. The correct order in which the three layers of filter bed used in water treatment are arranged from top to bottom is
   A. Gravel, Coarse sand and Fine sand
   B. Fine sand, Coarse sand and Gravel
   C. Fine sand, Gravel and Coarse sand
   D. Coarse sand, Gravel and Fine sand

3. Which of the following is used for sterilising water?
   A. Permutit
   B. Alum
   C. Chloramine
   D. Lime

4. In the sterilization of water by Chlorine the bacteria are destroyed by
   A. Chloride ions
   B. Hydroxyl ions
   C. Hydrochloric acid
   D. Hypochlorous acid
1. The liquid waste of a community is called
   A. effluent
   B. sewage
   C. sewerage
   D. drainage

2. The waste liquid flowing out from industries is called
   A. sewerage
   B. sewage
   C. effluent
   D. drainage

3. The process of conveying sewage into sea or river is called
   A. sewerage
   B. self-exhaustion
   C. neutralisation
   D. sludge disposal

4. The soft-mud that settles down in sewage purifying units is called
   A. crust
   B. coagulant
   C. sluice
   D. sludge
C.R.T. No.30
(Code No.13.2)

1. The major air pollutant released by automobiles is
   A. Sulphurdioxide
   B. Sulphurtrioxide
   C. Carbonmonoxide
   D. Nitrogendioxide

2. The major air pollutant released by mines is
   A. Dust
   B. Carbonmonoxide
   C. Hydrogen sulphide
   D. Sulphurdioxide

3. Which of the following processes releases Hydrogen sulphide as a pollutant?
   A. Water treatment
   B. Sewage treatment
   C. Mining
   D. Oil refining

4. Which of the following processes release Hydrogen fluoride as a pollutant?
   A. Sewage treatment
   B. Petroleum industry
   C. Tanning
   D. Aluminium industry
1 Which of the following has the highest calorific value?
   A Peat
   B Lignite
   C Bituminous Coal
   D Anthracite Coal

2 Which of the following has the lowest calorific value?
   A Peat
   B Lignite
   C Bituminous Coal
   D Anthracite Coal

3 Which of the following has the highest percentage of carbon?
   A Wood
   B Peat
   C Lignite
   D Bituminous Coal

4 Which of the following has the lowest percentage of carbon?
   A Wood
   B Peat
   C Lignite
   D Bituminous Coal
5 Which of the following has the highest percentage of moisture?
   A Lignite
   B Peat
   C Bituminous Coal
   D Anthracite Coal

6 The percentage of moisture is least in
   A Peat
   B Lignite
   C Anthracite Coal
   D Bituminous Coal
1. The main components of Liquified Petroleum Gas are
   A. Methane and Butane
   B. Ethane and Propane
   C. Propane and Butane
   D. Butane and Pentane

2. The main components of WATER GAS are
   A. Carbon dioxide and Hydrogen
   B. Carbon dioxide and Nitrogen
   C. Carbon monoxide and Nitrogen
   D. Carbon monoxide and Hydrogen

3. The main components of PRODUCER GAS are
   A. Propane and Butane
   B. Nitrogen and Carbon monoxide
   C. Methane and Hydrogen
   D. Methane and Nitrogen

4. The main components of BIO GAS are
   A. Methane, CO$_2$, N$_2$, and H$_2$
   B. Methane, CO, N$_2$, and H$_2$
   C. Propane, Ethane and N$_2$
   D. Propane, Ethane and H$_2$
1 Which of the following is an example for the SOLID lubricants?
   A Manganous sulphide
   B Manganous oxide
   C Molybdenum sulphide
   D Molybdenum oxide

2 Which of the following is an example for the SOLID lubricants?
   A Corundum
   B Graphite
   C Carborundum
   D Garnet

3 Which one of the following lubricants belongs to the class of vegetable oils?
   A Tallow oil
   B Lard oil
   C Crude oil
   D Castor oil

4 Which one of the following lubricants belongs to the class of Mineral oils?
   A Naphtha
   B Molybdenum sulphide
   C Olive oil
   D Palm oil
1 The rate of corrosion can be lowered by
   A lowering the temperature
   B increasing the temperature
   C increasing the concentration of electrolytes
   D increasing the concentration of non-electrolytes.

2 Corrosion of a metal is more rapid when its surface is
   A uniform
   B non-uniform
   C coated with oil
   D coated with plastic

3 The rate of corrosion of a metal will be high when its environment is
   A basic
   B alkaline
   C neutral
   D acidic

4 Corrosion of Iron can be retarded by the presence of
   A Zinc in contact with the Iron
   B an electrolyte
   C an acid
   D water possessing hardness
1. The medium in which the pigment of a paint is dispersed is called
   A. Drier
   B. Thinner
   C. Vehicle
   D. Filler

2. Substances which increase the elasticity of the film formed by a paint are called
   A. Anti-skinning agents
   B. Fillers
   C. Thinnners
   D. Plasticizers

3. A substance which prevents the pealing of paint from the surface is called
   A. Anti-skinning agent
   B. Plasticizer
   C. Vehicle
   D. Thinner

4. A liquid added to increase the fluidity of paints is called
   A. Vehicle
   B. Thinner
   C. Plasticizer
   D. Filler
1 Thermosetting plastics are more suitable than thermoplastics when the purpose is
A high temperature service
B corrosion resistance
C good surface finish
D lightness combined with strength

2 A characteristic property of thermosetting plastics is that they
A undergo a physical change on heating
B have low melting points
C are soluble in organic solvents
D cannot be moulded a second time

3 Thermoplastics are generally formed by
A addition polymerization
B condensation polymerization
C elastic deformation
D plastic deformation

4 Thermoplastics are generally processed by
A cold moulding
B transfer moulding
C injection moulding
D compression moulding
5 An example for thermosetting plastics is
   A Polythene
   B Polystyrene
   C Bakelite
   D Nylon

6 An example for thermoplastics is
   A Polyester
   B Polyvinyl Chloride
   C Phenol formaldehyde
   D Urea formaldehyde
1. The monomeric unit present in natural rubber is
   A. Neoprene
   B. Isoprene
   C. Butadiene
   D. Isobutene

2. The substance used to coagulate the rubber in latex is
   A. Lime
   B. Sulphur
   C. Acetic acid
   D. Oxalic acid

3. Which of the following is a variety of crude natural rubber?
   A. Neoprene
   B. Thiokol
   C. Butyl rubber
   D. Crepe rubber

4. For vulcanisation, rubber is compounded with
   A. Sodium
   B. Selenium
   C. Sulphur
   D. Silicon
5. Which of the following is used as a reinforcing agent during 'compounding of rubber'?
   A  Calcium Oxide
   B  Zinc Oxide
   C  Stearic acid
   D  Formic acid

6. Which of the following is used as 'antioxidant' during 'compounding of rubber'?
   A  Secondary amines
   B  Primary amines
   C  Thiocarbamates
   D  Thiozoles
1. The chemical name of the abrasive 'Corundum' is
   A. Silicon carbide
   B. Boron carbide
   C. Aluminium oxide
   D. Aluminium silicate

2. The chemical name of 'Carborundum' is
   A. Sodium silicate
   B. Aluminium silicate
   C. Silicon dioxide
   D. Silicon carbide

3. The abrasive which consists of a mixture of Corundum and Magnetite is called
   A. Garnet
   B. Emery
   C. Quartz
   D. Flint

4. An example for a non-siliceous abrasive is
   A. Corundum
   B. Garnet
   C. Flint
   D. Quartz
1 Which of the following is a basic refractory?
A Graphite
B Sillimanite
C Dolomite
D Chromite

2 An example for acid-refractories is
A Magnesite
B Fire clay
C Chromite
D Bauxite

3 Which of the following is an acid refractory?
A Silica
B Graphite
C Alumina
D Dolomite

4 Which of the following is a neutral refractory?
A Fire clay
B Magnesite
C Dolomite
D Graphite
In the manufacture of cement, calcareous materials contribute
A Carbon
B Alumina
C Lime
D Silica

In the manufacture of cement, Argillaceous materials contribute
A Silica, Iron oxide and Lime
B Alumina, Iron oxide and Lime
C Silica, Alumina and Lime
D Silica, Iron oxide and Alumina

Addition of Gypsum to cement
A delays the setting of cement
B prevents the formation of lumps
C makes the structure strong
D helps the formation of clinker

In the manufacture of cement, sodium salt of polymers of condensed Naphthalene function as a/an
A retarder
B catalyst
C dispersing agent
D oxidising agent
1. A salt on treatment with dil. Hydrochloric acid solution produces effervescence. The liberated gas turns lime water milky. The anion present in the salt is

A. Sulphate
B. Nitrate
C. Iodide
D. Carbonate

2. A colourless gas with pungent smell is evolved by the reaction of a salt with hot concentrated Sulphuric acid. On holding a glass rod dipped in Ammonium hydroxide solution in the path of the gas, dense white fumes are formed. The anion present in the salt is

A. Phosphate
B. Chloride
C. Bromide
D. Nitrate

3. On adding slowly concentrated Sulphuric acid through the sides of the test tube, to a mixture of a salt solution and ferrous sulphate solution, a brown ring is formed. The anion present in the salt is

A. Nitrate
B. Iodide
C. Phosphate
D. Bromide

4. To the original solution of a salt a few drops of concentrated Nitric acid and Ammonium molybdate solution were added and then the solution was heated. A canary yellow precipitate was formed on cooling the solution. The anion present in the salt is

A. Chloride
B. Phosphate
C. Bromide
D. Iodide
5 The Sodium carbonate extract of a salt on treatment with dil. HCl and Barium chloride solution forms a white precipitate, insoluble in concentrated HCl. The anion present in the salt is
   A  Carbonate
   B  Sulphite
   C  Sulphate
   D  Nitrate

6 The Sodium carbonate extract of a salt on treatment with dil. HNO₃ and Silvernitrate solution forms a pale yellow precipitate which is partially soluble in Ammonium hydroxide. The anion present in the salt is
   A  Sulphate
   B  Chloride
   C  Bromide
   D  Iodide
1. Brick red colour is imparted to the flame by salts containing
   A. Calcium
   B. Barium
   C. Lead
   D. Iron

2. Potassium iodide solution forms a yellow precipitate with a solution containing __________ion.
   A. Copper
   B. Zinc
   C. Magnesium
   D. Lead

3. When Ammonium hydroxide is added to the solution of a salt, a blue precipitate is first formed which dissolves in excess of the reagent to form a deep blue solution. The cation present in the salt is
   A. Aluminium
   B. Calcium
   C. Copper
   D. Manganese

4. Ammonium Thiocyanate solution forms a blood red colour on reacting with __________ion.
   A. Zinc
   B. Aluminium
   C. Ferrous
   D. Ferric
5 The solution of a salt on reacting with Potassium ferrocyanide solution forms a white precipitate. The cation present in the salt is
A Magnesium
B Zinc
C Barium
D Bismuth

6 Nessler's reagent gives a reddish brown precipitate with a solution containing ______________ion.
A Zinc
B Barium
C Ammonium
D Lead
1. The indicator to be used for the titration between Sodium hydroxide and Oxalic acid is
   A. Eriochrome Black T
   B. Murexide
   C. Phenolphthalein
   D. Methyl orange

2. The indicator to be used for the titration between Sodium Carbonate and Hydrochloric acid is
   A. Phenolphthalein
   B. Methyl orange
   C. Murexide
   D. Iodine

3. In Iodimetry titrations the indicator used is
   A. Phenolphthalein
   B. Methyl orange
   C. Eriochrome Black T
   D. Starch

4. The indicator used in the titration between hard water and E.D.T.A. is
   A. Eriochrome Black T
   B. Calcium Chloride
   C. Magnesium Bicarbonate
   D. Starch
1. The link solution required for determining the strength of Oxalic acid using a standard solution of Nitric acid is
   A. Sodium carbonate
   B. Sodium hydroxide
   C. Potassium permanganate
   D. Potassium dichromate

2. The link solution required for determining the strength of Potassium permanganate using a standard solution of Sodium hydroxide is
   A. Oxalic acid
   B. Hydrochloric acid
   C. Sodium thiosulphate
   D. Ferrous sulphate

3. The link solution required for determining the strength of Ferrous ammonium sulphate using a standard solution of Oxalic acid is
   A. Potassium hydroxide
   B. Sodium carbonate
   C. Potassium permanganate
   D. Sodium thiosulphate

4. The link solution required for determining the strength of Potassium dichromate using a standard solution of Iodine is
   A. Sodium thiosulphate
   B. Sodium hypochlorite
   C. Potassium permanganate
   D. Potassium hydroxide
1. 20 ml of 0.098 N Sodium carbonate requires 20 ml of Sulphuric acid for neutralisation. The normality of the Sulphuric acid is
   A. 0.49
   B. 0.049
   C. 0.98
   D. 0.098

2. If 20 ml of 0.1 N HCl is required to neutralise 40 ml of NaOH, the normality of Sodium hydroxide solution is
   A. 0.5
   B. 0.05
   C. 0.2
   D. 0.02

3. 20 ml of 0.2 N Ferrous sulphate requires 40 ml of KMnO₄ for Oxidation. The normality of the KMnO₄ solution is
   A. 0.5
   B. 0.2
   C. 0.1
   D. 0.01

4. 25 ml of Sodium thiosulphate solution requires 10 ml of 0.05 N Iodine solution for Oxidation. The normality of Sodium thiosulphate solution is
   A. 0.02
   B. 0.04
   C. 0.025
   D. 0.125
C.R.T. No.46
(Code No.23.4)

1 How many grams of Crystalline Ferrous sulphate (Equivalent weight = 278) will be present in one litre of a decinormal solution?
   A 2.78
   B 27.8
   C 278
   D 139

2 The weight in grams of Potassium permanganate (Equivalent weight = 31.6) required to prepare 10 litres of a decinormal solution is
   A 31.6
   B 316
   C 63.2
   D 632

3 What is the weight in grams of Sodium carbonate (Equivalent weight = 53) required to prepare 500 ml of 4 N solution?
   A 424
   B 212
   C 106
   D 53

4 How many grams of Potassium dichromate (Equivalent weight = 49) will be present in 250 ml of 0.2 N solution?
   A 12.5
   B 9.8
   C 4.9
   D 2.45
# APPENDIX IV B

## Criterion Referenced Tests in Chemistry

### RESPONSE SHEET

<table>
<thead>
<tr>
<th>Name:______________</th>
<th>Class:__________</th>
<th>Roll No.__________</th>
<th>Polytechnic:_______</th>
</tr>
</thead>
</table>

### TEST NO.____

<table>
<thead>
<tr>
<th>Item No.</th>
<th>OPTIONS</th>
<th>Item No.</th>
<th>OPTIONS</th>
<th>Item No.</th>
<th>OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A B C D</td>
<td>1</td>
<td>A B C D</td>
<td>1</td>
<td>A B C D</td>
</tr>
<tr>
<td>2</td>
<td>A B C D</td>
<td>2</td>
<td>A B C D</td>
<td>2</td>
<td>A B C D</td>
</tr>
<tr>
<td>3</td>
<td>A B C D</td>
<td>3</td>
<td>A B C D</td>
<td>3</td>
<td>A B C D</td>
</tr>
<tr>
<td>4</td>
<td>A B C D</td>
<td>4</td>
<td>A B C D</td>
<td>4</td>
<td>A B C D</td>
</tr>
<tr>
<td>5</td>
<td>A B C D</td>
<td>5</td>
<td>A B C D</td>
<td>5</td>
<td>A B C D</td>
</tr>
<tr>
<td>6</td>
<td>A B C D</td>
<td>6</td>
<td>A B C D</td>
<td>6</td>
<td>A B C D</td>
</tr>
</tbody>
</table>

### TEST NO.____

<table>
<thead>
<tr>
<th>Item No.</th>
<th>OPTIONS</th>
<th>Item No.</th>
<th>OPTIONS</th>
<th>Item No.</th>
<th>OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A B C D</td>
<td>1</td>
<td>A B C D</td>
<td>1</td>
<td>A B C D</td>
</tr>
<tr>
<td>2</td>
<td>A B C D</td>
<td>2</td>
<td>A B C D</td>
<td>2</td>
<td>A B C D</td>
</tr>
<tr>
<td>3</td>
<td>A B C D</td>
<td>3</td>
<td>A B C D</td>
<td>3</td>
<td>A B C D</td>
</tr>
<tr>
<td>4</td>
<td>A B C D</td>
<td>4</td>
<td>A B C D</td>
<td>4</td>
<td>A B C D</td>
</tr>
<tr>
<td>5</td>
<td>A B C D</td>
<td>5</td>
<td>A B C D</td>
<td>5</td>
<td>A B C D</td>
</tr>
<tr>
<td>6</td>
<td>A B C D</td>
<td>6</td>
<td>A B C D</td>
<td>6</td>
<td>A B C D</td>
</tr>
</tbody>
</table>
## APPENDIX IV C

### SCORING KEY
OF
CRITERION REFERENCED TESTS

<table>
<thead>
<tr>
<th>Item No.</th>
<th>C.R.I. No.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>C</td>
<td>A</td>
<td>D</td>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>B</td>
<td>C</td>
<td>A</td>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>B</td>
<td>A</td>
<td>C</td>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>A</td>
<td>B</td>
<td>A</td>
<td>B</td>
<td>A</td>
<td>C</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>B</td>
<td>A</td>
<td>C</td>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>A</td>
<td>D</td>
<td>C</td>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>D</td>
<td>B</td>
<td>A</td>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>B</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>B</td>
<td>A</td>
<td>D</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>A</td>
<td>A</td>
<td>B</td>
<td>D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>C</td>
<td>A</td>
<td>C</td>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td>D</td>
<td>D</td>
<td>C</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td></td>
<td>B</td>
<td>D</td>
<td>A</td>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td></td>
<td>B</td>
<td>B</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>A</td>
<td>D</td>
<td>C</td>
<td>B</td>
<td>A</td>
<td>D</td>
</tr>
</tbody>
</table>

contd.
<table>
<thead>
<tr>
<th>C.R.T. No.</th>
<th>Item No.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>D</td>
<td>A</td>
<td>C</td>
<td>A</td>
<td>D</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>B</td>
<td>A</td>
<td>A</td>
<td>C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>A</td>
<td>C</td>
<td>D</td>
<td>B</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>D</td>
<td>B</td>
<td>B</td>
<td>C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>B</td>
<td>C</td>
<td>A</td>
<td>B</td>
<td>A</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>D</td>
<td>B</td>
<td>A</td>
<td>C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>A</td>
<td>B</td>
<td>A</td>
<td>B</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>C</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>C</td>
<td>A</td>
<td>D</td>
<td>B</td>
<td>A</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>B</td>
<td>D</td>
<td>B</td>
<td>C</td>
<td>A</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>D</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>B</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>A</td>
<td>D</td>
<td>C</td>
<td>A</td>
<td>D</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>B</td>
<td>C</td>
<td>A</td>
<td>D</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>C</td>
<td>A</td>
<td>B</td>
<td>D</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>D</td>
<td>A</td>
<td>D</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>C</td>
<td>D</td>
<td>B</td>
<td>A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item No.</td>
<td>C.R.T. No.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>---------</td>
<td>------------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>33</td>
<td></td>
<td>C</td>
<td>B</td>
<td>D</td>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>34</td>
<td></td>
<td>A</td>
<td>B</td>
<td>D</td>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35</td>
<td></td>
<td>C</td>
<td>D</td>
<td>A</td>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>36</td>
<td></td>
<td>A</td>
<td>D</td>
<td>A</td>
<td>C</td>
<td>C</td>
<td>B</td>
</tr>
<tr>
<td>37</td>
<td></td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>C</td>
<td>B</td>
<td>A</td>
</tr>
<tr>
<td>38</td>
<td></td>
<td>C</td>
<td>D</td>
<td>B</td>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>39</td>
<td></td>
<td>C</td>
<td>B</td>
<td>A</td>
<td>D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td></td>
<td>C</td>
<td>D</td>
<td>A</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41</td>
<td></td>
<td>D</td>
<td>B</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>42</td>
<td></td>
<td>A</td>
<td>D</td>
<td>C</td>
<td>D</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>43</td>
<td></td>
<td>C</td>
<td>B</td>
<td>D</td>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>44</td>
<td></td>
<td>B</td>
<td>A</td>
<td>C</td>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45</td>
<td></td>
<td>D</td>
<td>B</td>
<td>C</td>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>46</td>
<td></td>
<td>B</td>
<td>A</td>
<td>C</td>
<td>D</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>