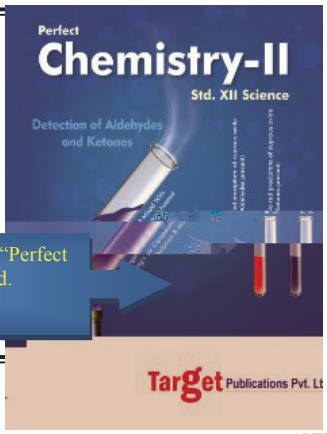
BOARD QUESTION PAPER: MARCH 2014
CHEMISTRY – II (12th Sci., HSC, Maharashtra)

Time: 3 Hrs **Total Marks: 70**

Note:

i. All questions are compulsory.
ii. Answer to the two sections are to be written in the same answer book.
iii. Figures to the right hand side indicate full marks.
iv. Write balanced chemical equations and draw neat and labelled diagrams wherever necessary.
v. Start every new question on a new page.
vi. Use of logarithmic table is allowed.



SECTION – II

Q.5. Answer any ONE: **[7]**

i. Write the structural formula and IUPAC names of all possible isomers of the compound with molecular formula C_3H_8O.
Write 'two' uses of phenol.
What happens when glucose is treated with:
a. Bromine water
b. Dilute nitric acid
c. Hydrogen cyanide (HCN)

ii. Write the molecular formula and structural formula of BHA and BHT.
What are thermoplastic polymers?
Write a note on aldol condensation.

Q.6. Answer any THREE: **[9]**

i. What is the action of the following reagents on aniline?
a. Bromine water
b. Acetic anhydride
c. Hot and conc. sulphuric acid

ii. Discuss the optical activity of lactic acid.

iii. Write balanced chemical equations for action of potassium permanganate on:
a. Hydrogen
b. Warm conc. sulphuric acid
Explain why Mn^{2+} ion is more stable than Mn^{3+}?
(Given: Mn → Z = 25)

iv. What is effective atomic number (EAN)?
Calculate EAN of cobalt (Z = 27) in $[CO(NH_3)_6]^{+3}$ and of zinc (Z = 30) in $[Zn(NH_3)_4]SO_4$.

Q.7. Answer any SIX: **[12]**

i. What is a 'soap'? How is it prepared?

ii. Identify the compounds 'A' and 'B' in the following equation:

$CH_3 - CH_3 + HNO_3 \xrightarrow{423-600\,K}$ 'A' $\xrightarrow{Sn/conc.HCl}$ 'B' + H_2O

iii. Write a note on self oxidation-reduction reaction of aldehyde with suitable example.

iv. Write names and chemical formulae of monomers used in preparing Buna–S.

v. Define complex lipids. Mention 'two' functions of lipids.

vi. Distinguish between S_N^1 and S_N^2 mechanisms.

vii. What are lanthanoids? What is the position of actinoids in periodic table?

viii. How is methoxyethane prepared from:
   a. Methyl iodide
   b. Diazomethane

Q.8. Select and write the most appropriate answer from the given alternatives for each sub-question: **[7]**

i. IUPAC name of $K_4[Fe(CN)_6]$ is _____.
   (A) tetrapotassium ferrocyanide (B) potassium ferricyanide
   (C) potassium ferrocyanide (D) potassium hexacyanoferrate

ii. Carbon atom in methyl carbocation contains how many pairs of electrons?
   (A) 8 (B) 4
   (C) 3 (D) 5

iii. How many moles of acetic anhydride will be required to form glucose pentaacetate from 2 M of glucose?
   (A) 2 (B) 5
   (C) 10 (D) 2.5

iv. Identify the weakest base amongst the following:
   (A) p-methoxyaniline (B) o-toluidine
   (C) benzene-1,4-diamine (D) 4-aminobenzoic acid

v. Bakelite is the polymer of _____.
   (A) Benzaldehyde and phenol (B) Acetaldehyde and phenol
   (C) Formaldehyde and phenol (D) Formaldehyde and benzyl alcohol

vi. Formalin is 40% aqueous solution of _____.
   (A) Methanal (B) Methanoic acid
   (C) Methanol (D) Methanamine

vii. Which among the following pairs of elements is 'not' an example of chemical twins?
   (A) Zr and Hf (B) Nb and Ta
   (C) Mo and W (D) Ta and Re