5. Attempt any **TEN** of the following :

(i) Define relative humidity. 1

(ii) What is saturation ? 1

(iii) What is difference between Atomic weight an Molecular weight ? 1

(iv) What is crystallization ? 1

(v) Define flash evaporation. 1

(vi) Give main objective of evaporation in Industry. 1

(vii) What are different alloys of Nickel ? 1

(viii) Define pressure sensitive adhesive. 1

(ix) Define plasticizer. 1

(x) What is dissolved oxygen ? 1

(xi) What is acidity of water ? 1

(xii) What is chemical composition of cellulose paper ? 1

NTK/KW/15/5847

Bachelor of Science (B.Sc.) Semester-III Examination

Paper–I : INDUSTRIAL CHEMISTRY (ICH-301)

Time—Three Hours] [Maximum Marks—50

N.B. : (1) **ALL** questions are compulsory and carry equal marks.

(2) Draw diagrams and write equations wherever necessary.

1. (A) Explain details with suitable example of the following :

(i) Molecular weight

(ii) Equivalent weight. 5

(B) Explain by the help of calculation of mole composition of liquid mixture and gaseous mixture. 5

OR

(C) What are the various levels of mass and energy balance ? 2½

(D) Derive the ideal gas equal PV = nRT. 2½

(E) Calculate the equivalent weight of the following by the help of molecular weight.

(i) H_2SO_4 (m.wt = 98)

(ii) $KMNO_4$ (m.wt = 158)

(iii) Oxalic acid (m.wt = 126)

(iv) $K_2Cr_2O_7$ (m.wt = 294). 2½

(F) Discuss the energy balance procedure in assessing chemical process. 2½

2. (A) Draw flow diagram for material balance without recycle or by pass for following operations :

(i) Distillation operation for a binary mixture

(ii) Crystallization. 5

(B) Give different types of extraction. Explain any one in detail. 5

OR

(C) What is absorption ? How is it useful for purification of compound ? 2½

(D) Describe with flow diagram material balance in evaporation process. 2½

(E) What is purpose of crystallization ? Explain with example. 2½

(F) Explain the solvent extraction technique. 2½

3. (A) What are the requirement of high speed alloys ? Explain the formation of Iron high speed alloys. 5

(B) What is animal glue ? Explain in detail the formation of animal glue. 5

OR

(C) Explain the solvent responsive adhesive with suitable example. 2½

(D) Give an account of chemical composition of uses of bronze and brass. 2½

(E) Give the uses of adhesive in daily life. 2½

(F) Discuss in brief about chemical reactive adhesive. 2½

4. (A) How will you determine the alkalinity of water by titrimetric method ? 5

(B) How Kraft pulp is prepared Industrially ? 5

OR

(C) How will you determine dissolved oxygen in waste water ? 2½

(D) How acidity of water is to be determined ? 2½

(E) How temporary hardness of water is to be removed ? Explain in detail. 2½

(F) Write a short note on Sulphite pulp. 2½