KNT/KW/16/5066

Bachelor of Science (B.Sc.) Semester—I (C.B.S.) Examination

INDUSTRIAL CHEMISTRY (ICH-102)

Compulsory Paper—2

Time : Three Hours] [Maximum Marks : 50

N.B. :— (1) All the **FIVE** questions are compulsory and carry equal marks.

(2) Write equations and draw well labelled diagrams wherever necessary.

1. (A) What do you mean by Adsorption Isotherm ? Discuss Freundlich adsorption isotherm. How is it verified ? 5

(B) Define Micelle. Write the mechanism of Micelle formation of sodium state. 5

OR

(C) Write a note on Aerosols. 2½

(D) Distinguish between emulsion and micro emulsion. 2½

(E) What is the importance of "surface chemistry" in industrial application ? 2½

(F) Explain Sol and Gel with examples. 2½

2. (A) How will you determine calorific value of fuel by Bomb calorimeter ? Explain in detail. 5

(B) What are different types of coal ? What are the criteria for selection of coal ? 5

OR

(C) Write a note on distillation of coal. 5

(D) Give the characteristics of good fuel. Explain any two schemes of classification of fuels. 2½

(E) Define the term Flash Point. How is flash point determined experimentally ? 2½

3. (A) Explain the mechanism of the catalytic oxidation of $SO_2(g)$ to $SO_3(g)$ in presence of nitric oxide gas as catalyst. 5

(B) What is acid-base catalysis ? Give its mechanism. 5

OR

(C) Distinguish between homogeneous and heterogeneous catalysis with examples. 2½

(D) What is energy profile diagram ? What is its importance in catalysis ? 2½

(E) Write a note on "Industrial application of catalyst". 2½

(F) Explain phase transfer catalyst. 2½

4. (A) What are primary and secondary air pollutants ? How are air pollutants classified ? Discuss the principle of gaseous sampling. 5

(B) Describe a method for estimation of NO_x pollutants in air. Give the effect of SO_2, NO_x and CO pollutants on human health. 5

OR

(C) Discuss methods employed for collection of gaseous pollutants. 2½

(D) Explain Greenhouse effect. 2½

(E) Discuss combustion and absorption method for controlling gaseous pollutants. 2½

(F) Write a note on Global Warming. 2½

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

(i) What are surfactants ?

(ii) Write Freundlich Adsorption Isotherm equation.

(iii) Define isotherm.

(iv) Why is blending of coal done ?

(v) What is calorific value ?

(vi) Write the name of different types of fuels.

(vii) What do you mean by catalytic poisoning ?

(viii) Justify the statement “A catalyst is specific in its action”.

(ix) What do you mean by promoter ?

(x) Give examples of air pollutants.

(xi) Define air pollutants.

(xii) Convert 1 ppm SO_2 to $\mu g/m^3$. 1×10