

## 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** questions are compulsory and carry equal marks.

(2) Give chemical equations and diagram whenever necessary.

1. (A) Distinguish between physical and chemical adsorption. 5

(B) What do you mean by micelle ? Write the mechanism of micelle formation. 5

**OR**

(C) What is emulsion ? How emulsion can be prepared ? 2½

(D) What is absorption ? Give its advantages. 2½

(E) Write a note on surfactants. 2½

(F) Write any two applications of adsorption. 2½

2. (A) What is calorific value ? How is it determined by Bomb calorimeter ? 5

(B) Classify coal by ultimate analysis method. Discuss coking of coal. 5

**OR**

(C) What are the various fractions obtained on distillation of coal ? 2½

(D) What are the characteristics of good fuels ? 2½

(E) Compare between liquid and solid fuels. 2½

(F) Write a note on Antiknocking agent. 2½

3. (A) What are enzyme-catalyzed reactions ? Explain with suitable examples. Write Michaelis equation for an enzyme-catalyzed reaction and show that :

(i) At very low conc. of substrate it is first order with respect to substrate and

(ii) At high conc. of substrate, the reaction is zero order with respect to substrate. 5

(B) Discuss the phase transfer catalysis with suitable example. 5

**OR**

- (C) Justify the statement “A catalyst is specific in its action”. 2½
- (D) Explain the function of negative catalyst with example. 2½
- (E) What is homogeneous catalysis ? Give two examples. 2½
- (F) Write a note on “catalytic poisoning”. 2½
4. (A) What is inversion ? What are the effects of inversion on air pollution ? 5
- (B) Discuss briefly a method used to determine  $\text{NO}_x$  in ambient air. How are the concentrations of gaseous pollutants expressed ? 5

OR

- (C) What do you mean by pollutant and Toxicity ? What are the sources of air pollutants ? 2½
- (D) Describe a method used to determine sulfur dioxide in ambient air. 2½
- (E) Write a note on Global Warming. 2½
- (F) What do you mean by PUC ? Why is it necessary to monitor carbon monoxide in vehicle ? 2½
5. Answer any **TEN** of the following :—
- Define sol.
  - What do you mean by aerosols ?
  - Define gel.
  - Mention unit of calorific value.
  - Mention the fractions of coal.
  - What is flash point ?
  - What is heterogeneous catalysis ?
  - What do you mean by promoter ?
  - What do you mean by catalysis ?
  - What are the constituents of clean air ?
  - Define acid rain.
  - What is the effect of air pollutants on health ? 1×10=10