

2019

Major 3rd Semester Examination

INDUSTRIAL CHEMISTRY

Paper - C 7-T

Full Marks : 40

Time : 2 Hours

*The figures in the margin indicate full marks.
Candidates are required to give their answers
in their own words as far as practicable.*

Answer all questions.

1. Answer *any five* questions : 2×5=10
 - (a) Explain the principle behind the working of an ion selective electrode. 2
 - (b) What is half wave potential ? 2
 - (c) Explain the basic principle of voltammetry. 2
 - (d) What is dropping mercury electrode ? 2
 - (e) Explain the principle of thermal analysis. 2

[Turn Over]

(f) What DSC can measure ? Define the working principle of it. 2

(g) Write down the application of polarography ? 2

(h) What is Amperometry ? How it works. 2

2. Answer *any four* questions : 5×4=20

(a) Write down the basic principle of thermal mechanical analysis (TMA) and also write one industrial application. 3+2

(b) Explain with a sketch how the polarographic current-potential curve characterising an electrochemical process of reduction changes when the process become irreversible. 3+2

(c) What are advantages and application of gas sensing electrodes ? 2+3

(d) Draw and label silver-silver electrode and mention its electrode reaction and Nernst equation. 3+2

(e) Write short notes on :

IHKOVIC equation (through mention IHKOVIC equation) Discuss the parameters affecting polarography ID.

Is this equation used for qualitative or quantitative measurement and why ? 2+3

(f) How does a glass electrode work ? Give one example of ion selective electrode. 2+3

3. Answer *any one* question : 10×1=10

(a) Describe with examples the various types of curves obtained from thermogravimetric (TG) experiments and discuss their interpretation.

6+4

(b) Make a detailed comparison of the techniques of differential thermal analysis (DTA) and differential scanning calorimetry (DSC) and discuss the relative advantages and disadvantages of the techniques. 4+6