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NA—146—2023

FACULTY OF SCIENCE

B.Sc. (Third Year) (Sixth Semester) EXAMINATION

NOVEMBER/DECEMBER, 2023

(CBCS/New Pattern)

INDUSTRIAL CHEMISTRY

Paper XV

(Spectroscopy, Chromatography and Plant Utilities)

(Friday, 22-12-2023)

Time : 10.00 a.m. to 12.00 noon

Time—Two Hours

Maximum Marks—40

N.B. :— Use of log table and scientific calculator is allowed.

1. Explain infrared spectroscopy and give the construction and working of IR spectrometer with neat labelled diagram. 15

Or

Solve the problems—calculate the wave number of stretching vibration of carbon-carbon double bond. Given force constant ($K = 10 \times 10^5 \text{ dyne cm}^{-1}$)

- (a) Explain electromagnetic waves and explain electromagnetic spectrum. 8
- (b) Explain purification of water by Fonex change process. 7
2. Define Steam. Explain formation of steam at constant pressure with neat labelled diagram. 15

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Or

- (a) Explain theory of molecular vibration with respect to Infrared spectroscopy. 8
- (b) Explain construction and working of mass spectrometer. 7
3. Write short notes on (any two) : 10
- (a) McLaferty rearrangement
- (b) HPTLC
- (c) Lambert-Beer law and Hooke's law
- (d) Boiler.

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