K. K. Wagh Institute of Engineering Education and Research, Nashik

(An Autonomous Institute from A. Y. 2022-23)

In-Sem Examination

Exam Seat No.

Academic Year: 2023-2024 **Semester: I**

Name of Programme:FYBTech (All branch) **Pattern: 2023**

Name of Course:Applied Chemistry **Course Code:2300104A**

Max. Marks: 30* **Duration: 1Hr.**

***30 marks will be converted into 20/ 25 marks in proportion.**

Instructions: Candidates should read carefully the instructions printed on the Question Paper and on the cover page of the Answer Book, which is provided for their use.

(1)This question paper contains(s) 02page(s).
(2)Answer to each new question is to be started on a fresh page.
(3)Assume suitable data wherever required, but justify it.
(4) Draw the neat labelled diagrams, wherever necessary.

Q. No.	Details	Max. Marks	CO Level
Q.1.	a) Explain the conductometric titration between HCl and NaOH with titration curve and reaction. (5 marks)	[15]	CO1
	OR		
	b) Give construction and working of calomel electrode with labelled diagram and its representation (5 marks)		
	c) Define primary battery? Give construction, working and reactions of dry cell (5 marks)		
	OR		CO1
	d) Define buffer solution. Explain its types with an example. Give procedure for standardisation of pH meter. (5 marks)		
	e) Explain different types of electronic transition occur in UV-Visible spectroscopy with energy diagram. (5 marks)		
	OR		
	f) Define or explain the term (5 marks) 1. Secondary Battery 2. Reference Electrode 3. Bathochromic Shift 4. Auxochrome 5. Hyperchromic shift		CO4

Q.2 a) What is Proximate analysis? Discuss the procedure with formula in the determination of each constituent in the proximate analysis of coal. (5 marks)

OR

b) What is biodiesel? Explain preparation method with reaction. (5 marks)

CO2

c) Describe fractional distillation process of crude oil with neat labelled diagram. (5 marks)

OR

d) What is calorific value? State its types and give relation between them. (5 marks)

CO5

e) Sample of coal containing 7 % Hydrogen when allowed to undergo combustion in Bomb Calorimeter, the following data were obtained. [15]
weight of coal burnt = 0.72 gm
weight of water taken = 1200gm
water equivalent of bomb calorimeter = 750 gm
Initial temperature = 28°C
Final temperature = 31.2°C
Calculate GCV and NCV of the coal. (5 marks)

OR

f) The fuel containing 6 % hydrogen has Net calorific value of 4400 cal/gm. Calculate its Gross Calorific Value in Joules / kg. (Latent Heat of water= 586 cal/ gm). (5 marks)

CO4