

	<p>Pimpri Chinchwad Education Trust's Pimpri Chinchwad College of Engineering An Autonomous Institute (Permanently affiliated to Savitribai Phule Pune University)</p>	SET – II
		SEMESTER - I

Summative Assessment

First Year B. Tech. (Comp, Comp (R) and IT)

Engineering Chemistry[BSC]

[BSH21BS05]

(Regulation:2023)

Odd Semester (2024-25)

Total No. of Questions-4

[Time: 1Hr.]

Total No. of Printed Pages-02

[Max. Marks: 30]

PRN

Instructions:

IMP: Verify that you have received a question paper with correct course, code, branch etc.

- All questions are compulsory.
- Assume suitable data wherever necessary.
- Neat labelled diagrams must be drawn wherever necessary.
- Figure to right indicates full marks.
- Use of a non-programmable calculator is allowed.

		Marks
Q.1	Attempt <u>any four</u> of the following	8M
	i) Give any two disadvantages of zeolite method. ii) Provide name of chemical for following: A) Chemical to remove dissolved O ₂ from boiler feed water ----- B) Chemical to remove dissolved CO ₂ from boiler feed water----- iii) Calculate atom economy for following reaction. $C_4H_8 + 3 O_2 \rightarrow C_4H_2O_3 + 3H_2O$ iv) Draw neatly labelled diagram of ion exchanger. v) 50 ml of water sample requires 12.2 ml of 0.02 M EDTA during the titration. Calculate the total hardness of water sample.	
Q.2	Attempt following questions.	7M
2A	Attempt <u>any one</u> of the following:	3M
	i) Define proximate analysis of coal and give formula for determination of % M, % VM, % ash and % fixed carbon. ii) Calculate the GCV and NCV of fuel containing 7% hydrogen with the following data of Bomb calorimeter experiment. a. Mass of fuel = 1.0 gm b. Mass of water in calorimeter = 2030 gm. c. Water equivalent of calorimeter set = 840 gm. d. Rise in temperature = 2.66 °C.	
2B	Define power alcohol. Give any three advantages of power alcohol.	4M

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Q.3	Attempt following questions.	5M
3A	Attempt any <u>one</u> of the following	2M
	i) Give two important conditions for wet corrosion along with anodic and cathodic reactions for H ₂ -evolution mechanism ii) Suggest technique for metallic coating for following articles a. Zn coating on Buckets b. Duralumin sheet sandwiched between layer of pure Aluminium c. Chromium coating on condensers d. Gold is plated over steel jewellery	
3B	Explain nature of oxide film formed in case of Na, Cr and Mo with help of Pilling-Bedworth rule. Give individual oxidative reactions.	3M
Q.4	Attempt following questions	10M
4.A	Attempt any <u>three</u> of the following:	6M
	i) Give any two differences between thermosoft and thermosetting polymer. ii) Classify the following nanomaterials on the basis of their dimensions. Quantum dots, Graphene, Nanowires, CNT's, iii) Give structure and two important applications of electroluminiscent polymer - PPV iv) What are biodegradable polymers? Write any two important applications of PHBV.	
4.B	What is conducting polymers? Explain P-doping and N-doping with reactions	4M

**** End of Question Paper****