

BTECH
(SEM II) THEORY EXAMINATION 2023-24
ENGINEERING CHEMISTRY

TIME: 3 HRS

M.MARKS: 100

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt all questions in brief.

2 x 10 = 20

Qno.	Question	Marks	CO
a.	Explain why helium is monoatomic and hydrogen is diatomic?	2	1
b.	What are Raman active molecules?	2	2
c.	Define corrosion in short.	2	3
d.	Name the different techniques of water softening.	2	4
e.	Write monomers of Buna-S and Nylon 66?	2	5
f.	Arrange the following molecules or ions in increasing order of bond stability. N_2^{2-} , N_2^- & N_2 .	2	1
g.	Define spectroscopy in brief.	2	2
h.	List the different applications of phase rule.	2	3
i.	Classify fuels.	2	4
j.	Give the applications of Grignard reagent.	2	5

SECTION B

2. Attempt any three of the following:

Qno.	Question	Marks	CO
a.	Discuss the electrical and lubrication properties of graphite in detail.	10	1
b.	Define the principle of Raman spectroscopy. Define chromophore also.	10	2
c.	Define corrosion. Also explain its effects and prevention in detail.	10	3
d.	Explain ion exchange resin and reverse osmosis in detail.	10	4
e.	What are organometallic compounds? How Grignard reagents are prepared? Write any five applications of Grignard reagents.	10	5

SECTION C

3. Attempt any one part of the following:

Qno.	Question	Marks	CO
a.	With the help of molecular orbital diagram, explain the magnetic character of O_2 and N_2 .	10	1
b.	What do you understand by nano-materials? Also discuss its application.	10	1

4. Attempt any one part of the following:

Qno.	Question	Marks	CO
a.	What is rotational spectroscopy? Explain the instrument of microwave Spectroscopy and what are the conditions for microwave active molecules?	10	2
b.	What do you understand by visible spectroscopy? Give its applications.	10	2



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5. Attempt any one part of the following:

Qno.	Question	Marks	CO
a.	What is secondary storage battery? Write charging and discharging reaction of Lead acid battery with application of lead acid battery.	10	3
✓	With the help of phase diagram of a water system. Calculate the degree of freedom of triple point and define term involved in Phase rule?	10	3

6. Attempt any one part of the following:

Qno.	Question	Marks	CO
✓	Explain the process of determination of calorific value using Bomb calorimeter method.	10	4
b.	Define hardness of water. Also explain any one technique of water softening in detail.	10	4

7. Attempt any one part of the following:

Qno.	Question	Marks	CO
a.	Write down synthesis and application of following polymers i)-BUNA-S ii)-Neoprene iii)- Nylon 66 iv)- Dacron.	10	5
b.	What are conducting polymers? Write the classification and application of conducting polymers.	10	5

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