(Please write your Enrolment No. immediately)

Enrolment No.

MID TERM EXAMINATION

B. TECH PROGRAMMES (UNDER THE AEGIS OF USICT)

I Semester, November, 2023

Paper Code: BS 103

Subject: Applied Chemistry

Time: 1½ Hrs.

Max. Marks: 30

Note: Attempt Q. No. 1 which is compulsory and any two more questions from remaining.

Q. No.	Question	Max. Marks	CO(s)
1.a.	A good petrol engine is bad fuel for diesel engine. comment	2	CO1
b.	A mixture containing powdered sulphur, sugar and urea, identify the no. of phase	2	CO2
c.	In a phase diagram of water, the fusion curve of ice has a negative slop, explain why?	2	CO2
d.	How does a non-conducting polymer become conducting?	2	CO2
e.	What is carbonisation.	2	CO1
2.a.	A sample of coal was found to have the following composition by weight. C = 75%; H = 5.2%; O = 12.1%; N = 3.2% and ash = 4.5% Calculate (i) minimum weight of O_2 and air necessary for complete combustion of 1 kg of coal; (ii) Volume of air required if 40% excess air is supplied.	5	CO1
b.	With the help of a well labelled diagram, explain the sulphur system in detail. Explain why in a sulphur system, all the four phases cannot exist in equilibrium.	5	CO2
3.	Distinguish between the following		
a.	thermal cracking & catalytic cracking	2.5	CO1
b.	Triple point &Eutectic point	2.5	CO2
c.	Octane no. & cetane no.	2.5	CO1
d.	Low density polyethene (LDPE) & high density polyethene (HDPE)	2.5	CO2
4.a.	Define a polymer. Explain the classification of polymers.	4	CO2
b.	0.25 g of a sample of coal was analysed by combustion method. The increase in weights of $CaCl_2$ tube and the potash bulbs at the end of the operation was found to be 0.15 g and 0.55g, respectively. Calculate the percentage of carbon and hydrogen in the coal	4	CO1
c.	1 kg of fuel contains 0.7% hydrogen, calculate its net calorific values if gross calorific value is 12, 638 cal/g.	2	CO1