

Hall Ticket No

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Course Code: AHSD03



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad - 500 043

B TECH I SEMESTER CIE-II EXAMINATIONS, JANUARY – 2024

Regulation: BT23

ENGINEERING CHEMISTRY

(COMMON TO CSE | CSE(DS) | CSE (CS))

Time: 2 Hours

Max Marks: 20

Answer any FOUR questions

All parts of the question must be answered in one place only

1. (a) Draw the flowchart for the processing of natural rubber and explain the process of vulcanization of raw rubber. [BL: Understand| CO: 4|Marks: 2]
(b) Write short note on elastomers. Give the preparation, properties and applications of Buna-S and Thiokol rubber. [BL: Understand| CO: 4|Marks: 3]
2. (a) Explain how the percentage of carbon, hydrogen, nitrogen, and sulphur are estimated in ultimate analysis of coal. [BL: Understand| CO: 5|Marks: 2]
(b) Calculate the gross and net calorific values of a coal sample containing 82% of carbon, 1.5 % of sulphur, 2% of Nitrogen, 5.5% of hydrogen and 9% of oxygen. The calorific value of carbon, hydrogen and sulphur are 8080 kcal/kg, 34500 kcal/kg and 2240 kcal/kg, respectively, and latent heat of steam is 587 cal/g. [BL: Apply | CO: 5|Marks: 3]
3. (a) List the various steps involved in refining of petroleum. At what temperature kerosene, diesel and gasoline are obtained. How do they differ in their composition? [BL: Understand| CO: 5|Marks: 2]
(b) Outline the composition, properties and applications of LPG and CNG. Mention the characteristics of a good fuel [BL: Apply | CO: 5|Marks: 3]
4. (a) Discuss the composition, setting and hardening reactions of portland cement. [BL: Understand| CO: 6|Marks: 2]
(b) List the medical applications of smart materials. Illustrate the chemical reduction method for the preparation of nano materials. [BL: Understand | CO: 6|Marks: 3]
5. (a) Summarize the synthesis, properties and uses of poly L- lactic acid and polyacryl amides. [BL: Understand| CO: 6|Marks: 2]
(b) What are lubricants ? Discuss the following properties of lubricants giving their significance.
 - i) Flash point and Fire point
 - ii) Cloud point and Pour point [BL: Understand| CO: 6|Marks: 3]

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