

Gandhi Institute of Engineering and Technology University, Odisha, Gunupur (GIET University)



B. Tech (Sixth Semester - Regular) Examinations, April 2026

23BCHPE36001- Fuel and Energy Technology (Chemical Engineering)

Time: 3 hrs

Maximum: 60 Marks

Answer ALL questions

PART – A

(2 x 5 = 10 Marks)

Q.1. Answer **ALL** questions

	CO #	Blooms Level
a. Explain Coalification Process. Discuss it with respect to rank.	CO1	K1
b. Differentiate between Humic Coal, Sapropelic Coal and Liptobiolites.	CO2	K1
c. Differentiate between Proximate and Ultimate Analysis of Coal.	CO3	K1
d. What is Producer gas. Give its composition.	CO4	K1
e. What is knocking in engines?	CO5	K1

PART – B

(10 x 5 = 50 Marks)

Answer **ALL** the questions

	Marks	CO #	Blooms Level
2. a. Enumerate about the origin of coal formations.	5	CO1	K1
b. What are the different Losses take place during Coal Storage? How it can be Prevented	5	CO1	K2
(OR)			
c. What are the different impurities present in Coal? Discuss the process of Coal washing .	5	CO1	K1
d. Why coal washing is required? Emphasize on the sink float method of coal washing.	5	CO1	K2
3.a. Discuss the typical composition of Coal Tar. Discuss about the coal tar distillation process.	5	CO2	K1
b. Discuss the Beehive coke oven process with neat diagram during the manufacturing coke.	5	CO2	K2
(OR)			
c. Differentiate between High and Low temperature carbonizations.	5	CO2	K1
d. Discuss the by-product coke oven process with neat diagram during the manufacturing coke.	5	CO2	K2
4.a. Discuss the formation of petroleum on the basis of inorganic and modern theory	5	CO3	K1
b. Analyse the different Pre-treatment processes of oil at Oil field before Refining.	5	CO3	K2
(OR)			
c. Discuss the different fractions obtained from petroleum refining and their uses.	5	CO3	K1
d. Explain octane number and its significance in fuels	5	CO3	K2
5.a. What is cracking? Why its requirement. What are the factors affecting cracking?	5	CO4	K2
b. Discuss the Bergurios Process for converting the solid into liquid fuel.	5	CO5	K2
(OR)			
c. Write the reactions involved in catalytic cracking. Explain FCC with neat sketch	5	CO4	K2

d. What is Synthetic Fuel? Discuss the Fischer Troph Process for converting the solid into liquid fuel.	5	CO5	K2
6.a. Classify nuclear reactors based on their design and working principles.	5	CO6	K1
b. Explain all the parts of a nuclear reactor with their functions	5	CO6	K2
(OR)			
c. Describe the manufacturing process, composition, and uses of (a) Producer gas (b) Water gas	5	CO6	K1
d. Explain the advantages, disadvantages, and applications of gaseous fuels.	5	CO6	K2

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