

B.E. CHEMICAL ENGINEERING THIRD YEAR FIRST SEMESTER – 2025**ENERGY ENGINEERING(HONS.)****Time: 3 Hrs****Marks: 100****Answer any four questions**

CO	Questions	Marks
CO1 CO2	1) A. 'All caking coals are not necessarily coking coal but all coking coals have to be necessarily caking in nature'- is the statement justified? Write down your thoughts on this. B. What is black lignite? Why is raw lignite difficult to transport with respect to high rank coal? C. Write short notes on: I. Rank of coal II. Carbonisation of coal III. Gasification of coal	5+5+5+5+5
CO3	2) A. Describe in brief with a neat sketch of the process the Mobil process B. Can kerosene, used for domestic cooking, be used as aviation turbine fuel? C. Define flash point and fire point of a fuel. Is flash point and autoignition temperature same? D. For a liquid fuel to be used and stored in high altitude area, what are the properties that should be tested and why?	5+5+5+10
CO2	3) A. What is the composition of producer gas and Water gas? How producer gas can be produced? Mention all the reactions involved with the process? What are the factors that affects the composition of producer gas? B. Find the cold gas thermal efficiency of a producer gas plant from the following data: CV of producer gas: 1150kcal/Nm ³ Yield of producer gas: 2.8 Nm ³ /kg coke CV of the coke gasified: 6000 kcal/kg	5+5+5+5+5
CO4	4) Discuss in brief on Bio-oil and its applications? How is Bio-oil obtained from biomass through fast pyrolysis? What are the challenges for large scale production of Bio-oil?	8+12+5
CO4 CO1 CO1	5) A. Discuss the working principle and application of a Fuel cell. B. Discuss about Beehive coke oven. C. Compare the products obtained from LTC and HTC.	10+10+5
CO4 CO1	6) Write short notes on I. Ethanol blending scenario in India. II. Biofuel from lignocellulose by fermentation III. Aniline point and diesel index. IV. Usage of CNG over petrol as SI engine fuel. V. Coal Tar and coal tar fuels (CTF)	5*5=25