


Name:	
Enrolment No:	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2020

Programme Name: B. Tech. APE (Gas)	Semester : V
Course Name : Gasification & Gas to Liquid Technology	Time : 03 hrs
Course Code : CHGS 3008	Max. Marks: 100
Nos. of page(s) : 02	

Instructions: 1) There are two sections. Section A for 60 marks and Section B for 40 marks.
 2) Answer the questions in sequence.
 3) Diagrams must be drawn wherever necessary.

SECTION A (5 X 12=60 Marks)

Answer all Questions

S. No.	Question	Marks	CO
1.	Briefly discuss the effect of basic fuel parameters in the gasifier design.	12M	CO1
2.	Discuss the IGCC process with a neat flow diagram with CO ₂ capture.	12M	CO2
3.	With a neat diagram, explain the operation of a downdraft gasifier its reaction zones and temperature profiles along the gasifier.	12M	CO3
4.	Give the status of biomass gasification technology in India.	12M	CO4
5.	Classify the Fischer-Tropsch synthesis (FTS) reactors and analyze the classical development route for a reactor technology in industry.	12M	CO5

SECTION B (2 X 20=40 Marks)

Answer any two questions

6.	Gasifiers are gas/solid contacting devices and are generally classified according to fluidized bed characteristics or regimes. Discuss.	20M	CO3
7.	Explain the gasification fundamentals, reaction conditions to produce synthesis gas and its composition and cleaning.	20M	CO4
8.	a) The overall process from original carbon source for the syngas to the (FTS) product is named after the feedstock collectively known as XTL where X=	(15+5) 20M	CO5

	<p>natural gas, biomass and coal. Consider any one feedstock and describe the conversion to syncrude with a flow diagram.</p> <p>b) Explain the mechanism and kinetics of FTS over Iron and Cobalt Catalysts</p>		
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