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UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2017

Program: B.Tech APE Gas

Subject (Course): Gasification and Gas to liq. Tech.

Course Code : PTEG371

No. of page/s: 02

Semester - **V**

Max. Marks : 100

Duration : 3 Hrs

**NOTE: i) Attempt ALL from Section A and any TWO from Section B
ii) Make necessary assumption in case of data missing.
iii) Exchange of calculators NOT allowed.**

SECTION A: Attempt ALL [10×6=60]

Q1. What is a gasification process and what are the different feedstocks used in it? Name the gas produced from it with its typical composition and applications.

Q2. Which route, coal combustion or coal gasification, is cleaner for power generation and how? What is CO₂ / carbon capture or carbon sequestration?

Q3. Describe fossil fuels, their applications and how the Sulphur in fuels is harmful? What is the name of Sulphur recovery process from H₂S gas and give brief details of the process.

Q4. Describe how Methanol is produced from Syngas? What different products are obtained from methanol and mention their uses.

Q5. Give the full forms of IGCC, UCG, CBM, DME, MTBE, LNG, CNG, GTL, CTL and BTL.

Q.6 what is meant by coal liquefaction and what are the two routes for it? Why the liquid products obtained from it are extra clean?

SECTION B: Attempt any TWO [20×2=40]

Q7. What is LNG and how it is obtained from natural gas? What are the advantages of converting Natural Gas into LNG and how it is different from CNG? What steps are involved in Gas to liquid conversion (GTL) and mention some advantages of it.

Q8. What is a biomass and name some types of it. What is the gasification principle and mention types of gasifiers used for it? What is the typical composition of syngas / producer gas, using air as oxidant for a given biomass and mention applications of producer gas.

Q9. What is Fischer-Tropsch synthesis and its types based on temperature? Describe various catalysts and reactors being used in this process. Describe the products that are produced from this process and their applications.