Ref. No.: Ex/Che/PC/H/T/315/2024(S)

B.E. CHEMICAL ENGINEERING THIRD YEAR FIRST SEMESTER SUPPLEMENTARY EXAM - 2024
ENERGY ENGINEERING (HONS.)

Full Marks (100)

Answer any four questions

1. a. Write Dulong's formula for low calorific value and high calorific value fuel.
   b. Define cloud point, octane number and pour point of fuel.
   c. Define non-coking coal.
   d.What is the difference between coal and coke?
   e. How coke is formed.

   6+9+3+3+4 [CO1+CO2+CO3]

2. a. Briefly describe Bioethanol synthesis from agricultural biomass.
   b. What is the difference between renewable and green energy,
   c. Briefly describe torrefaction
   d. Briefly describe 3rd generation of biofuel.
   e. What are the challenges of algae production

   12+3+3+3+4 [CO3]

3. a. Compare blue and grey hydrogen energy production and its impact on environment.
   b. Briefly describe compresses gas Hydrogen storage and liquid hydrogen storage, applications and its limitations.
   c. What is Boudouard Reaction?
   d. Briefly describe metallurgical coke

   8+12+2+3 [CO2+ CO4]

4. a. What are the stages of gasification? 3
   b. Write down the chemistry of coal gasification process 8
   c. Write down the advantages and disadvantages of coal gasification process. 6
   d. Briefly describe syngas production using gasification process 8

5. a. Briefly describe PV–thermal technology and its uses. 4
   b. Briefly describe solar cells 4
   c. Write down the different type of solar radiation 5
   d. Briefly describe nuclear energy reactor for generation of energy, 12

   [CO4]