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

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

Full Marks (100)

Answer any four questions

1. a. Write Dulong's formula for low calorfic value and high calorific value fuel
   b. Define low heating value and high heating value
   c. Define cetane number. Cetane number of a particular fuel is lower, what will be the property of that fuel.
   d. How coal is formed. Compare the properties of anthracite, bituminuous and lignite coal. Which type of coal is available in India.

   6+4+4+4+5+2

2. Briefly describe Biodiesel synthesis from biomass.
   Biofuels are renewable energy or non renewable energy, explain.
   What is the difference between renewable and green energy,
   Briefly describe torrefaction
   Write doown the advantages of using microalgae for biofuel production.
   Briefly describe top down approach of biorefinery process with example

   6+3+3+3+5+5

3. Compare blue and green hydrogen energy production and its impact on environment.
   Briefly describe liquid hydrogen storage and solid state hydrogen storage, applications and its limitations.
   What is Boudouard reaction and its application.
   Briefly describe API gravity of liquid fuel

   8+12+3+2

4. Briefly describe pyrolysis of coal for gasification process. 10
   Compare Lurgi and Winkler process of gasification. 6
   Define allothermal reaction. 2
   Write down the application of gasification process 3
   What are the challenges of gasification process. 4

5. Briefly describe naphtha cracking process, mechanism and its products. 10
   Briefly describe Photovoltaic Panels 6
   Briefly describe different types of solar collector. 9