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Total number of printed pages - 02

B.TECH
PECH5303

5th Semester Regular / Back Examination 2016 - 17
FUEL AND ENERGY TECHNOLOGY

BRANCH : Chemical

Time : 3 Hours

Max Marks : 70

Question Code :Y298

Answer Question No. 1 which is compulsory and any FIVE from the rest.

The figures in the right-hand margin indicate marks.

Assume suitable notations and any missing data wherever necessary.

Answer all parts of a question at a place.

1. **Answer the following questions :** **2 x 10**
- (a) Explain Hilt's law.
 - (b) Define coalification of coal.
 - (c) Why coal washing is required?
 - (d) What is the effect of presence of water and salt in crude oil?
 - (e) What is visbreaking?
 - (f) What is the difference between dry well and wet well?
 - (g) Differentiate between rich gas and lean gas.
 - (h) Write the composition of water gas.
 - (i) Write the properties of Thorium?
 - (j) What are the requirements for a combustion process?
2. (a) What are the losses occurred during coal storage? **04**
- (b) What is the difference between LTC and HTC? **06**
3. (a) Write the manufacture of water gas with a neat sketch. **05**
- (b) With a flow sheet discuss briefly about tar distillation. **05**
4. (a) What is different type of cracking? Explain fluidized bed catalytic cracking. **06**
- (b) What are the various parameters affecting cracking? **04**

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5. What are the different types of coal washing process? Explain in detail about Baum Jig and Cyclone washer with their neat sketch. **10**
6. Explain in detail the Fischer-Tropsch synthesis of liquefaction of coal. **10**
7. Determine the flue gas analysis and air-fuel ratio by weight when a medium fuel oil with 84.9% carbon, 11.4% hydrogen, 3.2% sulphur, 0.4% oxygen, and 0.1% ash by weight is burnt with 20 % excess air. Assume complete combustion. **10**
8. Write short notes on any **TWO**: **5 x 2**
- (a) Fast breeder reactor
 - (b) Blast furnace gas
 - (c) Washability curve
 - (d) Lurgi process
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