Registration No.										

Total number of pages : 01 **B.Tech.**
PECH5303

5th Semester Back Examination 2017-18
Fuel and Energy Technology
BRANCH : CHEM, PLASTIC
Time : 3 Hours
Max Marks : 70
Question Code : B334

Answer Question No. 1 which is compulsory and any FIVE from the rest.
The figures in the right-hand margin indicate marks.
Answer all parts of a question at a place.

1. **Answer the following questions :** **(2x10)**

(a) Why freshly mined coal is risky ?
(b) Write the uses of coal.
(c) Write the Fraser & Yancey equation for washing efficiency.
(d) Differentiate between vitrain and clarain.
(e) Why dehydration and desalting of crude oil is necessary ?
(f) Define vis-breaking and mention its importance.
(g) What do you understand by knocking ? What is done to improve knocking characteristics ?
(h) What is sweet gas ? Mention the properties of producer gas.
(i) What do you understand by hydrogenation of coal ?
(j) Write briefly about nuclear fuels.

2. **(a)** Write the steps to prevent loss of coal. **(4)**
(b) Write the pertrographic constituents of coal. **(6)**

3. **(a)** Briefly discuss any two methods for coal washing. **(6)**
(b) What do you understand by washability of coal ? **(4)**

4. With a neat flow sheet, describe the crude oil distillation highlighting the products. Also discuss the major engineering problems. **(10)**

5. Discuss in detail the production of water gas giving emphasis on chemical reactions. Also mention the properties and uses. **(10)**

6. Discuss in detail the Fischer-Tropsch synthesis. **(10)**

7. Discuss the Lurgi gasification process with the neat diagram of Lurgigasifier. Also discuss the process variables. **(10)**

8. **Write short notes on any TWO:** **(5x2)**

(a) High temperature carbonization
(b) Blast furnace gas
(c) Carburetted water gas
(d) Fast breeder reactor