

Registration No. :

--	--	--	--	--	--	--	--	--	--

Total number of printed pages – 2

B. Tech
PECH 5303

Fifth Semester Back Examination – 2014

FUEL AND ENERGY TECHNOLOGY

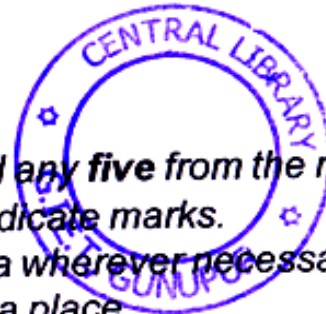
BRANCH : CHEM

QUESTION CODE : L268

Full Marks – 70

Time : 3 Hours

*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 × 10
 - (a) Differentiate between In-situ and Drift theory for origin of coal.
 - (b) Mention the safe coal storing conditions.
 - (c) What is petrography of coal ? Mention petrographic constituents of coal.
 - (d) Strength of coke is measured by _____ index while hardness is measured by _____ index.
 - (e) What is visbreaking ? Mention the T and P conditions for visbreaking.
 - (f) _____ is added to increase the octane number of petrol.
 - (g) Mention the use of Palladosulphite tube.
 - (h) Write the properties of coke oven gas.
 - (i) Mention the properties of thorium.
 - (j) What are the elements of a nuclear reactor ?

2.
 - (a) Discuss in detail the significance of constituents of coal. 8
 - (b) Write the uses of coal. 2

3. Critically compare between LTC and HTC. 10

P.T.O.

4. With a neat diagram, explain the fluidized bed catalytic cracking process. 10
5. Discuss the manufacturing process of carburated water gas with a neat diagram. 10
6. Discuss in detail the Fischer-Tropsch synthesis. 10
7. The volumetric composition of a gaseous fuel is $H_2 = 50\%$, $CH_4 = 20\%$, $C_2H_4 = 2\%$, $CO_2 = 5\%$, $CO = 16\%$, and rest N_2 . Determine : 10
- (i) MW,
 - (ii) Density of the mixture at STP and NTP, and
 - (iii) Wt %.
8. Write short notes on any **two** : 5×2
- (a) Properties of coke
 - (b) Knocking
 - (c) Coal gas
 - (d) Fast breeder reactor.

