Registration No: | | | | | | | | | | |

Total Number of Pages: 01 **B.Tech.**
PEMN5301

5th Semester Back Examination 2017-18
Fuel Technology
BRANCH: METTA, MME
Time: 3 Hours
Max Marks: 70
Q.CODE: B432

Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.

Q1 **Answer the following questions:** **(2 x 10)**

a) What is the difference between adiabatic and theoretical flame temperature?
b) Write the different methods that are used for the determination of spontaneous ignition temperature of vapors and gases?
c) Define high temperature carbonization process?
d) Define calorific value of fuel?
e) What is the composition of coke oven gas?
f) Write effect of excess air on products of combustion?
g) Define Proximate and Ultimate analysis of fuel?
h) Write down disadvantages of Solid, Liquid and Gaseous fuels?
i) Define low temperature carbonization?
j) Define Metallurgical coke?

Q2 **a)** Define 'Fuel'? What is 'fossil Fuel'? Give general classification of fuels? **(5)**
b) Give advantages & disadvantages of Solid, Liquid & Gaseous fuels? **(5)**

Q3 **a)** Define carbonization and differentiate between Low Temperature carbonization (LTC) & High Temperature carbonization (HTC)? **(5)**
b) Compare Batch Furnaces and Continuous Furnaces used For heat treatment of metals and alloys? **(5)**

Q4 **a)** Describe various modes of Heat Losses from a furnace? **(5)**
b) How waste heat can be recovered from Furnace flue gases? **(5)**

Q5 **a)** Give advantages and disadvantages of Solid, Liquid and Gaseous fuels? **(5)**
b) Describe manufacture of water gas with the help of simplified sketch and relevant chemical reactions? **(5)**

Q6 **a)** Define refractoriness under load (RUL) and explain RUL test? **(5)**
b) What is caking power of coal? Explain British Standard Swelling number test? **(5)**

Q7 **a)** Explain the combustion Properties of fuel? **(5)**
b) Write a brief note on Proximate and Ultimate analysis of fuel? **(5)**

Q8 **Write short notes on any TWO :**

a) Coke Oven gas **(5×2)**
b) Blast Furnace Gas
c) Nuclear Fuels