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**FACULTY OF ENGINEERING**

**F.E -Year Examination June – 2015**

**Engineering Chemistry & Environmental Science**

**(Revised)**

**[Time: Two *Hours*]** **[Max. Marks: 40]**

"Please check whether you have got the right question paper."

i) Question No.1 is compulsory
ii) Solve any two questions from remaining questions
iii) Figures to the right indicate full marks
iv) Use of non – programmable calculator is allowed

Q.1 Answer the following questions (any five) 10

a) How hard water is different soft water?
b) What are possible combinations of alkalinity
c) Define PH. Give its range for acidic and basic solution
d) Define LCV and HCV
e) Write formula for calculation of calorific value of coal using bomb calorimeter using corrections
f) How fixed carbon percentage in coal is calculated
g) Define condensation polymerization. Give two example of such polymers
h) Write formula for BUNA-S and butyl rubber
i) Draw diagram of coiled structure of rubber

Q.2 a) 100 ml hard water is titrated for total and permanent hardness in which 0.1m EDTA gives 4.6 and 2.1 ml burette reading respectively. Calculate all types of hardness. (1 ml of 0.1 m EDTA = 10.0 mg.$CaCO_3$) 06

b) How water is purified by electrodialysis 05

c) Define scale formation in boiler how it is prevented 04

Q.3 a) Define calorific value of coal. How it is depend on presency of N,S,O,C and H in coal. 06

b) How mining of petroleum oil is done? 05

c) Explain octane No. and cetane No. far liquid fuels 04

Q.4 a) Define polymerization. Give mechanism of addition polymerization 06

b) Give preparation, properties and uses of Teflon 05

c) How natural runner is obtained 04

Q.5 a) Explain zeolite process of water softening 05

b) Give applications of potentiometer 04

c) Coal containing 2.5 percentages of by dragon have 7000 GCV. Calculate iD NCV 03

d) What is source of natural gas? Give its composition 03