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Total number of printed pages – 2

B. Tech  
**BSCC 1208**

**Third Semester Examination – 2013**

**CHEMISTRY – II**

**BRANCH : CHEM, ENV, TEXTILE**

**QUESTION CODE : C- 481**

**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.*

1. Answer the following questions : 2 × 10
- (a) Write the units of hardness of water and their interrelation.
- (b) Why is net calorific value less than gross calorific value ?
- (c) What are chemical batteries and why they are so named ?
- (d) What is Pilling-Bed worth rule ? What is its significance ?
- (e) How does iron corrode in neutral or alkaline medium ?
- (f) What is the composition of water gas ?
- (g) What do you mean by the cracking ?
- (h) What is the difference Between Primary fuel and secondary fuel ?
- (i) Why calgon conditioning is better than the phosphate conditioning ?
- (j) What do you mean by condensation polymerization ?
2. (a) Describe the principle and procedure involved in zeolite process for treatment of water. What are the limitation of process ? 5
- (b) Suggest some chemicals reagent for removal of DO and CO<sub>2</sub> from water which is better and why ? 5

**P.T.O.**

3. (a) What are the disadvantages of using TEL as an anti-knocking agent ? Calculate the gross and net calorific value of coal having the following composition : C = 85%, H = 8%, S = 1%, N = 2%, ash = 4%. 5
- (b) Define Octane and Cetane numbers. What is their significance ? 5
4. What do you mean by cracking ? Discuss Thermal cracking with mechanism. What is advantage of catalytic cracking over thermal cracking ? 10
5. (a) Discuss the synthesis, properties and application of carbon nano-tube. 5
- (b) What do you mean by the wet corrosion ? What are the factor which influence in it ? 5
6. (a) What do you mean by addition polymerization and condensation polymerization process ? Explain with example. 5
- (b) 50 ml of standard hard water (1 ml = 1 mg  $\text{CaCO}_3$ ) required 90 ml of EDTA solution for detection of end-point. 50 ml of water sample required 18 ml of EDTA solution and 50ml of the boiled water sample required 11 ml EDTA solution. Calculate the carbonate and non-carbonate hardness of the water sample. 5
7. (a) Explain the mechanism of following type of corrosion : 5
- (i) Electrochemical corrosion
- (ii) Differential aeration corrosion.
- (b) What do you mean by the Battery ? Discuss characteristics properties of Battery. 5
8. Write short notes on : 2.5×4
- (a) Break point Chlorination
- (b) Caustic Embrittlement
- (c) Alkaline Battery
- (d) Addition polymerization.

