

**B.TECH. SEM -II (CHEMICAL/ CIVIL/ ELECTRICAL/
MECHANICAL/ PRODUCTION 2014 COURSE (CBCS) :
SUMMER - 2018
SUBJECT: ENGINEERING CHEMISTRY**

Day: **Friday**
Date: **08/06/2018**

S-2018-2216

Time: **10.00 AM TO 01.00 PM**
Max Marks. 60

N.B.

- 1) All questions are **COMPULSORY**.
 - 2) Figures to the right indicate **FULL** marks.
 - 3) Use of non-programmable **CALCULATOR** is allowed.
 - 4) Neat diagrams must be drawn **WHEREVER** necessary.
 - 5) Assume suitable data if necessary
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Q.1 What is meant by softening of water? Explain the Zeolite method of water softening. (10)

OR

- a) What is Hardness of water? What are the units & types of hardness of water? (06)
- b) An exhausted Zeolite bed is regenerated by passing 8 liters of NaCl solutions having concentration 130 gm NaCl per liter. The bed gets exhausted by treatment of 700 liters of water. Calculate hardness of water. (04)

Q.2 What is Crystallography? Explain the three fundamental laws of crystallography. (10)

OR

- a) Define Portland cement. What are the chemical composition and compound constituents of Portland cement. (06)
- b) X – ray of wavelength 2.3 \AA are diffracted by a Bragg's crystal spectrometer at an angle 16.5° in the first order. What is the spacing of atomic layer in the crystal? (04)

Q.3 What are the characteristics of Good fuels? Explain Proximate analysis of coal and give its significance. (10)

OR

- a) Explain determination of Calorific value of fuel by Bomb calorimeter. (06)
- b) What is a fuel? How are fuels classified? (04)

P.T.O

Q.4 What is Electrochemical Corrosion? Explain Galvanic corrosion and Concentration cell corrosion. (10)

OR

- a) What are the factors affecting the rate of corrosion? (06)
- b) Write note on Electrochemical series & Galvanic series. (04)

Q.5 What is Redox reaction? Explain the mechanism of Acidic buffer, Basic buffer and Neutral buffer. (10)

OR

- a) What is Conductometric Titration? Explain the Strong Acid versus Strong Base titration. (06)
- b) What is the Arrhenius theory of Acid and Base? (04)

Q.6 Write note on Optical Isomerism with examples. Explain Optical Isomerism with one asymmetric carbon atom. (10)

OR

- a) Define and explain the following terms: (06)
- i) Enantiomers
 - ii) Diastereoisomers
 - iii) Meso compounds
- b) How do you represent Dotted line and Wedge formula and Saw horse formula of Ethane. (04)

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