

**B.Tech. SEM -I Computer/ Info. Tech./ Electronics / Bio Medical / E &
TC) 2014 Course (CBCS) : WINTER - 2018
SUBJECT: ENGINEERING CHEMISTRY**

Day: Thursday
Date: 29/11/2018

W-2018-2264

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 to the non-programmable **CALCULATOR** is allowed.
 - 4) Neat diagram must be drawn **WHEREVER** necessary.
 - 5) Assume suitable data if necessary.
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- Q.1** a) Explain the permutit process with help of labelled diagram. Write main reactions occurring in the process. (06)
- b) Write note on phosphate conditioning. (04)

OR

- Q.1** a) What are the scales and sludges? Give their causes of formation, disadvantages and preventive measures in a boiler. (06)
- b) Write note on caustic embrittlement. (04)

- Q.2** a) What is Portland cement? Give its chemical composition and compound constituents with its properties. What is role of gypsum in setting of cement? (06)
- b) What are Weiss indices and miller indices? If certain lattice plane intersects the X, Y and Z axes at distance $3a$, $2b$, $-1c$ what will be Weiss indices and miller indices? (04)

OR

- Q.2** What is crystallography? Explain the different laws of crystallography. (10)
- Q.3** a) How is the calorific value of gaseous fuel determining using Boy's gas calorimeter? (06)
- b) Why and how corrections are made in the determination of calorific value by Bomb's calorimeter? (04)

OR

- Q.3** a) Explain the importance of ultimate analysis of coal. (06)
- b) Composition of a coal sample is : C = 81%, H = 5%, O = 8.5%, S = 1.0% and N = 1.5% and ash = 3%. Calculate the gross and net calorific value of the coal sample. (04)

P.T.O.

Q.4 Discuss the anodic and cathodic metallic coating. Which is more preferred? (10)

OR

Q.4 a) What are different factors affecting dry and wet corrosion? (06)

b) "Passivation is a static state not a dynamic one". Comment. (04)

Q.5 a) What is conductometric titration? Explain the titration curve for weak acid strong base titration. (06)

b) The solubility of AgCl in water is 1.34×10^{-5} mole/dm³. Calculate its solubility product. (04)

OR

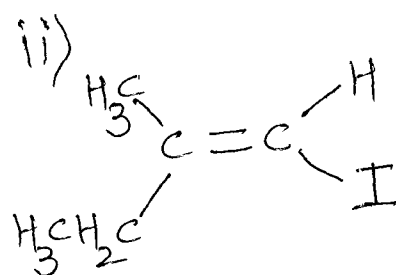
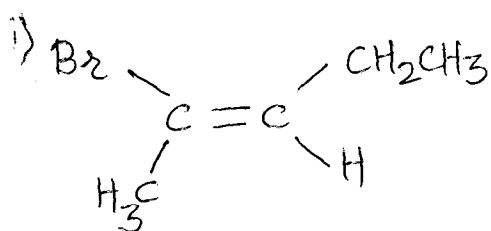
Q.5 a) Write a note on Fuel cells. (06)

b) Explain solubility and solubility product. (04)

Q.6 a) State and explain following terms: (06)

i) Enantiomers ii) Geometrical isomerism iii) Optical isomerism

b) Assign E and Z configuration of each of the following: (04)



OR

Q.6 What is conformational isomerism? Discuss the conformational isomerism of n-butane. (10)

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