Code No: 132AG **R16**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech I Year II Semester Examinations, August/September - 2017
ENGINEERING CHEMISTRY
(Common to CE, ME, MCT, MMT, MIE, CEE, MSNT)

Time: 3 hours **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

1.a) Write the specifications of potable water. [2]
b) What is Caustic embrittlement? Give chemical reaction involved. [3]
c) What are secondary cells? Give two examples. [2]
d) What is single electrode potential? Write Nernst equation to calculate electrode potential. [3]
e) Give the characteristics of Elastomers. [2]
f) Write short note on free radical addition polymerisation. [3]
g) Explain the importance of Octane number. [2]
h) What is CNG? Give its composition and characteristic properties. [3]
i) Define flash and fire point of a lubricant. [2]
j) What are special cements? Give their uses. [3]

PART-B

(50 Marks)

2.a) Explain the Break point chlorination and give its significance.
b) A Sample of water showed the following analysis
$CaCl_2$ = 2.22mg/*l*; $Mg(NO_3)_2$ = 1.48mg/*l*; KCl = 7.45mg/*l*; $CaSO_4$ = 1.36 mg/*l*;, $Mg(HCO_3)$ = 2.92 mg/*l*; Organic impurities = 1.22mg/*l*.
Calculate the temporary and permanent hardness of the given water sample. [5+5]

OR

3.a) Differentiate between chlorination and ozonization disinfection methods of potable water.
b) Explain the steps involved in treatment of sewage water. [5+5]

4.a) What are fuel cells? Explain the construction and working of hydrogen oxygen fuel cell.
b) What do you understand by electrochemical series? Explain its applications. [5+5]

OR

5.a) Explain the construction, working and application of glass electrode with neat diagram.
b) Explain the chemical reactions of lead acid battery during its charging and discharging. [5+5]

6.a) Differentiate between thermoplastics and thermosetting plastics with suitable examples.
b) What are conducting polymers? Explain the conduction mechanism in trans-polyacetylene and give its applications. [5+5]

OR

7.a) What are Fiber reinforced plastics? Give their applications.
b) Write about the compounding and fabrication of plastic. [5+5]

8.a) Explain the proximate method of analysis of coal and write its significance.
b) Describe the Fisher-Tropsch's process for the synthetic petrol. [5+5]

OR

9.a) What is HCV and LCV of a fuel? Explain their inter relationship.
b) With neat diagram, explain the petroleum refining. [5+5]

10.a) What are composites? Give the classification and applications of composite materials.
b) Explain the mechanism of extreme pressure lubrication with suitable examples. [5+5]

OR

11.a) What is a refractory? Give their characteristic properties and applications.
b) Give the composition, setting and hardening of Portland cement. [5+5]

---ooOoo---