

Code No: 151AF

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech I Year I Semester Examinations, October/November - 2020

CHEMISTRY

(Common to EEE, CSE, IT, ITE)

Time: 2 hours

Max. Marks: 75

Answer any five questions  
All questions carry equal marks

- - -

- 1.a) Write an account on linear combination of atomic orbital's.
- b) Describe energy level diagram for  $N_2$  and  $O_2$  and specify their magnetic property. [7+8]
- 2.a) What are the postulates of crystal field theory.
- b) Write a note on band structure of solids. [7+8]
- 3.a) Discuss about priming and foaming and caustic embrittlement of boiler water treatment.
- b) A water sample had the data:  $Mg(HCO_3)_2=16.8\text{mg/L}$ ,  $CaCO_3=20\text{ppm}$ ,  $MgCl_2=19\text{mg/L}$ ,  $MgSO_4=24\text{ Mg/L}$ ,  $NaOH=10\text{ ppm}$ . Calculate temporary, permanent and total hardness of water. [7+8]
- 4.a) Describe the steps involved in the treatment of domestic water.
- b) Calculate total and temporary hardness of water containing  $Ca^{2+}=60\text{ mg/L}$ ,  $Mg^{2+}=36\text{ mg/L}$ ,  $HCO_3^-=122\text{ mg/L}$ , Silica= $100\text{mg/L}$ . [7+8]
- 5.a) What is electrode potential? What are the factors affecting electrode potential. Write the constructions and working of glass electrode.
- b) What is galvanic corrosion? Give about corrosion control methods. [7+8]
- 6.a) What are primary and secondary cells? Give examples. Give the construction and working of lithium ion battery.
- b) What are the factors affecting rate of corrosion by metal. [7+8]
- 7.a) How HBr adds on to propene? Give the mechanism. Explain Markownikoff's rule.
- b) Write about absolute configuration. Give examples. [7+8]
- 8.a) Write the quantitative applications of UV-visible spectrophotometry.
- b) How do you identify  $-OH$ ,  $-CHO$ ,  $COOH$ ,  $NH_2$  groups in I.R spectroscopy? [7+8]

---ooOoo---