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Code No: 151AF

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

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

CHEMISTRY

(Common to EEE, CSE, IT, ITE)

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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= 100mg/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]

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