GIET MAIN CAMPUS AUTONOMOUS GUNUPUR – 765022

BD18001004

Registration No: | | | | | | | | | | |

Total Number of Pages : 2 AR-18 B.TECH

1st Semester (BACK PAPER) Examination-December 2019

BBSBS1022 ENGINEERING CHEMISTRY

Time : 3 Hours Maximum : 100 Marks

Answer ALL Questions

The figures in the right hand margin indicate marks.

PART – A: (Multiple Choice Questions) 10 x 2=20 Mark

Q.1. Answer *All* Questions

a Which molecule has the highest bond order
a. N_2 b. O_2 c.H_2 d. Li_2

b Which of the following species is the least stable
a. O_2 b. O_2^{2-} c. O_2^{-} d. O_2^{+}

c Which one of the following is paramagnetic?
a. N_2 b. O_3 c. NO d. CO

d _____ is used in carbonate conditioning.
(a) Na_2CO_3 (b) Na_2SO_4 (c) Na_2PO_4 (d) Calgon

e Dissolved oxygen in water causes_____
(a) Corrosion (b) Custic embrittlement (c) Both (d) None

f Temporary Hardness is removed y_____
(a) Conditioning (b) Boiling (c) Filtering (d) Screening

g In galvanic corrosion metal gets corroded at
(a)Anode (b) Cathode (c) Both (d) None

h Which of the following is an addition polymer?.
(a) Nylon -6,6 (b) Decron (c) Bakelite (d) HDPE

i PVC is used for
(a) Manufacture of tyres (b) Manufacture of pipes
(c) Manufacture of non-stick pans (d) Manufacture of cosmetics

j $F_2C=CF_2$ is monomer of
(a) Nylon (b) PMMA (c) Teflon (d) PVC

PART – B: (Short Answer Questions) 10X2=20 Marks

Q.2. Answer *ALL* questions

a Write the Schrodinger's wave equation in 1D box.

b What do you mean by Eigen value and Eigen function?

c Write the selection rule for transition of e^-.

d Why Coagulants are used in Lime-Soda method

e What are the disadvantages of Lime-Soda process?

f Which resins are used in the ion exchange process? Give example

g Define Dry & Wet corrosion

h What is Pilling – Bedworth rule?

i Define water line corrosion

j Explain nano composite.

PART – C: (Long Answer Questions) 4X15=60 Marks

Answer *ALL* questions

Q.3

a Draw the energy level diagram of NO & CO. 5

b Derive energy associated with vibrating diatomic molecule 10

OR

c Write different forms of Schrodinger's wave equations and mention the parameters involved 5

d Compare N_2, N_2^+, N_2^- in the increasing order of the stability ,bond strength& bond length 10

Q.4

a Explain Calgon Conditioning 5

b A sample of water on analysis has been found to contain following in ppm: 10

$Ca(HCO_3)_2$= 4.86 $Mg(HCO_3)_2$ =5.84 $CaSO_4$= 6.8 $MgSO_4$=8.4 $CaCl_2$=11 $MgCl_2$= 9.5

Calculate the temporary, permanent and total hardness.

OR

c Define custicembrittlement 5

d Explain the softening of water by lime soda process 10

Q.5

a Explain Inhibitors 5

b What is meant by differential aeration corrosion? Illustrate pitting corrosion 10

OR

c Explain Tinning.Write the advantages 5

d Define corrosion and Explain the dry corrosion with suitable example 10

Q.6

a Differentiate between HDPE and LDPE 5

b Write the polymerization, properties and uses of the following 10

(a) PTFE

(b) Nylon-6,

OR

c Difference between thermoplastic & thermosetting plastic. 5

d Write the polymerization, properties and uses of the following 10

(a) PVC

(b) PE

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