GIET MAIN CAMPUS AUTONOMOUS,
GUNUPUR - 765022

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

Total Number of Pages :2

B.TECH. DEGREE EXAMINATION-Nov-Dec.2018
End Semester Examination-I Semester
BBSBS 1022-Engineering Chemistry
(Regulations 2018)(Common to all Branches except CSE and Mechanical)

Time : 3 Hours Maximum : 100 Marks Question Code:51312

Answer ALL Questions

PART-A (10 X 2=20 Marks)

1. (a) Which molecule has the highest bond order [CO1][PO1]
   a. N_2 b. O_2 c.H_2 d. Li_2
   (b) The difference in energy levels of n=2 and n=1 of a particle in one dimensional box is 6 units of energy. In the same units what is the difference in energy levels of n=3 and n=2 for the above system. [CO1][PO1]
   (a) 4 (b) 5 (c) 9 (d) 10
   (c) Antibonding molecular orbitals are produced by [CO1][PO1]
   (a) Destructive interaction of atomic orbitals.(b) Constructive interaction of atomic orbitals.(c) The overlap of the atomic orbitals of two negative ions(d) All of the above
   (d) Soda lime is used in water treatment to remove Hardness from water. This process is known as? [CO2][PO1]
   (a) Haber process (b) Clark's process (c) Phase separation process (d) Pyroprocess
   (e) The corrosion is the reverse process of..... [CO3][PO1]
   (a) Metal extraction (b) Metal production (c) Metal heating (d) Metal moulding
   (f) Which of the following is not lost during corrosion? [CO3][PO1]
   (a) Malleability (b) Ductility (c) Conductivity (d) Colour
   (g) Which of the following methods is used to prevent corrosion in metals? [CO3][PO1]
   (a) Using pure metal (b) Using metal alloys(c) Modifying the properties of metal (d) All of the above
   (h) Nylon- 6,6 used in textile and plastics industries mostly contains [CO4][PO1]
   (a) Glutaric acid and hexamethylene diamine (b) Adipic acid and hexamethylene diamine (c) Glutaric acid and ethylenediamine (d) Adipic acid and ethylenediamine
   (i) The polymers that can't be recycled [CO4][PO1]
   (a) Thermoplastic (b) Elastomers (c) Thermosetting (d) All polymers
   (j) Which of the following is a thermosetting polymer? [CO4][PO1]
   (a) Polystyrene (b) Phenolic resins (c) Nylons (d) Polyolefins

PART-B (10 X 2=20 Marks)

2.(a) Build up the energy level diagram for carbon monoxide. [CO1][PO1]
   (b) Explain why only molecules having permanent dipole moment exhibit rotational spectra. [CO1][PO1]
   (c) Differentiate between permanent and temporary hardness of water. [CO2][PO1]
   (d) Why it is necessary to soften water before sending to domestic hot water systems? [CO2][PO1]
   (e) Why usually large quantities of detergents are required while cleaning cloths in hard water? [CO2][PO1]
   (f) How do the environmental factors such as pH and humidity affect the extent of corrosion? [CO3][PO1]
   (g) Write down Nernst's equation explaining each terms involved in it taking one example. [CO3][PO1]
   (h) Defining the entropy of a system give the trend of entropy of water in its three phases assigning reason thereof. [CO3][PO1]
   (i) Define biodegradable and non biodegradable polymer with example. [CO4][PO1]
   (j) What is degree of polymerization? Express the degree of polymerization of a homopolymer. [CO4][PO1]

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PART-C (4 X 15=60 Marks)

3. (a) (i)	Calculate the energy for a particle in 1-dimensional box of length L	[10][CO1][PO1]
(ii)	Write down Schrodinger wave equation. What is its significance to Chemistry?	[5][CO1][PO1]
	(or)	
(b) (i)	Describe the energy level diagram for homonuclear diatomic molecule with example mentioning the basis of building.	[8][CO1][PO1]
(ii)	Derive moment of inertia of a diatomic molecule as rigid rotor.	[7][CO1][PO1]
4. (a)(i)	Discuss the removal process of hardness of water by ion exchange method	[10][CO2][PO1]
(ii)	Distinguish between scale and sludge -	[5][CO2][PO1]
	(or)	
(b) (i)	What is meant by hardness of water? How can it be made suitable for domestic use?	[5][CO2][PO1]
(ii)	Discuss methods of softening hard water by Lima-Soda process.	[10][CO2][PO1]
5. (a) (i)	Describe the preventive measures to be taken to prevent the corrosion on metals.	[10][CO3][PO1]
(ii)	Write short note on Inhibitor-	[5][CO3][PO1]
	(or)	
(b) (i)	How do the environmental factors affect corrosion? Elaborate.	[10][CO3][PO1]
(ii)	Describe cathodic protection to control corrosion-	[5][CO3][PO1]
6. (a) (i)	Discuss the classification of polymers giving at least one example in each case.	[10][CO4][PO1]
(ii)	Explain Conducting polymers with suitable example-	[5][CO4][PO1]
	(or)	
(b) (i)	Describe the synthesis, characteristics and uses of Bakelite.	[10][CO4][PO1]
(ii)	Differentiate between thermoplastic and thermosetting plastic	[5][CO4][PO1]

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