Total No. of Questions: 6 *Total No. of Printed Pages:2*

Enrollment No.....

Faculty of Engineering

End Sem (Odd) Examination Dec-2017

EN2BS05 Chemistry-I

Programme: Diploma Branch/Specialisation: All

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

Q.1

i. The total number of orbital associated with principal quantum number n=3 is **1**
(a) 4 (b) 9 (c) 16 (d) 25

ii. According to n+l rule, electrons will first fill in which of the following orbital. **1**
(a) 4s (b) 3d (c) 3p (d) 3s

iii. Corrosion in iron is called **1**
(a) Rusting (b) Tarnishing (c) Cupelling (d) Poling

iv. Corrosion takes place at **1**
(a) Anodic area (b) Cathodic area
(c) Neutral area (d) All the above

v. On passing electricity, the positively changed ion in a solution move towards **1**
(a) Anode (b) Cathode (c) Both (a)and(b) (d) None of these

vi. The following combination form an acidic buffer **1**
(a) Acetic acid/sodium acetate
(b) Ammonium hydroxide/ammonium chloride
(c) Both (a) and (b)
(d) None of these

vii. The minimum pressure required to liquefy the gas at the critical temperature is called **1**
(a) Critical pressure (b) Atmospheric pressure
(c) Partial pressure (d) None of these

viii. "The equal volume of all gases under the same condition of temperature and pressure contains equal number of molecules" is stated by **1**
(a) Charle's law (b) Boyle's law
(c) Avagadro's law (d) All of these

ix. Beer-Lamberts law states that **1**
(a) A=εcl (b) A=ε/cl (c) A=cl (d) A=l

x. Separation of constituents of gases can be carried out using **1**
(a) IR spectroscopy (b) UV spectroscopy
(c) GC (d) None of these

P.T.O.

Q.2
i. State Pauli's exclusion principle. **2**
ii. Explain n+l rules with an example. **3**
iii. Discuss the study of periodicity of element giving special reference to: (a)Ionisation potential (b) Electron affinity **5**
OR iv. Discuss Bohr model of atom and write any one reason for its failure. **5**

Q.3
i. Give the effect of alloying of any two elements in steel. **4**
ii. Describe dry corrosion with example. **6**
OR iii. Discuss with neat diagram the extraction of iron from ore. Write equation involved in it. **6**

Q.4
i. Define pH value. **2**
ii. What is buffer solution? Give two examples. **3**
iii. State Faraday's laws of electrolysis and give its significance. **5**
OR iv. What is degree of ionisation? What are the factors influencing degree of ionisation. **5**

Q.5
i. Define critical temperature. **2**
ii. Write any three postulates of kinetic theory of gases. **3**
OR iii. Derive Van der Waal's gas equation for real gas. **5**
iv. Explain liquefaction of gases by Linde's process with neat labelled diagram **5**

Q.6
i. Differentiate absorption and emission spectra. **4**
ii. Explain the instrumentation of UV spectroscopy with block diagram. **6**
OR iii. Write any two applications of each of the following: **6**
(a)IR (b)NMR (c) GC

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Marking Scheme

Q.1	i.	(b) 9	**1**
	ii.	(d) 3s	**1**
	iii.	(a) rusting	**1**
	iv.	(a) anodic area	**1**
	v.	(b) cathode	**1**
	vi.	(a) acetic acid/sodium acetate	**1**
	vii.	(a) critical pressure	**1**
	viii.	(c) Avagadro's law	**1**
	ix.	(a) A=εcl	**1**
	x.	(c) GC	**1**
Q.2	i.	Statement	**2**
	ii.	Rule - 2 marks Example – 1 mark	**3**
	iii.	Explanation for Ionisation potential – 2.5 marks Explanation for Electron affinity – 2.5 marks	**5**
OR	iv.	Four Postulates – 4 marks Reason - 1 mark	**5**
Q.3	i.	Effect of each element (2 marks * 2 = 4 marks)	**4**
	ii.	Explanation - 4 marks Examples. – 2 marks	**6**
OR	iii.	Discussion - 3 marks Diagram - 2 marks Equation - 1 mark	**6**
Q.4	i.	Definition	**2**
	ii.	Definition – 2 marks At least two examples – 1 mark	**3**
	iii.	At least two Statements - 3 marks Significance. – 2 marks	**5**
OR	iv	Definition - 1 mark Factors involved (four) - 4 marks (1 mark * 4 = 4 marks)	**5**
Q.5	i	Definition.	**2**
	ii	At least three postulates 1 for each (1 mark * 3 = 3 marks)	**3**
OR	iii	Derivation	**5**
	iv	Explanation - 3 marks Diagram – 2 marks	**5**
Q.6	i.	At least two difference (2 marks * 2 = 4 marks)	**4**
	ii.	Block diagram – 3 marks Explanation – 3 marks	**6**
OR	iii.	Two application 3 marks for each (3 marks * 2 = 6 marks)	**6**

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