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[A-84]

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SARDAR PATEL UNIVERSITY
B. Sc. Examination (Sixth semester)
Monday, 4th April-2016
2.30 pm to 5.30 pm
US06CCHE04 (Inorganic Chemistry)

Total Marks: 70

Q-1 Choose the most appropriate option for each of the following. **[10]**

(i) At cathodic area _____ reaction takes place.
(a) reduction (b) oxidation (c) redox (d) chemical

(ii) _____ is corrosion inhibitor.
(a) Na_2CO_3 (b) $OC(NH_2)_2$ (c) $SC(NH_2)_2$ (d) $KMnO_4$

(iii) Immersed corrosion is fully explain by _____ .
(a) oxygen theory (b) peroxide theory
(c) carbonate theory (d) electro-chemical theory

(iv) Hardener alloy generally consist of mixture of constituent metals.
(a) 50-50 % (b) 25-75 % (c) 35-65 % (d) 45-55 %

(v) Substitutional alloy is a mixture of _____.
(a) metal with non-metal (b) metal with metal
(c) metal with carbon (d) all of these

(vi) _____ is non ferrous non-corroding alloy.
(a) Nickel steel (b) Manganese steel (c) Monel metal (d) Durion

(vii) _____ has maximum tendency to form polyhalide ions.
(a) Chlorine (b) Iodine (c) Fluorine (d) Bromine

(viii) _____ is XY-type interhalogen compound exist in two forms.
(a) IBr (b) ICl (c) ClF (d) none of all

(ix) In _____ cell, mercury act as intermediate electrode in the manufacture of NaOH.
(a) Nelson (b) Kellner-Solvay (c) Solvay's through (d) Castner-Kellner

(x) Charring of wood, paper and sugar etc are all _____ property of sulphuric acid.
(a) oxidizing (b) reducing (c) sulphonating (d) dehydration

Q-2 Attempt any ten questions of following. **[20]**

(a) Give any two evidences in the favour of "Protective layer theory".

(b) Explain immersed corrosion by "acid theory".

(c) State the 'Pilling-Bedworth' rule of oxidation corrosion.

(d) Explain any two effect of alloying.

(e) Give Tamman's rule.

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(f) How will you prepared useful alloy of copper with aluminum?

(g) Explain the term "inter halogen compound".

(h) Define polyhalides ions and polyhalides giving suitable example.

(i) Give the Lewis structure and hybridization scheme of central I-atom of IF_7 molecule.

(j) Explain Causticizing process for manufacture of sodium hydroxide.

(k) Explain sulphuric acid neutralizes alkalis to give two series of salts.

(l) Give the main uses of nitric acid.

Q-3 Explain the term passivity. Discuss different theories of passivity in brief. **[10]**

OR

Q-3 Discuss prevention of corrosion by the methods based on treatment of metals and methods based on the treatment of medium. **[10]**

Q-4 Attempt the following.

(a) Give the classification of alloys. Discuss non-ferrous alloys with suitable examples. **[05]**

(b) Write note on substitutional alloy. **[05]**

OR

Q-4 Attempt the following.

(a) Describe the fusion method for the preparation of alloys. **[05]**

(b) Write note on inter metallic comounds. **[05]**

Q-5 Attempt the following.

(a) Describe preparation, properties and structure of IF_5 molecule. **[05]**

(b) Explain $[ICl_2]^+$ ion has V-shaped species while $[IF_6]^-$ has distorted octahedral geometry. **[05]**

OR

Q-5 Attempt the following.

(a) Discuss the properties and preparation of iodine-monochloride. **[05]**

(b) Discuss shape of ICl_4^- ion on the bases of hybridization scheme. **[05]**

Q-6 Attempt the following.

(a) Describe contact process for the manufacture of sulphuric acid with neat labeled diagram of process. **[05]**

(b) Explain nitric acid is an important oxidizing agent. **[05]**

OR

Q-6 Attempt the following.

(a) Describe the manufacture of caustic soda by using Nelson cell. **[05]**

(b) How and why the chamber acid is concentrated? **[05]**