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SARDAR PATEL UNIVERSITY
B. Sc. Examination (Fifth semester)
Wednesday, 20th November-2013
10.30 am to 1.30 pm
US05CCHE04 (Inorganic Chemistry)

Total Marks: 70

Q-1 Answer the following questions. **[10]**

1. In NH_3 molecule, the N-atom in it is _____ hybridized.
   (a) sp (b) sp^2 (c) sp^3 (d) dsp^2

2. Strong acid like HNO_3 and H_2SO_4 can accept proton from _____ non aqueous solvent.
   (a) NH_3 (b) SO_2 (c) HF (d) CH_3COOH

3. _____ Solvents have hydrogen atom in their formula.
   (a) Acidic (b) Protonic (c) Protogenic (d) Protophilic

4. Ionic carbides regards as derivative of _____ and are called acetylides.
   (a) acetylene (b) allylene (c) ethylene (d) propylene

5. Permutit is an artificial zeolite, chemically it is a _____ orthosilicate.
   (a) sodium-aluminium (b) sodium-potessium
   (c) sodium-ammonium (d) sodium-calcium

6. The general composition of glass is _____.
   (a) Na_2SiO_3 (b) $Na_2OCaO6SiO_2$ (c) K_2SiO_3 (d) $CaSiO_3$

7. The glass containing _____ is used for optical purpose.
   (a) PbO (b) MnO_2 (c) CaO (d) K_2O

8. _____ is a mechanical process of making large number of similar articles economically.
   (a) pressing (b) Jolling (c) Kneading (d) Throwing

9. When two molecules of $R_3Si(OH)_3$ undergo polymerization, a _____ silicone is obtained.
   (a) cross linked (b) straight chain (c) cyclic (d) addition

10. Two or more simple molecules of the same substance polymerise and form a polymer of same empirical formula is known as _____ polymer.
    (a) Addition polymer (b) Homoatomic polymer
    (c) Condensation polymer (d) Coordination polymer.

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

1. Lewis acids are not always Lowry-Bronsted acids but all Lewis base are always Lowry-Bronsted bases.
2. Discuss auto-ionization of liquid SO_2.
3. Discuss ammonia as proton-accepter.
4. Discuss the uses of covalent carbides.
5. Discuss the structure of acetylide ion (C_2^{2-}).
6. Explain water softening by adding washing soda.
7. What is pyrex glass?
8. Give the physical properties of glass.
9. Write the basic raw material used for making ceramics.
10. Define the term inorganic polymer and give the classification of the same.
11. What is borazine?
12. Write properties of silicones.

Q-3 Attempt the following.

(a) Give brief account on Arhenious acid-base concept with its utility and limitations. **[05]**

(b) Discuss the role of liquid NH_3 as a solvent. **[05]**

OR

Q-3 Attempt the following.

(a) Discuss Bronsted and Lowry concept of acids and bases. Give example of conjugate acid and base pairs. **[05]**

(b) Discuss the general properties of ionizing solvent. **[05]**

Q-4 Attempt the following.

(a) Outline the ion-exchange method of demineralization of water. **[05]**

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

OR

Q-4 Attempt the following.

(a) Give preparation, properties and structure of Silicon Carbide. **[05]**

(b) Discuss the constitution of hydrogen peroxide. **[05]**

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Q-5 Define the term glass, Discuss the manufacturing process of glass. **[10]**

OR

Q-5 What are ceramics? Discuss the classification of ceramic in different way. **[10]**

Q-6 Attempt the following.

(a) What are silicones? Write properties and uses of silicones. **[05]**

(b) Discuss the structure of $(PNCl_2)_3$ molecule. **[05]**

OR

Q-6 Attempt the following.

(a) Write note on imides of sulphur. **[05]**

(b) Compare and contrast the chemical properties of organic benzene and inorganic benzene **[05]**

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