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SEAT No. \_\_\_\_\_

[62 & A-46]

SARDAR PATEL UNIVERSITY

B.Sc. Examination (Fifth semester, CBCS)

Thursday, 12-04-2018

Time: 02:00 P.M. to 05:00 P.M.

Subject: Chemistry

Course Code: US05CCHE04

Course Title: Inorganic Chemistry

Note: (1) All the questions are compulsory.

(2) Figures to right indicate full marks.

Total Marks: 70

**Que:1 Choose the most appropriate option for each of the following and rewrite the sentence.**

[10]

- 1 The basic character of \_\_\_\_\_ cannot be explained by Arrhenius concept.  
 (a) NaOH (b) KOH  
 (c) NH<sub>4</sub>NO<sub>3</sub> (d) NH<sub>3</sub>
- 2 \_\_\_\_\_ solvents may or may not have hydrogen in their formula and neither donate nor accept protons.  
 (a) Amphoteric (b) Aprotic  
 (c) Protogenic (d) Protophilic
- 3 Soap is the \_\_\_\_\_ salt of a higher fatty acid.  
 (a) potassium (b) calcium  
 (c) sodium (d) magnesium
- 4 Aluminium carbide is prepared by heating \_\_\_\_\_ with carbon in an electric furnace.  
 (a) Al<sub>2</sub>O<sub>3</sub> (b) AlPO<sub>4</sub>  
 (c) Al<sub>4</sub>C<sub>3</sub> (d) Al(OH)<sub>3</sub>
- 5 The material which retains their mechanical properties at high temperature is known as \_\_\_\_\_.  
 (a) Structural ceramics (b) Special ceramics  
 (c) Refractories (d) Porcelain
- 6 Fused silica glass is also known as \_\_\_\_\_ glass.  
 (a) Silica glass (b) Borosilicate glass  
 (c) Flint glass (d) Quartz
- 7 The formula of kaolinite is \_\_\_\_\_.  
 (a) Al<sub>2</sub>O<sub>3</sub>·2SiO<sub>2</sub> (b) Al<sub>2</sub>O<sub>3</sub>·2SiO<sub>2</sub>·2H<sub>2</sub>O  
 (c) K<sub>2</sub>O·Al<sub>2</sub>O<sub>3</sub>·6SiO<sub>2</sub> (d) None of these
- 8 The molecular formula of inorganic rubber is \_\_\_\_\_.  
 (a) [N<sub>2</sub>P<sub>2</sub>Cl<sub>2</sub>]<sub>n</sub>·P<sub>2</sub>Cl<sub>5</sub> (b) N<sub>3</sub>P<sub>3</sub>(NH<sub>2</sub>)<sub>6</sub>  
 (c) (N<sub>4</sub>P<sub>4</sub>Cl<sub>8</sub>) (d) [N<sub>2</sub>P<sub>2</sub>Cl<sub>2</sub>]<sub>n</sub>
- 9 The short chain vitreous polyphosphate polymers are used for deflocculation of \_\_\_\_\_.  
 (a) enzymes (b) vitamins  
 (c) proteins (d) food
- 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.

[20]

**Que:2 Answer the following in short. (ANY TEN)**

- 1 Water is amphoteric solvent, Explain.
- 2 List the general properties of Ionising solvents.
- 3 Discuss solubility of inorganic materials in liquid SO<sub>2</sub>.
- 4 Discuss the influence of hydrogen bonding in the physical properties of water.
- 5 State general properties of carbides.
- 6 Describe the water softening by calgon process.
- 7 Define the term annealing.
- 8 What is ceramics? Classify ceramic products according to their main field of uses.
- 9 Write the different steps involve in ceramic manufacturing.
- 10 Write the polymerization process for dialkyl-dihydroxy-silane.
- 11 Write hydrolysis reaction of borazine.
- 12 Write properties of silicones.

- Que:3 (a) Describe the reactions of liquid ammonia solvent under the following heads [05]  
(i) Metathetical reaction (ii) Solvolysis reaction.  
(b) Discuss Acid-Base reactions and formation of ammono salts. [05]

**OR**

- Que:3 (a) Give brief account on Arrhenius acid-base concept with its utility and limitations. [05]  
(b) Explain the term leveling and differentiating solvents. [05]
- Que:4 Discuss the preparation, properties uses and structure of Silicon silicide and Carborundum. [10]

**OR**

- Que:4 Discuss the manufacture of Hydrogen peroxide by electrolysis method and write physical and chemical properties of H<sub>2</sub>O<sub>2</sub>. [10]
- Que:5 (a) What are ceramics? Classify ceramic in different way. [05]  
(b) What is porcelain and china? Discuss raw material used for porcelain and china. [05]

**OR**

- Que:5 (a) Discuss the chemical properties of glass. [05]  
(b) Write note on pot furnace. [05]
- Que:6 (a) Give preparation and properties of white graphite. [05]  
(b) Discuss the preparation and properties of polyphosphonitrilic chlorides, [PNCl<sub>2</sub>]<sub>n</sub> [05]

**OR**

- Que:6 (a) Explain : [05]  
(i) Silicon rubber is especially valuable.  
(ii) Silicon resin requires heat treatment.
- (b) Discuss the polymeric compounds form by imide group with sulphur element. [05]

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