RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. FOURTH SEMESTER EXAMINATION, JUNE 2022

SECOND YEAR [BATCH 2020-23]

Date : 23/06/2022

INDUSTRIAL CHEMISTRY (HONOURS)

Time : 11 am – 1 pm

Paper : IX [CC9]

Full Marks : 50

Answer **any five** questions of the following: [5×10]

1. a) What is the importance of polymorphic transformation in ceramics engineering? Give proper examples.
   b) What are the differences between enamellings & glazing?
   c) What is sintering? Give examples. [4+4+2]

2. a) The density of Al_2O_3 is 3.96 g/cm^3. A ceramic part is produced by sintering alumina powder. It weights 80 g when dry, 92 g after it has soaked in water, and 58 g when suspended in water. Calculate the apparent porosity, the true porosity, and the closed porosity.
   b) What are advantages of low cement castable refractories?
   c) Draw and explain the Alumina-Silica phase diagram?
   d) What do you mean by NCC & CC? [3+2+3+2]

3. a) Why fused quartz has high thermal shock resistance?
   b) Explain the different steps involved in the manufacturing process of ceramic insulator. Mention its properties & uses. [3+(3+4)]

4. a) Write the chemical compositions of any two clay? Mention its properties and uses.
   b) Write a note on Modern Ceramics Processing. [(2+3)+5]

5. a) How does bone china body differ from porcelain body?
   b) Explain the shaping and drying process followed for pottery bodies.
   c) Briefly describe with a flow sheet the process of manufacture of white-wares. [3+3+4]

6. a) Explain the different steps involved in the manufacturing process of Silica refractory.
   b) What are the disadvantages of magnesia refractories?
   c) Why 20% Al_2O_3 remaining SiO_2 is avoided for refractory manufacturing? [5+2+3]

7. a) Which refractory is used in steel industries? Explain with suitable examples.
   b) Write short notes on RUL.
   c) Explain the different steps involved in the manufacturing process of Alumina bricks. Mention its properties. [3+3+4]

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