



'সমানো মন্ত্র: সমিতি: সমানী'

UNIVERSITY OF NORTH BENGAL

B.Sc. Honours 5th Semester Examination, 2021

DSE-P2-CHEMISTRY

INORGANIC MATERIALS OF INDUSTRIAL IMPORTANCE

Time Allotted: 2 Hours

Full Marks: 40

*The figures in the margin indicate full marks.
All symbols are of usual significance.*

Answer any four questions from the following

10×4 = 40

1. (a) Define glass. Write the main characteristics of glass. 1+2
(b) Differentiate between silicate and non-silicate glasses. 2
(c) Write the composition and properties of soda-lime and borosilicate glasses. 2+2
(d) Name two colouring agents used to make coloured glass. 1

2. (a) What are high technology ceramics? Give examples. 2
(b) What is the role of Gypsum in the manufacture of cement? 2
(c) What is meant by setting of cement? Give the reactions involved therein. 2+3
(d) What is white cement? 1

3. (a) Differentiate between compound and mixed fertilizers. 2
(b) Briefly describe the manufacture of ammonium phosphate, polyphosphate and superphosphate fertilizers. 6
(c) Why organic fertilizers are safer to use than chemical fertilizers? 2

4. (a) What are the functions of pigments in paints? 2
(b) Discuss the role of thinners and binders in paints. Give examples of each. 2+2
(c) Discuss briefly about Heat retardant and Fire retardant paints. 2+2

5. (a) Describe the working of a Fuel cell. What are the advantages and disadvantages of fuel cells? 4+1 $\frac{1}{2}$ +1 $\frac{1}{2}$
(b) Differentiate between primary and secondary batteries. 3

6. (a) Give examples of two ferrous and two non-ferrous alloys. 2
(b) Write the composition and uses of the following steels: 2+2
(i) Stainless steel
(ii) Tool steel.
(c) Discuss briefly nitriding and carburizing of steel. 2+2
7. (a) What are catalyst poisons and promoters? Give examples in each case. $1\frac{1}{2} + 1\frac{1}{2}$
(b) Write down different steps involved in homogeneous catalysis. How does it differ from heterogeneous catalysis? 4
(c) Explain Phase Transfer Catalysts with suitable example. 3
8. Write short notes on (any *four*): $2\frac{1}{2} \times 4 = 10$
(a) Fullerenes
(b) Carbon nanotubes
(c) Annealing of glass
(d) Solar cell
(e) Echo friendly paints
(f) Lead acid battery.

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