



'समानो मन्त्रः समितिः समानी'

**UNIVERSITY OF NORTH BENGAL**

B.Sc. Honours 5th Semester Examination, 2022

**DSE-P2-CHEMISTRY**

Time Allotted: 2 Hours

Full Marks: 40

*The figures in the margin indicate full marks.*

1. Answer any **five** out of the following questions: 1×5 = 5
  - (a) What is portland cement? Give an example.
  - (b) Name the metallic composites used for hydraulic cement.
  - (c) Prices of glass-apparatus depends on the different form of glass — Comment on.
  - (d) What do you mean by annealing of glass?
  - (e) What is biopolymer? Give an example.
  - (f) Give an example of high technology ceramic.
  - (g) Write down the effect of bio-fertilizer on soil.
  - (h) State the role of metallic oxide for bringing the colour in ceramics.
  
2. Answer any **three** of the following: 5×3 = 15
  - (a) (i) What is paint? What do you mean by weather quoting? 1+2
  - (ii) State the harsh effect of lead and cadmium in the preparation of paint. 2
  - (b) (i) Li-ion batteries dominate in the advance electrical devices — Comment on. 2
  - (ii) Describe the working principle of a solar cell. 3
  - (c) (i) Write briefly the role of epoxy polymers. 3
  - (ii) What do you mean by fillers and binders? 2
  - (d) (i) What is emulsifying agent? Give examples. 2
  - (ii) Write down the redox reactions occurring in galvanic cell. 3
  - (e) (i) Describe the manufacturing process for urea. 3
  - (ii) What is mineral fertilizer? How does it work? 2
  
3. Answer any **two** of the following: 10×2 = 20
  - (a) (i) How does a fuel cell differ from a battery? Illustrate with examples. 4
  - (ii) What do you mean by primary and secondary steelmaking? 3
  - (iii) Write down the properties of cast iron. State some applications. 3

- (b) (i) Nanomaterials are considered as an emerging heterogeneous catalyst for value-added productions — Discuss with examples. 4
- (ii) What is meant by catalyst poison? How does it work? 4
- (iii) Give an example of auto-catalysis. Write down its chemical-balanced equation. 2
- (c) Write down a short-note on the following:  $2\frac{1}{2} \times 4 = 10$   
Feldspar, Ceramics, Armoured glass, Weather-proof paint.
- (d) (i) Write down the working principle of rechargeable battery. Give example. 4
- (ii) Comment on the beneficial roles of agricultural waste on soil. 3
- (iii) Write down the use of semiconductor for design of a typical solar cell. 3

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