



বিদ্যাসাগর বিশ্ববিদ্যালয়  
**VIDYASAGAR UNIVERSITY**  
**Question Paper**

**B.Sc. Major Examinations 2022**  
(Under CBCS Pattern)  
**Semester - IV**  
**Subject : INDUSTRIAL CHEMISTRY**  
**Paper : SEC 2-T**

**Full Marks : 40**

**Time : 2 Hours**

*Candidates are required to give their answers in their own words as far as practicable.  
The figures in the margin indicate full marks.*

**Chemical Technology & Society**

**Group - A**

Answer any **four** of the following questions :

5×4=20

1. What is clean technology? How green chemistry is useful for clean technology?
2. What are pumps? Discuss their classifications in details.
3. What is distillation? Discuss the basic principle of distillation.
4. Write short note on the following : (i) extruders, (ii) emulgators.
5. Write a short note on scaling up of operations.
6. What is reciprocating pumps? Describe the importance of reciprocating pump.

P.T.O.

**Group - B**

Answer any *two* of the following questions :

10×2=20

7. Explain the principle of solvent extraction. What is liquid-liquid extraction process? What is the difference between solid-liquid extraction and liquid-liquid extraction?
  8. What is genetic engineering? Discuss its advantages and disadvantages.
  9. Discuss the synthesis, properties and uses of Nylon-6 and Nylon-66.
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VidyaSagar University

**Or,**  
**Paper - SEC 2-T**  
**Management, Costing and Plant Design**

Full Marks : 40

Time : 2 Hours

**Group - A**

Answer any *four* of the following questions :

5×4=20

1. What are the main objectives of financial management? Briefly explain.
2. What is break even analysis : Discuss the importance of break even analysis.
3. What are the legal aspects of safety in plant design?
4. What is economic order quantity and how do you calculate it?
5. What is marketing? What functions does it perform in the process of exchange of goods and service? Explain.
6. How does working capital affect both the liquidity as well as profitability of a business?

**Group - B**

Answer any *two* of the following questions :

10×2=20

7. What do you mean by project management? Explain the various phases of project management. Discuss the important characteristics of project.
  8. Discuss different types of cost indices used in cost estimation.
  9. What is working capital? How is it calculated? Discuss five important determinants of working capital requirement.
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Or,  
Paper - SEC 2-T  
Chemical sensors & Biosensor

Full Marks : 40

Time : 2 Hours

**Group - A**

Answer any *four* of the following questions :

5×4=20

1. Explain the measurement of oxygen pressure using Clark oxygen electrode.
2. What is ELISA? Describe the basic principle of ELISA.
3. What is immunosensor? Discuss on the working principle of immunosensor.
4. Explain how does a glucose biosensor only detect glucose.
5. What is Electrochemiluminescence? How is Electrochemiluminescence measured?
6. What is DNA sensor? How does a DNA biosensor work?
7. Write a brief note on Luciferase Biosensors.

**Group - B**

Answer any *two* of the following questions :

10×2=20

8. Discuss the basic principles and applications of potentiometry as chemical sensor.
  9. Describe the selective detection of gases using optical sensors. Discuss on the application of optical sensors in atmospheric chemistry and environmental science.
  10. Write short note on :
    - (i) Affinity biosensors
    - (ii) Calorimetric biosensors
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