

I B. Tech II Semester Supplementary Examinations, January/February - 2023
ENGINEERING CHEMISTRY
(Common to CE, ME, Agri. E)

Time: 3 hoursMax. Marks: 70

Answer any FIVE Questions ONE Question from Each Unit
All Questions Carry Equal Marks

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**UNIT-I**

1. a) Explain emulsion polymerization. [7M]  
b) Discuss the importance of biomedical polymers. [7M]

**(OR)**

2. a) Explain fabrication of plastics by extrusion moulding technique. [7M]  
b) Discuss bulletproof plastics. [7M]

**UNIT-II**

3. a) Explain the uses of electrochemical series. [7M]  
b) What is cathodic protection? How it controls the corrosion. [7M]

**(OR)**

4. a) What are secondary batteries? Explain working of Li ion batteries. [7M]  
b) Discuss factors affecting rate of corrosion. [7M]

**UNIT-III**

5. a) Explain applications of grapheme. [7M]  
b) Discuss the properties of lubricants. [7M]

**(OR)**

6. a) What is thermal analysis? Explain instrumentation of TGA. [7M]  
b) Explain the characterization of TiO<sub>2</sub> by TEM. [7M]

**UNIT-IV**

7. a) Calculate the gross and net calorific value of coal having the following [7M]  
composition: Carbon-86%, hydrogen-8%, sulphur-0.5%, nitrogen-1.5%,  
remaining ash, latent heat of steam-587 cal/g.  
b) Explain synthesis of petrol by Fisher Tropsch process. [7M]

**(OR)**

8. a) Write notes on liquefied petroleum gas. [7M]  
b) Discuss determination of fixed carbon in coal by proximate analysis. [7M]

**UNIT-V**

9. a) Explain desalination of saline water by electro-dialysis. [7M]  
b) Discuss briefly internal treatment methods for purification of water. [7M]

**(OR)**

10. a) Discuss how foaming and scales are formed in boiler and how to minimize their [7M]  
formation.  
b) Explain softening of hard water by zeolite process. [7M]

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