

- (b) Explain conventional and green chemistry route of production of adipic acid. Highlight the green chemistry principle involved. 5
- (c) What is the principle of cathodic protection method of corrosion control? Explain the method of Impressed current cathodic protection. 4
4. (a) What are the drawbacks of plain carbon steels? Explain special effects of the following metals on properties of alloy steels: 6
(i) Nickel (ii) Chromium (iii) Cobalt (iv) Tungsten
- (b) With a suitable diagram and electrode reactions, explain electrochemical mechanism of rusting of iron in neutral, aqueous medium. 5
- (c) Discuss the influence of any two chemical factors on adhesive action. 4
5. (a) With a schematic diagram, explain Fixed Bed Catalytic Cracking. Mention any two advantages of catalytic cracking over thermal cracking. 6
- (b) List various steps involved in powder metallurgy. Mention the aim of each step. Give any two advantages of powder metallurgy. 5
- (c) Explain 'sandwich panel' type layered composites with a suitable diagram. Mention their application. 4
6. (a) Define 'Paint'. Mention any four constituents of paint and state functions of each constituent. 5
- (b) A sample of coal has the following composition by mass : C = 80%, H = 4%, O = 6%, S = 3%, N = 2% and Ash = 5%. Calculate Gross and Net Calorific value using Dulong's's formula. 5
- (c) What is an alloy? Explain any four purposes of alloying with suitable examples. 5
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