

- Note: 1. Q1 is compulsory  
2. Solve any three from remaining

- Q1 Solve **any four** questions **20**
- A. Role of science & Technology in Sustainable design of products
  - B. Simultaneous engineering
  - C. Explain Product design for Environment.
  - D. What is PLM? State its need and scope and phases.
  - E. What is digital mockup? State its benefits and list software used for it.
- Q.2 A. What do you mean by Design for X. How will you use design for X tools **20**  
in the design process?  
B. Explain useful life extension strategies.
- Q.3 A. Explain the general framework of LCCA. **20**  
B. What is sustainable development? Explain role of science & technology in it.
- Q.4 A. Discuss new product development process **20**  
B. Explain cost analysis and life cycle approach in detail.
- Q.5 A. Explain the strategies for recovery at the end-of-life cycle **20**  
B. What is the virtual product development process? Write its applications and advantages.
- Q.6 A. Explain the product life cycle in detail with suitable example **20**  
B. Explain various reasons for implementation of PDM system. Explain various barriers for PDM implementation
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