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**B.E. (Mechanical Engineering) (Semester - I)**

**PRODUCT DESIGN AND DEVELOPMENT**

**(2008 Pattern) (Elective - I)**

*Time : 3 Hours]*

*[Max. Marks : 100*

*Instructions to the candidates:*

- 1) Answer any three questions from each section.*
- 2) Answers to the two sections should be written in separate books.*
- 3) Neat diagrams must be drawn wherever necessary.*
- 4) Figures to the right indicate full marks.*
- 5) Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator is allowed.*
- 6) Assume suitable data, if necessary.*

**SECTION - I**

- Q1)** a) Explain design by evolution and innovation? [10]  
b) Explain different factors in product design? [8]

OR

- Q2)** a) What is product? Write standardization in product design? [10]  
b) Write note on product development and product design? [8]

- Q3)** a) Write in detail about Technology Forecasting? [8]  
b) Explain in detail about Mission statement? [8]

OR

- Q4)** a) Explain in detail steps involved in Technical Questioning? [8]  
b) What is concept of customer wants? [8]

- Q5)** a) Explain in detail generating concepts? [8]  
b) Write in detail FMEA? [8]

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OR

- Q6)** a) Explain steps involved in product benchmarking? [8]  
b) Explain in detail concept selection-design evaluation? [8]

**SECTION - II**

- Q7)** a) Write note on application of Product Teardown Process? [10]  
b) Explain in detail about trend analysis? [8]

OR

- Q8)** a) Write in detail tear down method? [10]  
b) Explain the form diagram? [8]

- Q9)** a) What is concept design for assembly? [8]  
b) Explain in detail life cycle assessment? [8]

OR

- Q10)** a) Write note on DFX. [8]  
b) Explain the weighed sum assessment method? [8]

- Q11)** a) Write short notes on : [8]  
i) Benefits of Product life cycle  
ii) Emergence of PLM  
b) Write in detail different element of PLM. [8]

OR

- Q12)** a) Write note on Customer Involvement. [8]  
b) What is importance of product workflow? [8]

