

**B.Tech. – VIEP – MECHANICAL ENGINEERING  
(BTMEVI)**

**Term-End Examination**

**December, 2017**

00202

**BIMEE-010 : MECHANICAL SYSTEM DESIGN**

*Time : 3 hours*

*Maximum Marks : 70*

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**Note :** Answer any *five* questions. All questions carry equal marks.

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1. (a) What are the different types of engineering systems ? Describe the overall design process with the help of a block diagram. 7
- (b) Enumerate the factors responsible for the development and deployment of concurrent engineering in manufacturing industries. Describe any one of them. 7
2. (a) Explain the essential features of state theory approach applied to system analysis. 7
- (b) Explain the procedure for developing the design specifications of a heating duct insulation system. 7

3. (a) Discuss the need of modelling of a system.  
Explain the various types of modelling. 7
- (b) Explain the importance of optimization in a network model used in the automobile industry. 7
4. (a) Explain the significance of financial analysis for the evaluation of a system.  
How is it useful in the designing of a system ? 7
- (b) What are the objectives of an optimization process ? List the various techniques of multi-performance optimization. 7
5. (a) What are the elements of a decision problem ? Explain the method of taking decisions under uncertainty with a suitable example. 7
- (b) Discuss the advantages and limitations of simulation approach. 7

6. (a) Explain Bayes' theorem and discuss its applications. 7
- (b) Explain the black-box approach for system analysis with a suitable example. 7
7. (a) Describe the procedure for formulating a mathematical model of an optimization problem with a suitable example. 7
- (b) Explain the various steps involved in simulation of inventory control. 7
8. Write short notes on any *four* of the following :  $4 \times 3 \frac{1}{2} = 14$
- (a) Time Value of Money
- (b) Graph Modelling and Analysis
- (c) Feasibility Assessment
- (d) Utility Value
- (e) Spreadsheet Simulation
- (f) Computer Application in Simulation
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