

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

00363 **Term-End Examination**

December, 2018

BIMEE-010 : MECHANICAL SYSTEM DESIGN

Time : 3 hours

Maximum Marks : 70

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

1. (a) Discuss the need for modelling of a mechanical system. Briefly explain the various types of models used in mechanical system design. 7
- (b) How is feasibility assessment important in system evaluation ? Discuss the significance of financial analysis. 7

2. (a) Explain how you would develop the design specifications of a product for inclusion in needs statement. 7
- (b) Give a list of optimization techniques used for analysis of a system. Describe any one technique in brief. 7
3. (a) Discuss the factors that have prompted the development and rapid deployment of concurrent engineering in industries. 7
- (b) Briefly explain iconic, analog, mathematical and simulation models. List the limitations of using models in mechanical system design and analysis. 7
4. (a) Explain the following : 7
- (i) Model with inequality constraints
- (ii) Time value of money
- (b) Discuss network flow problem with the help of an example. 7

5. (a) Describe the procedure for formulating a mathematical model for a compound bar system. 7
- (b) What do you understand by decision tree analysis ? How is it useful in mechanical system design ? Explain. 7
6. Write short notes on the following : $4 \times 3 \frac{1}{2} = 14$
- (a) Expected Monetary Value
- (b) Graph Modelling and Analysis Process
- (c) Optimization Model with Two Decision Variables
- (d) Inventory Control in Production Unit
-