No. of Printed Pages : 3 | BIMEE-010 |

B. Tech. VIEP-MECHANICAL ENGINEERING

(BTMEVI)

Term-End Examination, 2019

BIMEE-010 : MECHANICAL SYSTEM DESIGN

Time : 3 Hours] [Maximum Marks : 70

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

1. (a) Describe the Black-box Approach and discuss its essential features. [7]

   (b) Discuss the general goals and purposes of an optimization process. [7]

2. (a) Explain how a mathematical model is formulated for a compound bar system. [7]

   (b) What is the importance of probability in Decision Analysis ? Explain Baye's theorem and give its applications. [7]

3. (a) Draw the network diagram from the information provided in the Table. Find the critical path and total duration of the project. [7]

Activity	Duration (Days)
1-2	9
1-3	8
1-4	15
2-4	5
3-4	10
4-5	2

(b)   What is simulation ? Explain the steps followed in developing simulation model of a mechanical system.   [7]

4.   (a)   Briefly describe different approaches and techniques used in concurrent engineering. [7]

(b)   What is the importance of understanding the problem environment ? Discuss the hierarchical nature of engineering problem.   [7]

5.   (a)   Discuss the need of modelling for studying a mechanical system. Briefly describe the different types of model and their purpose.   [7]

(b)   What are the elements of a decision problem ? With suitable example, explain the method of taking decision under uncertaintes.   [7]

6.   Write short notes on the following :   [4x3.5=14]

(a)   Advantages of system approach

(b)   Utility value

(c)   Time value of money

(d)   Probability density function

----- X -----