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

Term-End Examination

00643

June, 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 importance of systems approach. What factors have contributed to the extensive usage of systems approach in resolving engineering problems ? 7

    (b) Discuss the approach of concurrent engineering with suitable examples. 7

2. (a) Explain the black-box approach for system analysis with a suitable example. 7

    (b) What are the different types of engineering systems ? Explain the four essential attributes in defining a system. 7

3. (a) What are the various types of models used in engineering systems ? Explain any one type of model. 7

   (b) Explain graph modelling and analysis process in engineering system design. 7

4. (a) Discuss the goals and objectives of any optimization process. 7

   (b) Explain network flow problem with the help of an example. 7

5. (a) Explain briefly the analytical methods of optimization and combinational optimization. 7

   (b) Discuss the role of feasibility assessment in evaluating any system. 7

6. (a) Discuss the need of modelling for studying a system. How does it help in solving problems ? 7

   (b) What do you understand by decision tree analysis ? How is it useful in making decisions ? Explain. 7

7. (a) What is simulation ? Explain the steps followed in simulation. 7

(b) Describe the procedure for formulating a mathematical model for a compound bar system. 7

8. Write short notes on any *four* of the following : $4 \times 3\frac{1}{2} = 14$

(a) Time Value of Money

(b) Planning Horizon

(c) Expected Monetary Value

(d) Limitation of Simulation Approach

(e) Advantages of System Approach

(f) Uncertainty Risk and Conflict Probability