(Following Paper ID and Roll No. to be filled in your Answer Books)

Paper ID : 2012242   Roll No. ☐☐☐☐☐☐☐☐☐☐

B.TECH.

Regular Theory Examination (Odd Sem - VII),2016-17
MECHANICAL SYSTEM DESIGN

Time : 3 Hours   *Max. Marks : 100*

Section - A

1. **Attempt all parts. All parts carry equal marks. Write answer of each part in short.** **(10×2=20)**

   a) What is the role of engineer in mechanical system design?

   b) What is a system?

   c) Give the characteristics of a problem.

   d) List the types of tools used for system development.

   e) State black-box approach.

   f) What are the types of system Evaluation?

   g) Draw any three symbols used in network.

   h) What is system feasibility

   i) List three typical engineering application of optimization

   j) Define Baye's theorem.

Section - B

Note: Attempt any five questions from this section.

(5×10=50)

2. List the type of system available and explain any two type of system in detail?

3. Briefly explain elements of a system.

4. What is system Development Life cycle (SDLC)? What are the stages in SDLC?

5. Explain the following, concerned with system theories:

   a) Static theory approach

   b) Component integration approach.

6. Enumerate the different steps and symbols used in network.

7. Explain the following:

   a) Design vector.

   b) Constraint Surfaces

   c) Objective function.

8. Explain the aluminium expression system with suitable example.

9. Explain the steps involved in simulation in detail?

Section - C

Note: **Attempt any two questions from this section.**

(2×15=30)

10. a) Explain different technique involved in defining a problem **(8)**

b) Explain phases of system development life cycle. **(7)**

11. a) Calculate the height of a right circular cone of largest volume that can be enclosed by a sphere of radius. **(8)**

b) Briefly explain the different stages of evaluation. **(7)**

12. A producer of boats has estimated the following distribution of demand for a particular kind of boat:

No. of boats demanded	0	1	2	3	4	5	6
Probability	0.10	0.31	0.27	0.16	0.11	0.03	0.02

Each boat costs him Rs. 6000 and he sells them for Rs.10,000 each. Any boats that are left unsold at the end of the season must be disposed of for Rs. 5000 each. How many boats should be in stock so as to maximize his expected profit.

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