Roll No. | | | | | | | | | | | | | **Total No. of Pages : 02**

Total No. of Questions : 08

M.Tech (ME) (Sem.–1)

ADVANCED DESIGN OF MECHANICAL SYSTEMS

Subject Code : MTME-103

M.Code : 74717

Date of Examination : 20-05-2023

Time : 3 Hrs. **Max. Marks : 100**

INSTRUCTIONS TO CANDIDATES :

1. **Attempt any FIVE questions in all, out of EIGHT questions.**
2. **Each question carries TWENTY marks.**

1. a) Explain the system design approach for product design.

   b) Describe briefly the integrated process design approach for robust product design. Explain the process to achieve the robustness in a system.

2. a) Discuss in detail the objectives and constraints of design approach used in product design.

   b) Explain the need of simulating the product performance and manufacturing processes digitally.

3. a) Explain the steps involved in conceptualization, refinement and management of the industrial design process.

   b) Discuss the procedure for assessing the quality in industrial design.

4. a) Enumerate the common problems encountered in materials selection for a product. Suggest the remedial methods for the problems.

   b) Explain the influence of materials on form design of castings.

5. a) Discuss the design consideration for minimum material usage and remanufacturing.

   b) How component design can be efficiently planned to facilitate machining?

6. a) Give the difference between manual, automatic and robotic assembly.

   b) Discuss various handling and insertion processes used in the assembly process.

7. **a) Write short note on any one of the following:**

   i) Design for recyclability

   ii) Process Capability & methods to increase the process capability.

   b) Discuss key principles of Design for Environment. Differentiate between global, regional and local environmental issues.

8. a) In what ways can DFE help to improve the quality of a product, in terms of its functionality, reliability, durability, and reparability?

   b) Write in brief on integration of CAD, CAM & CAE tools.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.