CBCS SCHEME

USN | | | | | | | | | | |

15ME744

Seventh Semester B.E. Degree Examination, Jan./Feb. 2021
Design for Manufacturing

Time: 3 hrs. Max. Marks: 80

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. What is DFM and DFMA? Explain. **(04 Marks)**
b. Explain major phases of Design. **(06 Marks)**
c. List and explain the guidelines for design for manufacturing. **(06 Marks)**

OR

2 a. Explain any one quantitative method for material selection process. **(04 Marks)**
b. What is process capacity? Explain both CP and CPK. **(06 Marks)**
c. Explain standard deviation, skewness and kurtosis. Calculate standard deviation for producing spindles by cylindrical grinders with a specification of spindle diameter being equal to 1.600 ± 0.008, taking $Cp = 1.0$. **(06 Marks)**

Module-2

3 a. What is selective assembly? Explain. **(04 Marks)**
b. What are secondary machining operations? Explain. **(06 Marks)**
c. Write a note on laminated shims. **(06 Marks)**

OR

4 a. Explain true position theory. **(04 Marks)**
b. Compare Co-ordinate and true position system with the help of figure. **(06 Marks)**
c. What is a fixed and floating fastener? If an M14 × 2 bolt is used to fasten two parts together where part A has clearance hole diameter of 14.4/14.2, and part B is threaded with M14 × 2 to accommodate the bolt, calculate the position tolerance. **(06 Marks)**

Module-3

5 a. Write a note on doweling procedure. **(04 Marks)**
b. Explain design features to facilitate machining. **(06 Marks)**
c. What are datum features and also explain changing datum. **(06 Marks)**

OR

6 a. Explain counter sunk screw. **(04 Marks)**
b. What is design for economy and design for Clampability. **(06 Marks)**
c. Explain design for accessibility and design for assembly. **(06 Marks)**

Module-4

7 a. What is Parting line and cored holes in casting process. **(04 Marks)**
b. What are the design considerations of casting process? **(06 Marks)**
c. Explain guidelines for welded assemblies. **(06 Marks)**

OR

8	a.	What is Casting Process? Explain types of casting?	**(04 Marks)**
	b.	Explain design considerations for pattern, mould and machined holes.	**(06 Marks)**
	c.	List the points, which are must for a designer to design welding components.	**(06 Marks)**

Module-5

9	a.	What are the principles followed in designing forged components.	**(04 Marks)**
	b.	Write basic rules for the design of powder metallurgy parts.	**(06 Marks)**
	c.	Explain injection moulding system and injection moulding cycle.	**(06 Marks)**

OR

10	a.	Explain design consideration in forging.	**(04 Marks)**
	b.	What are the requirements for the design of components for powder metallurgy?	**(06 Marks)**
	c.	List and explain design requirements and rules for injection moulding.	**(06 Marks)**

* * * * *