

CBCS SCHEME

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20MCM242

Second Semester M.Tech. Degree Examination, July/August 2022 Tooling for Manufacture in Automation

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Obtain an expression for the shear angle in orthogonal metal cutting using Lee and Shaffer model. How does this differ from the expression obtained using Ernst-Merchant model? (10 Marks)
- b. List the parameters to be considered in the selection of inserts. Mention the reasons for preferring inserts of specific shapes. (10 Marks)

OR

- 2 a. Write a note on coating of cutting tools. (10 Marks)
- b. List the desirable properties of cutting tools. Identify the properties which help in deciding the cutting speed, feed rate and depth of cut. (10 Marks)

Module-2

- 3 a. Enumerate the factors to be considered in the optimization of machining system. (10 Marks)
- b. Explain with a neat sketch the modular tool-holding system. (10 Marks)

OR

- 4 a. What are the different ways in which tool holder-spindle connection can exist? Explain. (10 Marks)
- b. With a neat sketch, explain the working of a hydraulic chuck tool holder. (10 Marks)

Module-3

- 5 a. What are the factors influencing the method of clamping? (10 Marks)
- b. Explain with a neat diagram strap clamp. (10 Marks)

OR

- 6 a. What are the machine considerations in the selection of fixtures? (10 Marks)
- b. Illustrate with two neat sketches how rest pads can be used for locating work pieces. (10 Marks)

Module-4

- 7 a. Write a note on flexible fixturing system. (10 Marks)
- b. List the advantages of automatic pallet changing system. Mention the working principles of the two types of automatic pallet changing system. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8=50, will be treated as malpractice.

OR

- 8 a. Write a note on fixturing in FMS. (10 Marks)
b. How are dowel-pin based and T-slot based modular fixtures used? Explain. (10 Marks)

Module-5

- 9 a. Enumerate any five types of tools that can be produced using epoxy resin. (10 Marks)
b. What are the general considerations for urethane dies? (10 Marks)

OR

- 10 a. Mention the steps to be followed in calculating forces for urethane pads. (10 Marks)
b. Illustrate with neat sketches, how the following operations are performed using urethane dies:
i) Radius forming in a steel workpiece.
ii) Maintaining flatness in a steel workpiece supported by urethane pads. (10 Marks)

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