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10ME45

Fourth Semester B.E. Degree Examination, June/July 2019
Manufacturing Process - II

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting atleast TWO questions from each part.

PART - A

- 1 a. Briefly explain the mechanism and types of chip formation. (10 Marks)
b. The following data refer to an orthogonal cutting process. Chip thickness 0.62mm , feed 0.2mm , rake angle 15° . Calculate chip reduction co-efficient and shear angle. (05 Marks)
c. Define Tool life. List out the factors that affect tool life. (05 Marks)
- 2 a. Clearly explain the different factors that are to be considered during the selection of a cutting tool material. (06 Marks)
b. Discuss the salient features of the following cutting tool materials :
i) High speed steel ii) Carbides iii) CBN. (09 Marks)
c. Briefly explain the desirable properties of cutting fluids. (05 Marks)
- 3 a. Differentiate between a Turret lathe and a Capstan lathe. (06 Marks)
b. Explain with neat sketch, Open and Cross belt drive mechanism of a planer. (08 Marks)
c. With neat sketches, explain any three operations performed on a Turret Lathe. (06 Marks)
- 4 a. With simple sketches, explain the following drilling machine operations :
i) Reaming ii) Boring iii) Tapping iv) Trepanning. (08 Marks)
b. List the main components of CNC machine tool and explain their functions. (06 Marks)
c. Find the time required for drilling a 18mm hole in a work piece having thickness of 50mm. Assume cutting speed of 12 meters/minute and feed 0.2mm/revolution. Neglect the length of approach. (06 Marks)

PART - B

- 5 a. Clearly explain Up milling and Down milling. (10 Marks)
b. List the different types of milling machines and with a neat sketch, explain vertical milling machine. (10 Marks)
- 6 a. With a neat sketch, explain the principle of working of a center type cylindrical grinding machine. (10 Marks)
b. Write a note on the following : i) Abrasives ii) Selection of a grinding wheel. (10 Marks)
- 7 a. With a neat sketch, explain the lapping process. State advantages and disadvantages. (10 Marks)
b. Briefly explain the honing process with a neat sketch. State its advantages, disadvantages and applications of honing process. (10 Marks)
- 8 Explain with neat sketches, principal , need , equipment , operation , advantages and disadvantages of the following non – Traditional processes :
a. Ultrasonic Machining equipment (USM). (10 Marks)
b. Abrasive Jet Machining (AJM). (10 Marks)

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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.