CBCS SCHEME

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17AU46

Fourth Semester B.E. Degree Examination, Dec.2019/Jan.2020
Manufacturing Process – II

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. Briefly explain the elements of single point cutting tool with a neat sketch. **(06 Marks)**

b. Explain the following types of tool wear with necessary sketches.
i) Crater wear ii) Flank wear. **(06 Marks)**

c. Derive an expression for shear angle in terms of chip thickness ratio and rake angle for orthogonal cutting. **(08 Marks)**

OR

2 a. While machining Carbon steel by a tungsten cobalt steel tool, it was observed that the tool life was 60 minutes for cutting speed of 50m/min. Determine the tool life for a cutting speed of 40m/min using Taylor's tool life equation, taking the index n as 0.143. **(06 Marks)**

b. Briefly explain the desirable properties of cutting tool materials. **(06 Marks)**

c. Explain the three zones of heat generation in metal cutting. **(08 Marks)**

Module-2

3 a. Explain with neat sketch the main parts of turret lathe. **(12 Marks)**

b. List different operations on lathe and explain with a neat sketches the following operations :
i) Taper turning ii) Knurling iii) Facing. **(08 Marks)**

OR

4 a. Sketch and illustrate the fundamental parts of a horizontal shaping machine. **(10 Marks)**

b. Explain the working principle of planning machine. **(05 Marks)**

c. A mild steel plate of dimensions 400 × 800 × 30mm is to be shaped along its wider face. The ratio of return time to cutting time is 2 : 3 and the feed per cycle is 2mm. Tool approach and the over travel respectively are 50mm each. Calculate the machining time required for machining the given plate with HSS tool. Assume the average cutting speed for MS material 24m/min. **(05 Marks)**

Module-3

5 a. Explain the milling cutter nomenclature. With a neat sketch. **(10 Marks)**

b. What is indexing in milling operation? Clearly discuss about compound and angular indexing. **(10 Marks)**

OR

6 a. Write a note on the following : i) Abrasives ii) Bonding process. **(10 Marks)**

b. With a neat sketch, explain the centre less grinding machine. **(10 Marks)**

Module-4

7 a. With a neat sketch, explain briefly the construction and working principle of sensitive drilling machine. **(10 Marks)**

b. With a neat diagram, explain the constructional features of continuous surface broaching machine. **(10 Marks)**

OR

8 a. What is honing? With a neat sketch, explain clearly the horizontal honing machine. **(10 Marks)**

b. Write a short notes with necessary sketches on :
i) Super finishing process ii) Lapping process. **(10 Marks)**

Module-5

9 a. Explain with a neat sketch, the working principle of ultrasonic machining process and state its advantages. **(10 Marks)**

b. With a neat sketch, briefly explain the working principle involved in water jet machining with advantages, disadvantages and applications. **(10 Marks)**

OR

10 a. Explain with a neat sketches, the working principle of electron beam machining with advantages and applications. **(10 Marks)**

b. Explain briefly the principle of EDM with a neat sketch. List the various factors affecting the MRR in EDM process and explain any one of them. **(10 Marks)**

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