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Manufacturing Process-II VTU CBCS Question Paper Set 2018

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CBCS Scheme

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

15AU46

Fourth Semester B.E. Degree Examination, Dec.2017/Jan.2018
Manufacturing Process - II

Time: 3 hrs. Max. Marks: 80

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

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

Module-1

1 a. With suitable sketches, explain different types of chips produced during machining. **(06 Marks)**

b. The following data refer to an orthogonal cutting process. Chip thickness 0.62mm feed 0.2mm , rake angle 15^0. Calculate chip reduction co-efficient and shear angle. **(05 Marks)**

c. Define tool life and list the factors that affect tool life. **(05 Marks)**

OR

2 a. What are the desirable properties or characteristics of cutting tool material and list the different cutting tool materials? **(08 Marks)**

b. List the various methods of measuring chip – tool interface temperature. Explain briefly tool – work thermocouple method of measuring it. **(08 Marks)**

Module-2

3 a. With a neat sketch, explain the constructional features of a Capstan lathe. **(10 Marks)**

b. Differentiate between Turret lathe and Capstan lathe. **(06 Marks)**

OR

4 a. How Shapers are classified? Explain briefly "Quick Return Mechanism" used in shaper, with neat sketch. **(10 Marks)**

b. Differentiate between Shaper and Planer. **(06 Marks)**

Module-3

5 a. With a neat sketch, explain the constructional features of horizontal milling machine. **(10 Marks)**

b. Differentiate up milling and down milling, with a neat sketch. **(06 Marks)**

OR

6 a. With a neat sketch, explain clearly the construction and working principle of cylindrical grinding machine. **(10 Marks)**

b. List the various grinding wheel abrasives and bonding processes. **(06 Marks)**

Module-4

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

b. With suitable sketches, explain the following operations using drilling machine : **(06 Marks)**
i) Tapping ii) Counter boring.

OR

8 a. Briefly explain the honing process with a neat sketch. State its advantages and disadvantages. **(08 Marks)**

b. With a neat sketch, explain the Lapping process. State its advantages and disadvantages. **(08 Marks)**

Module-5

9 a. Explain the working principle and operation of Laser Beam machining (LBM) with a neat sketch. State its advantages and disadvantages. **(08 Marks)**

b. Explain with neat sketch, Plasma Arc Machining (PAM). Give its merits and demerits. **(08 Marks)**

OR

10 a. With the help a neat diagram, explain construction and working principle of Ultrasonic Machining (USM). **(08 Marks)**

b. Sketch and explain the principle and operation of Abrasive Jet Machining (AJM). Give its merits and demerits. **(08 Marks)**

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15AU46

Fourth Semester B.E. Degree Examination, June/July 2017

Manufacturing Process – II

Time: 3 hrs. Max. Marks: 80

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

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.

Module-1

1 a. Explain the nomenclature of a single point cutting tool with a neat sketch. **(04 Marks)**

b. With neat sketches, explain the different types of chips produced during metal cutting. **(06 Marks)**

c. Draw Merchant's circle diagram and derive the Ernst-Merchant's solution, $2\phi + \beta - \alpha = \frac{\pi}{2}$ when ϕ = shear plane angle, β = friction angle, α = rake angle. **(06 Marks)**

OR

2 a. Explain the properties that are to be considered during the selection of a cutting tool material. **(06 Marks)**

b. Briefly explain the different types of cutting fluids. **(05 Marks)**

c. With a neat sketch, explain the zones of heat generation in metal cutting. **(05 Marks)**

Module-2

3 a. With a neat sketch, explain constructional features of a turret lathe. **(08 Marks)**

b. With neat sketches, explain any four operations performed on lathe. **(08 Marks)**

OR

4 a. Explain the construction and working principle of a shaping machine with a neat sketch. **(08 Marks)**

b. Explain the construction and working of a planing machine with a neat sketch. **(08 Marks)**

Module-3

5 a. Explain horizontal milling machine with a neat sketch. **(10 Marks)**

b. Explain up milling and down milling with neat sketches. **(06 Marks)**

OR

6 a. Write a note on grade and structure of grinding wheel. **(04 Marks)**

b. With a neat sketch, explain the constructional features of a centreless grinding machine. **(08 Marks)**

c. Explain the factors to be considered while selecting a grinding wheel. **(04 Marks)**

Module-4

7 a. Classify drilling machines. Explain the nomenclature of a drill bit with a neat sketch. **(06 Marks)**

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

OR

8 a. With a neat sketch, explain the principle of lapping. **(08 Marks)**

b. With a neat sketch, explain the principle of honing. **(08 Marks)**

Module-5

9 a. Explain the need for non-traditional machining. **(06 Marks)**

b. Explain laser beam machining with a neat sketch. Mention its applications. **(10 Marks)**

OR

10 a. With a neat sketch, explain the working principle of ultrasonic machining process. Mention its advantages. **(08 Marks)**

b. With a neat sketch, explain the working principle of electron beam machining process. State its advantages. **(08 Marks)**

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