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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Second Semester, M.Tech. - Mechanical Engineering (MCIM)

Semester End Examination; May/June - 2019

Newer Machining Technique

Time: 3 hrs

Max. Marks: 100

Note: Answer **FIVE** full questions, selecting **ONE** full question from each unit.

UNIT - I

- 1 a. Derive hard machining and enumerate the technological process including hard machining with example. 10
- b. Explain briefly thermal consideration and tool wear in hard machining process. 10
- 2 a. Explain the requirement of cutting tool material in hard machining and mention the applications of hard machining. 10
- b. What are the parameters considered in characterization of hard machining process? Explain any two of them. 10

UNIT - II

- 3 a. Sketch and explain the working principle of NDM with internal aerosol supply with an external atomizer. 10
- b. Discuss the principal ways to reduce both ecological and economical impacts of MWFs. 10
- 4 a. Classify NDM processes and explain with neat sketch two options of NDM with external aerosol supply. 10
- b. What are the effects of reinforcement particles on chip formation in machining of particulate reinforced MMC? Explain briefly. 10

UNIT - III

- 5 a. Discuss the process in mould manufacture. 10
- b. Explain the tool path selection using cutting force prediction in five axis mould. 10
- 6 a. Explain with sketch the hydro static head of the ball roller system related to work piece roughness. 10
- b. Explain the tool path selection using cutting force prediction in three axis mould. 10

UNIT - IV

- 7 a. Sketch and explain the abrasive flow machining process. 10
- b. Explain with neat sketch EDM with ultrasonic assistance process. 10
- 8 a. What are the variables and responses of abrasive flow machining process? Explain briefly. 10
- b. Sketch and explain the Electro Chemical Discharge Grinding (ECDG) Process. 10

UNIT - V

- 9 a. Explain the machining effects at the micro scale when,
 - i) Shear stress on shear plane 10
 - ii) Chip thickness and resisting shear stress
- b. Classify the nano machining process. Explain briefly. 10
- 10 a. What are the parameter effects on theoretical basis of nano machining? Explain any two of them. 10
- b. Distinguish between conventional machining and nano metric machining. 10

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