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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; June - 2017

Newer Machining Techniques

Time: 3 hrs *Max. Marks: 100*

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

UNIT - I

1 a. Write the parameter considered in characterization of the hard machining process, explaining any two. 10

b. Briefly explain the application of Hard machining process. 10

2 a. Define hard machining and mention the technological process including hard machining with example. 10

b. With a sketch, explain the typical wear pattern of a PCBN tool corresponding to saw tooth chip formation 10

UNIT - II

3 a. Define near dry machining and explain with a sketch 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. Explain the concept of the oil on water NDM with a sketch and list the any three advantages and disadvantages of NDM with external aerosol supply. 10

b. Explain the effect of reinforcement particles on Residual Stress related to Surface integrity in matching of MMC. 10

UNIT - III

5 a. Discuss the process in mould manufacture. 10

b. Explain the tool path selection using cutting force prediction in three axis Case. 10

6 a. With a schematic diagram, explain the mechanistic model for cutting force estimation. 10

b. With a neat sketch, explain the hydrostatic head of the ball roller system related to work piece roughness. 10

UNIT - IV

7 a. Mention the elements of AFM and discuss the variables and responses of abrasive flow machining process. 10

b. With a schematic diagram explain the EDM with ultrasonic assistance process. 10

8 a. Explain magnetic float polishing with a neat sketch and list any four application of AFM. 10

Contd…..2

b. Explain the following with neat sketch :

i) Electrochemical discharge grinding 10

ii) Brush erosion dissolution mechanical machining.

UNIT - V

9 a. Classify the Nano machining. 10

b. Mention the parameter effects on theoretical basis of Nano machining and explain any two. 10

10 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. Compare Nano metric machining and Conventional machining. 10

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