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06ME/IP/IM/MA/AU45

Fourth Semester B.E. Degree Examination, June 2012
Manufacturing Process - II

Time: 3 hrs.

Max. Marks:100

Note: Answer FIVE full questions, selecting atleast TWO questions each from Part - A and Part - B.

PART - A

- 1
 - a. Explain the geometry of single point cutting tool with neat sketches. (08 Marks)
 - b. Derive $F_S = F_R \cos (\phi + \beta - \delta')$ from Merchant's circle diagram. (08 Marks)
 - c. What is the effect of cutting speed and depth of cut on tool life? (04 Marks)
- 2
 - a. Discuss the following tool materials as regards to composition, manufacturing and applications : i) HSS ii) Ceramics. (08 Marks)
 - b. Explain tool work thermocouple technique for measurement of tool tip temperature. (08 Marks)
 - c. State the desirable properties of cutting fluids. (04 Marks)
- 3
 - a. Differentiate between turret and capston lathes. (04 Marks)
 - b. Write the classification of shaping machines based on different parameters. (08 Marks)
 - c. Explain with a neat sketch, open and cross belt drive mechanism of a planer. (08 Marks)
- 4
 - a. Sketch and explain radial drilling machine. (10 Marks)
 - b. Explain with a neat sketch the nomenclature of a twist drill bit. (10 Marks)

PART - B

- 5
 - a. Explain up milling and down milling principles. (06 Marks)
 - b. Explain the following milling operations : i) Slot milling ii) Form milling. (06 Marks)
 - c. Show the calculation for indexing 69 divisions in a milling machine by compound indexing.
 The following index plates are available :
 Plate No. 1 – 15, 16, 17, 18, 19, 20.
 Plate No. 2 – 21, 23, 27, 29, 31, 33.
 Plate No. 3 – 37, 39, 41, 43, 47, 49. (08 Marks)
- 6
 - a. Explain BIS specifications for grinding wheels. (06 Marks)
 - b. Write detailed classification of grinding machines. (08 Marks)
 - c. Discuss the principle of centreless grinding. (06 Marks)
- 7
 - a. What is lapping? Explain hand lapping process. (10 Marks)
 - b. Explain the working principle of honing. (05 Marks)
 - c. State any three applications of lapping and honing. (05 Marks)
- 8
 - a. Explain with a neat sketch, the working principle of ultrasonic machining. Mention the process parameters. (10 Marks)
 - b. Explain with a neat sketch, the working of abrasive jet machining. Mention its applications. (10 Marks)

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.