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P.E.S. College of Engineering, Mandya - 571 401
(An Autonomous Institution affiliated to VTU, Belagavi)
Fourth Semester, B.E. - Mechanical Engineering
Semester End Examination; June - 2017
Manufacturing Process - II

Time: 3 hrs *Max. Marks: 100*

Note: *i) Answer **FIVE** full questions, selecting **ONE** full question from each unit.*
ii) Any missing data may be assumed suitably.

UNIT - I

1 a. With neat sketches give nomenclature of single point cutting tool. 8

b. The following data were obtained during orthogonal turning of a certain work piece material. Chip thickness 0.45 mm, width of cut 2.45 mm, feed 0.25 mm/rev, cutting force 113 kg, thrust force 29.5kg, the cutting speed was 150m/min and the rake angle was ±10º. Calculate the following; 12

(i) chip thickness ratio (ii) shear angle

(iii) velocity of the chip along the tool face (iv) Frictional force along the tool face

(v) Shear stress (vi) power required for cutting.

2 a. Explain the properties desired in cutting tool material. 10

b. With suitable sketches explain different types of chips produced during machining. 10

UNIT - II

3 a. What are the methods of measurement of temperature of cutting tool tip? Explain any one of them. 10

b. List the causes for tool failure & discuss any three. 10

4 a. List the various factors influencing tool-life? Explain any two of them. 10

b. The total life for a HSS tool is expressed by the relation $VT^{1/7} = c_1$, for a tungsten carbide $VT^{1/5} = c_2$ If the tool life for a cutting speed of 24 m/min is 128 min compare the life of the two tools at a speed of 30 m/min 10

UNIT - III

5 a. Differentiate between capstan and turret lathe. 8

b. With a neat sketch explain any one of the driving mechanism used in a shaping machine. 12

6 a. Sketch a planing machine indicating major parts. Name any one of the mechanism for quick return movement in a planer. 10

b. Explain with neat sketch any two methods of taper turning by using a lathe. 10

UNIT - IV

7 a. With sketches differentiate between up milling and down milling operations. 10

b. Index 69 divisions using compound indexing the following Indexing the following Index plates are available.

10

Plat No.1	15	16	17	18	19	20
Plat No.2	21	23	27	29	31	33
Plate No. 3	37	39	41	43	47	49

8 a. Draw a neat sketch to show major parts of a horizontal milling machine. 10

b. What is indexing? Explain any two indexing methods. 10

UNIT - V

9 a. Sketch and explain any three drilling operation? Mention the applications of drilling machine operations.

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b. Sketch and explain radial drilling machine. 10

10 a. List various grinding wheel abrasives and bonding process. 10

b. With a neat sketch explain centreless grinding machine. 10

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