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**Third Semester B.E. Degree Examination, Dec.2017/Jan.2018**  
**Machine Tools and Operations**

Time: 3 hrs.

Max. Marks: 80

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

**Module-1**

- 1 a. What is Drilling, sketch and explain the common parts of a Radial Drilling Machine. (08 Marks)
- b. Define Milling. Differentiate between up milling and down milling with neat sketch. (08 Marks)

**OR**

- 2 a. With a suitable sketch, explain the working principle of centerless grinding Machine. (08 Marks)
- b. List out the differences between shaper and planer. (08 Marks)

**Module-2**

- 3 a. With a suitable, sketch, explain the following milling operations. (08 Marks)  
 i) Gang milling      ii) Saw milling.
- b. Draw and explain the following operations using drilling machine. (08 Marks)  
 i) Reaming      ii) Counter Boring.

**OR**

- 4 a. Describe the properties of the cutting tool materials and types of cutting tool materials. (08 Marks)
- b. A work piece of diameter 38mm and Length 400mm was turned on a lathe using a suitable cutting tool. Determine the machining time to reduce the work piece to 36.5mm diameter in one pass with cutting speed of 30mpm and feed 0.7mm/rev. (08 Marks)

**Module-3**

- 5 a. With suitable sketch, elaborate the types of operations performed on a Turret Lathe. (08 Marks)
- b. Sketch and explain in brief the process of Gear milling and thread milling operations. (08 Marks)

**OR**

- 6 a. What is Grinding, with a suitable sketch, Describe vertical spindle grinding machine, with reciprocating table. (08 Marks)
- b. State the functions of cutting fluid. Briefly, explain the properties of cutting fluids. (08 Marks)

**Module-4**

- 7 a. Define Indexing. With suitable sketch describe simple indexing mechanisms. (08 Marks)
- b. Draw and explain the driving mechanism of a bench drilling machine. (08 Marks)

OR

- 8 a. Define the following terms :  
i) Cutting speed  
ii) Feed  
iii) Depth of cut  
iv) Machining time with equations for turning operations. (08 Marks)
- b. Calculate the required rpm of work piece of 100mm diameter to provide a cutting speed to 50mpm. Also find machining time of length of work is 400mm and feed is 0.4mm/rev. (08 Marks)

**Module-5**

- 9 a. What do you mean by the term chip formation? Describe types of chips with a neat sketch. (08 Marks)
- b. With a suitable sketch. Describe orthogonal and oblique cutting operations. (08 Marks)

OR

- 10 a. Define Tool wear. Explain the following terms :  
i) Crater wear  
ii) Flank wear (08 Marks)
- b. Explain the terms Tool failure and Tool life. Describe the effects of cutting parameter on Tool life. (08 Marks)

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