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15ME35B

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.
   i) Gang milling   ii) Saw milling.
(08 Marks)
   b. Draw and explain the following operations using drilling machine.
   i) Reaming   ii) Counter Boring.
(08 Marks)

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 is one pass with cutting speed of 30mpm and forced 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.
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