

B.E./B.TECH. Degree Examination, December 2020  
Fourth Semester

**ME16402 MANUFACTURING TECHNOLOGY - II**

(Regulation 2016)

Time: Three hours

Maximum : 80 Marks

Answer **ALL** questions

**PART A - (8 X 2 = 16 marks)**

1. In oblique cutting of metals, the cutting edge of the tool is  
a) Perpendicular to the work piece, b) Perpendicular to the direction of tool travel, c) Parallel to the direction of tool travel, d) ) Inclined at an angle less than  $90^\circ$  to the direction of tool travel
2. The average cutting speed for turning brass with a high speed steel tool is  
a) 15 to 19 m/min, b) 25 to 31 m/min, c) 60 to 90 m/min, d) 90 to 120 m/min
3. Internal gears can be made by  
a) Hobbing, b) Shaping with pinion cutter, c) Shaping with rack cutter, d) Milling
4. Which type of motor is not used in axis or spindle drives of CNC machine tools?  
a) Induction motor, b) DC servo motor, c) Stepper motor, d) Linear servo motor
5. Define: Cutting ratio
6. How is milling machine specified?
7. Differentiate between dressing and truing.
8. What do you understand by the word 'canned cycle' in manual part programming?

**PART B - (4 X16 = 64 marks)**

09. (a) (i) The following data relate to an orthogonal turning process: (12)  
chip thickness=0.62 mm, Feed=0.2 mm/rev, rake angle= $15^\circ$   
Calculate: Cutting ratio, chip reduction coefficient, shear angle and dynamic shear strain involved in the deformation process.
- (ii) Enumerate the essential requirements of a tool material. (4)
- (OR)**
- (b) (i) Using Taylor equation and using  $n=0.5$ ,  $C=400$ . Calculate the percentage increase in (12)  
tool life when cutting speed is reduced by 50%.
- (ii) What are the main functions of a cutting fluid? (4)

10. (a) (i) Find the angle at which the compound rest should be set up to turn taper on work piece having a length of 200 mm, larger diameter 45 mm and the smaller diameter 30mm. (4)
- (ii) Discuss any four operations that can be performed in a lathe with neat diagrams (12)
- (OR)**
- (b) (i) A hollow work piece of 50mm diameter and 200 mm long is to be turned over in 4 passes. If the approach length is 200 mm over travel 10mm, 0.8 mm/rev and cutting speed 30 m/min. Find the machining time. (10)
- (ii) Sketch a diagram of automatic lathe, Name its major parts. (6)
11. (a) Sketch a twist drill and justify the purpose of its various elements. (16)
- (OR)**
- (b) (i) Explain the principle of gear hobbing. (8)
- (ii) Discuss the various gear finishing operations. (8)
12. (a) (i) Discuss briefly the standard specification of Grinding Wheel. (8)
- (ii) Describe the various broaching machines used in industry. (8)
- (OR)**
- (b) (i) With suitable example explain the part programming procedure. (8)
- (ii) Explain the construction and special features of CNC machine. (8)