B.Tech. 5th Semester (ME) F-Scheme

Examination, December–2017

MANUFACTURING TECHNOLOGY-II

Paper– ME-309-F

Time allowed : 3 hours] *[Maximum marks : 100*

***Note:** Attempt **five** questions in all. **Question no. 1 is compulsory** (short answer type) and select at least **one** question from each section.*

1. (a) Explain the mechanism of metal cutting. 4

   (b) What do you mean by fixture? Discuss the milling fixtures. 4

   (c) Nomenclature of lathe 2

   (d) Write short note on Clamping devices and its use. 2

   (e) Locating devices 2

   (f) What is group technology? 2

   (g) Tool life 2

   (h) Tool signature of single point cutting tool 2

Section - A

2. An orthogonal cutting of steel is done with 10° rake tool, with a depth of cut 2 mm and feed rate of 0.20 mm/rev. The cutting speed is 200 m/min. The chip thickness ratio is 0.31. The vertical cutting force is 1200N and the horizontal cutting force is 650N. Calculate from the

Merchant's theory, the various work done in metal cutting and shear stress. 20

3. (a) What do you mean by tool wear and explain the various types of tool wear? 10

   (b) What is the purpose of cutting fluids? How they can be classified and how they improve the tool life? Explain. 10

Section - B

4. Explain ECM and ECG on the basis of Principle, System analysis, Equipment, Dielectric fluid, Electrodes, Process characteristics, Advantages, Disadvantages and Applications with neat sketch. 20

5. Define Jigs and Fixtures, advantages of using Jigs and Fixtures and also Principle of Location. 20

Section - C

6. Classify NC systems and describe the NC machines. 20

7. (a) What are the principles to be considered while placing the locators in different planes of part? 8

   (b) How is cutter compensation given in the case of a machining centre? Explain it with the help of an example how it is operational. Specify any of the limitations in using this facility. 12

Section - D

8. What is Group Technology? What are their benefits, applications, advantages and disadvantages? 20

9. (a) How classification and coding of parts is done in Group Technology layouts? Also give some benefits of using group technology principles in production plant. 12

   (b) Write a short note on composite part concept used in group technology. 8