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E-35

B. Tech. EXAMINATION, Dec. 2018

(Fifth Semester)

(B. Scheme) (Main & Re-appear)

(ME)

ME309B

MANUFACTURING SCIENCE

Time : 3 *Hours*] [*Maximum Marks :* 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit IV

7. (a) Explain briefly the principles of Jigs and Fixture Design. **8**

(b) Discuss various advantages of using Jigs and Fixture. **7**

8. (a) Distinguish between Liner and Angular Measurements. **8**

(b) Explain the principle of sine bar for measuring angles. **7**

Unit I

1. (a) Derive the expression for the main cutting force in orthogonal cutting in terms of work materials, properties and cutting process parmeters. **10**

(b) Give the comparison between orthogonal cutting and oblique Cutting. **5**

2. (a) Discuss the various types of chips produced in metal cutting. **8**

(b) Discuss briefly "Temperature distribution in metal cutting". **7**

Unit II

3. (a) What are the basic requirements of cutting fluids in mental machining ? Explain their main applications. Discuss some of the cutting fluids used using Machining and their method of application. **10**

(b) Explain the factors on which tool wear and tool life depends. **5**

4. (a) Distinguish between lapping, hobbing, shaping and milling. **7**

(b) What are the characteristics of tools materials ? Discuss various types of cutting tool materials. **8**

Unit III

5. (a) How are non-conventional machining processes different from conventional machining process ? Classify the different types of a non-conventional machining process. **10**

(b) Explain the mechanics of material removal in Electro-Chemical Machining (ECM) process. **5**

6. (a) Discuss the various applications of Laser Beam Machining process. **8**

(b) What are the important parameters that control the material removal rate in Abrasive Jet Machining (AJM) process ? Briefly explain them. **7**