

B. TECH
(SEM-V) THEORY EXAMINATION 2022-23
MANUFACTURING SCIENCE & TECHNOLOGY

Time: 3 Hours**Total Marks: 70****Note:** Attempt all Sections. If require any missing data; then choose suitably.**SECTION A****1. Attempt all questions in brief. 2x7 = 14**

- (a) Discuss about single point cutting tool used in machining.
- (b) Discuss about coolant used in Lathe machine.
- (c) Define straight polarity?
- (d) Explain about oxidizing flame used in oxy acetylene gas welding.
- (e) Explain: a) boring b) Reaming
- (f) Define air aspiration welding defect.
- (g) Discuss the types of wear mechanism in tools.

SECTION B**2. Attempt any three of the following: 7x3 = 21**

- (a) Discuss the tool geometry of a single point cutting tool and draw neat diagram.
- (b) Discuss about milling machine. Also recommend the application of milling machine in industry.
- (c) Discuss about Centreless grinding machine. Also mention their advantages and limitations.
- (d) Illustrate the spot resistance welding. And explain the main factors to be considered in resistance welding?
- (e) With the help of a neat sketch, explain the working principle and machine setup of Abrasive Jet Machining (AJM). Also discuss the effect of process variables on material removal rate in AJM.

SECTION C**3. Attempt any one part of the following: 7x1 = 7**

- (a) Discuss the various types of chips? And explain under what condition each is formed.
- (b) A carbide tool with MS work piece was found to give tool life of 2 hrs while cutting at 0.4 m/min. compute the tool life if the same tool is used at speed of 24% higher than previous one. Also determine the value of cutting speed if the tool is required to have tool life of 3 hrs. Assume taylors exponent n to be 0.2?

4. **Attempt any *one* part of the following:** **7x1 = 7**
- (a) Compare between up milling and down milling. Also write their use in industry.
 - (b) Describe the mechanism of a dividing head and explain how it is used for indexing a work-piece e.g., a gear blank.
5. **Attempt any *one* part of the following:** **7x1 = 7**
- (a) Discuss the through feed and Infeed in grinding.
 - (b) Illustrate grinding wheel specification? Clearly differentiate between grade and structure of a Grinding wheel.
6. **Attempt any *one* part of the following:** **7x1 = 7**
- (a) Explain the classification of welding? Also illustrate different types of welding defects.
 - (b) Illustrate the Metal Inert gas (MIG) welding with neat sketch.
7. **Attempt any *one* part of the following:** **7x1 = 7**
- (a) Discuss the principal of Plasma arc machining (PAM). Giving neat sketch, and explain the working of plasma arc machining process.
 - (b) Illustrate the working of Electrochemical Machining (ECM) process. What is the function of electrolyte in ECM? Enlist the application of ECM.