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**MANIPAL INSTITUTE OF TECHNOLOGY**  
**MANIPAL**  
*A Constituent Institution of Manipal University*

**I SEMESTER M.TECH. MANUFACTURING ENGINEERING AND  
 TECHNOLOGY (MET)**

**END SEMESTER EXAMINATIONS, NOVEMBER 2017**

**SUBJECT: ADVANCED MANUFACTURING TECHNOLOGY (MME 5125)**

**REVISED CREDIT SYSTEM**

Time: 3 Hours

MAX. MARKS: 50

**Instructions to Candidates:**

❖ Answer **ALL** the questions.

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| <b>1A.</b> | Derive an expression for metal removal in Abrasive jet Machining for brittle material.   | <b>5</b> |
| <b>1B.</b> | Briefly explain Ultrasonic machining.  | <b>3</b> |
| <b>1C.</b> | List the applications of Water Jet Machining.  | <b>2</b> |
| <b>2A.</b> | Derive an equation for charging current, charging voltage, charging duration, discharge current, discharge voltage, discharge duration and energy dissipated across the gap in RC-type power generator in EDM. | <b>5</b> |
| <b>2B.</b> | Derive an expression for material removal rate in electro-chemical machining.  | <b>3</b> |
| <b>2C.</b> | Discuss the process characteristics of plasma arc machining.   | <b>2</b> |
| <b>3A.</b> | Explain laser beam machining and associated process parameters.  | <b>4</b> |
| <b>3B.</b> | Write a note on ECM tooling.   | <b>3</b> |
| <b>3C.</b> | Write a note on various types of maskants and its usage in chemical machining.   | <b>3</b> |
| <b>4A.</b> | Explain ceramic investment casting with a neat sketch.   | <b>4</b> |
| <b>4B.</b> | Explain Electro hydraulic Forming with neat sketches.  | <b>4</b> |
| <b>4C.</b> | Briefly explain Continuous casting process.  | <b>2</b> |
| <b>5A.</b> | Discuss the issues involved in customization and also write the generalized guidelines for product customization   | <b>4</b> |
| <b>5B.</b> | Discuss the process chain for liquid-based additive manufacturing  | <b>4</b> |
| <b>5C.</b> | What is the impact of rapid manufacturing on design process  | <b>2</b> |