



**B.E. DEGREE EXAMINATIONS: APRIL / MAY 2023**

(Regulation 2018)

Second Semester

**AERONAUTICAL ENGINEERING**

U18AEI2201: Manufacturing Process

**COURSE OUTCOMES**

**CO1:** Describe the different casting processes starting from the part design.

**CO2:** Explain the basic use and operation of various welding methods.

**CO3:** Describe metal cutting processes using conventional machines.

**CO4:** Explain the principle of working, mechanism of metal removal in unconventional machining processes.

**CO5:** Explain the principle of working and the mechanism of various types of forging processes.

**Time: Three Hours**

**Maximum Marks: 100**

**Answer all the Questions:-**

**PART A (10 x 2 = 20 Marks)**

**(Answer not more than 40 words)**

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|---|-----|-------------------|
| 1. List any four types of patterns.   | CO1 | [K <sub>1</sub> ] |
| 2. Mention any two advantages and disadvantages of die casting.                                     | CO1 | [K <sub>1</sub> ] |
| 3. Define the resistance welding process.   | CO2 | [K <sub>1</sub> ] |
| 4. Classify various gas welding processes.  | CO2 | [K <sub>2</sub> ] |
| 5. Write down the formula for calculating the taper turning angle by the compound rest method.      | CO3 | [K <sub>2</sub> ] |
| 6. Write down any four operations performed by a drilling machine.                                  | CO3 | [K <sub>1</sub> ] |
| 7. Name some of the most commonly used dielectric fluids in EDM.                                    | CO4 | [K <sub>1</sub> ] |
| 8. Identify the mechanism of material removal, transfer media, and energy source for ECM.           | CO4 | [K <sub>2</sub> ] |
| 9. Why parts produced by forging is preferred when compared to other machining and welding process? | CO5 | [K <sub>2</sub> ] |
| 10. What is meant by wire drawing?  | CO5 | [K <sub>2</sub> ] |

**Answer any FIVE Questions:-**

**PART B (5 x 16 = 80 Marks)**

**(Answer not more than 400 words)**

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|--|----|-----|-------------------|
| 11. What are the defects that occur in products made by the casting process? Explain the causes and remedies of each defect with a neat diagram. | 16 | CO1 | [K <sub>3</sub> ] |
| 12. Explain the MIG welding process with a neat sketch. State the advantages and disadvantages of it.  | 16 | CO2 | [K <sub>3</sub> ] |

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|-----|----|---|----|-----|-------------------|
| 13. | a) | Briefly explain the various parts of a Lathe machine with a neat sketch.  | 8  | CO3 | [K <sub>3</sub> ] |
|     | b) | Describe the various machining operations which may be performed on a center lathe.   | 8  | CO3 | [K <sub>3</sub> ] |
| 14. |    | Discuss the working principle of the Abrasive Jet Machining process in detail and explain briefly how its various parameters influence the material removal rate. Use schematic diagrams. | 16 | CO4 | [K <sub>3</sub> ] |
| 15. | a) | Compare hot working and cold working in metal forming processes.  | 8  | CO5 | [K <sub>3</sub> ] |
|     | b) | With a neat sketch briefly explain two high and three high rolling mills.   | 8  | CO5 | [K <sub>3</sub> ] |
| 16. |    | Enumerate the step-by-step procedure involved in the shell molding process with a neat diagram. State its advantages and disadvantages.   | 16 | CO1 | [K <sub>3</sub> ] |

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