

B.E/B.TECH DEGREE EXAMINATIONS: NOV/DEC 2024

(Regulation 2018)

Fifth Semester

MECHATRONICS ENGINEERING

U18MCI5202: Manufacturing Technology

COURSE OUTCOMES**CO1:** Select and justify appropriate casting methods.**CO2:** Summarize various bulk deformation processes and explain the working machineries.**CO3:** Describe the working principles of machines and various machining processes.**CO4:** Choose a suitable metal joining process for a given application.**CO5:** Perform various lathe and drilling operations for a given drawing.**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. Define the term pattern in the casting process and mention its role. | CO1 | K2 |
| 2. List the types of melting furnaces used in casting. | CO1 | K2 |
| 3. List the casting defects. | CO1 | K2 |
| 4. Differentiate between hot working and cold working processes with an example of each. | CO2 | K2 |
| 5. Describe the purpose of a rolling mill in the rolling process. | CO2 | K2 |
| 6. Differentiate between hot extrusion and cold extrusion processes. | CO2 | K2 |
| 7. State the primary operations that can be performed on a lathe. | CO3 | K2 |
| 8. List three types of drilling machines and mention their significances. | CO3 | K2 |
| 9. Write notes of welding process. | CO4 | K2 |
| 10. Distinguish between soldering and brazing based on their temperature and applications. | CO4 | K2 |

Answer any FIVE Questions:-**PART B (5 x 16 = 80 Marks)****(Answer not more than 400 words)**

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| 11. a) Explain the casting process stages, focusing on pattern and core making. | 8 | CO1 | [K ₂] |
| b) Describe how these affect casting quality and common defects. | 8 | CO1 | [K ₂] |
| 12. Explain construction and working principles of cupola furnace with sketch. | 16 | CO1 | [K ₂] |

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| 13. | Describe the rolling process, including types of mills and defects, and differentiate between hot and cold rolling. | 16 | CO2 | [K ₂] |
| 14. | Explain hot, cold, impact, and hydrostatic extrusion, and analyze how each method affects material properties and product quality. | 16 | CO2 | [K ₄] |
| 15. | Outline the main operations of lathes and milling machines, highlighting their effects on part geometry and surface finish. | 16 | CO3 | [K ₂] |
| 16. | a) Explain the construction and working principle of Electric Arc welding. | 8 | CO4 | [K ₂] |
| | b) Compare Gas welding and Electric welding principles applications, advantages, and limitations. | 8 | CO4 | [K ₄] |
