



B.E DEGREE EXAMINATIONS: NOV/DEC 2024

(Regulation 2018)

Third Semester

MECHATRONICS ENGINEERING

U18MCR0001: Fundamentals of 3D Printing

COURSE OUTCOMES

CO1: Discuss the basics concepts of 3D printing technology

CO2: Explain the basics of computer graphics

CO3: Develop CAD models for 3D printing

CO4: Select a specific material for the given application

CO5: Explain various method for designing and modeling for industrial applications

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. What is additive manufacturing process? | CO1 | [K ₂] |
| 2. What are the factor to consider for design a product? | CO1 | [K ₂] |
| 3. Brief the computer graphics in CAD. | CO2 | [K ₂] |
| 4. What is clipping in a CAD? | CO2 | [K ₂] |
| 5. Write the role of slicing software in 3D printing. | CO3 | [K ₂] |
| 6. What do you meant by rapid product development? | CO3 | [K ₂] |
| 7. List the forms of 3D printing materials. | CO4 | [K ₂] |
| 8. When the design required support materials in the additive manufacturing process. | CO4 | [K ₂] |
| 9. How can 3D printing technology add value to healthcare? | CO5 | [K ₂] |
| 10. Enlist various applications of 3D printing. | CO5 | [K ₂] |

Answer any FIVE Questions:-

PART B (5 x 16 = 80 Marks)

(Answer not more than 400 words)

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|--|----|-----|-------------------|
| 11. a) Discuss the components used in 3D printer. | 10 | CO1 | [K ₂] |
| b) Distinguish additive and conventional manufacturing process. | 06 | CO1 | [K ₂] |
| 12. List the types of coordinate system and discuss the 3D transformation in | 16 | CO2 | [K ₂] |

computer graphics.

- | | | | | |
|--------|--|----|-----|-------------------|
| 13. | Describe the role of 3D design software and slicing software in 3D printing technology. | 16 | CO3 | [K ₂] |
| 14. | Discuss the role of different materials in additive manufacturing. Brief the importance of support materials in 3D printing. | 16 | CO4 | [K ₂] |
| 15. | Discuss the role of additive manufacturing in various industries. | 16 | CO5 | [K ₂] |
| 16. a) | Discuss the future trends and advancements in additive manufacturing. | 10 | CO5 | [K ₃] |
| b) | Compare the properties and applications of polymers and other materials used in 3D printing. | 06 | CO4 | [K ₃] |
