

06 FEB 2023

Reg. No.

Question Paper Code

11686

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV/DEC 2022

Third Semester

Mechanical and Automation Engineering

20MUPC301 - BASIC MANUFACTURING PROCESSES

(Regulations 2020)

Duration: 3 Hours

Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

- | | <i>Marks,
K-Level, CO</i> |
|--|-------------------------------|
| 1. List the defects in welding. | 2,K1,CO1 |
| 2. State any four types of patterns. | 2,K1,CO1 |
| 3. Define extrusion. | 2,K1,CO2 |
| 4. List out various types of extrusion process. | 2,K1,CO2 |
| 5. Compare orthogonal and oblique cutting. | 2,K2,CO3 |
| 6. Calculate the power required for cutting a steel rod of 50mm in diameter at 200rpm. Assume cutting force of 160 kg. | 2,K2,CO4 |
| 7. What is broaching? | 2,K1,CO5 |
| 8. Write the differences between drilling and tapping? | 2,K2,CO5 |
| 9. What is meant by centreless grinding? | 2,K1,CO6 |
| 10. What is meant by surface integrity? | 2,K1,CO6 |

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

- | | |
|--|-----------|
| 11. a) (i) Discuss the properties of moulding sand. | 6,K2,CO1 |
| (ii) What are the various moulding methods, explain them. | 7,K2,CO1 |
| OR | |
| b) Distinguish between brazing, soldering and welding. | 13,K2,CO1 |
| 12. a) Write short note on the following: | |
| a) upsetting | 4,K2,CO2 |
| b) roll forging | 5,K2,CO2 |
| c) trimming | 4,K2,CO2 |
| OR | |
| b) Explain with neat sketch the working principle of tube drawing. | 13,K2,CO2 |

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create

11686

13. a) In an orthogonal cutting test with a tool of rake angle 8° , the following observations were made: Chip thickness ratio = 0.2 Horizontal component of cutting force = 1050N; Vertical component of cutting force 1450N; From Merchant's theory, calculate the various components of the cutting forces and the coefficient of friction at the chip tool interface. 13,K2,CO3

OR

- b) Explain the different types of tool wear that occur in metal cutting. 13,K2,CO3
14. a) (i) Give advantages and limitations of gear hobbing. 6,K2,CO5
(ii) Explain the gear cutting by a formed tool. 7,K2,CO5

OR

- b) Sketch the following operations performed in drilling machine and explain. (i) Drilling, (ii) Reaming, (iii) Boring, (iv) Counter boring, (v) Counter sinking, (vi) Spot facing and (vii) Tapping. 13,K2,CO5
15. a) Explain the working mechanism of cylindrical and surface grinding process. 13,K2,CO6

OR

- b) Comparison of honing and lapping process with advantages and disadvantages. 13,K2,CO6

PART - C (1 × 15 = 15 Marks)

16. a) List the types of Work holding devices and Tool holding devices that are generally used in a turret lathe with suitable diagrams. 15,K2,CO4

OR

- b) (i) Describe the turret indexing mechanism. 8,K2,CO4
(ii) Discuss about the bar feed mechanism. 7,K2,CO4