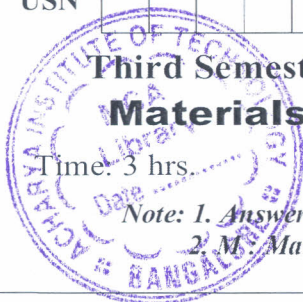


CBCS SCHEME

USN

BMT303



Third Semester B.E./B.Tech. Degree Examination, June/July 2025

Materials Science and Manufacturing Technology

Time: 3 hrs.

Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.

2. M: Marks, L: Bloom's level, C: Course outcomes.

Module – 1			M	L	C
Q.1	a.	Define Atomic Packing Factor. Determine the APF of face centered cubic structure.	10	L1	CO1
	b.	State Fick's laws of diffusion and explain the factors affecting diffusion.	10	L1	CO1
OR					
Q.2	a.	With a neat sketch, explain the stress-strain curve of a ductile material and explain its salient points.	10	L2	CO1
	b.	Explain the plastic deformation of single crystal by slip and twinning.	10	L2	CO1
Module – 2					
Q.3	a.	What are Composites? Discuss the functions of the matrix and the reinforcement in composites.	10	L2	CO2
	b.	Explain with a neat sketch, hand layup process of processing composite materials.	10	L2	CO2
OR					
Q.4	a.	Write a short note on : (i) Piezoelectric material (ii) Electrostrictive materials.	10	L2	CO2
	b.	Write a short note on : (i) Magnetorheological materials. (ii) Shape memory alloys.	10	L2	CO2
Module – 3					
Q.5	a.	Discuss the concepts of manufacturing processes. Briefly explain the classifications of manufacturing processes.	10	L2	CO3
	b.	Explain with a neat sketch centrifugal casting.	10	L2	CO3
OR					
Q.6	a.	Describe with a neat sketch the working principle of cupola furnace.	10	L2	CO3
	b.	With a neat diagram, explain the working of electric arc furnace.	10	L2	CO3
Module – 4					
Q.7	a.	Explain with a neat sketch metal arc welding and mention its advantages and limitations.	10	L2	CO4
	b.	Discuss the principle and working of Atomic Hydrogen Welding.	10	L2	CO4
OR					
Q.8	a.	Describe with the help of a neat diagram the working principle of Thermit welding.	10	L2	CO4
	b.	Explain with a neat sketch the working principle of Electron Beam Welding process.	10	L2	CO4
Module – 5					
Q.9	a.	Differentiate with simple sketches orthogonal and oblique cutting operation.	10	L2	CO5
	b.	With a neat sketch, explain the parts of lathe.	10	L2	CO5
OR					
Q.10	a.	Explain Up Milling and Down Milling with neat sketches.	10	L2	CO5
	b.	Differentiate drilling, boring and reaming process.	10	L2	CO5
