

	Sanjay Ghodawat University, Kolhapur Established as State Private University under Govt. of Maharashtra. Act No XL, 2017	2018-19 EXM/P/09/01
Year and Program: FY M. Tech	School: Technology	Department: Mechanical Engg.
Course Code: MMD503	Course Title: Advanced Engineering Materials	Semester: I
Day and Date: Wednesday 19-12-2018	End Semester Examination (ESE)	Time: 10 to 1 pm. Max Marks: 100

Instructions:

- 1) All questions are compulsory.
- 2) Assume suitable data wherever necessary.
- 3) Figures to the right indicate full marks.

Q.1	Solve any Two	Marks	Bloom's Level	CO
a)	Explain the heat treatment of ferrous and no-ferrous alloys and enlist the basic heat treatment processes.	05	L ₂	CO1
b)	What is a composite material? Define and enlist typical engineered composite materials.	05	L ₃	CO1
c)	Discuss modification of structure and properties in heat treatment of 60-40 Brass.	05	L ₂	CO1
Q.2	Solve any Two	Marks	Bloom's Level	CO
a)	Elaborate the term smart material and explain smart gels.	05	L ₃	CO2
b)	Define semiconductor materials and describe their types?	05	L ₂	CO2
c)	Discuss the classification of dielectric materials?	05	L ₃	CO2
Q.3	Solve any Two	Marks	Bloom's Level	CO
a)	Discuss in details production technique of fibers?	05	L ₂	CO3
b)	Discuss in details production technique of foams?	05	L ₂	CO3
c)	Explain structure, properties and applications of engineering polymers.	05	L ₂	CO3
Q.4	Solve any Two	Marks	Bloom's Level	CO
a)	Elaborate with sketch: Diaphragm forming	05	L ₃	CO4
b)	Analyze the concept: Bag molding	05	L ₃	CO4
c)	Enlist the processes for manufacturing of polymer matrix composites and write the applications of PMC's.	05	L ₃	CO4

Q.5	Solve any Three			
a)	What are the solid state fabrication methods used in MMC? Explain the diffusion bonding process.	10	L ₂	CO5
b)	Discuss in details the powder metallurgy process for manufacturing of metal matrix composites.	10	L ₄	CO5
c)	What are the liquid state fabrication methods? Discuss in details squeeze casting.	10	L ₄	CO5
d)	What are the problems with infiltration processing technique? How these problems can be solved.	10	L ₃	CO5
Q.6	Solve any Three			
a)	Propose materials and manufacturing methods that might be used for, 1. Springs 2. Turbine blades, Justify your answer.	10	L ₂	CO6
b)	Discuss the relationship between materials selection and processing.	10	L ₂	CO6
c)	What are the cost factors and service requirements in selection of materials?	10	L ₃	CO6
d)	Discuss the criteria for selection of materials for applications: 1. Engine block 2. Cylinder head, Justify your answer.	10	L ₄	CO6
