

**BALLARI INSTITUTE OF TECHNOLOGY & MANAGEMENT**

(Autonomous Institute under Visvesvaraya Technological University, Belagavi)

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Course Code 

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Fifth Semester B.E. Degree Examinations, April/May 2024

**COMPOSITE MATERIALS**

Duration: 3 hrs

Max. Marks: 100

Note: 1. Answer any FIVE full questions choosing ONE full Question from each Module.  
2. Missing data, if any, may be suitably assumed

<u>Q. No</u>	<u>Question</u>	<u>Marks</u>	<u>(RBTL:CO:PI)</u>
<b><u>Module-1</u></b>			
1.	a. Define and classify the types of composite materials.	08	(1 :1 : 1.3.1)
	b. Explain briefly with classification of composite materials based on matrix.	12	(1 :1 : 1.4.1)
(OR)			
2.	a. Briefly explain about parameters and benefits affecting the composites.	10	(1 :1 : 1.4.1)
	b. Differentiate between thermosetting and thermoplastic polymers.	10	(1 :1 : 1.3.1)
<b><u>Module-2</u></b>			
3.	a. With the help of neat sketches, explain 'Hand layup' process.	10	(2 :2 : 1.4.1)
	b. With the help of neat sketches, explain 'Filament winding' process.	10	(2 :2 : 1.4.1)
(OR)			
4.	a. Differentiate between open and closed mould process with the neat sketches.	10	(1 :2 : 1.3.1)
	b. With the help of neat sketches, explain 'Pultrusion' process.	10	(1 :2 : 1.3.1)
<b><u>Module-3</u></b>			
5.	a. With the help of neat sketches, explain 'Stir casting' process.	10	(2 :3 : 1.4.1)
	b. With the help of neat sketches, explain 'Powder Metallurgy' process.	10	(2 :3 : 1.4.1)
(OR)			
6.	a. With the help of neat sketches, explain 'Compo/Rheo casting' process.	10	(2 :3 : 1.4.1)
	b. List and explain 5 different applications of metal matrix composites.	10	(1 :3 : 1.3.1)
<b><u>Module-4</u></b>			
7.	a. Describe briefly about Iso-stress and Iso-strain condition with neat graphs.	10	(1 :4 : 1.4.1)
	b. Discuss briefly about rule of mixture.	10	(1 :4 : 1.3.1)
(OR)			
8.	a. Explain with stress strain curve for PMC and MMC.	10	(1 :4 : 1.3.1)
	b. Discuss briefly about critical volume fraction of fiber.	10	(1 :4 : 1.4.1)
<b><u>Module-5</u></b>			
9.	a. What are Nano-composites? List and explain the types of nano-composites.	10	(1 :5 : 1.4.1)
	b. What are self-healing composites? Explain with strategies.	10	(1 :5 : 1.3.1)
(OR)			
10.	a. Explain the tensile and compressive properties in detail.	10	(1 :5 : 1.3.1)
	b. Explain the procedure adopted in Izod test with a neat sketch.	10	(2 :5 : 1.4.1)

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