

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION MO/SP20**)

CLASS: BTECH
BRANCH: MECHANICAL

SEMESTER: IV
SESSION: SP/2023

SUBJECT: ME215 COMPOSITE MATERIAL

TIME: 02 Hours

FULL MARKS: 25

INSTRUCTIONS:

1. The question paper contains 5 questions each of 5 marks and total 25 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates
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			CO	BL
Q.1(a)	Explain the difference between thermosetting and thermoplastic matrix materials.	[2]	1	L
Q.1(b)	Provide the applications of various composites in Aviation, Automotive and Telecom industries.	[3]	1	M
Q.2(a)	List the structural applications of composites and briefly explain any two of them.	[2]	1	L
Q.2(b)	List the advantages and disadvantages of PMC's.	[3]	1	L
Q.3	Derive the expression to compute the elastic constants for a unidirectional composite under the following condition:		2	M
	(a) ISO strain	[2]		
	(b) ISO stress	[3]		
Q.4	A thermoplastic matrix contains 40 wt % glass fibre. If the density of the matrix is 1.1 g/cc while that of the glass fibre is 2.5 g/cc, what is the density of the composite? Assuming:		2	M
	(a) No voids	[2]		
	(b) 0.1% Void.	[3]		
Q.5(a)	Describe the experimental methods to determine any mechanical property of a composite material according to ASTM Standard.	[2]	5	M
Q.5(b)	What is creep and fatigue? Discuss briefly the tests for the determination of the same.	[3]	5	M

.....23/02/2023:.....M