

**GANDHI INSTITUTE OF ENGINEERING AND TECHNOLOGY UNIVERSITY, ODISHA, GUNUPUR
(GIET UNIVERSITY)**



VI.Tech. (First Semester- Regular/Supplementary) Examinations, January - 2026
24MMTPC11001 –Composite Material
(Manufacturing Technology)

Time: 3 hrs

Maximum: 60 Marks

(The figures in the right hand margin indicate marks)

PART – A**(2 x 5 = 10 Marks)**Q.1. Answer *ALL* questions

	CO #	Blooms Level
a. How does the choice of reinforcing material affect the strength of FRP?	CO1	K1
b. List the key factors influencing plasticity and fracture in composite materials.	CO3	K2
c. What are the transverse equations for laminated plates	CO4	K3
d. State the process of injection moulding.	CO5	K2
e. Distinguish between open mould and close mould processes	CO6	K2

PART – B**(10 x 5=50 Marks)**Answer *ALL* the questions

	Marks	CO #	Blooms Level
2. a. Explain in detail the general characteristics of composite materials and state some of its application?	5	CO1	K2
b. What are the commercial forms of fiber available and mention its importance in the evaluation of elastic properties.	5	CO1	K1
(OR)			
c. Discuss material selection and process selection criteria for designing in FRP	5	CO2	K3
d. Explain the concept of fiber orientation in FRP and its effects on properties.	5	CO2	K2
3.a. Deduce a relation between on-axis and off-axis stress transformations for a unidirectional lamina	5	CO2	K3
b. List the assumptions for plane stress condition.	5	CO3	K2
(OR)			
c. Derive the compliance relations for an off-axis lamina	5	CO3	K3
d. State the basic assumptions made in thin plate theory..	5	CO4	K2
4.a. write the short notes on i) Fibre reinforced composite ii) laminated composites	5	CO1	K1
b. Derive the strain-stress relations for an orthotropic lamina in three-dimensional domain in terms of engineering constants.	5	CO3	K3
(OR)			
c. Mention the three modes of crack propagation with neat sketch.	5	CO4	K3
d. Show the reduction of anisotropic material stress-strain equations to those of monoclinic material stress-strain equations	5	CO4	K3
5.a. Explain monoclinic material with compliance and stiffness matrices.	5	CO4	K3

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| b. | Explain with neat sketches the production of carbon fibers | 5 | CO5 | K2 |
| (OR) | | | | |
| c. | Write the working principle of centrifugal casting. | 5 | CO5 | K2 |
| d. | Describe the injection molding process | 5 | CO6 | K2 |
| 6.a. | Explain the characteristics of the following laminates : | 10 | CO3 | K2 |
| | (i) Unidirectional Laminates | | | |
| | (ii) Symmetric Balanced Laminates | | | |
| | (iii) Zero CTE Laminates | | | |
| | (iv) Thermally Quasi — Isotropic Laminates | | | |
| (OR) | | | | |
| c. | Give advantages and limitations of FRP. | 5 | CO1 | K2 |
| d. | Write short notes on the construction and working of the following. Spray up Process & Compression Moulding | 5 | CO5 | K2 |

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