

ANURAG Engineering College
(An Autonomous Institution)

IV B. Tech II Semester Regular/Supplementary Examinations, April - 2024

COMPOSITE MATERIALS
(MECHANICAL ENGINEERING)

Time: 3 Hours

Max. Marks: 75

Section – A (Short Answer type questions)

(25 Marks)

Answer All Questions

	Course Outcome	B.T Level	Marks
1. List the applications of polymer matrix composites.	CO1	L1	2M
2. Classify composite materials.	CO1	L2	3M
3. What is pultruded in FRP?	CO2	L1	2M
4. Explain filament winding process.	CO2	L2	3M
5. What are three common modes of failure of a unidirectional composite subjected to longitudinal tensile load?	CO3	L1	2M
6. Write the stiffness matrix for orthotropic material.	CO3	L2	3M
7. Explain plate stiffness and compliance.	CO4	L1	2M
8. What is the importance of cross-ply laminates?	CO4	L2	3M
9. What are the different joining methods? Describe the importance.	CO5	L1	2M
10. Explain the advantages of Tsai-Hill failure criterion.	CO5	L2	3M

Section B (Essay Questions)

Answer all questions, each question carries equal marks.

(5 X 10M = 50M)

11. A) What are the constituent materials in a composites? Explain the role of each constituent.	CO1	L3	10M
OR			
B) Compare the properties of composites with standard materials	CO1	L3	10M
12. A) Discuss the characterization of carbon fibre and glass fibre composites	CO2	L3	10M
OR			
B) Explain the following methods of manufacturing PMC's with suitable sketches: i) Pultrusion and ii) Prepregs	CO2	L3	10M
13. A) Develop concepts of volume and weight fraction of fiber and matrix in a composite.	CO3	L3	10M
OR			
B) Analyse the Hygrothermal stress-strain relationships for a unidirectional lamina.	CO3	L3	10M
14. A) Explain the classification of laminates.	CO4	L3	10M
OR			
B) Briefly explain inter laminar stresses in a laminate composite.	CO4	L3	10M
15. A) Explain the advantages and disadvantages of mechanically fastened Joints	CO5	L3	10M
OR			
B) Derive the expression for Tsai-Wu failure theory of lamina.	CO5	L3	10M