

# CBCS SCHEME

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18IP56

## Fifth Semester B.E. Degree Examination, Feb./Mar. 2022 Composite Materials

Time: 3 hrs.

Max. Marks: 100

*Note: Answer any FIVE full questions, choosing ONE full question from each module.*

### Module-1

- 1 a. What are composites? Explain the classification of composites in accordance with the materials and reinforcement types. (10 Marks)
- b. List and briefly explain the characteristics of composite materials. (10 Marks)

OR

- 2 a. With the help of neat sketches explain the hand lay-up technique. (10 Marks)
- b. Sketch and explain Filament winding process. (10 Marks)

### Module-2

- 3 a. What is Composite Machining? Explain the different types of machining operations. (10 Marks)
- b. List and explain the design guidelines for adhesive bonding. (10 Marks)

OR

- 4 a. List and explain the design parameters for Bolted joints. (10 Marks)
- b. With a neat sketch explain the Laserjet cutting. (10 Marks)

### Module-3

- 5 a. List the structural applications of composites and briefly explain any two of them. (10 Marks)
- b. Explain the Major and Minor Poisson's ratios. (10 Marks)

OR

- 6 a. What are Volume and Mass fractions? Explain briefly. (10 Marks)
- b. Derive the equation for transverse and shear modulus for composites. (10 Marks)

### Module-4

- 7 a. What are metal matrix composites? Explain their mechanical properties. (10 Marks)
- b. Briefly explain Wear, Machinability properties of MMCs. (10 Marks)

OR

- 8 a. What are the effects of size, shape and distribution of particulates on properties of composites? (10 Marks)
- b. What are the Shape Memory Alloys? Explain their applications. (10 Marks)

### Module-5

- 9 a. What are natural composites? Explain the characteristics of Natural fibers. (10 Marks)
- b. Mention the advantages and limitations of Natural fibers. (10 Marks)

OR

- 10 a. With neat sketches explain the Silk, Feather, Cotton fibers. (10 Marks)
- b. List and explain the applications of the Natural composites. (10 Marks)

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