

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (Civil Engg./ Mechanical Engg.) (Sem.-6)

**COMPOSITE MATERIALS**

Subject Code : BTME-612-18

M.Code : 79657

Date of Examination : 12-07-22

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTIONS TO CANDIDATES :**

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

**SECTION-A**

**1. Write briefly :**

- a) What is the role reinforcement in composite materials?
- b) List types of fibres used in FRP.
- c) Mention important characteristics of composite material.
- d) Define lamina.
- e) Write the generalized Hook's Law for composite materials.
- f) What is the role of matrix in a composite material?
- g) What is plane stress condition?
- h) Give relative merits of Carbon fibre.
- i) Give relative merits of Glass fibre.
- j) Write the compliance matrix for plane stress.

## SECTION-B

2. What are composite materials? Classify composite material.
3. Discuss the advantages and drawbacks of metal matrix composites over polymer matrix composites.
4. Explain in detail fiber reinforcements. Why fiber reinforcements are of a thin diameter?
5. What is the need for composite material? Give examples of use of composite materials.
6. Mention important matrix materials. Give examples for fiber material.

## SECTION-C

7. What is the role of matrix and reinforcement in composite materials. Discuss the theories of stress transfer from the matrix to the fibers in composites.
8. What are ceramic fibers? Discuss in brief about their fabrication methods, structure and properties and applications.
9. Explain fatigue damage in a composite material. How does it influence the performance of the composite material?

**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**