

Sub Code: **CET-307**

ROLL NO.....

**SEMESTER EXAMINATION, 2022-23
YEAR**

Programme – Ist Yr. M.Tech – STRUCTURE ENGINEERING

Theory and applications of cement composites

Duration : 3:00 hrs

Max Marks: 100

Note:-Attempt all questions. All Question carry equal marks. In case of any ambiguity or missing data, the same may be assumed and state the assumption mad in the answer.

Q 1. Answer any four parts of the following.

- a) Discuss the advantages of composites over conventional materials.
- b) Explain Orthotropic and Anisotropic materials.
- c) Define Fiber reinforced concrete. Compare conventional concrete with Fiber reinforced concrete.
- d) Discuss Classification and characteristics of composite materials.
- e) Define aspect ratio. Explain how aspect ratio affects the mechanical properties of Fiber reinforced concrete.
- f) Discuss how polymers are used in concrete.

Q 2. Answer any four parts of the following.

- a) Discuss the manufacture process of polymer impregnated concrete.
- b) State the differences between SIFCON and SIMCON.
- c) What is polymerization? Discuss various methods of polymerization.
- d) Discuss theories of Orthotropic Lamina.
- e) What do you understand by shrinkage compensating concrete? Discuss its applications.
- f) Discuss mechanical properties of ferro-cement.

Q 3. Answer any two parts of the following.

- a) Discuss in detail the uses of high-strength cementitious composites.
- b) Explain in detail engineered cementitious concrete and state their uses.
- c) Discuss applications of ferrocement .

Q 4. Answer any two parts of the following.

- a) Justify the Fatigue and Impact behavior of Fiber Cement Composites with contest of some researchers.
- b) Write a note on Post Cracking characteristics of Cementitious Composites and advantages of using HPFRCC in structure applications.
- c) Explain in detail Mechanical and Durability properties of Engineered Cementations Composites.

Q 5. Answer any two parts of the following.

- a) Write a note on polymer concrete and its advance applications in structural engineering.
- b) Define primary reinforcing and secondary reinforcing. Critically explain main fiber characteristics of interest in FRCC and Classification of FRCC based on its applications.
- c) Discuss mechanical properties of ferro-cement. What are the advantages of fibrous ferro-cement.