Reg. No.



MANIPAL INSTITUTE OF TECHNOLOGY MANIPAL

(A constituent institution of MAHE, Manipal)

II SEMESTER M.TECH. (C E M) END SEMESTER EXAMINATIONS, APRIL/MAY 2018 SUBJECT: RECENT ADVANCES IN CONCRETE TECHNOLOGY [CIE - 5239] REVISED CREDIT SYSTEM (27/ 04/ 2018)

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ✤ Answer ALL the questions.
- ✤ Missing data may be suitable assumed.

Q.No		Marks
1A.	Distinguish between Entrained air and Entrapped air in concrete. State their effects on the properties of concrete.	2
1 B .	Explain, briefly, effect of addition of Silica Fume on the microstructure of concrete.	4
1C.	With reference to Light Weight Aggregate Concrete, write a short note on its:(i). Workability (ii) Bond between aggregates and matrix.	4
2A.	Discuss Thermal Performance & Dimensional Stability of High Strength Concrete.	2
2 B .	How is the Reactive Powder Concrete produced? State its applications, giving reasons for its use	2
2C.	Describe design procedure for Self-Compacting Concrete mix with s flow diagram	6
3A.	Explain the production process of Polymer Modified Cement Concrete. Name the properties that are improved in this type of concrete.	2
3B.	Distinguish between the failure modes of SIFCON & SIMCON; State the situation in which each of them is preferred.	2
3C.	Under Flexure, state the effects of discrete steel fiber reinforcement in concrete on its, (i) Deformation and fracture characteristics; (ii) Strength characteristic.	6
4A.	How do the Roller Compacted Concrete differ from Conventional Concrete?	2
4B.	(i). Discuss, briefly, the problem encountered in mass concreting and its effect.(ii). Enumerate recommendation made for selection of mass concrete ingredients.	4
4C.	Explain: (i) Why concrete shrinks in volume; (ii) How Shrinkage Compensating Concrete overcomes the problems of shrinkage	4
5A.	Describe how the quality of concrete is assessed in Ultra Sonic Pulse Test and state the characteristics of concrete that can be assessed this test.	3
5B.	(i). Explain why reinforcing steel, though embedded in concrete, get corroded;(ii). What are the effects of this corrosion	3
5C.	Discus how the deteriorations of concrete due Acid attack, Sulphate attack & Alkali-Aggregate reaction attacks differ from each other.	4