(3 HRS) **Maximum Marks: 80**

N.B.

1. Attempt any **FOUR** questions.
2. Assume suitable data **if necessary** but justify the same.
3. Use of IS code is **NOT** permitted.

Q.1	Attempt the following.		**20**
	a.	Explain Precast construction and its applications.	(5)
	b.	Explain tremie method of concreting with neat sketches.	(5)
	c.	Explain durability of concrete and factors affecting durability.	(10)
Q.2		Attempt the following.	**20**
	a.	Enlist and explain different nondestructive testing methods of reinforced concrete, also mention the principle used in it.	(10)
	b.	Explain different types of fibers used in fiber reinforced concrete	(05)
	c.	Explain different properties of FRC.	(10)
Q.3		Attempt the following.	**20**
	a.	Explain following terms i). Recycled concrete aggregate ii)Gap graded concrete	(10)
	b	Describe effects of incorporating fibers in concrete	(05)
	c	What are the factors affecting workability of concrete.	(05)
Q.4		Attempt the following.	**20**
	a.	Explain Gel space ratio.	(05)
	b.	Explain following terms i). Creep and shrinkage of concrete ii). Maturity of concrete iii). Chloride attack on concrete	(15)

Q.5		Attempt the following.	20
	a	Explain in detail I.S code method of concrete mix design.	(08)
	b	Explain in detail trial and error method of concrete mix design.	(06)
	c	Explain in brief fly ash based cement concrete mix.	(06)
Q.6	a	Explain GFRC and Carbon fibre reinforced concrete.	(08)
	b	Explain the various applications of SIFCON.	(06)
	c	Discuss historical development of FRC.	(06)
