



VI SEMESTER B.TECH (CIVIL ENGINEERING)

END SEMESTER EXAMINATIONS, JUNE 2022

SUBJECT: ADVANCES IN CONCRETE TECHNOLOGY [CIE 4051]

REVISED CREDIT SYSTEM

(_ / _ / 2022)

Time: 3 Hours

Max. Marks: 50

Instructions to Candidates:

- ❖ Answer ALL the questions
- ❖ Missing data may be suitably assumed

Q.No		Marks	CO
1A.	With the help of a neat sketch explain the relationship between the following: i) Compressive strength and water-cement ratio ii) Compressive strength and eel-space ratio	4	1
1B.	With the help of a neat sketch, discuss the stress - strain behavior of cement paste and aggregate. Discuss the reasons for non-linear behavior of concrete under loading	4	1
1C.	Discuss any four main features of advances in concrete technology in comparison to ordinary concrete	2	1
2A.	Define workability. With the help of a neat sketch explain the types of slump that can be obtained for a concrete in plastic state.	4	2
2B.	Discuss the principles and applicability of the following tests: i) Slump test ii) Compaction factor iii) Vee-Bee test	4	2
2C.	With the help of a graph discuss the influence of size of aggregates on strength and their use in obtaining concrete mixes with different consistency.	2	2,3
3A.	With the help of a neat sketch explain the mechanism of action of plasticizers and superplasticizers. Describe the benefits of using water reducing admixtures for producing concrete.	4	3
3B.	What is concrete mix proportioning? List the objectives of concrete mix proportioning. Describe the parameters that contribute in obtaining the target mean strength of the concrete.	4	3
3C.	Enumerate the advantages of high-performance concrete over ordinary standard concrete with suitable illustration.	2	4
4A.	Draw a neat sketch showing the mechanism to achieve Self-consolidating concrete. Discuss the recommendations for mix design o obtain the self-consolidating concrete.	4	4
4B.	Distinguish between: gas concrete and foam concrete. Discuss the advantages and limitations of various types of light weight concrete.	4	4
4C.	With the help of a neat sketch explain the crack arrest mechanism in fibre reinforced concrete when a) short fibers are used b) lone fibers are used	2	4,5
5A.	Explain the principles of UPV test. Discuss the ways of measuring the pulse velocity through concrete.	4	5
5B.	Discuss the protective measures for negating ill effects of corrosion in concrete structures.	4	5
5C.	Explain Alkali - aggregate Reaction in concrete.	2	5