Reg. No.																

Question Paper Code	14059

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2025

Fifth Semester

Civil Engineering

20CEEL506 - CONCRETE TECHNOLOGY

Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	Which of the following is the main ingredient responsible for the setting of cement? (a) Lime (b) Silica (c) Alumina (d) Gypsum	1	K1	CO1
2.	Which type of aggregate is used for making high-strength concrete? (a) Lightweight aggregate (b) Fine aggregate (c) Coarse aggregate (d) Recycled aggregate	1	K1	CO1
3.	Which admixture is used to increase the workability of concrete? a) Retarder b) Plasticizer c) Accelerator d) Water proofer	1	K1	CO2
4.	Fly ash is a type of: (a) Chemical admixture (b) Mineral admixture (c) Aggregate (d) Binder	1	K1	CO2
5.	The BIS method of concrete mix design is based on: (a) IS 800 (b) IS 456 (c) IS 10262 (d) IS 383	1	K1	CO3
6.	Which mix is designed based on experience rather than tests? (a) Nominal mix (b) Design mix (c) High-strength mix (d) Fiber mix	1	K1	CO3
7.	Which test is used to measure the workability of concrete? (a) Slump test (b) Permeability test (c) Acid resistance test (d) Corrosion test	1	K1	CO4
8.	The maximum strength of concrete is determined using which test? (a) Split tensile test (b) Flexural strength test (c) Compressive strength test (d) Modulus of elasticity test	1	K1	CO4
9.	As per IS: 456-2000, the relationship between the flexural strength and characteristic strength of concrete is _____ (a) $0.12\sqrt{fck}$ (b) $0.5\sqrt{fck}$ (c) $0.7\sqrt{fck}$ (d) $1.0\sqrt{fck}$	1	K1	CO5
10.	SIFCON stands for: (a) Slurry Infilled Fiber Concrete (b) Slurry Infiltrated Fiber Concrete (c) Steel Infused Fiber Concrete (d) Silica Injected Fiber Concrete	1	K1	CO6

PART - B (12 × 2 = 24 Marks)

Answer ALL Questions

		Marks	K – Level	CO
11.	What are the chemical composition and its percentage in cement?	2	K1	CO1
12.	Mention the BIS grading requirements for aggregates.	2	K1	CO1
13.	What is meant by Retarders?	2	K1	CO2
14.	List the effects on concrete properties.	2	K1	CO2
15.	Write the principles of mix proportioning.	2	K1	CO3
16.	Distinguish between design mix and nominal mix of concrete.	2	K2	CO3
17.	Differentiate between segregation and bleeding in concrete.	2	K2	CO4
18.	Summarize what happens if a concrete mix has too high slump for concrete.	2	K1	CO4
19.	Outline why is flexural strength important in the design of concrete structures.	2	K2	CO5
20.	Demonstrate the effect of creep on concrete structures.	2	K2	CO5
21.	What is meant by foam concrete?	2	K1	CO6

22.		Write a note on Shotcrete.	*2*	*K1*	*CO6*

PART - C (6 × 11 = 66 Marks)

Answer ALL Questions

23.	a)	Describe the tests conducted on cement to determine its quality and explain the IS specifications for cement.	*11*	*K2*	*CO1*
		OR			
	b)	Elaborate the various characteristics of aggregates influencing the properties of concrete.	*11*	*K2*	*CO1*
24.	a)	What is an admixture? Enumerate any types of chemical admixtures.	*11*	*K2*	*CO2*
		OR			
	b)	Discuss the process of production of Ground granulated blast furnace slag and positive impact of addition of Ground granulated blast furnace slag in concrete.	*11*	*K2*	*CO2*
25.	a)	List the types of mixing of concrete and write brief on physical properties of materials required for concrete mix design.	*11*	*K2*	*CO3*
		OR			
	b)	Discuss in detail the procedure of concrete mix design using the BIS method and illustrate with a sample calculation for designing a mix for M25 grade concrete.	*11*	*K2*	*CO3*
26.	a)	Outline what is meant by bleeding and segregation of concrete? What are the effects of bleeding and segregation in concrete? State the control measures to be taken to control it?	*11*	*K2*	*CO4*
		OR			
	b)	Compare and contrast the slump test, compacting factor test, and Vee bee test in measuring workability. In what situations is each test most suitable?	*11*	*K2*	*CO4*
27.	a)	Explain the different properties of hardened concrete and explain the tests used to determine them.	*11*	*K2*	*CO5*
		OR			
	b)	Draw and explain the complete stress-strain curve of concrete under compression, highlighting key stages and differences between normal and high-strength concrete.	*11*	*K2*	*CO5*
28.	a)	Discuss the types of fibers used in FRC and their effect on the properties of concrete.	*11*	*K2*	*CO6*
		OR			
	b)	Describe the concept, production process, properties, and applications of SIFCON.	*11*	*K2*	*CO6*