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Question Paper Code	12472
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**B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2023**

Fifth Semester

**Civil Engineering**

**20CEEL506 - CONCRETE TECHNOLOGY**

(Use of IS456 – 2000 and IS1026 – 1982 or 2009 tables are permitted)

(Regulations 2020)

Duration: 3 Hours

Max. Marks: 100

**PART - A (10 × 2 = 20 Marks)**

Answer ALL Questions

	<i>Marks, K-Level, CO</i>
1. What is setting time of cement	2,K1,CO1
2. What are the properties of cement	2,K1,CO1
3. Discuss about slump loss	2,K1,CO2
4. List the effect of fly ash on fresh concrete	2,K1,CO2
5. Summarize the term nominal mix and design mix.	2,K2,CO3
6. What are the basic requirements of concrete mix design?	2,K1,CO3
7. What is fresh concrete?	2,K1,CO5
8. Define segregation and bleeding.	2,K1,CO5
9. Define Aerated concrete.	2,K1,CO6
10. Define special concrete.	2,K1,CO6

**PART - B (5 × 13 = 65 Marks)**

Answer ALL Questions

11. a) Explain the procedure to find compressive strength of cement concrete with neat sketch.	13,K2,CO1
<b>OR</b>	
b) Explain the manufacturing process of cement with a flow chart	13,K2,CO1
12. a) Explain about plasticizer and super plasticizers.	13,K2,CO2
<b>OR</b>	
b) Explain the factors that affect the workability.	13,K2,CO2
13. a) Write down the main objectives for doing the mix design.	13,K2,CO3

**OR**

b) Explain the mix design for the Pumpable concrete. 13,K2,CO3

14. a) Explain the slump cone test procedure with neat sketches. 13,K2,CO5

**OR**

b) Explain the various experiments conducted on hardened concrete. 13,K2,CO5

15. a) Differentiate Normal strength of Concrete and High strength of concrete. 13,K2,CO6

**OR**

b) Explain Self compacting concrete with suitable example. 13,K2,CO6

**PART - C (1 × 15 = 15 Marks)**

16. a) Design of **M20** concrete mix as per IS:10262-2009, Concrete mix proportioning-guidelines 15,K3,CO4

i. Grade designation : **M20**

ii. Type of cement : OPC 43 grade confirming to IS 8112

iii. Maximum nominal size of aggregates : 20 mm

iv. Minimum cement content : 320 kg/m<sup>3</sup>

v. Maximum water cement ratio : 0.55

vi. Workability : 75 mm (slump)

vii. Exposure condition : Mild

viii. Degree of supervision : Good

ix. Type of aggregate : Crushed angular aggregate

x. Maximum cement content : 450 kg/m<sup>3</sup>

xi. Chemical admixture : Not recommended

xii. Specific gravity of

Cement : 3.15

Coarse aggregate : 2.68

Fine aggregate : 2.65

xiii. Water absorption

Coarse aggregate : 0.6 percent

Fine aggregate : 1.0 percent

xiv. Free (surface) moisture

Coarse aggregate : Nil (absorbed moisture full)

Fine aggregate : Nil

xv. Sieve analysis

Coarse aggregate : Conforming to Table 2 of IS: 383

Fine aggregate : Conforming to Zone I of IS: 383

**OR**

b) Simplify the design step procedure for M25 grade concrete. 15,K2,CO4