

College of Engineering Pune
End-Sem Exam Term – I 2012

CE 211 Concrete Technology

Class : SY B.Tech (Civil)
Time : 10.00am to 1.00 pm

Date : 29.11.2012
Max Marks : 50

Note : All questions are compulsory

Mobile phones are not allowed. Non programmable electronic calculator is allowed.
Assume suitable data if necessary.

- Q1. A) State difference between Ordinary Portland cement and rapid hardening Portland Cement. (2)
- B) What is aggregate crushing value ? How it is determined ? (3)
- C) State difference between weigh batching and volume batching methods of Concrete (2)
- Q.2. Explain the procedure for determination of modulus of rupture of concrete. (6)
- Q.3. A) Draw typical stress strain curves for high strength concrete and normal concrete. State factors affecting modulus of elasticity of concrete. (4)
- B) What is creep in concrete? State factors affecting creep in concrete. (3)
- Q.4. Design the concrete Mix of Grade M30 for RCC work by I.S. Method using following data. (12)
- Std. deviation = 6 N/mm^2 , Cement = OPC 43 grade having 28 days compressive strength = 45 MPa, Max size of aggregate = 20mm, Degree of workability = Medium, Slump = 75mm to 100 mm, Compaction factor = 0.90
Type of exposure = severe, Assume 1.5 % as entrapped air, Type of coarse aggregate = Crushed with sp. gravity 2.7 and water absorption = 0.6 % , Fine aggregate = River sand with sp. gravity 2.65 and water absorption = 2.5 %
Sieve analysis of fine aggregate is given below. $w/c = 0.45$

Sieve size	10 mm	4.75 mm	2.36 mm	1.18 mm	600 micron	300 micron	150 micron	Less than 150 micron
weight retained in gm	0	12	72	185	310	295	93	33

Q.6 A) Explain plastic shrinkage and drying shrinkage in concrete. (5)

B) What cares should be taken in hot weather concreting (4)

Q.7. Explain aggregate alkali aggregate reaction. How corrosion of reinforcement affects durability of concrete?

OR

Explain in brief

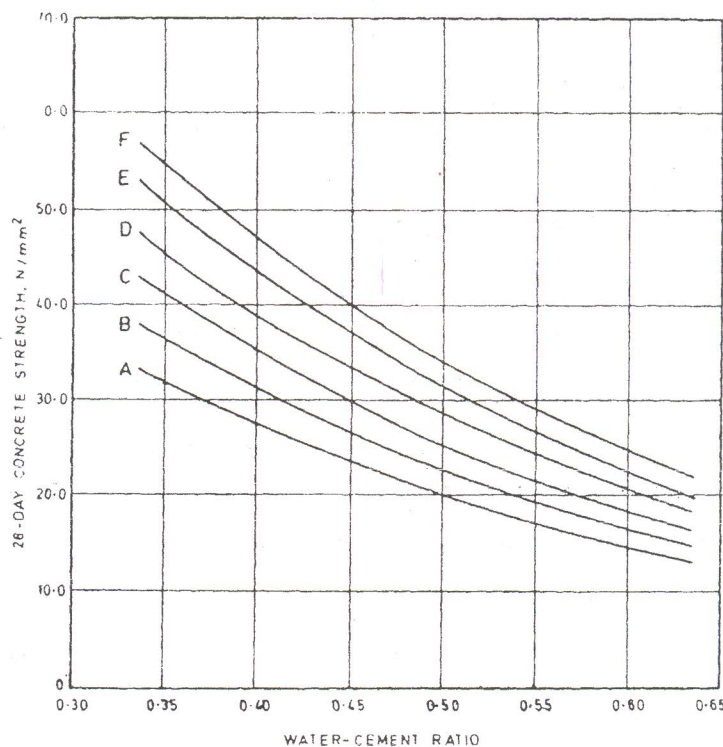
a) Aerated concrete b) Light weight concrete c) Ferro -cement (9)

TABLE 4 FINE AGGREGATES

(Clause 4.3)

IS SIEVE DESIGNATION	PERCENTAGE PASSING FOR			
	Grading Zone I	Grading Zone II	Grading Zone III	Grading Zone IV
10 mm	100	100	100	100
4.75 mm	90-100	90-100	90-100	95-100
2.36 mm	60-95	75-100	85-100	95-100
1.18 mm	30-70	55-90	75-100	90-100
600 micron	15-34	35-59	60-79	80-100
300 micron	5-20	8-30	12-40	15-50
150 micron	0-10	0-10	0-10	0-15

IS 10262 - 1982



28-Day Strength of Cement, Tested According to IS: 4031-1968

A = 31.9-36.8 N/mm² (325-375 kg/cm²)

B = 36.8-41.7 N/mm² (375-425 kg/cm²)

C = 41.7-46.6 N/mm² (425-475 kg/cm²)

D = 46.6-51.5 N/mm² (475-525 kg/cm²)

E = 51.5-56.4 N/mm² (525-575 kg/cm²)

F = 56.4-61.3 N/mm² (575-625 kg/cm²)

FIG. 2 RELATION BETWEEN FREE WATER-CEMENT RATIO AND CONCRETE STRENGTH FOR DIFFERENT CEMENT STRENGTHS