

Seat No.	
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S.E. (Civil Engg.) (Part - II) (Semester - IV) Examination, April - 2016

CONCRETE TECHNOLOGY

Sub. Code : 63346

Day and Date : Friday, 22 - 04 - 2016

Total Marks : 100

Time : 10.30 a.m. to 01.30 p.m.

- Instructions :
- 1) Solve all the three questions from each section
 - 2) Figures to the right indicate full marks
 - 3) Assume suitable data if necessary.

SECTION - I

- Q1)** a) Explain the classification of aggregate. [6]
b) What are field test conducted on quality of cement at site of construction. [6]
c) Explain how shape and texture of aggregate affected strength of concrete? [6]
- Q2)** a) What are methods of compaction of concrete used for making good quality concrete? Explain in brief. [8]
b) Define workability of concrete. Describe the compaction factor test of workability with neat sketch. [8]

OR

Describe the mechanism of action of plasticizers with neat sketch.

- Q3)** a) Enlist different tests on Hardened Concrete? Explain split tensile strength? [8]
b) Explain in details types of concrete shrinkage? How to determine plastic shrinkage in laboratory. [8]

P.T.O.

SECTION - II

Q4) Write short notes (any three) : **[18]**

- a) Hot Weather Concreting
- b) Vacuum Dewatered Concrete
- c) No-fines Concrete
- d) High Density Concrete

Q5) a) What is the effect of w/c ratio on durability of concrete? **[8]**

b) Explain Freezing and Thawing phenomena of concrete. **[8]**

OR

Explain in detail Schmidt's rebound hammer to test concrete with their limitation.

Q6) Design of M30 concrete mix as per DOE method **[16]**

- a) Grade designation : M30 (Non air entrained)
- b) Type of cement: OPC 43 grade confirming to IS 8112
- c) Maximum nominal size of aggregates : 20 mm
- d) Workability: 100 mm (slump)
- e) Exposure condition : Exposure to fresh water
- f) Specific gravity of cement : 3.15
- g) Specific gravity of Coarse aggregate : 2.8; Fine aggregate : 2.6
- h) % of finer on 6000 micron sieve of Fine aggregate : 54%

Table 11.11. Approximate Compressive Strength of Concrete Made with a free Water/Cement Ratio of 0.50 According to the 1988 British Method.

Type of Cement	Type of C.A.	Compressive Strength at the age (cube) of days MPa			
		3	7	28	91
Ordinary Portland cement (Type I) Sulphate Resisting Cement (Type V)	uncrushed	22	30	42	49
	Crushed	27	36	49	56
Rapid - Hardening Portland Cement (Type III)	Uncrushed	29	37	48	54
	Crushed	34	43	55	61

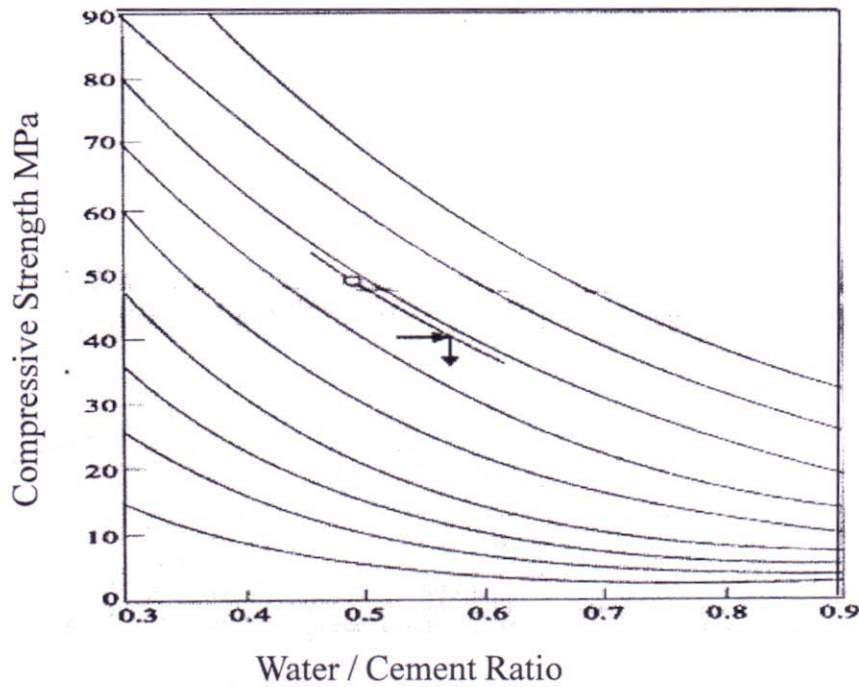
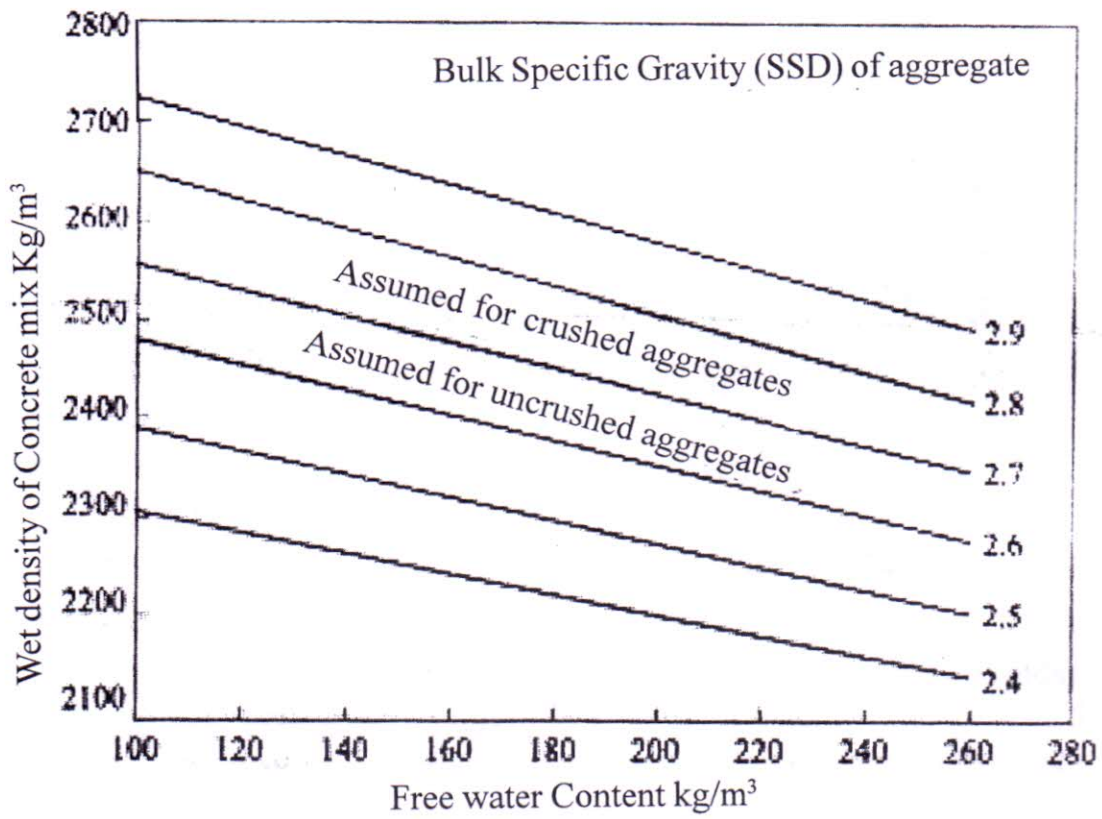


Table 9.20. Requirements of BS 8110 : Part I: 1985 to Ensure Durability Under Specified Exposure Conditions of Reinforced and Prestressed Concrete Made with Normal Weight Aggregate.

Condition of exposure	Nominal Cover of Concrete in mm				
	Mild	25	20	20	20
Moderate	-	35	30	25	20
Severe	-	-	40	30	25
Very Severe	-	-	50	40	30
Extreme	-	-	-	60	50
Maximum Water/Cementitious Material ratio	0.65	0.60	0.55	0.50	0.45
Minimum content of cementitious Material in kg/m ³	275	300	325	350	400
Minimum grade MPa	30	35	40	45	50



Maximum aggregate size : 20 mm

