BE (Sixth Semester)

Civil Engineering

Concrete Technology - 320654(20)

2015 - Summer Session , New Scheme

Chapter 1

1	What is curing related with concrete ?	**2**
2	Explain the process of hydration of cement with suitable diagram of hydrated product.	**7**
3	What is the need of Grading ? Explain your answer with suitable example in tabular form for coarse and fine aggregate both.	**7**
4	Write short notes on any two of the following :	**7**

- Surface Index
- Alkali Aggregate Reaction
- Testing procedure of crushing value of aggregate.
- Special purpose cements.

Chapter 2

1	What is workability ?	**2**
2	What is the classification of admixture ? Explain any two admixture for their reaction mechanism and suitability ?	**7**
3	What are the factors affecting workability ? Explain each point in detail.	**7**
4	Write short notes on any two of the following :	**7**

- Slump test
- Mineral additives and their effect on concrete properties.
- Seggregation and bleeding related to concrete.

Chapter 3

1	What are the properties of hardness concrete ?	**2**
2	What are the factors affecting compressive strength of concrete ? Explain each with supporting graphs and data.	**7**
3	The strength of fully matured concrete was found to be 45 N/mm^2 . Find the strength of an identical concrete at the age of seven days when cured at an average temperature during day time at 20^0C and night time 10^0C. (Take constant A = 32, B = 54).	**7**
4	Write short notes on any two of the following :	**7**

- Modulus of Elasticity of concrete
- Creep behaviour in concrete
- Shrinkage of concrete

Chapter 4

1	What are the need of concrete mix design ?	**2**
2	Write short notes on any two of the following :	**14**

- Sampling and acceptance criteria of concrete
- Difference between destrutive and non-destructive testing of concrete and its suitability.
- Concept and variable of concrete mix design.

3	Design M-30 grade of concrete by IS-Code method for the given data using given graphs/table :	**14**

- Cement OPC 43, specific gravity = 3.15.
- FA-Specific gravity = 2.53, Zone III.
- CA-Specific gravity 2.69, MSA = 20 mm.
- Strength of cement as per IS code.

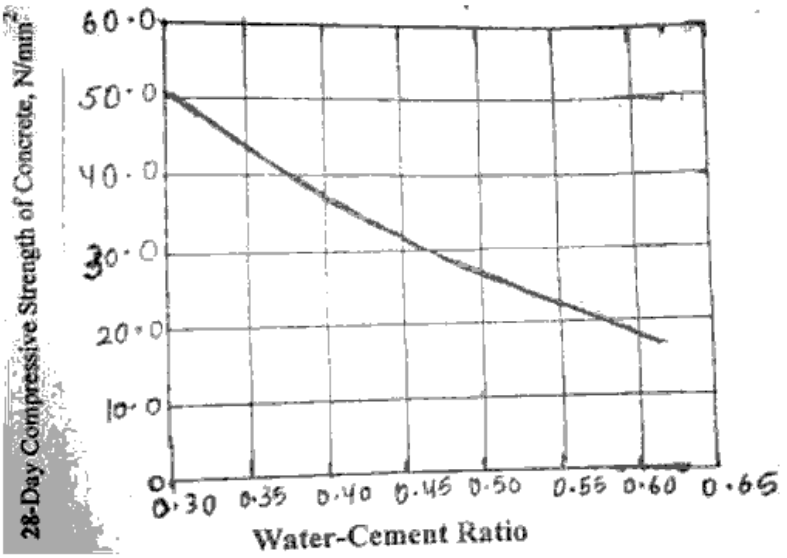

Fig.1.: Generalised Relation between free Water-Cement Ratio and Compressive strength of concrete.

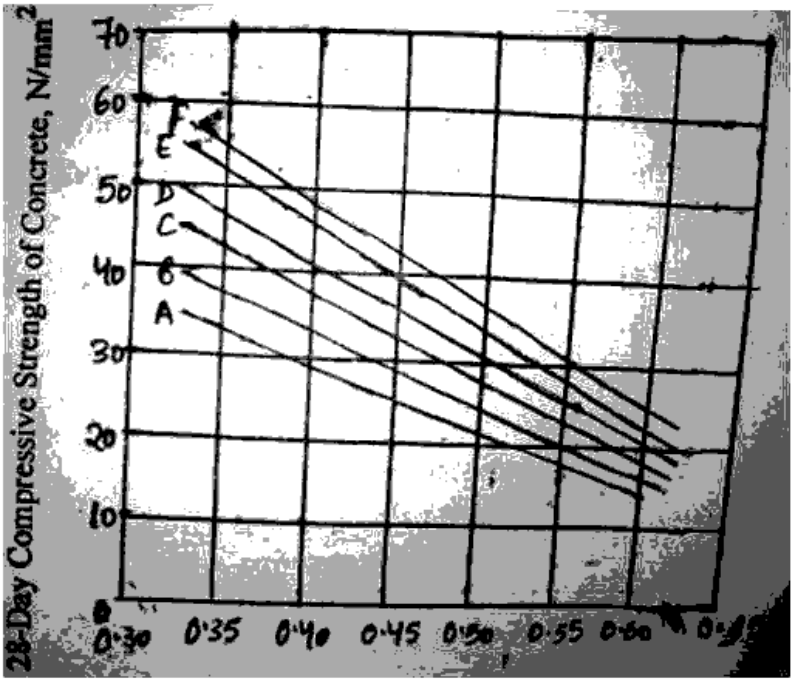

Fig.2.: Relation between free Water Cement Ratio and Concrete Strength for different cement strengths.

28 Day strength of cement, tested According to IS : 4.31-1968

A = 31.9-36.8 N/mm^3

B = 36.8-41.7 N/mm^3

C = 41.7-46.6 N/mm^3

D = 46.6-51.5 N/mm^3

E = 51.5-56.4 N/mm^3

F = 56.4-61.3 N/mm^3

Approximate Sand and Water Contents Per Cubic Meter of Concrete W/C = 0.60, Workability = 0.80 C.F.

Maximum Size of Aggregate (mm)	Water Content including surface water per cubic metre of concrete (kg)	Sand as percent of Total Aggregate by Absolute volume
10	200	40
20	186	35
40	165	30

Approximate Sand and Water Contents Per Cubic Meter of Concrete W/C = 0.35, Workability = 0.80 C.F.

Maximum Size of Aggregate (mm)	Water Content including surface water per cubic metre of concrete (kg)	Sand as percent of Total Aggregate by Absolute volume
10	200	28
20	180	25

Adjustment of values of water content and sand percentage for other conditions

Chapter 5

1	What do you mean by no-fines concrete?	**2**
2	Explain the need and procedure of vacuum dewatered concreting.	**7**
3	Explain the manufacturing process of light weight concrete.	**7**
4	Write short notes on any two of the following :	**7**

- Shortcreting
- Fibre reinforced concrete
- Cold weather concreting
- Under water concreting