6.6 Problems

1. Draw the following with net sketches

a. Test setup for flexural tensile strength test of concrete

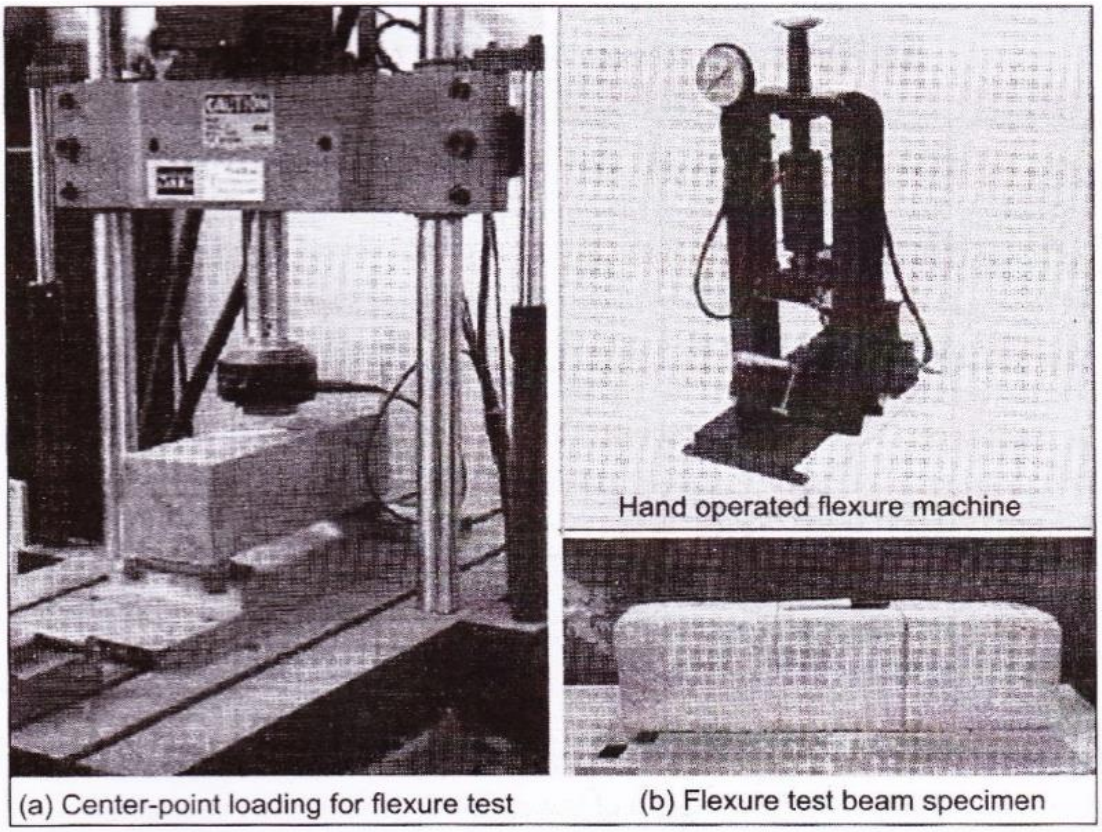


Fig. 6.2 Flexural Testing machine (FTM), test setup and specimen

b. Test setup for splitting tensile strength of concrete on i. cylinders, ii. diagonal direction of cubes, iii. cube side.

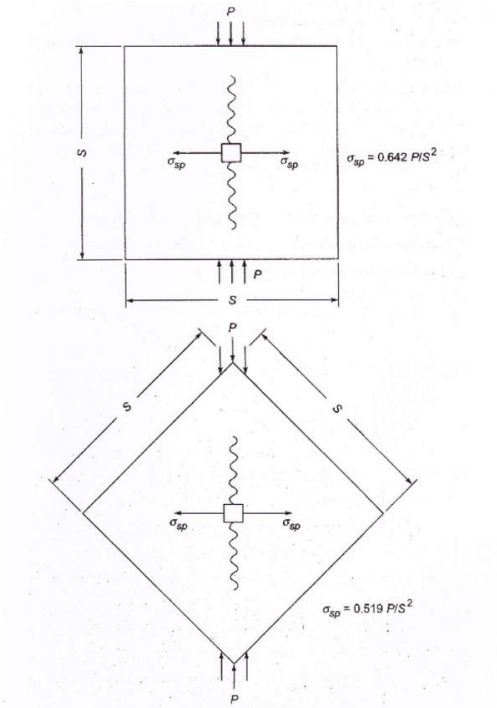


Fig. 6.5 Determination of splitting tensile strength of concrete from testing of cubes

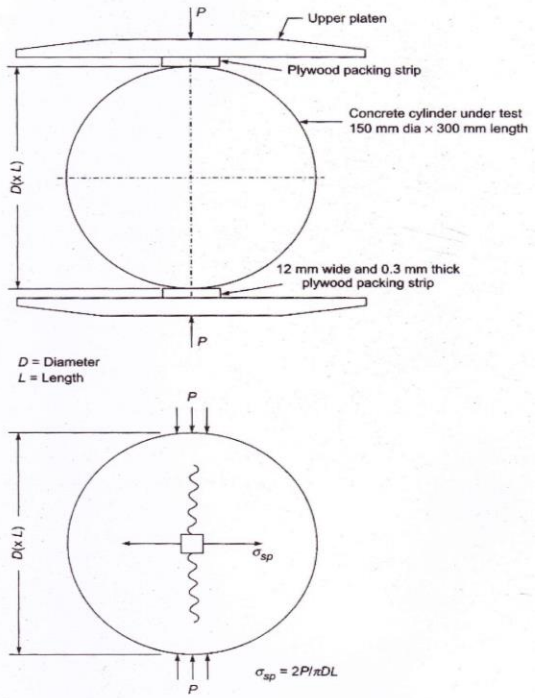


Fig. 6.4 Loading setup for determination of splitting tensile strength of concrete

c. The relation between splitting and flexural tensile strength of concrete.

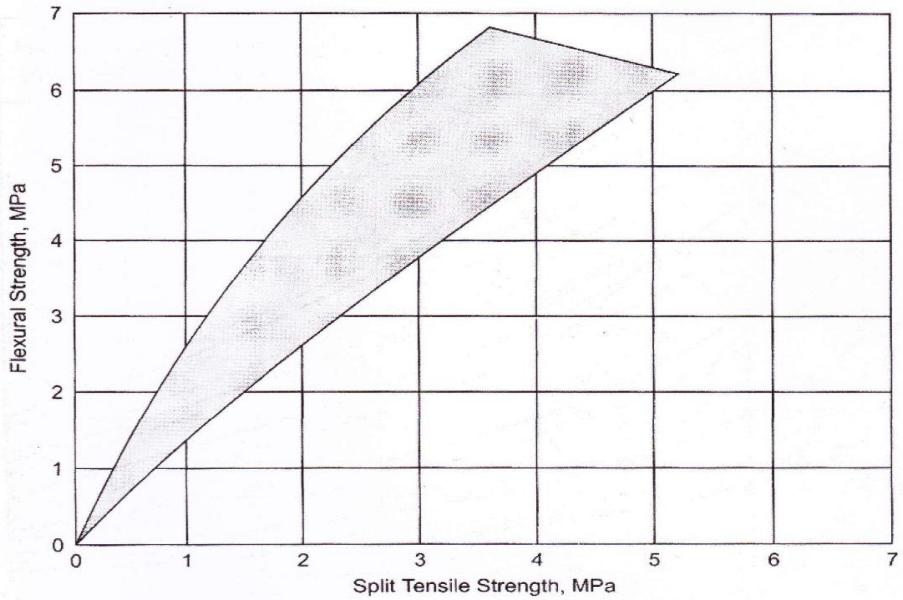
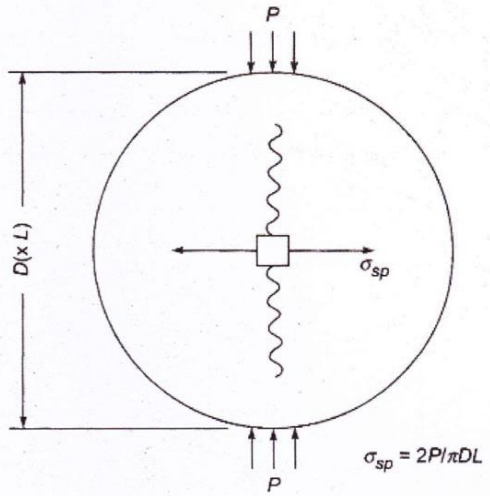


Fig. 6.7 Relationship between flexural strength and split strength

d. The stress distribution on concrete cylinder under splitting tension.



e. The relationship between splitting strength and compressive strength of concrete.

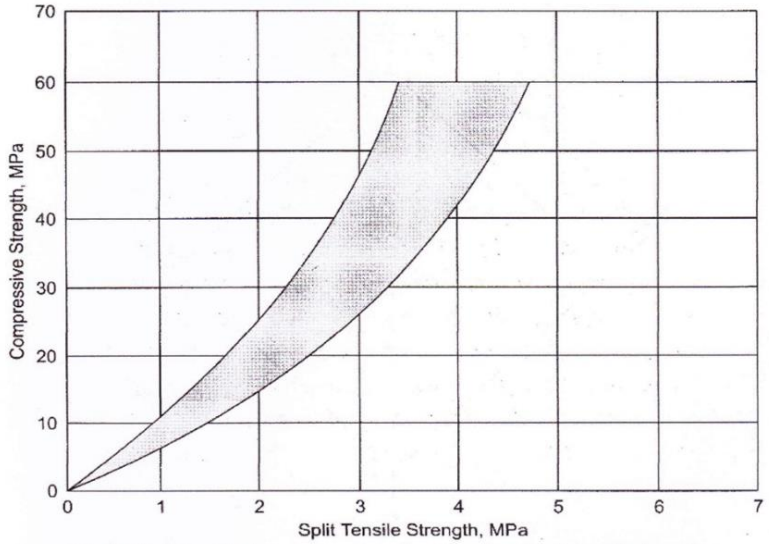


Fig. 6.6 Relationship between compressive strength and split tensile strength

f. The relationship between flexural tensile strength and compressive strength of concrete.

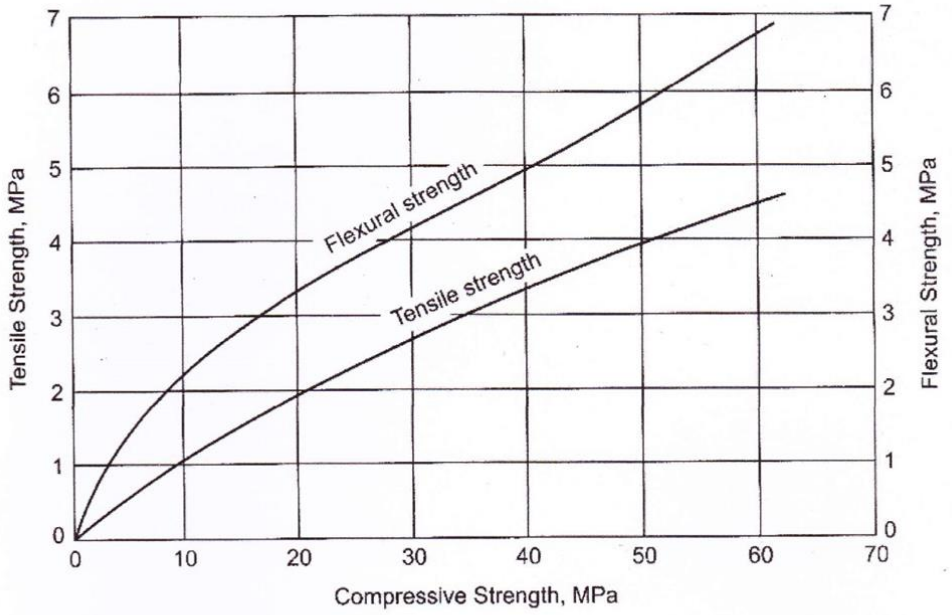


Fig. 6.3 Relationship between compressive strength, tensile strength, and flexural tensile strength

g. The effect of cement content on compressive strength of concrete.

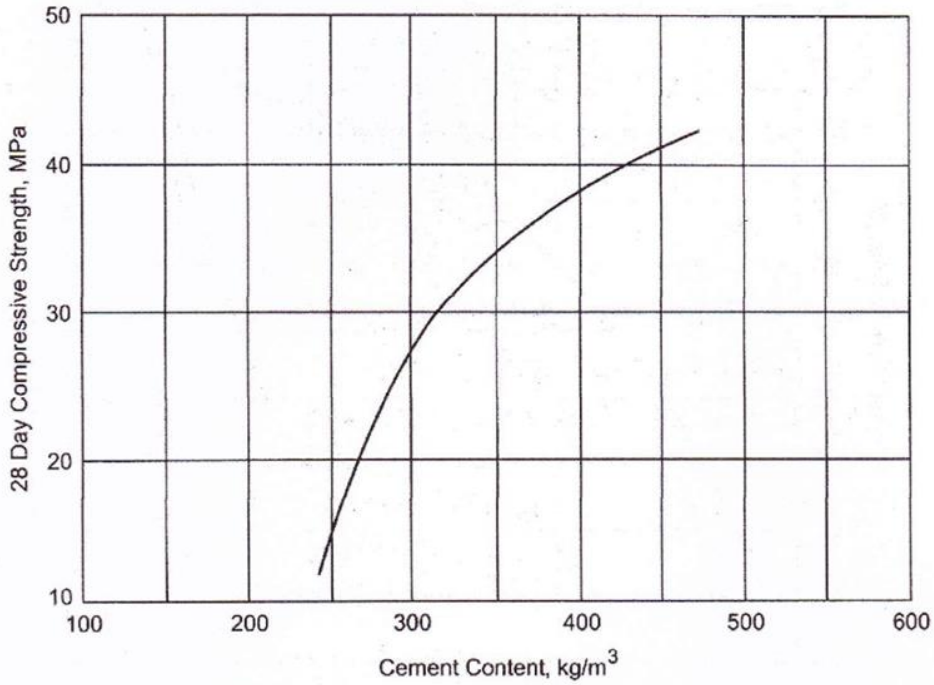


Fig. 6.9 Effect of cement content on concrete strength

h. The effect of cement fineness on the compressive strength of concrete for early and later ages.

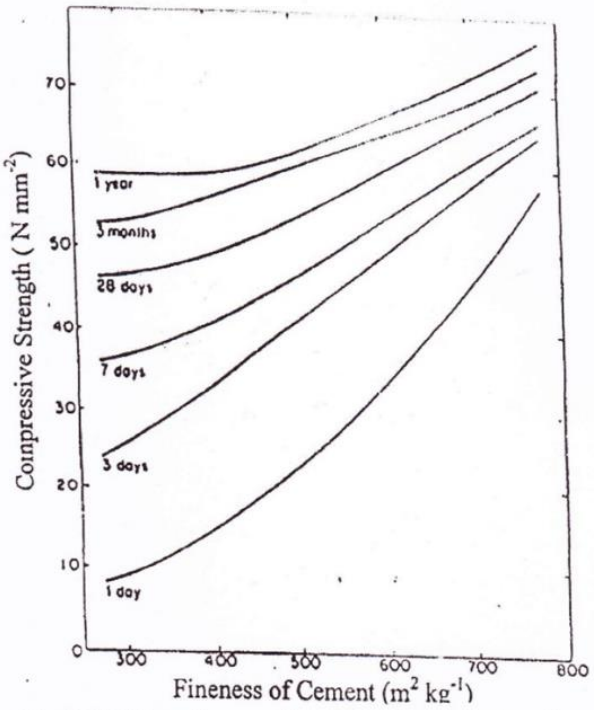


Fig. 6.10 Effect of cement fineness on concrete strength

i. The effect of chemical composition of hydrated cement on the compressive strength of concrete.

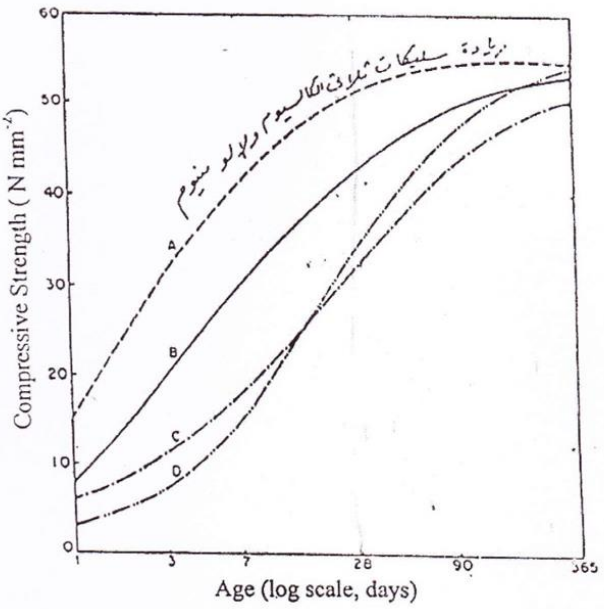


Fig. 6.11 Effect of chemical composition of hydrated cement on concrete strength

j. The effect of chemical composition of hydrated cement on the relative compressive strength of concrete in the early and later ages.

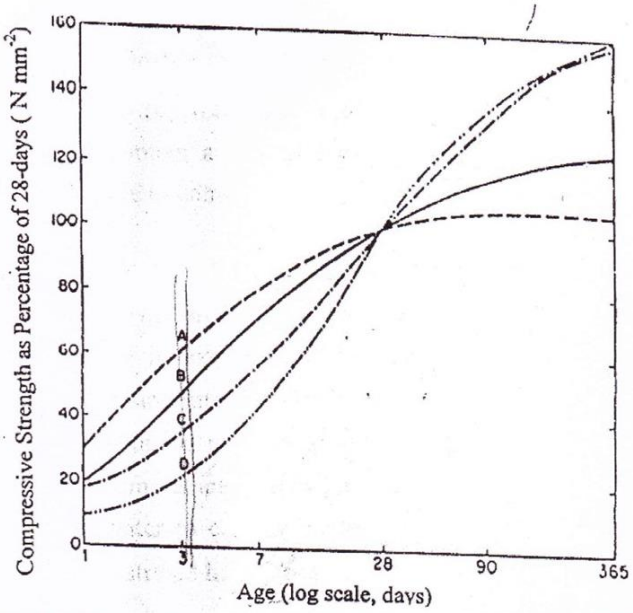


Fig. 6.12 Development of concrete strength made with different cements

k. Effect of water-cement ratio on concrete compressive strength at different ages.

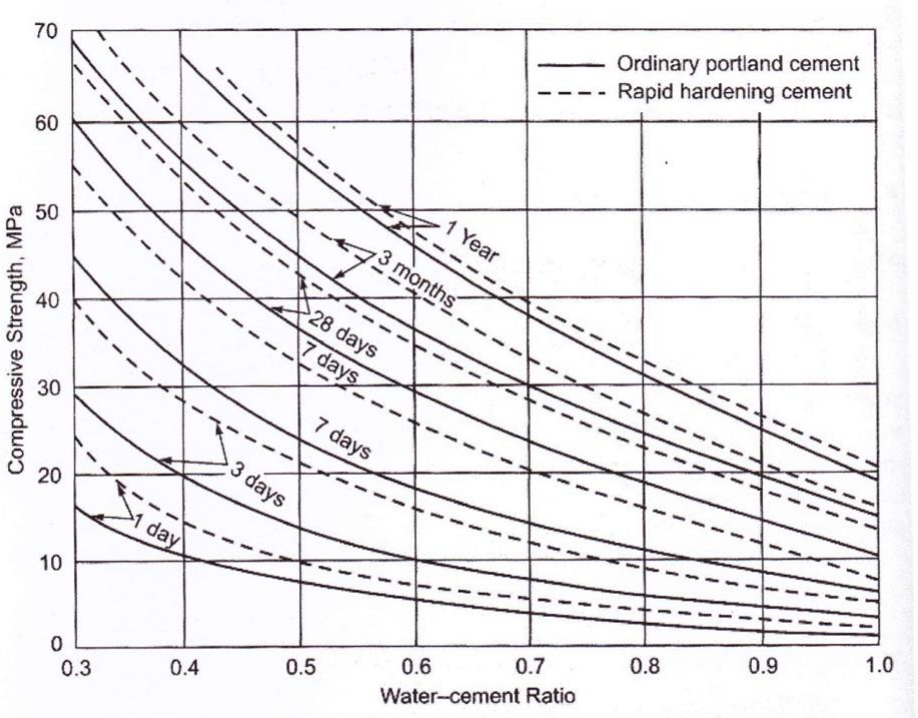


Fig. 6.13 Effect of water-cement ratio on concrete compressive strength at different ages

l. Effect of aggregate-cement ratio on the compressive strength of concrete.

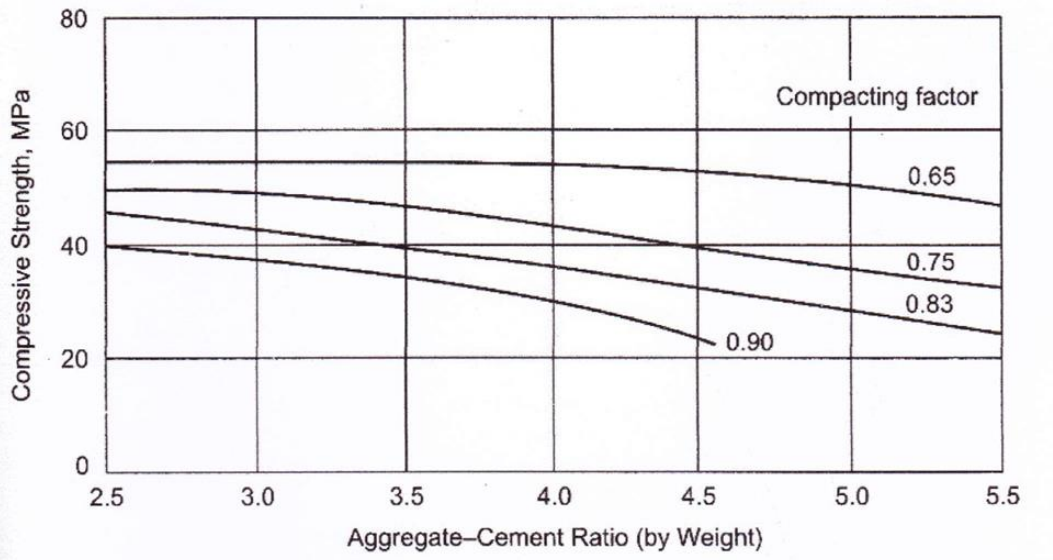


Fig. 6.14 Effect of aggregate-cement ratio on concrete compressive strength

m. Effect of entrained air admixture percentages on concrete compressive strength.

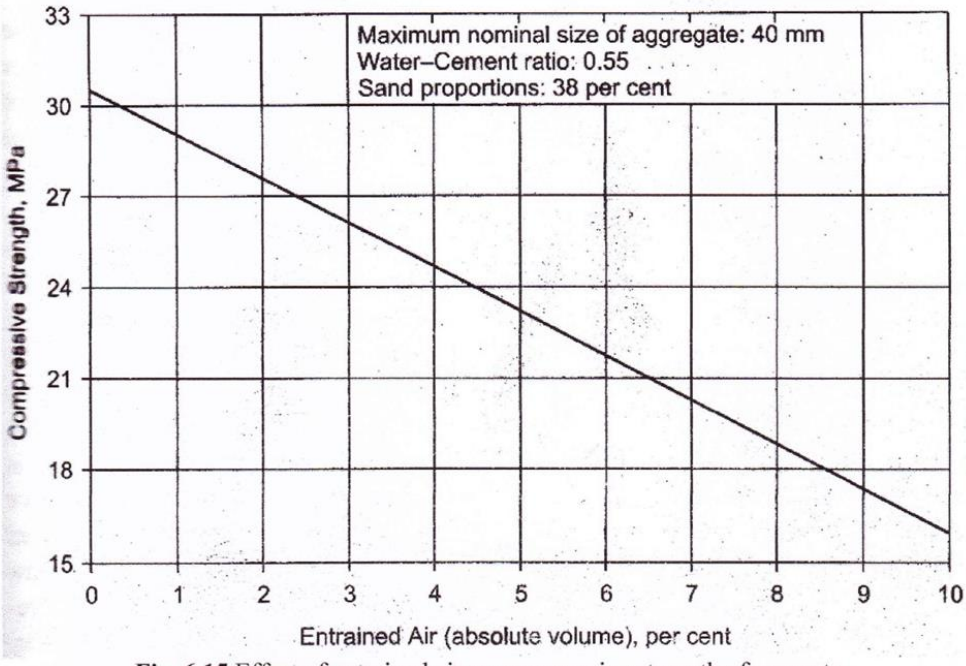


Fig. 6.15 Effect of entrained air on compressive strength of concrete

n. Effect of Curing and Condition of Concrete compressive strength.

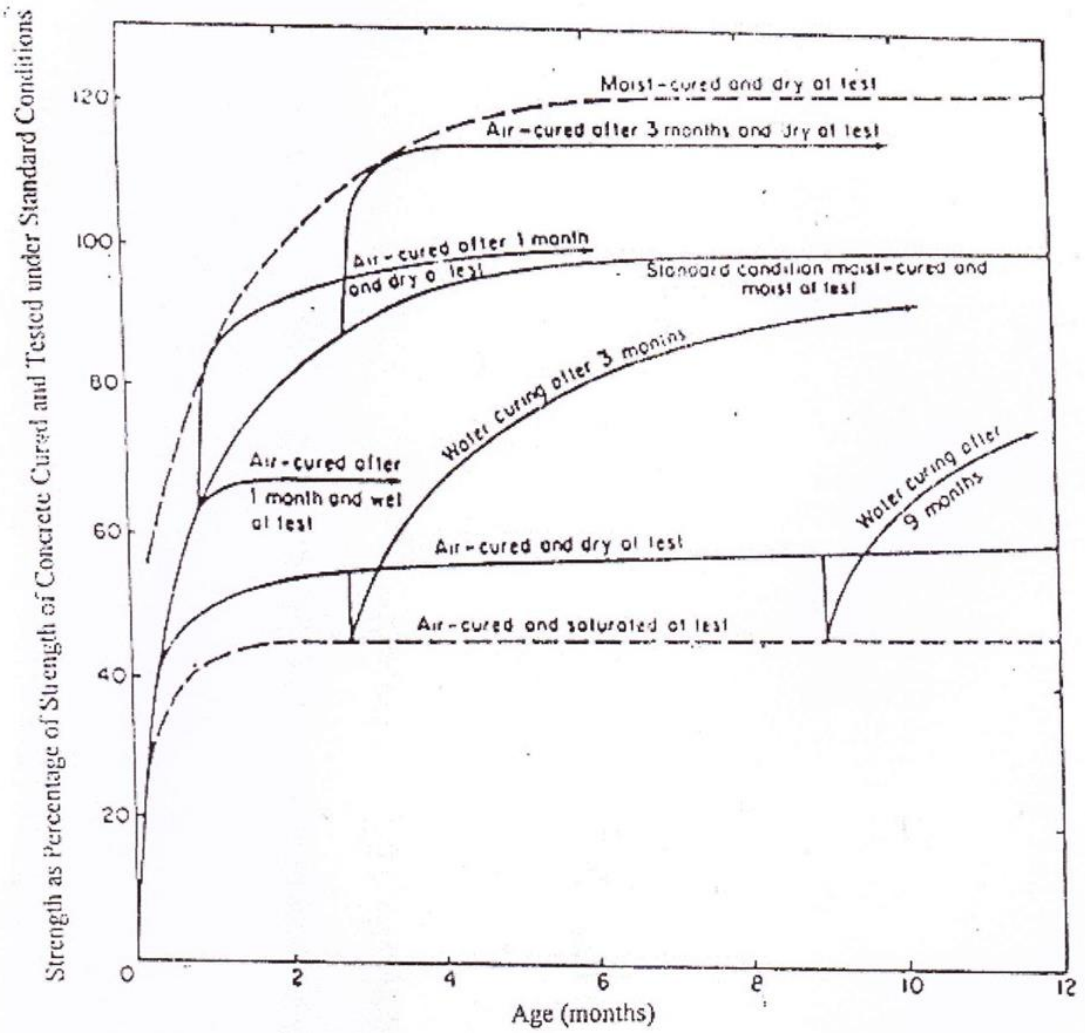


Fig. 6.16 Effect of Curing and Condition of Concrete when Tested on Concrete, Based on Price (1937)

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o. Effect of curing temperature on the compressive strength of concrete.

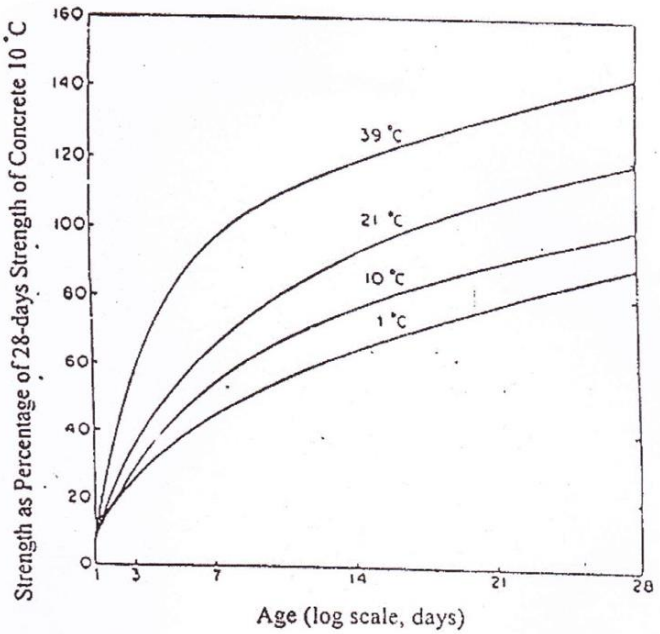

Fig. 6.19 Comparative Compressive Strength of Concrete Cast, Sealed and Maintained at 10 □C for the first 24 Hours and Subsequently Cured at Different Temperatures, Based on Price (1951)

p. Effect of curing temperature on the relative compressive strength of concrete on the early and later ages.

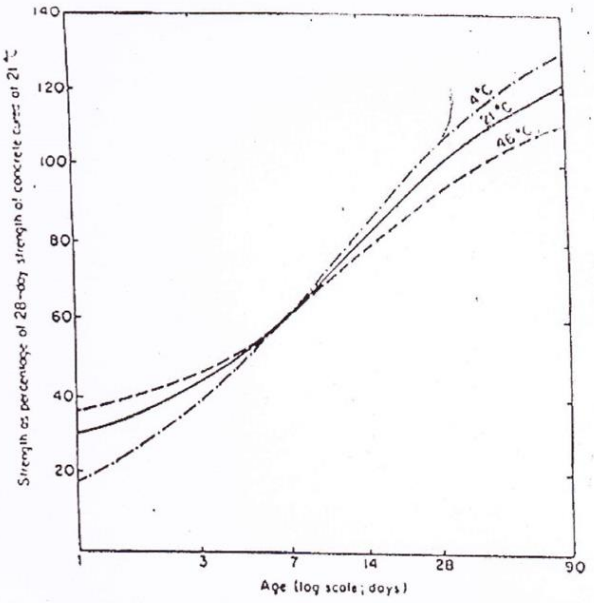

Fig. 6.18 Comparative Compressive Strength of Concrete Specimens Maintained at Different Temperatures for 2 Hours after Casting Subsequently Cured at 21□ C Based on Price (1951)

q. Effect of test specimen size on the compressive strength.

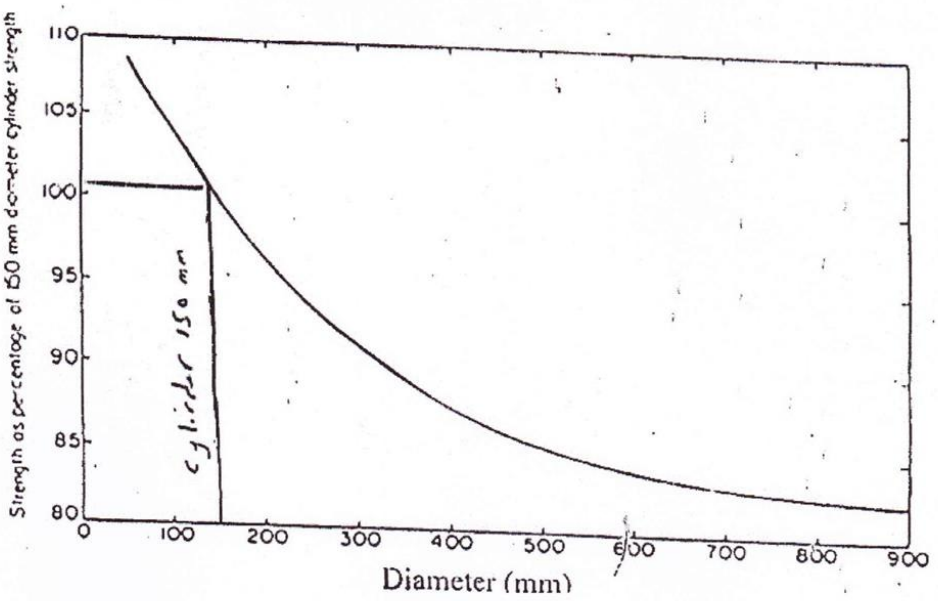

Fig. 6.20 Effect of Specimen size on the Apparent 28-day Concrete Compressive Strength for Specimens with a Height-Diameter Ratio of 2 and Aggregate Whose Maximum Diameter is One-Quarter of The Diameter of The Specimen, Based on Price (1951)

r. Effect of the aspect ratio of test specimen on the compressive strength.

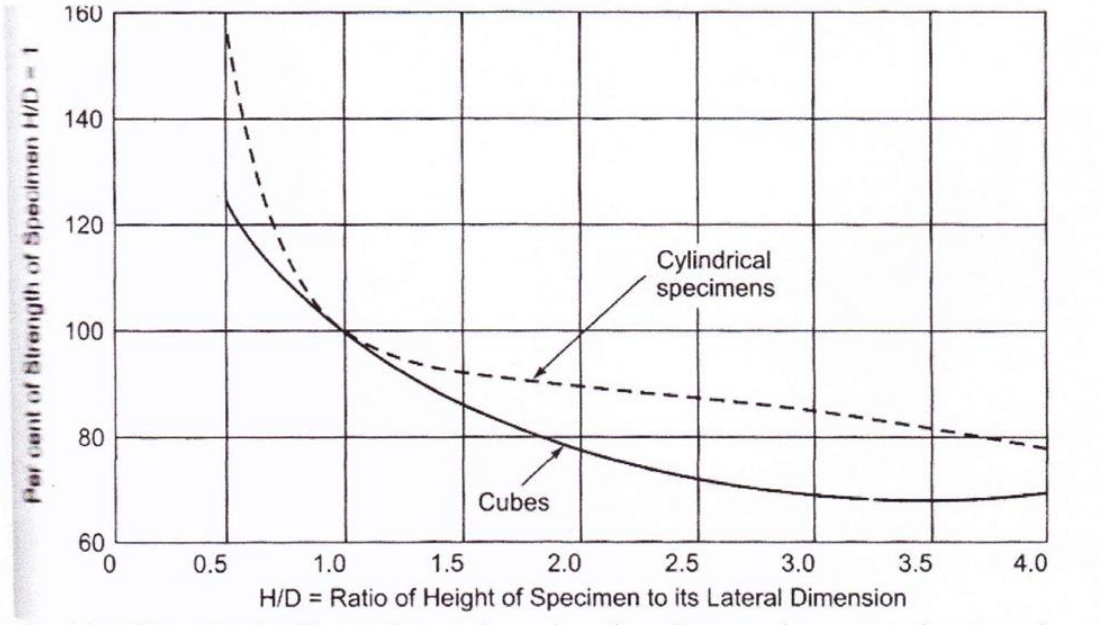

Fig. 6.21 Effect of ratio of height/lateral dimension of specimen on the compressive strength

s. Typical stress-strain relationship of concrete.

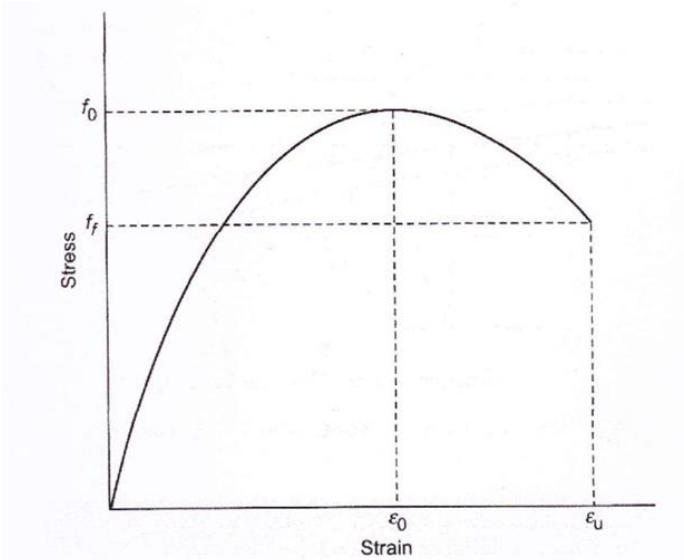

Fig. 6.22 Stress-Strain characteristics of concrete

t. Diagram showing deformation of hardened concrete under load.

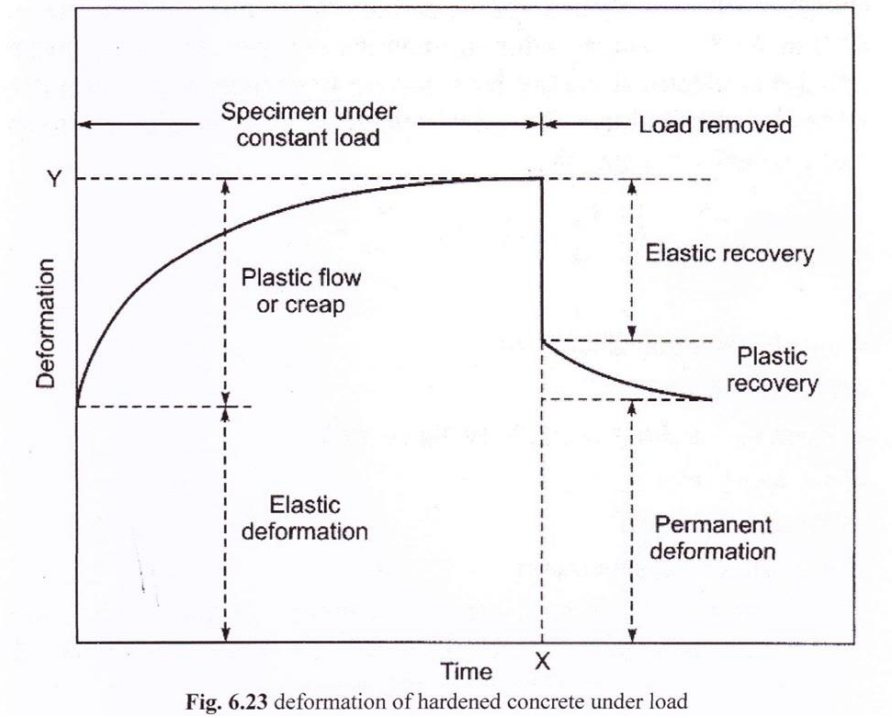

Fig. 6.23 deformation of hardened concrete under load

u. diagram showing the different types of modulus of elasticity of concrete.

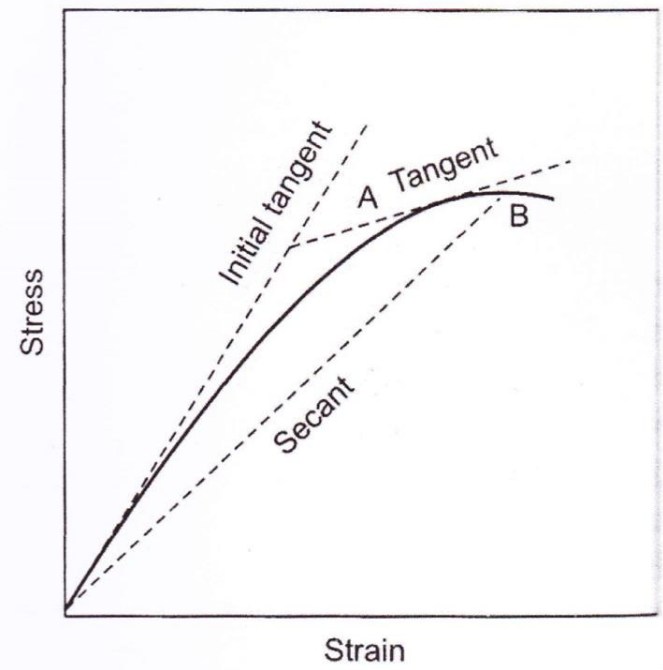

Fig. 6.24 Different modulii of elasticity

v. Diagram showing the variation of drying shrinkage and moisture movement with alternative drying and wetting.

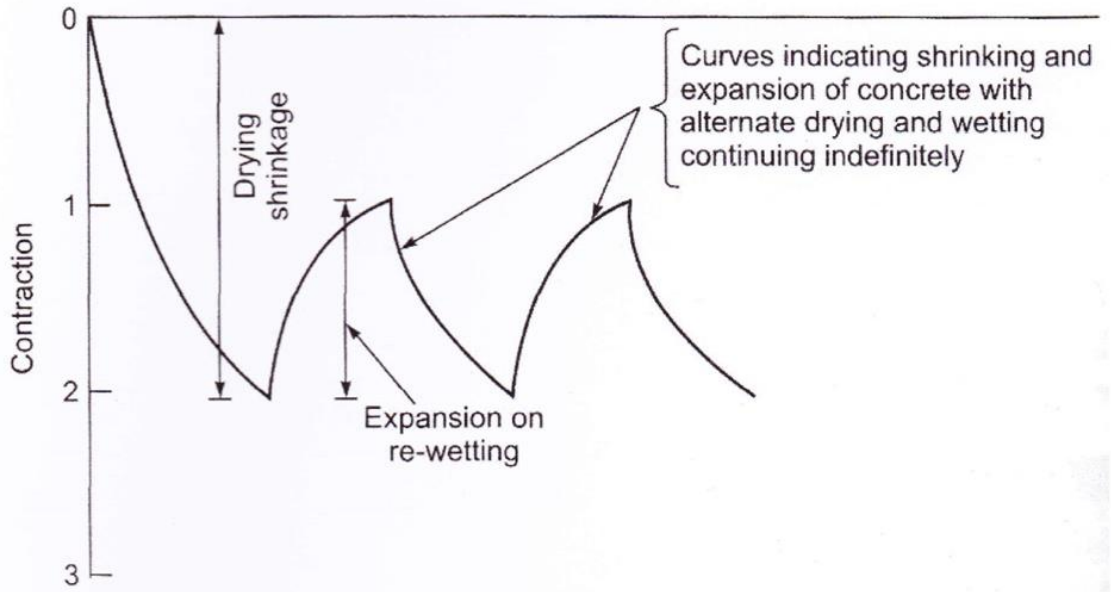

Fig. 6.25 Variation of drying shrinkage and moisture movement with alternative drying and wetting