

CEPC-412 (Concrete Technology)

B.Tech.-4th NEP

Time : 3 Hours

Max. Marks : 60

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note: Attempt five questions in all, select one question each from section A, B, C, D. Section E (Question-9) is compulsory.

SECTION-A

1. Define the following phenomena and give their significance and the factors affecting them: slump loss, segregation, and bleeding. Suggest at least two methods to reduce "bleeding" of a concrete mixture. (8+4=12)
2. Enumerate the steps involved in the Indian standard method of mix design. Why is it important to control the aggregate gradation once the concrete mix design has been selected? How is this gradation control expressed in IS code specification? (6+4+2=12)

SECTION-B

3. What are the different types of chemical admixtures being used in concrete? With the help of suitable examples, show how accelerating and retarding admixtures affect the setting time of a concrete mixture. (4+8=12)
4. Explain the effect of fly ash on the fresh and hardened properties of concrete in detail. (12)

SECTION-C

5. Define the coefficient of permeability. How does aggregate size influence the coefficient of permeability of concrete? List other factors that determine the permeability of concrete in a structure. (2+10=12)
6. Explain the significance of following properties of concrete and their test methods:
(a) Creep (b) Shrinkage (6+6=12)

SECTION-D

7. What is difference between polymer concrete and polymer impregnated concrete? Explain their significance. (12)
8. List four non-destructive test method for the evaluation of concrete quality. Explain one which can be used as a direct substitute for determining the compressive strength of concrete. (6+6=12)

SECTION-E (Compulsory)

9. (a) Define initial setting and final setting time of cement.
(b) Write and explain pozzolanic reaction.
(c) Define creep and how does it affect the concrete.
(d) Write any two factors affecting durability of concrete.
(e) What is high performance concrete?
(f) What is the significance of ultrasonic pulse velocity test? (6×2=12)