Total No. of printed pages = 4

**19/4th Sem/UCE 404**

**2022**

# CONCRETE TECHNOLOGY

Full Marks – 100

Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer any *five* questions.

1. (a) What is the difference between a true slump and zero slump ? 3

   (b) How slump loss occurs in concrete ? What are the steps which we can adopt to reduce slump loss ? 3+4=7

   (c) How dimensional stability plays an important role in concrete property ? Discuss the following terms :

   Creep, Plastic Shrinkage, Autogenous shrinkage, and Drying shrinkage. 2+8=10

2. (a) Discuss the various factors affecting workability. 8

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(b) What is the main purpose of compaction ? What are the general problems which occur due to poor compaction ? 2+4=6

(c) How external vibrators are different from internal vibrators ? What is the mechanism behind compaction by spinning method ? 4+2=6

3. (a) What do you understand by the rheology of fresh concrete ? Enlist the various parameters that are to be considered under the rheology of fresh concrete. 2+2=4

(b) Why curing is done in concrete ? What are the benefits which we can ensure after proper curing ? 2+4=6

(c) At what situation membrane curing of concrete is adopted ? Discuss its types. 2+8=10

4. (a) Why does the volume change in concrete occurs ? Enlist the various factors which trigger volume change. 2+2=4

(b) Discuss any three actions which reduce the chemical durability. 6

(c) How air-entrained concrete is made ? Discuss how it is modifying the properties such as freezing and thawing, workability, bleeding and laitance. 2+8=10

5. (a) What are the destructive and non-destructive testing methods ? 4

(b) Discuss the mobility parameter in the rheology of concrete. 6

(c) What is the action of plasticizers in concrete ? Also, discuss the mechanism involved. 3+7=10

6. (a) How super plasticizers affect fresh concrete and hardened concrete ? What are its advantages ? 4+6=10

(b) Why retarding and accelerating admixtures are added to fresh concrete ? At what situation these kinds of admixtures are used in concrete (give uses separately) ? 4+6=10

7. (a) Give the mechanism behind the deterioration of concrete through alkali-aggregate reaction. 6

(b) What are the various methods used to control alkali-aggregate reaction ? 4

(c) How size, shape and texture of aggregates play an important role in preparing a good concrete ? 10