

Total No. of printed pages = 4

19/4th Sem/UCE 404

2022

## CONCRETE TECHNOLOGY

Full Marks – 100

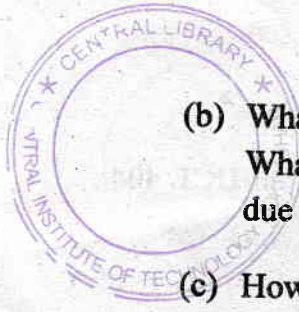
Time – Three hours

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 shrink-  
age, and Drying shrinkage. 2+8=10
2. (a) Discuss the various factors affecting work-  
ability. 8

[Turn over



(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.  $2+2=4$

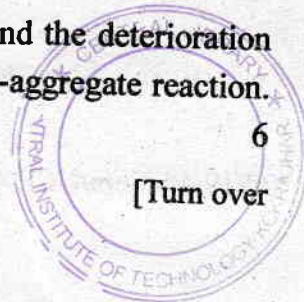
(b) Why curing is done in concrete ? What are  
the benefits which we can ensure after proper  
curing ?  $2+4=6$

(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

