



## BRAINWARE UNIVERSITY

**Term End Examination 2023-2024**  
**Programme – Dip.CE-2022**  
**Course Name – Concrete Technology**  
**Course Code - DCEPC304**  
**( Semester III )**

*Library*  
**Brainware University**  
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**Full Marks : 4**

**Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

### Group-A

(Multiple Choice Type Question)

1 x 15=15

1. Choose the correct alternative from the following :

- (i) Identify the laboratory test that measures the particle size of cement particles:
- |                      |                              |
|----------------------|------------------------------|
| a) Fineness test     | b) Standard consistency test |
| c) Setting time test | d) Compressive strength test |
- (ii) Select the primary purpose of the mixing process in concrete production:
- |                          |                              |
|--------------------------|------------------------------|
| a) To transport concrete | b) To place concrete         |
| c) To remove air voids   | d) To homogenize ingredients |
- (iii) Identify the laboratory test used to determine the final setting time of cement paste:
- |                              |                            |
|------------------------------|----------------------------|
| a) Initial setting time test | b) Soundness test          |
| c) Autoclave test            | d) Final setting time test |
- (iv) Identify the term used to describe the ability of sand to absorb and retain moisture from its surroundings:
- |                     |                     |
|---------------------|---------------------|
| a) Bulk density     | b) Water absorption |
| c) Fineness modulus | d) Grading zone     |
- (v) Choose the type of formwork commonly used for constructing vertical members like columns:
- |                    |                        |
|--------------------|------------------------|
| a) Beam formwork   | b) Slab formwork       |
| c) Column formwork | d) Horizontal formwork |
- (vi) Choose the type of joint designed to control cracking caused by drying shrinkage in concrete:
- |                      |                    |
|----------------------|--------------------|
| a) Contraction joint | b) Isolation joint |
| c) Expansion joint   | d) Control joint   |
- (vii) Identify the term used to describe the distribution of particle sizes in coarse aggregates:
- |                   |                   |
|-------------------|-------------------|
| a) Crushing value | b) Impact value   |
| c) Grading        | d) Abrasion value |
- (viii) Identify the impact value limit that indicates high-quality aggregates in the impact value test:
- |                  |                  |
|------------------|------------------|
| a) Less than 10% | b) Less than 15% |
| c) Less than 20% | d) Less than 25% |

- (ix) Choose a property that is typically associated with plasticizers (water-reducing admixtures) in concrete:
- a) Increasing air content  
b) Delaying setting time  
c) Reducing water demand  
d) Enhancing shrinkage
- (x) Choose the factor that makes RMC suitable for large construction projects and projects with tight schedules:
- a) Lower cost  
b) Easy on-site mixing  
c) Reduced transportation time  
d) Customizable mix proportions
- (xi) Choose the characteristic that defines High-Performance Concrete (HPC) compared to conventional concrete:
- a) Lower compressive strength  
b) Lower workability  
c) Superior mechanical properties and durability  
d) Faster setting time
- (xii) Identify the workability test that measures the time taken by concrete to pass through a standard funnel-shaped mold:
- a) Flow table test  
b) Slump cone test  
c) Vee-Bee Consistometer test  
d) Compaction factor test
- (xiii) Identify the test commonly used to assess the permeability of concrete by measuring the flow of water through the specimen:
- a) Slump test  
b) Chloride ion penetration test  
c) Water absorption test  
d) Permeability test
- (xiv) Select the characteristic that mix design aims to achieve according to IS 10262, based on the exposure conditions and the desired life of the structure:
- a) Workability  
b) Durability  
c) Finish  
d) Elasticity
- (xv) Select the term used to describe the Rebound Hammer Test's measurement principle, where the rebound velocity is related to the concrete's hardness:
- a) Leeb rebound  
b) Schmidt rebound  
c) Shore hardness  
d) Brinell hardness

**Group-B**

(Short Answer Type Questions)

3 x 5=15

2. Define the term fineness when discussing cement quality. (3)
3. Explain compressive strength of cement and its significance. (3)
4. Discuss why fineness test performed on cement, and what it indicates about the quality of cement. (3)
5. Explain the compacting factor test. (3)
6. Conclude the interconnection between the impact value of aggregate and its durability. (3)

**OR**

Conclude how the presence of excessive organic matter in water affect the setting and strength of concrete. (3)

**Group-C**

(Long Answer Type Questions)

5 x 6=30

7. Conclude the possible causes of segregation. (5)
8. Differentiate the high-strength grades and medium strength grades of concrete. (5)
9. List the necessity of using admixture. (5)
10. Discuss the purpose of compaction in concrete placement. (5)
11. Write a short note on lightweight concrete. (5)
12. Explain how the rebound number value is interpreted in the rebound hammer test. (5)

**OR**

Explain cold weather concreting. (5)