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# BRAINWARE UNIVERSITY

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Brainware University
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**Term End Examination 2025-2026**
**Programme – Dip.CE-2024**
**Course Name – Concrete Technology**
**Course Code - DCE30103**
**( Semester III )**

**Full Marks : 60** **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) Select the BIS code for testing compressive strength of cement.
a) IS 4031 b) IS 456
c) IS 10262 d) IS 269

(ii) Identify the apparatus used for determining standard consistency of cement.
a) Vicat Apparatus b) Le Chatelier
c) Blaine Apparatus d) Pycnometer

(iii) Select the property tested using Le Chatelier apparatus.
a) Soundness b) Fineness
c) Consistency d) Setting time

(iv) Select the correct maximum w/c ratio for M20 concrete under mild exposure as per IS 456.
a) 0.65 b) 0.6
c) 0.55 d) 0.5

(v) Identify the instrument used to measure concrete workability by vibration.
a) Slump cone b) Compaction factor apparatus
c) Vee-Bee Consistometer d) Flow table

(vi) Select the suitable test for measuring compactability of fresh concrete.
a) Slump cone b) Compaction factor test
c) Ultrasonic test d) Split tensile test

(vii) Identify the property of concrete that helps resist water penetration.
a) Workability b) Segregation
c) Impermeability d) Bleeding

(viii) Select the correct size of standard cube for strength testing.
a) 100 mm cube b) 200 mm cube

c) 150 mm cube d) 50 mm cube

(ix) Identify the NDT test which uses sound waves.

a) Schmidt hammer b) UPV test
c) Slump test d) Core cutting

(x) Choose the factor not affecting concrete mix design.

a) Grade of concrete b) Type of cement
c) Reinforcement detailing d) Workability requirement

(xi) Select the main function of placing in concreting operation.

a) Curing the mix b) Removing air
c) Transporting materials d) Positioning concrete in formwork

(xii) Choose the ideal surface condition for effective bonding of old and new concrete.

a) Dry and dusty b) Wet and clean
c) Oil-coated d) Painted

(xiii) Choose the joint where flexible sealant is used.

a) Expansion joint b) Construction joint
c) Isolation joint d) Control joint

(xiv) Choose the major limitation of High Performance Concrete.

a) Difficult to place b) High cost
c) Requires air curing d) Short setting time

(xv) Choose the factor affecting durability of special concrete in cold weather.

a) Early frost exposure b) Use of silica fume
c) Low formwork pressure d) Extra mixing time

## Group-B

(Short Answer Type Questions) 3 x 5=15

2. State the different physical properties of OPC. (3)
3. Describe the factors affecting concrete mix design. (3)
4. Define stripping time of formwork as per IS 456. (3)
5. Explain the use and limitations of lightweight concrete. (3)
6. Distinguish between slump cone and compaction factor test. (3)

**OR**

Evaluate the effects of bleeding on concrete strength and durability. (3)

## Group-C

(Long Answer Type Questions) 5 x 6=30

7. Describe the various methods of curing concrete. (5)
8. Illustrate the application of lightweight concrete in building construction. (5)
9. Calculate the FM of a sample using following data. Total weight of dry cement 2000gm. Sieve size = 40, 25, 20, 12.5, 10, 4.75. Weight Retain = 142, 482, 202, 260, 417, 494. (5)
10. Explain the steps of mix design. (5)
11. Justify the relevance of compaction factor test in field conditions. (5)
12. Justify the selection of concrete grades based on structural requirements. (5)

**OR**

Justify the requirement of durability in extreme exposure conditions. (5)

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