

**CONSTRUCTION MATERIALS AND TECHNOLOGY
(CIVL 2103)**

Time Allotted : 3 hrs

Full Marks : 70

Figures out of the right margin indicate full marks.

Candidates are required to answer Group A and any 5 (five) from Group B to E, taking at least one from each group.

Candidates are required to give answer in their own words as far as practicable.

**Group – A
(Multiple Choice Type Questions)**

1. Choose the correct alternative for the following: **10 × 1 = 10**
- (i) The percentage of carbon in steel is
(a) 0.1%-0.2% (b) 0.15%-1.5% (c) 1%-3% (d) 2%-4.5%.
- (ii) The maximum percentage of water absorption of 1st class brick in 24 hours should be limited to
(a) 10% (b) 15% (c) 20% (d) 24%.
- (iii) Di-calcium silicate
(a) hydrates rapidly (b) generates less heat of hydration
(c) reacts with water only (d) hardens rapidly.
- (iv) Separation of coarse aggregates from mortar during transportation, is known
(a) bleeding (b) creep (c) segregation (d) shrinkage.
- (v) Quick lime is
(a) Calcium oxide (b) Calcium hydroxide
(c) Calcium carbonate (d) Calcium silicate.
- (vi) The residue on I.S sieve no.9 (90 μ) of ordinary Portland cement should not exceed
(a) 5% (b) 10% (c) 20% (d) 30%.
- (vii) Slump test of concrete is a measure of its
(a) impact value (b) compressive strength
(c) tensile strength (d) consistency.
- (viii) From workability point of view, the shape of aggregate is suitable to use
(a) angular (b) irregular (c) flaky (d) none of these.
- (ix) Use of accelerators in concrete
(a) shortens the setting time (b) reduces the early strength of concrete
(c) increases period of curing (d) all of the above.
- (x) In a stair, the vertical distance between two successive tread faces is called
(a) flight (b) tread (c) rise (d) nosing.

Group- B

2. What are the compositions of cement? State the function and limits of each of them.
[[CO2](Analyze/IOCQ)]
12
3. Write short notes on:
(i) Compressive strength test of cement
(ii) Soundness test of cement.
[[CO3](Remember/LOCQ)]
12

Group - C

4. (a) What is concrete and how is it made? [[CO1,CO3](Understand/LOCQ)]
(b) What is curing? What is its significance? [[CO5](Understand/LOCQ)]
(c) Define water-cement ratio. How does it influence concrete strength?
[[CO6](Understand/LOCQ)]
4 + 4 + 4 = 12
5. (a) What are admixtures? Describe the effects of following admixtures on cement concrete with three examples of each (i) retarders (ii) accelerators.
[[CO3,CO6](Remember/LOCQ)]
(b) Write short notes on:
(i) Shrinkage of concrete
(ii) Creep of concrete.
[[CO6](Remember/LOCQ)]
6 + 6 = 12

Group - D

6. (a) Write short notes on:
(i) Load Bearing Wall
(ii) Partition Wall. [[CO6](Remember/LOCQ)]
(b) Write a short note on different types of shallow foundation with neat sketches.
[CO6,Remember/LOCQ]
6 + 6 = 12
7. (a) What are the different sizes of doors generally used in residential buildings and public buildings? [[CO1](Remember/LOCQ)]
(b) Describe a well foundation with neat sketch pointing out different parts.
[[CO6](Apply/IOCQ)]
3 + 9 = 12

Group - E

8. (a) Write down the objects of plastering. [[CO5](Remember/ LOCQ)]

- (b) Write a short note on dog-legged stair. Plan a dog legged stair for a building in which the vertical distance between the floors is 3.6 m. The stair hall measures 3 m × 5 m.

[(CO6)(Apply/IOCQ)]

4 + 8 = 12

9. (a) What are the requirements for a good flooring work? [(CO1)(Remember/LOCQ)]

- (b) Write short notes on the following:

- (i) Concrete Flooring
- (ii) Terrazzo Flooring
- (iii) Mosaic Flooring.

[(CO6)(Remember/LOCQ)]

6 + 6 = 12

Cognition Level	LOCQ	IOCQ	HOCQ
Percentage distribution	69.8	30.2	0

Course Outcome (CO):

After going through this course, the students will be able to:

1. Impart knowledge regarding the various building and general construction products and their quality, durability and availability.
2. Impart knowledge regarding the various types of properties, uses and variety of materials used in the construction industry.
3. Study the behavior of concrete at its fresh and hardened state
4. Study about the concrete design mix.
5. Expose themselves to various quality control aspects of the civil engineering materials.
6. Learn and use the terms common in the building industry.

*LOCQ: Lower Order Cognitive Question; IOCQ: Intermediate Order Cognitive Question; HOCQ: Higher Order Cognitive Question.

