

**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) Strap footing is a
(a) Deep foundation (b) Well foundation
(c) Shallow foundation (d) Pile foundation.
- (ii) Bulking of sand occurs in the moisture content of
(a) 3% (b) 5% (c) 10% (d) 12%.
- (iii) Load bearing wall is meant for taking
(a) Live loads (b) Dead loads
(c) Wind loads (d) Seismic loads.
- (iv) Minimum number of steps that can be provided in a single flight of staircase is
(a) 5 (b) 4 (c) 3 (d) 2.
- (v) Hydration of cement is due to chemical action of water with
(a) Tricalcium silicate and dicalcium silicate
(b) Dicalcium silicate and tricalcium aluminate
(c) Tricalcium aluminate and tricalciumaluminos ferrite
(d) All the above.
- (vi) In a wooden panel door, the vertical members are known as
(a) Style (b) Rail (c) Frame (d) Battens.
- (vii) Proper proportioning of concrete, ensures
(a) Desired strength and workability (b) Desired durability
(c) Water tightness of the structure (d) Resistance to water.
- (viii) The bulk density of aggregates does not depend upon:
(a) Size and shape of aggregates (b) Specific gravity of aggregates
(c) Grading of aggregates (d) Size and shape of the container.

- (ix) In a truss, King Post is the
(a) Horizontal member (b) Inclined member
(c) Vertical member (d) Straining member.
- (x) In a truss, strut is a
(a) Compression member (b) Tension member
(c) Torsional member (d) Bending member.

Group – B

2. (a) What are the ingredients of good brick earth? [(CO2)(Remember/LOCQ)]
(b) Explain in details the process of hydration of cement.
[(CO3)(Understand/LOCQ)]
(c) Write a short note on the aggregate impact test. [(CO2)(Analyze/IOCQ)]
4 + 5 + 3 = 12
3. (a) Explain the importance of alkali aggregate reaction. [(CO6) (Creating/HOCQ)]
(b) Identify the differences between hydration of cement and slaking of lime.
[(CO3)(Apply/IOCQ)]
(c) Explain in details the consistency test of cement. [(CO5)(Evaluating/HOCQ)]
6 + 3 + 3 = 12

Group – C

4. (a) What are the factors that affect the workability of concrete?
[(CO3)(Remember/LOCQ)]
(b) Write a short note on water-cement ratio. [(CO2) (Understand/LOCQ)]
(c) What do you mean by segregation and bleeding of concrete?
[(CO6)(Remember/IOCQ)]
4 + 4 + 4 = 12
5. (a) Compare between accelerators and retarders in an admixture.
[(CO5)(Evaluate/HOCQ)]
(b) What are the various methods of proportioning in concrete mix design?
[(CO4)(Understand/LOCQ)]
(c) List the importance of curing of concrete. [(CO6)(Analyze/IOCQ)]
4 + 4 + 4 = 12

Group – D

6. (a) What do you understand by shallow foundation? [(CO6) (Remember/LOCQ)]
(b) Draw sketches and explain various types of shallow foundation.
[(CO6) (Evaluate/HOCQ)]
2 + 10 = 12
7. (a) Explain with sketches about different types of reinforced brick walls and where it is required? [(CO1) (Understand/LOCQ)]

- (b) What is cavity wall? Explain where it is required and with neat sketches describe the same. [(CO2) (Remember/LOCQ)]

6 + 6 = 12**Group – E**

8. (a) What are the points to be considered for planning a stair case and explain the same? [(CO4)(Remember/LOCQ)]
 (b) Plan a dog legged stair case for a residential building with a floor height 3.6 m and the dimension of the stair hall limited to 3.0m × 5.5m. [(CO2)(Evaluate/HOCQ)]
9. (a) What is a pitched roof? What are the advantages of a pitched roof? [(CO1) (Remember/LOCQ)]
 (b) Explain with sketches about various basic forms of pitched roofs. [(CO2)(Remember/LOCQ)]

5 + 7 = 12**3 + 9 = 12**

Cognition Level	LOCQ	IOCQ	HOCQ
Percentage distribution	50.00 %	25.0 %	25.0 %

Course Outcome (CO):

After the completion of the course 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 behaviour 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

Department & Section	Submission Link
CE & SEC A	https://classroom.google.com/c/NDUyNDcxOTMwNTIw/a/NDc1MTQwMzQ4NzI4/details
	Classroom joining link: https://classroom.google.com/c/NDUyNDcxOTMwNTIw?cjc=55stdzj
CE & SEC B	https://classroom.google.com/c/NDUyNDcxMzk5MDUw/a/NDc1MTQwMzQ4ODc1/details
	Classroom joining link: https://classroom.google.com/c/NDUyNDcxMzk5MDUw?cjc=mnxclfm