

Daffodil International University

B. Sc. in Civil Engineering

Mid Term Examination, Spring - 2025

Course Code: CE 201

Course Title: Engineering Materials

Section: BN1 & BN2

Level-Term: 2-1

Teacher's Initial: AU

Full Marks: 25

Date: March 11, 2025

Time: 1.5 Hours

Note: There are six questions in total. Answer all of them. Right hand margin indicates full marks.

- ✓1. The initial weight of a sample of powdered limestone is 430 grams, and the weight of the [03]
dried residue on filter paper is 110 grams. The residue after decantation and drying
weighed 55 grams. Calculate the percentage of carbonate, sand, and clay present in the $CaCO_3$
sample of limestone. [CO2, C3]
2. Write down the uses of Mortar. [CO1, C1] [02]
3. Write short note on any four of the following: [CO1, C1] [08]
- Bulking of Sand
 - Field Tests of Bricks
 - Hydration of Cement
 - Harmful Constituents of Bricks
 - False Setting of Cement
 - Slag Cement
- ✓4. For a bridge construction project, the recommended FM for sand is 2.5. From a nearby [07]
market, two sand samples (sand-1 and sand-2) were collected. The samples were sent to
the Concrete Laboratory of Daffodil International University of Bangladesh for sieve
analysis. The sieve analysis data are given.

Sieve Size (mm)	Materials Retained (gm) Sand-1	Materials Retained (gm) Sand-2
25	20	23
16	22	38
4.75	17	31
2.36	56	20
1.19	48	25
0.59	15	13
0.4	50	20
0.15	10	10
0.075	42	40
Pan	0	0

- (i) *Calculate FM of the sand samples.*
- (ii) *In what proportions, the sand samples are to be mixed to get the recommended FM?*
- (iii) *Comment on the samples based on the sieve analysis data. [CO2, C3]*

5. *Illustrate the figure of rule pointing and cut pointing. [CO1, C2] [02]*

6. *Illustrate the flow chart of the wet process for the manufacturing of cement. [CO1, C2] [03]*