Graphic Era HILL UNIVERSITY
Established by an Act of the State Legislature of Uttarakhand (Adhiniyam Sankhya 12 of 2011)
University under section 2(f) of UGC Act, 1956

End Term (Odd) Semester Examination November 2025

Roll no.....

Name of the Course and semester: Diploma Civil Engineering III Sem
Name of the Paper: Concrete Technology
Paper Code: DTCE 304
Time: 3 hour Maximum Marks: 100

Note:

(i) All the questions are compulsory.
(ii) Answer any two sub questions from a, b and c in each main question.
(iii) Total marks for each question is 20 (twenty).
(iv) Each sub-question carries 10 marks.

Q1. (2X10=20 Marks) CO1

a. Explain the role of C_3S, C_2S, C_3A, and C_4AF compounds in the hydration process of OPC.
b. Examine the impact of improper storage conditions on cement quality and recommend corrective measures.
c. Explain various field tests for cement quality

Q2. (2X10=20 Marks) CO2

a. Explain how the size, grading, and angularity of aggregates affect workability, segregation and ultimate strength of concrete,
b. Explain the phenomenon of bulking of sand and its effect on volumetric batching.
c. Differentiate between crushing value, impact value, and abrasion value tests.

Q3. (2X10=20 Marks) CO3

a. Distinguish between creep and shrinkage, explaining factors influencing each and their implications in long-span structures.
b. Explain the concept of workability and describe slump, compaction factor, and Vee-Bee tests.
c. Explain the classification of concrete.

Q4. (2X10=20 Marks) CO4

a. Explain the difference between weight batching and volume batching with examples.
b. Describe various types of concrete mixers
c. Explain methods for curing of concrete.

Q5. (2X10=20 Marks) CO5

a. Define accelerating admixtures, retarding admixtures, superplasticizers, and air-entraining agents.
b. Explain the effects of hot weather on concrete setting, strength, and shrinkage behavior.
c. what are the hot- and cold-weather concreting checklist for field engineers.