



ELIZADE UNIVERSITY, ILARA-MOKIN
FACULTY OF ENGINEERING

DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

COURSE CODE: CVE 307 SESSION/SEMESTER: FIRST SEMESTER/ 2019/2020

COURSE TITLE: CIVIL ENGRINEERING MATERIALS LEVEL: 300L

TIME ALLOWED: 2 HOURS 15 MINUTES

INSTRUCTION: ATTEMPT ANY FOUR QUESTIONS

Question 1 (15 marks)

- 1a. i.** Explain the main reason for including Additives and Reinforcement in Concrete mixture. (2 marks)
- ii.** State the aim of mixing the constituents materials in concrete in measure amount. (2 marks)
- iii.** Why is it necessary to reinforce the concrete with steel bars? (2 marks)
- 1b.** List the chemical compounds that are in Portland cement. (6 marks)
- 1c.** Briefly described the process of the hydration and formation of setting of cement (3 marks)

Question 2 (15 marks)

2a. The results of a sieve analysis on a soil sample are as shown in Table 1:

Table 1: Sieve analysis Table

Sieve size (mm)	Mass retained (g)
10	0.0
6.3	5.5
2	25.7
1	23.1
0.6	22.0
0.3	17.3
0.15	12.7
0.063	6.9

2.3 g passed through the 63 μ m sieve.

Plot the particle size distribution curve and determine the uniformity coefficient of the soil (10 marks)

2b. What is Fineness modulus? Explain its usefulness. (5 marks)

Question 3 (15 marks)

3a. Enumerate the advantages of Concrete. (11 marks)

3b. State clearly the limitations of Concrete. (4 marks)

Question 4 (15 marks)

4a. Mention the structural steel shapes that are commonly designated and used in civil engineering works.

(6 marks)

4b. i. List five properties most commonly used as a basis for specification and design (5 marks)

ii. Write short note on welding of structural members and its implication when it is badly done. (4 marks)

Question 5 (15 marks)

5a. i. Itemize various important bases that are considered for the classification of timbers.

(5 marks)

ii. Write briefly on the term "Exogenous trees". (4 marks)

iii. Draw a typical cross-section of a exogeneous tree. (2 marks)



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ii. Write briefly on the term "Exogenous trees". (4 marks)

iii. Draw a typical cross-section of a exogeneous tree. (2 marks)

5b. With a neat sketch explain the Timber defect called Knot.

(4 marks)

Question 6 (15 marks)

6a. Write short notes on the following bituminous materials used in pavement construction.

- i. Asphalt cement (2 marks)
- ii. Cutback asphalt (2 marks)
- iii. Emulsified asphalt (2 marks)

6b. Discuss the following bituminous tests and their significance.

(3 marks)

- i. Penetration Test
- ii. Flash Point Test
- iii. Viscosity Tests

(3 marks)

(3 marks)