29/12/23 - FN

Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 20512

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2023.

Fourth Semester

Civil Engineering

CE 3403 – CONCRETE TECHNOLOGY

(Regulations 2021)

Time : Three hours Maximum : 100 marks

(Use of IS: 10262:2019 is permitted) (Without Any Annexures)

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is the chemical composition and its percentage in cement?
2. List the BIS grading requirements for aggregates?
3. What is the effect of fly ash on concrete?
4. Mention the different types of mineral admixtures used in concrete.
5. Define the principles of mix proportioning.
6. What is air entering agent?
7. What are the factors affecting workability of concrete?
8. Outline the significance of segregation and bleeding in concrete?
9. Recall the uses of polymer concrete.
10. What are the functions of shotcrete?

PART B — (5 × 13 = 65 marks)

11. (a) Describe the tests conducted on cement to determine its quality and explain the IS specifications for cement.

Or

(b) Explain the quality requirements for water used in concrete and discuss the effect of impurities on concrete.

12. (a) Describe the different types of chemical admixtures and their uses in concrete.

Or

(b) (i) Discuss the importance of waterproofers in concrete and their effect on the properties of concrete. (8)

(ii) Summarize the purpose of accelerators and retarders in concrete. (5)

13. (a) Explain the role of mix proportioning in producing quality concrete.

Or

(b) Compare the properties of nominal mix and design mix for M20 grade concrete.

14. (a) Discuss the different properties of hardened concrete and explain the tests used to determine them.

Or

(b) Explain the significance of the stress-strain curve for concrete and the factors affecting it.

15. (a) Discuss the types of fibers used in FRC and their effect on the properties of concrete.

Or

(b) Narrate the different types of special concretes and their uses in construction.

PART C — ($1 \times 15 = 15$ marks)

16. (a) Calculate the target mean strength: 40 N/mm^2 at 28 days. Consider the data as follow:

Maximum size of aggregate: 20mm

Degree of workability: 50-75 mm slump

Specific gravity of cement: 3.15

Specific gravity of fine aggregate: 2.6

Specific gravity of coarse aggregate: 2.7

Water absorption of fine aggregate: 1%

Water absorption of coarse aggregate: 2%

Maximum water-cement ratio as per IS 10262 :2009: 0.35

Or

(b) Suggest and Discuss a concrete that can replace cement in future to reduce carbon foot print to address sustainable development goals.

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Anna University

for Affilated Engineering College - 2021 Regulation

Civil Engineering

1st Semester | 2nd Semester | 3rd Semester | 4th Semester

5th Semester | 6th Semester | 7th Semester | 8th Semester

Click on Subject/Paper under Semester to enter.

1st Semester

- Professional English - I - HS3152
- Matrices and Calculus - MA3151
- Engineering Physics - PH3151
- Engineering Chemistry - CY3151
- Problem Solving and Python Programming - GE3151

2nd Semester

- Professional English - II - HS3252
- Statistics and Numerical Methods - MA3251
- Engineering Graphics - GE3251
- Physics For Civil Engineering - PH3201
- Basic Electrical and Electronics & Instrumentation Engineering - BE3252

3rd Semester

- Transforms and Partial Differential Equations - MA3351
- Engineering Mechanics - ME3351
- Fluid Mechanics - CE3301
- Construction Materials and Technology - CE3302
- Water Supply and Wastewater Engineering - CE3303
- Surveying and Levelling - CE3351

4th Semester

- Environmental Sciences and Sustainability - GE3451
- Applied Hydraulics Engineering - CE3401
- Strength of Materials - CE3402
- Concrete Technology - CE3403
- Soil Mechanics - CE3404
- Highway and Railway Engineering - CE3405

5th Semester

- Design of Reinforced Concrete Structural Elements - CE3501
- Structural Analysis I - CE3502
- Foundation Engineering - CE3503
- Elective 1
- Elective 2
- Elective 3

6th Semester

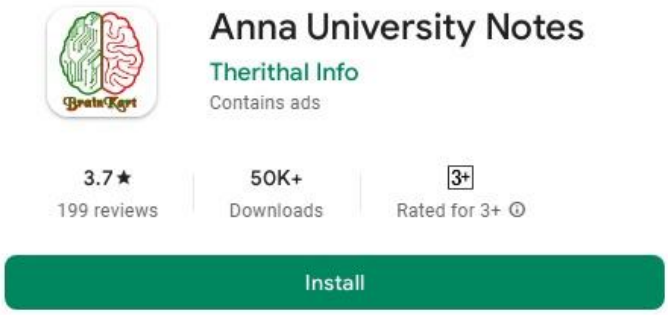
- Design of Steel Structural Elements - CE3601
- Structural Analysis II - CE3602
- Engineering Geology - AG3601
- Open Elective-1
- Elective-4
- Elective-5
- Elective-6

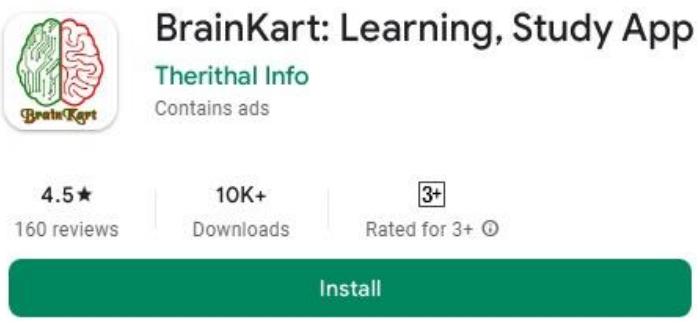
7th Semester

- Estimation Costing and Valuation Engineering - CE3701
- Hydrology and Irrigation Engineering - CE3702
- Human Values and Ethics - GE3791
- Total Quality Management - GE3752
- Open Elective 2
- Open Elective 3
- Open Elective 4

8th Semester

- Project Work / Intership





All Civil Engg Subjects- [B.E., M.E.,]		(Click on Subjects to enter)
Engineering Mechanics	Engineering Geology	Mechanics of Solids
Mechanics of Fluids	Surveying I	Surveying II
Construction Materials	Strength of Materials	Applied Hydraulic Engineering
Soil Mechanics	Structural Analysis I	Structural Analysis II
Environmental Science and Engineering	Environmental Engineering I	Environmental Engineering II
Foundation Engineering	Highway Engineering	Design of Steel Structures
Design of Reinforced Concrete Elements	Construction Techniques and Equipment and Practice	Design of Reinforced Concrete and Brick Masonry Structures
Remote Sensing Techniques and GIS	Construction Planning and Scheduling	Railways and Airports and Harbour Engineering
Prestressed Concrete Structures	Water Resources and Irrigation Engineering	Structural Dynamics and Earthquake Engineering
Housing Planning and Management	Air Pollution Management	Municipal Solid Waste Management
Soil Mechanics	Principles of Management	Prefabricated Structures
Physics For Civil Engineering	Transforms and Partial Differential Equations	Repair and Rehabilitation of Structures
Numerical Methods	Engineering Physics	Engineering Chemistry
Technical English	Engineering Graphics	Total Quality Management
Problem Solving and Python Programming	Professional Ethics in Engineering	Basic Electrical and Electronics Engineering