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**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
FIFTH SEMESTER B.TECH DEGREE EXAMINATION(R&S), DECEMBER 2019

**Course Code: CE361**

**Course Name: ADVANCED CONCRETE TECHNOLOGY**

Max. Marks: 100

Duration: 3 Hours

**PART A**

*Answer any two full questions, each carries 15 marks.*

Marks

- |   |  |      |
|---|--|------|
| 1 | a) Explain in detail any three tests for cement.   | (9)  |
|   | b) What are light weight aggregates? Discuss any two uses of them with examples.                     | (3)  |
|   | c) Explain segregation and bleeding in concrete.   | (3)  |
| 2 | a) Discuss the hydration reaction of different cement compounds.                                     | (10) |
|   | b) What is meant by batching of concrete? What are the different types? Which one is better and why? | (5)  |
| 3 | a) List the different types of cement.   | (4)  |
|   | b) Mention the classification of aggregate in accordance with size and source.                       | (8)  |
|   | c) What are blended cement? State its advantages.  | (3)  |

**PART B**

*Answer any two full questions, each carries 15 marks.*

- |   |   |      |
|---|---|------|
| 4 | a) What are the effects of creep on concrete?   | (4)  |
|   | b) Draw the typical stress strain curve for concrete. Explain how to determine the various elastic moduli for concrete. | (6)  |
|   | c) State the physical and chemical characteristics of GGBS (Ground Granulated Blast Furnace Slag).                      | (5)  |
| 5 | a) Discuss the step-by-step procedure of ACI method of concrete mix design.   | (12) |
|   | b) What is the significance of compressive strength of concrete?  | (3)  |
| 6 | a) List three mineral admixtures along with their advantages.   | (6)  |
|   | b) Explain the procedure for determining the flexural strength of concrete under  | (6)  |

four point bending test.

- c) Differentiate between creep and shrinkage in concrete. (3)

### PART C

*Answer any two full questions, each carries 20 marks.*

- 7 a) What is meant by reinforcement cover? How it is measured? (5)
- b) Explain any two methods for testing fresh stage properties of self-compacting concrete. (7)
- c) Discuss in brief the mechanism of chloride induced corrosion of steel and its control. (8)
- 8 a) Explain in detail the types of polymer concrete highlighting its composition, properties and applications. (10)
- b) What is carbonation of concrete? Explain the factors affecting carbonation of concrete. (6)
- c) Explain the pull-out test on concrete. (4)
- 9 a) Write notes on under water concreting and mass concreting. (10)
- b) What are the factors affecting durability? (4)
- c) Discuss in detail the manufacture of roller compacted concrete. What are its applications? (6)