



Year and Program: 2018-19

School of Technology

Department of Civil Engineering  
(M. Tech. Construction  
Engineering & Management)  
Semester – I

Course Code: CEM 501

Course Title: Advanced Concrete  
Science and Technology

End Semester Examination (ESE)

Day and Date

Friday - 28/12/2018

Time: Max Marks: 100

10 am to 1 pm.

**Instructions:**

- 1) All questions are compulsory.
- 2) Assume suitable data wherever necessary.
- 3) Figures to the right indicate full marks.

Q.1	<b>Solve the following</b>	Marks	BL	CO
a)	Explain types of Portland cement as per ASTM standard?	09	L <sub>3</sub>	CO1
	OR			
a)	Summarize in details burning process in kiln during manufacturing of cement?	09	L <sub>5</sub>	CO1
b)	Detail overview of the hydration process?	09	L <sub>6</sub>	CO2
Q.2	<b>Solve the following</b>			
a)	Conclude in details Calcium Hydroxide (CH)?	09	L <sub>5</sub>	CO3
	OR			
a)	Explain physical state of water in cement paste?	09	L <sub>3</sub>	CO3
b)	Classified of pores in cement hydration?	09	L <sub>4</sub>	CO4
Q.3	<b>Solve any Two</b>			
a)	Define is super plasticizers? What are the classifications of super plasticizers and state its applications?	08	L <sub>3</sub>	CO5
b)	Assess retarders and accelerators and their effects on properties of concrete	08	L <sub>5</sub>	CO5
c)	Classify air entraining agent? Explain its mechanism in concrete.	08	L <sub>4</sub>	CO5
Q.4	<b>Solve any Two</b>			
a)	Rank advantages of silica fume in manufacturing of concrete?	08	L <sub>5</sub>	CO5
b)	Explain the influence of micro-silica in fresh and hardened concrete	08	L <sub>3</sub>	CO5
c)	Illustrate the effect of GGBS based concrete against sulphate attack and permeability.	08	L <sub>4</sub>	CO5
Q.5	<b>Solve any Two</b>			
a)	What is mean by specific creep? How to measure creep of concrete?	08	L <sub>5</sub>	CO6

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|----|--|----|----------------|-----|
| b) | Describe the role of aggregate in creep in concrete.                       | 08 | L <sub>4</sub> | CO6 |
| c) | Comment on the magnitude of creep of concrete made with different cements. | 08 | L <sub>6</sub> | CO6 |

**Q.6      Solve any Two**

- |    |   |    |                |     |
|----|---|----|----------------|-----|
| a) | Define concrete shrinkage? Classify concrete shrinkage?       | 08 | L <sub>3</sub> | CO6 |
| b) | Describe the mechanism of drying shrinkage in concrete.       | 08 | L <sub>4</sub> | CO6 |
| c) | Discuss the main factors affecting the shrinkage of concrete. | 08 | L <sub>4</sub> | CO6 |
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