6. (a) Explain various underwater methods of construction.

(b) What are the effects and precautions required in hot and cold weather on concreting ? **7½×2=15**

Section D

7. What are the factors which influence corrosion of reinforcement ? How the corrosion of steel embedded in concrete is an electrochemical process ? Discuss a few methods for corrosion preventions. **15**

8. How does Bogue's composition of cement react with aggressive environment near sea-shore' ? Discuss various remedies if the end hydration product is harmful. **15**

No. of Printed Pages : 04 **Roll No. .....**

AA-562

M. Tech. EXAMINATION, Dec. 2018

(First Semester)

(B. Scheme) (Re-appear Only)

CE(SE)

CES505

ADVANCED CONCRETE TECHNOLOGY

Time : 3 *Hours*] [*Maximum Marks :* 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions only which carry equal marks. However, a student should attempt at least *one* question from every Section. Any data if missing can be suitably assumed. Use of scientific calculator is allowed. Indian standards can be used.

Section A

1. Explain various types of cements used in construction industry with the mention of special circumstances of their applications. **15**

2. Design a concrete mix for M 25 grade of concrete to be used in column as per Indian standard with the following data :

(a) Exposure : sever

(b) Maximum size of aggregate 20 mm

(c) 28 days compressive strength of cement = 49 MPa

(d) Specific gravities of cement, fine and coarse aggregates = 3.15, 2.48 and 2.67 respectively

(e) Water absorption for fine and coarse aggregate = 0.7% and 0.15%

(f) Fineness modulus of fine and coarse aggregate = 2.46 and 6.67. **15**

Section B

3. Explain the phenomenon of slump loss, segregation and bleeding with their significance and effecting factors. Also discuss maturity of concrete, its applications and limitations. **15**

4. (a) Discuss Abrams law for compressive strength and water cement ratio.

(b) How are compressive and tensile strengths of concrete related ? Is this relationship independent of concrete strength ? If not, why ? **7½×2=15**

Section C

5. Explain any *three* of the following methods : **3×5=15**

(a) Rebound Hammer Test

(b) Windsor probe test

(c) Ultrasonic pulse velocity method

(d) Pulse echo method.