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10CV81

**Eighth Semester B.E. Degree Examination, Aug./Sept.2020**  
**Advanced Concrete Technology**

Time: 3 hrs.

Max. Marks:100

**Note:1. Answer any FIVE full questions, selecting atleast TWO questions from each part.**  
**2. Use of ACI – 211.1 – 91 and LWC Design charts are permitted.**

**PART – A**

- 1 a. Explain voids in Hydrated cement paste. (10 Marks)  
b. What is Transition zone? Explain factors influencing transition zone on properties of concrete. (10 Marks)
- 2 a. Explain the action of plasticizer / super plasticizer, with the help of neat sketches. (10 Marks)  
b. Explain Marsh cone test for Optimum dosage of super – plasticizer. (10 Marks)
- 3 Design a concrete mix using IS method for the mean compressive strength of 26.6 N/mm<sup>2</sup> for the following data.
 

a. Type of cement	:	OPC 43G , Specific gravity = 3.15.				
b. Workability	:	75 mm slump.				
c. Exposure condition	:	Mild.				
d. Max. Nominal size of CA	:	19mm.				
e. Maximum W/c ratio	:	0.55				
f. Minimum cement	:	320 kg/m <sup>3</sup> .				
g. Type of Aggregate	:	Crushed Angular				
h. Chemical Admixture	:	Not used.				
i. Maximum cement	:	450 kg/m <sup>3</sup> .				
j. Specific gravity		<table style="display: inline-table; border-collapse: collapse;"><tr><td style="border-right: 1px solid black; padding: 0 5px;">CA</td><td style="padding: 0 5px;">2.68</td><td style="border-right: 1px solid black; padding: 0 5px;">FA</td><td style="padding: 0 5px;">2.65</td></tr></table>	CA	2.68	FA	2.65
CA	2.68	FA	2.65			
k. Water absorption		<table style="display: inline-table; border-collapse: collapse;"><tr><td style="border-right: 1px solid black; padding: 0 5px;">CA</td><td style="padding: 0 5px;">0.60%</td><td style="border-right: 1px solid black; padding: 0 5px;">FA</td><td style="padding: 0 5px;">1.0%</td></tr></table>	CA	0.60%	FA	1.0%
CA	0.60%	FA	1.0%			
l. Surface moisture		<table style="display: inline-table; border-collapse: collapse;"><tr><td style="border-right: 1px solid black; padding: 0 5px;">CA</td><td style="padding: 0 5px;">-</td><td style="border-right: 1px solid black; padding: 0 5px;">FA</td><td style="padding: 0 5px;">-</td></tr></table>	CA	-	FA	-
CA	-	FA	-			
m. Dry rodded density of CA	=	1640 kg/m <sup>3</sup> .				
n. Finness modulus of FA	=	3.0.				

(20 Marks)
- 4 a. Explain the factors which affect the permeability of concrete. (07 Marks)  
b. What is Sulphate attack? How resistance of concrete to sulphate attack can be improved? (07 Marks)  
c. Write a note on Alkali Aggregate reaction. (06 Marks)

**PART – B**

- 5 a. Explain in brief Prepacked concrete of under water concreting. (06 Marks)  
b. What is Self Compacting concrete? Explain its significance. (07 Marks)  
c. Explain the advantages of Self compacting concrete. (07 Marks)
- 6 a. Explain the factors affecting Fibre Reinforced Concrete (FRC)? (10 Marks)  
b. Explain the materials used in Ferro cement. (10 Marks)
- 7 a. Explain in brief advantages and disadvantages of Light Weight Concrete [LWC] and methods of production of LWC. (12 Marks)  
b. What is HPC? Explain the methods of achieving HPC. (08 Marks)
- 8 a. Explain the factors affecting the strength of test specimen under test. (08 Marks)  
b. What is non – destructive testing? How is it different from normal testing? Explain Rebond hammer and Pulse – velocity test. (12 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.