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

Question Paper Code: 55U07

M.E. DEGREE EXAMINATION, NOV 2018

Elective

Structural Engineering

15PSE507 – ADVANCED CONCRETE TECHNOLOGY

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

(IS 456: 2000, IS 10262:2009 and Charts from ACI 211.1-91-1991 and DOE1988 are permitted)

PART - A (5 x 1= 5 Marks)

1. The ready index of the coarseness or fineness of the material is called as CO1- R

   (a) Gap grading (b) Specific gravity (c) Fineness modulus (d) Flakiness index

2. The separation of the constituent materials of concrete is called CO2- R

   (a) Bleeding (b) Creep (c) Shrinkage (d) Segregation

3. The root mean square value of all the results is called as CO3- R

   (a) Variance (b) Standard Deviation (c) Mean strength (d) None of the above

4. J ring test is used to determine_____ CO4- R

   (a) Passing ability (b) Density (c) Flowability (d) Creep

5. Wet gunny bags are used for CO5- R

   (a) Curing (b) Mixing (c) Drying (d) Floating

PART – B (5 x 3= 15 Marks)

6. Define: Setting time of cement. CO1- U

7. Define :Shrinkage cracking. CO2- U

8. What do you mean by Mix Design? CO3 -U

9.		What is geopolymer concrete?	CO4- U	
10.		Name the methods for transportation of concrete.	CO5- U	

PART – C (5 x 16= 80 Marks)

11.	(a)	Discuss in detail the methods of combining aggregates to obtain specific grading.	CO1-U	(16)
		Or		
	(b)	Explain the hydration process of cement mentioning the functions of Bogue's compounds.	CO1-U	(16)
12.	(a)	Classify shrinkage and explain the different types of shrinkages.	CO2- U	(16)
		Or		
	(b)	Discuss in detail the following properties of concrete: (i) Segregation and (ii) Bleeding	CO2- U	(16)
13.	(a)	Design a concrete mix for M20 grade of concrete by DOE method for the following data: Fineness modulus of fine aggregate: 2.73, Fineness modulus of coarse aggregate: 7.6, Size of coarse aggregate: 20mm, Sieve analysis shows 47% passes through 600µ sieve. Bulk Specific gravity of Coarse aggregate: 2.6.	CO3- App	(16)
		Or		
	(b)	Discuss in detail the sampling and acceptance criteria of concrete as per ACI and IS Codes.	CO3- App	(16)
14.	(a)	(i) Discuss the influence of utilization of waste in concrete in India.	CO4- U	(8)
		(ii) Discuss the merits and demerits of RMC and In-situ concrete.	CO4- U	(8)
		Or		
	(b)	With neat sketches explain the various tests conducted to test the properties of fresh self compacting concrete.	CO4- U	(16)
15.	(a)	Explain in detail various techniques adopted for curing of concrete.	CO5- U	(16)
		Or		
	(b)	Explain the step by step procedure in vacuum dewatering of concrete.	CO5- U	(16)