

B. E. CONSTRUCTION ENGINEERING 4TH YEAR 2ND SEMESTER - 2019**SUBJECT: Advance Concrete Technology**

Time : Three Hours

Full Marks : 100

Part I

	Question No.		Marks
		State whether the following statements are TRUE or FALSE	
CO2	Q1a.	Incorporation of mineral admixtures decreases the permeability of concrete.	01
CO4	Q1b.	Higher aspect ratio increases the possibility of balling in case of fiber reinforced concrete.	01
CO5	Q1c.	CaO content in silica fume is higher as compared to that in fly ash and GGBS.	01
CO5	Q1d.	Incorporation of silica fume increases workability of concrete.	01
		Find out the corrected assure	
CO4	Q1e.	For the same concrete mix proportion ratio of cylinder compressive strength to cube compressive strength is close to i) 0.70 ii) 0.80 iii) 1.0 iv) 1.25	01
CO2	Q2.	Briefly discuss the different factors that affect the durability of concrete structures.	09
		or	
	Q3.a)	What are the different types of shrinkages encountered in concrete structure ?	03
	Q3.b)	What are the factors that influence drying shrinkage in concrete ?	06

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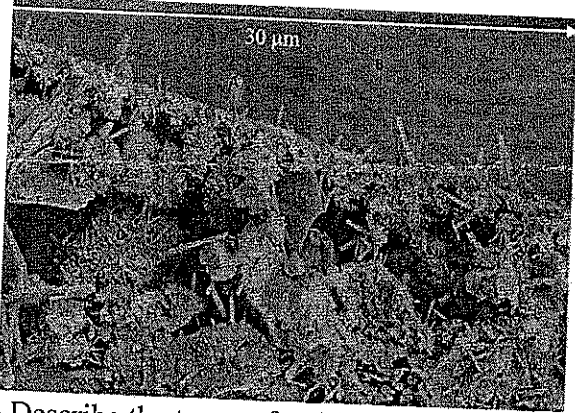
Part I

	Question No.		Marks
CO4	Q4a.	Define i) Self-Compacting Concrete ii) Aspect Ratio in case of fiber reinforced concrete	04
	Q4b.	Write a short note on any one of the following aspects of self-compacting concrete i) Filling ability ii) Resistance to segregation	08
	Q4c.	What is balling in case of fiber reinforced concrete? State the different measures that can be taken to minimize balling	06
CO5	Q5a.	Write a short note on cold weather concrete.	09
	Q5b.	What are the advantages of using mineral admixtures in concrete?	09

B. Construction Engineering 4th year 1st semester Examination – 2019
 Subject: Advance Concrete Technology

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Part-II(Full Marks-50)
 Use separate Answer Sheet for Each Part

CO1 [30]	<p>1. Answer any two of the following questions- [15×2=30 Marks]</p> <p>(a) Identify the different products A,B,C,D & E resulting from the hydration of cement from the following photograph? Describe microstructural features of the various hydration products? 5+10=15</p>  <p>(b) Describe the types of voids present in a hydrated paste? 15</p> <p>(c) Describe the types of water present in a hydrated paste? 15</p> <p>d) Describe the significance of the Interfacial Transition Zone? Draw a diagrammatic representation of the ITZ? Describe the relationship between gel/space ratio and strength of concrete? 7+3+5</p>
CO3 [20]	<p>Write Short notes on any four - [5×3=15]</p> <p>2. Write the effect of addition of the following materials on Concrete mix with respect to workability, strength, porosity and shrinkage(Any two)(5×2=10 Marks)</p> <ol style="list-style-type: none"> Fly Ash Slag Silica Fume <p>3. Write Short Notes on any two of the following [2 × 5=10 Marks]</p> <ol style="list-style-type: none"> Water Reducing Admixtures. Air entraining Admixtures. Photocatalytic Admixtures. Viscosity Modifying Admixtures.

- CO1: Explain microstructure of concrete and structure of hydrated cement paste (K5)
 CO2: Assess durability of concrete (K3)
 CO3: Explain Chemical properties of cement, role of chemical and mineral admixtures (K5)
 CO4: Describe fibre reinforced concrete, self compacting concrete, mass concrete, roller compacted concrete (K2)
 CO5: Assess the issues related to cold and hot weather concrete and high performance concrete (K3)