Ref. No. EX/CON/T/223/2019

B. E. CONSTRUCTION ENGINEERING 2ND YEAR 2ND SEMESTER - 2019

SUBJECT: CONCRETE TECHNOLOGY

Time : Three Hours **Full Marks : 100**

Part I

<table>
<tr><th></th><th>Question No.</th><th></th><th>Marks</th></tr>
<tr><td rowspan="6">CO1 [20]</td><td>Q1a.</td><td>State whether the following statements are TRUE or FALSE</td><td>03</td></tr>
<tr><td>i)</td><td>Use of rounded aggregate in concrete increases the water demand</td><td></td></tr>
<tr><td>ii)</td><td>Fineness modulus of sand grading Zone-III is more than that of sand grading Zone-I</td><td></td></tr>
<tr><td>iii)</td><td>Minimum grade of concrete for foundation work is M25</td><td></td></tr>
<tr><td>Q1b.</td><td>Define M-25 grade concrete</td><td>02</td></tr>
<tr><td>Q1c.</td><td>The grading of single sized aggregates of nominal size 20mm and 12.5mm are as follows.
<table>
<tr><th rowspan="2">Sieve size (mm)</th><th colspan="2">% finer</th></tr>
<tr><th>20.00mm</th><th>12.50mm</th></tr>
<tr><td>40.0</td><td>100.0</td><td>100.0</td></tr>
<tr><td>20.0</td><td>95.0</td><td>100.0</td></tr>
<tr><td>10.0</td><td>10.0</td><td>40.0</td></tr>
<tr><td>4.25</td><td>Nil</td><td>Nil</td></tr>
</table>
Find out the combined grading if 20mm and 12.5mm single size aggregates are mixed in proportion 60:40 by weight.</td><td>05</td></tr>
<tr><td></td><td>Q2.</td><td>Write a short note on porosity and water absorption of aggregates.
Or
Write a short note on water reducing and high range water reducing admixtures</td><td>10</td></tr>
</table>

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Part I

	Question No.		Marks
CO3 [05]	Q3.a.	**State whether the following statements are TRUE or FALSE**	02
	i)	Minimum period before striking of formwork for columns is 7 days.	
	ii)	For tremie concrete, the minimum slump is 150mm	
	Q3.b.	What do you understand by curing of concrete? What may be the effect in concrete if curing is inadequate?	03
CO4 [15]	Q4.a.	What do you understand by mix-design of concrete ?	02
	Q4.b.	Write a short note on target strength in case of concrete mix design.	03
	Q4.c.	In a concrete mix design the following data are finalized Volume of concrete : $1m^3$ Entrapped air as percentage of volume of concrete : 1.0 Water cement ratio : 0.48 Water content : 197kg Specific gravity of cement : 2.95 Specific gravity of coarse aggregate : 2.88 Specific gravity of fine aggregate : 2.66 Volume of coarse aggregate per unit volume of total aggregate: 0.624 Find out the concrete mix proportions per m^3 by weight.	10
CO5 [10]		**Answer any one from question (5a) and question (5b) in this block**	
	Q5a.	Briefly discuss curing of concrete with curing compound	10
	Q5b.	i) Briefly discuss the different modes of transportation of concrete	05
		ii) How do you understand that compaction of concrete with nozzle vibrators is complete?	05

B. Construction Engineering 2nd year 2nd semester Examination – 2019

Subject: Concrete Technology

Time : Three hours
Full Marks: 100

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

CO1 [25]	Answer any one from (a) and (b) in this Question 1. [10] [1] (a) Describe the wet process of manufacturing of cement? (b) Describe the dry process of manufacturing of cement? [2] Write short notes on any three from **(a), (b),(c),(d) and (e)** *in this block* [5X3=15] a. PPC b. Quick setting cement c. PSC d. IS classification of different types of Portland Cement e. Sulphate resisting Cement
CO2 [15]	[3]Write Short notes on any three from **(a), (b),(c),(d) and (e)** *in this block* - [5X3=15] a. Hydration process of cement b. Bogues compounds c. Causes of segregation in concrete d. Slump Test and its requirements of slump value as per IS. e. Factors affecting the workability of concrete
CO5 [10]	*Answer any* **two(2) from (a), (b) ,(c) ,(d) and (e)** *from this block:* [5X2=10] [4] a. Describe in brief the Alkali aggregate reaction in concrete? b. Describe in brief the steps for durability of concrete of concrete? C.Write a short notes on the phenomenon of sulphate attack on concrete? d. Write short notes on the phenomenon of carbonation of concrete? e. Write down the different step for making a good concrete.

CO1: Describe cement, Types of cement, aggregate, admixture and concrete (K1)
CO2: Describe hydration of cement and properties of concrete in fresh state (K2)
CO3: Describe different field activities related to concrete (K2).
CO4: Develop concrete mix proportions through Mix Design (K3)
CO5: Assess different measures for ensuring durability of concrete and Construction Quality Control & strength of concrete (K3)