Code No: C2005 **R09**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.TECH I SEMESTER EXAMINATIONS APRIL/MAY-2012
CONCRETE TECHNOLOGY
(STRUCTURAL ENGINEERING)

Time: 3hours **Max.Marks:60**

Answer any five questions
All questions carry equal marks
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1.a) Explain about heat of hydration and role of different Bogue's compounds in heat of hydration.
b) Explain in detail about mineral and mixtures used in concrete.

2. Combine the aggregate given below to suite to the specified grading given using analytical method.

Is sieve	% passing		
	Type I	Type II	Specified grading
40 mm	100	100	100
20 mm	100	98	100
10 mm	100	43	65
4.75 mm	96	03	42
2.36 mm	89	0	35
1.18 mm	73	0	28
600 microns	48	0	20
300 microns	20	0	07
150 microns	10	0	0

3.a) Explain in detail about alkali aggregate reaction, causes and remedial measures.
b) Explain in detail about gap grading and its advantages, disadvantages.

4.a) Explain various methods involved in the manufacturing of concrete in sequential order.
b) With neat sketches, explain Vee-bee test on concrete.

5.a) Explain the Abram's law, Gel / Space ratio law and maturity concept of estimating the strength of concrete.
b) Estimate the strength of concrete of M30 grade at 14 days and 21 days using maturity concept if it is cured at -2 ^{0}C for 4 hours, 10 ^{0}C for 12 hours and 8 ^{0}C for 8 hours. The Flow man's constants are A=21; B=61.

6.a) Explain the ultra sonic pulse velocity method of non destructive testing method. Explain how the quality of concrete is assessed based on pulse velocity.
b) Explain in detail various methods of quality measurement of concrete.

7.a) Explain in detail the factors affecting the properties of FRC.
b) Explain in detail the sampling criteria as per BIS code.

8.a) Explain the role of concrete mix design in concrete industry.
b) Explain the DOE method of concrete mix design procedure stepwise in detail.

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