

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III • EXAMINATION – SUMMER • 2014****Subject Code: 130605****Date: 23-05-2014****Subject Name: Concrete Technology****Time: 02.30 pm - 05.00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Enlist the types of cements and explain properties of PPC. **07**
 (b) Define standard consistency of cement and write the laboratory procedure for determining the same. **07**

- Q.2** (a) Define initial setting time and final setting time of cement and explain the laboratory test for the same. Mention the IS limits of IST and FST of OPC. **07**
 (b) Give difference between Rapid hardening cement and Quick setting cement. **07**

OR

- (b) Explain heat of hydration and it's importance in setting. **07**
- Q.3** (a) Define aggregate and classify them according to (i) size (ii) Shape (iii) source of origin and (iv) Weight criteria **07**
 (b) Define fineness modulus of aggregate and calculate it's value for the following test result. Explain it's utility. **07**

IS sieve (mm)	40	20	10	4.75	2.36	1.18	0.60	0.30	0.15
% wt. retained	5	30	50	60	80	96	99	100	100
% passing	95	70	50	40	20	04	01	00	00

OR

- Q.3** (a) Describe effect of impurities in water on properties of concrete. **07**
 (b) Enlist the purposes of using admixture in concrete. **07**
- Q.4** (a) Define workability of concrete and explain any one test to measure the workability of concrete. **07**
 (b) Explain segregation and bleeding phenomenon. Also write the causes of segregation. **07**

OR

- Q.4** Define the “ Mix design “ and design concrete mix M20 using following data and IS : 10262 procedure. **14**
1. Max. size of aggregate = 20 mm
 2. Degree of workability = 0.80 CF
 3. Degree of quality control = good
 4. Type of exposure = mild
 5. w/c/ = 0.47
 6. Cement used = OPC 53 grade
 7. Sp. Gravity of cement = 3.15, Coarse aggregate = 2.70, Fine aggregate = 2.65
 8. Water absorption of Coarse aggregate = 0.5 %, Fine aggregate = 1.0 %
 9. Free moisture in C. A. = 0.0 % , F. A. = 0.0 %
 10. Bulk density of Cement = 1440, C. A. = 1650, F.A. = 1800 kg/m³

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| Q.5 | (a) | Write note on NDT and it's utility | 07 |
| | (b) | Write note on (i) Hot weather concreting (ii) Recycled aggregate concrete. | 07 |
| OR | | | |
| Q.5 | (a) | State causes and precautions for distress in structures. | 07 |
| | (b) | Explain with sketch crack repair by injection grouting. | 07 |
