Seat No. : _____

DA-128

December-2013

Fourth Year B.ARCH-B.C.T. Sem.-VII

AR-703 : STRUCTURE-VII (Regular)

Old syllabus

Time : 3 Hours] **[Max. Marks : 50**

Instruction : Assume suitable Data if required.

1. Design trade-riser type of stair case for residence building. Consider flight spanning between landings and landing slab is supported on side beam spanning transversely. Width of stair flight = 1.2 M, Width of side beam = 230 mm, No. of steps in one flight = 09, T = 250 mm, R = 175 mm, M20, FE 415. Assume suitable data and draw reinforcement details. **10**

2. Any **five** : **10**
   (1) Explain zone of sand and importance.
   (2) Explain Boug's compound and importance of it in setting time.
   (3) Explain heat hydration of cement as well as C-S-H gel formation.
   (4) Explain normal consistence test, setting time and soundness test of cement.
   (5) If we use potable water, sea water, sewage water, acidic water, ---, what will be the effect in concrete.
   (6) Explain Field test of cement.

3. (1) A 500 gm sand sample is taken from the field, whose sieve analysis is shown in table. Find F.M. and give your comment. **4**

IS Sieve Size	**Weight retained (gm)**
4.75 mm	10
2.36 mm	50
1.18 mm	50
600 micron	95
300 micron	175
150 micron	85

Lower than 150 micron	35

(2) Enlist fresh and hardened properties of concrete and explain one in each in detail. **4**

(3) Explain freezing and thawing effect, Alkali-aggregate reaction in concrete. **2**

4. (1) For mix design data, find the proportion of ingredients, amount of entrapped air in wet concrete = 2%, mass of water/m^3 = 191.6 kg, Mass of cement/m^3 = 383 kg, Specific gravity of cement = 3.15, ratio of FA / total aggregate by absolute volume = 31.5%, specific gravity of F.A. and C.A =2.6. **4**

(2) Write short note on Ready mix concrete. **2**

(3) Enlist special types of concrete and explain any two in detail. **4**

5. • The volume of one cement bag _____ **1**

• Classify concrete according to strength **1**

• Enlist different types of fibres, advantages and limitation of it. **2**

• Enlist different types of cementitious materials and role of it. **3**

• Enlist non destructive test for concrete and explain three in detail. **3**

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