

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI  
(END SEMESTER EXAMINATION)**

**CLASS: BE  
BRANCH: CIVIL**

**SEMESTER : VII  
SESSION : MO/18**

**SUBJECT: CE7019 CONCRETE TECHNOLOGY AND MATERIALS**

**TIME: 3 HRS.**

**FULL MARKS: 60**

**INSTRUCTIONS:**

1. The question paper contains 7 questions each of 12 marks and total 84 marks.
  2. Candidates may attempt any 5 questions maximum of 60 marks.
  3. The missing data, if any, may be assumed suitably.
  4. Before attempting the question paper, be sure that you have got the correct question paper.
  5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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- Q.1(a) Explain different types of cement. [2]  
Q.1(b) Write about the formation of CSH gel. [4]  
Q.1(c) What is Hydration Equation? [6]
- Q.2(a) Why porosity is important with regard to (i) strength & (ii) durability? [2]  
Q.2(b) State the difference between capillary porosity, gel porosity and total porosity. [4]  
Q.2(c) Define the gel/space ratio. [6]
- Q.3(a) What is the influence of mixing time on the strength of concrete? [2]  
Q.3(b) How is the mixing efficiency of a mixer is assessed? [4]  
Q.3(c) What are the particular requirements for pumpability of a concrete mix? [6]
- Q.4(a) What are the factors affecting the strength of concrete? Explain. [6]  
Q.4(b) Explain the behaviour of concrete under compressive stress. [6]
- Q.5 Explain about the following terms: [4x3]  
(i) Sulphate attack on concrete  
(ii) Acid attack on concrete  
(iii) Alkali-aggregate reaction  
(iv) Freezing and thawing
- Q.6 Briefly describe the Indian standard method for the design of concrete mixes. [12]
- Q.7(a) What are chemical and mineral admixtures? Explain. [6]  
Q.7(b) Explain accelerators, retarders and water reducers. [6]

:::03/12/2018:::M