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

CLASS: BE **SEMESTER : VII**
BRANCH: CIVIL **SESSION : MO/19**

SUBJECT: CE8015 CONSTRUCTION ENGINEERING PRACTICES

TIME: 3.00Hrs. **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.

Q.1(a) How Strength of concrete is related to the compaction process? Discuss any two compaction methods with their respective applications? [4]

Q.1(b) What is ready mixed concrete? Discuss briefly the differences between ready mixed concrete and site mixed concrete? [4]

Q.1(c) Define curing of concrete. Discuss different curing methods with their respective applications. [4]

Q.2(a) What is maturity of concrete? What is the use of datum temperature in the calculation of maturity? [2]

Q.2(b) Write short note on steam curing without pressure and with pressure. [4]

Q.2(c) The maturity and strength of the concrete is supposed to follow the following empirical relationship: [6]

$$f_{ck} = -33 + 15 \times \log_{10}(M)$$

M is the maturity of the concrete in (°C hr).
The average day time temperature of region 'A' and 'B' are 10°C and 35°C respectively. On the other hand, the average night time temperature of region 'A' and 'B' are 2°C and 25°C respectively. Find out the strength of concrete at both region 'A' and 'B' at 28 days? If the stripping stress of concrete is 30 MPa then comment with justification on which region the concrete formwork can be removed?

Q.3(a) What should be done in concrete mixing process in order to reduce the hot weather effects? [2]

Q.3(b) Discuss any four factors that affect the hot weather concreting process. [4]

Q.3(c) Discuss how the concrete strength gets affected in hot weather region and cold weather region. [6]

Q.4(a) What are the attributes of high performance concrete? [2]

Q.4(b) What do you mean by high strength concrete? Discuss any two methods through which high strength concrete can be manufactured. [4]

Q.4(c) Define fiber reinforced concrete. Briefly discuss the different fibers used in fiber reinforced concrete. Where fiber reinforced concrete is used? [6]

Q.5(a) How do you calculate the mean and standard deviation of a set of measured concrete strength data? [2]

Q.5(b) Why quality control of concrete is necessary? Discuss the quality control chart for concrete. [4]

Q.5(c) Discuss the various data display methods used in quality assessment of concrete. [6]

Q.6(a) Discuss the electro-chemical reactions at Cathode and Anode in Corrosion. [2]

Q.6(b) Discuss the factors that affect the corrosion process in concrete. [4]

Q.6(c) Discuss the preventive measures you would suggest to avoid the corrosion. [6]

Q.7(a) State the difference between destructive and non-destructive testing procedure in concrete. [2]

Q.7(b) Discuss the tests done for corrosion monitoring in concrete structures. [4]

Q.7(c) Discuss the principle for ultrasonic pulse velocity test for assessing imperfections present in concrete structures.What are the limitations of this test? [6]

:::::09/12/2019E:::::