

Roll No. ....

**3084**

**B. Tech. 4th Semester (Civil)  
Examination – July, 2021  
MATERIAL TESTING AND EVALUATION  
Paper : PCC-CE-210-G**

*Time : Three hours ]*

*[ Maximum Marks : 75*

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

*Note : Attempt five questions, selecting one question from each unit and question no. 1 is compulsory.*

1. Define any six of the following : 2.5 × 6 = 15

- (i) Define low heat cement
- (ii) Define hydrophobic cement
- (iii) Define Permeability of concrete
- (iv) Define Polymer concrete
- (v) Differentiate between quick lime and hydrated lime
- (vi) Define admixtures
- (vii) Name various types of steel
- (viii) Define hot-mix plant

### UNIT - I

2. (a) Name and explain the various engineering materials which are used in construction field in detail. 10  
(b) Differentiate between PCC and RCC. 5
3. Write down the names of various tests conducted on cement. Explain any *two* tests in detail. 15

### UNIT - II

4. (a) What is Workability? Name various tests used for measurement of workability. Explain any *two* tests in brief. 10  
(b) Write a short note on Prestressed concrete. 5
5. (a) Describe basic considerations and importance of mix design. Explain briefly IS guidelines for mix design. 10  
(b) Write down various principles of concrete mix design. 5

### UNIT - III

6. (a) Name the various tests that can be conducted on a steel rod. Explain the tensile test on a steel rod in detail. 9

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- (b) Write short note on any *one* tests of steel : 6

- (i) Bending test  
(ii) Torsion test

7. (a) Explain elasticity of steel along with its principle and characteristics. 9  
(b) Write a short note on plastic deformation of metals. 6

### UNIT - IV

8. (a) Explain necessity of heavy construction equipments. 5  
(b) Define the term heavy construction. Also explain the precautions taken care during the construction of a dam in detail. 10

9. (a) Describe elastic and plastic deformation of materials in detail. 8  
(b) Define the following : 7

- (i) Fatigue of material  
(ii) Shrinkage  
(iii) Creep

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