Name : ....

Roll No. : ....

Invigilator's Signature : ....

CS/B.TECH/CE(N)/SEM-3/CE-303/2012-13

2012

BUILDING MATERIALS AND CONSTRUCTION

Time Allotted : 3 Hours   *Full Marks :* 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following :   10 × 1 = 10

    i)   A good soil for making bricks should contain

        I.   About 30% Alumina

        II.   About 10% Lime Nodules

        III. A small quantity iron oxides

        IV.   About 15% Magnesia

             Of the statements :

        a)   (I) and (II) are correct

        b)   (I) and (III) are correct

        c)   (I), (III) and (IV) are correct

        d)   (II), (III) and (IV) are correct.

3261(N)   [Turn over

ii) If L is the length and B is the width of the brick and t is the thickness of mortar, the relation between these is

a) $L = 2B$

b) $L = B + t$

c) $L = B + 2t$

d) $L = 2B + t$.

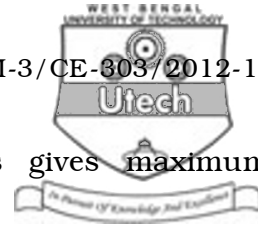iii) Water absorption for first class bricks should not be more than

a) 12%

b) 15%

c) 20%

d) 25%.

iv) Bricks are burnt at the temperature range of

a) 500° to 700° C

b) 700° to 900° C

c) 900° to 1200° C

d) 1200° to 1500° C.

v) Efflorescence of bricks is due to

a) Soluble salts present in clay for making bricks

b) High porosity of bricks

c) High salt content in brick earth

d) Excessive burning brick.

vi) Which of the following aggregates gives maximum strength in concrete ?

 a) Rounded   b) Elongated

 c) Flanky   d) Cubical.

vii) The process of mixing clay, water and other ingredients to make brick

 a) kneading   b) moulding

 c) pugging   d) drying.
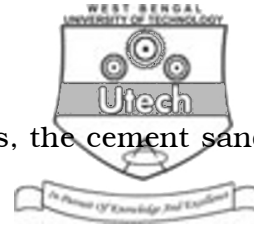
viii) A paint generally is made up of

 a) a vehicle   b) none of these

 c) a sub base   d) a blistering.

ix) The initial setting time for ordinary Portland cement as per IS specification should not be less than

 a) 10 minutes   b) 30 minutes

 c) 60 minutes   d) 600 minutes.

x) The piece of a brick cut with its one corner equivalent to half the length and half the width of a full brick is known as

 a) queen closer   b) beveled closer

 c) king closer   d) half king closer.

xi) For plastering the exposed brick walls, the cement sand mortar should be

    a)   1 : 2   b)   1 : 3

    c)   1 : 4   d)   1 : 6.

xii) The members which support covering materials of a sloping roof are

    a)   rafter   b)   purlins

    c)   battens   d)   struts.

GROUP – B

(Short Answer Type Questions)

Write short notes on any *three* of the following. 3 × 5 = 15

2. What are the various factors which are considered while selecting of good Brick for building works.

3. What is Plywood and how is it classified in CPWD Specification ?

4. Write about the term used Plastering :

    a)   With cement mortar

    b)   With mortar. $2 \times 2\dfrac{1}{2}$

5. Draw and describe queen post trust.

6. a) What is meant by workability and Water-Cement ratio of Concrete ?

   b) How are they related to the strength of concrete ?

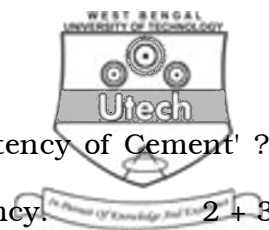7. Compare English Bond and Flemish Bond.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following.   3 × 15 = 45

8. a) Write down classification of bricks are per physical requirement.   3 + 3

   b) What do you understand by 'Hydraulic Lime' ? Differentiate between 'Hydraulic Lime' and 'Hydrated Lime' ?   2 + 2

   c) What do you understand by 'Bulking of Sand' ? Explain the test for determination of bulking of sand.   2 + 3

9. a) What do you understand by 'Consistency of Cement' ? Explain the test to check for consistency. 2 + 3

b) What are the characteristics of good mortar and plaster ? 5

c) What are the properties of a good concrete mix ? 5

10. What do you understand by bearing capacity of a foundation ? What are the different types of foundation ? Explain briefly about them. 2 + 3 + 10

11. a) Plan a dog legged stair for a residential building in which the vertical distance between each floor 3·36 m. The size of stair hall is limited to 5 m × 3 m. 8

b) Explain with sketch 'king Post' and 'Queen Post' roof truss. 7

12. a) What is bulking of sand ?

b) Compare between 1st Class, 2nd Class and 3rd bricks.

c) What is slaking of lime ? Write in brief about carbonate hardening of lime. 3 + 5 + 3 + 4

13. a) What are the rules for bonding ?

   b) Draw a neat sketch showing different components of a door.

   c) Briefly define the types of pitched roof with neat sketches. 2 + 3 + 10

═══════════