Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.Tech(CE)/SEM-3/CE-306/2009-10

2009

BUILDING MATERIALS & 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) Which of the following in timber is caused by fungus ?

a) Upsets b) Foxiness

c) Dry rot d) Wet rot.

ii) Slump test for concrete is carried out to determine

a) strength b) durability

c) workability d) water content.

iii) Lime mortar is generally made with

a) quicklime b) fat lime

c) hydraulic lime d) white lime.

iv) The temperature range in a cement kiln is

a) 500°C to 1000°C b) 1000°C to 1200°C

c) 1300°C to 1500°C d) 1600°C to 2000°C.

v) Hydraulic lime is obtained by burning

a) limestone b) kankar

c) marble d) none of these,

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

a) 12% b) 15%

c) 20% d) 25%.

vii) A corner footing constructed for two or more columns in is called a/an

a) isolated footing

b) combined footing

c) none of these.

viii) A foundation is set to be shallow if

a) $D/B<1$

b) $D/B\geq1$

c) none of these.

ix) Pile foundation is an example of

a) shallow foundation

b) deep foundation

c) none of these.

x) The bond in which all the bricks are laid with their length in the longitudinal direction of the wall is known as

a) stretcher bond b) header bond

c) English bond d) none of these.

xi) When alternate stretcher and headers are laid in each course, the arrangement is known as

a) English bond

b) header bond

c) double flemish bond

d) stretcher bond.

xii) The general height of a partition wall ranges between

a) (5 – 10) m b) (10 – 15) m

c) (2 – 3) m d) none of these.

xiii) The width of a door for a public building is 1.2 m. The height of the door will be in the range of

a) 2.1m – 2.3m b) 3m – 4m

c) 4m – 5m d) 5m – 6m.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

Draw neat sketches wherever necessary.

2. Write short note on 'Lean-to' pitched roof.

3. Explain the ledged & braced door.

4. Write short notes on the following :

a) Load bearing wall 2

b) Reinforced brick wall. 3

5. a) What is meant by workability and water-cement ratio of concrete ? 4

b) How are they related to the strength of concrete ? 1

6. Write about the terms used in stairs :

a) Baluster and Newel post. 2

b) Tread and Riser. 3

7. Illustrate the answer with neat sketches on the following :

   a) King-post truss 2

   b) Queen-post truss. 3

8. What is plywood and how is it classified in CPWD specifications ?

GROUP – C

(Long Answer Type Questions)

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

9. a) Write down the classification of brick. State the characteristics of good brick. 8

   b) Write down the classification of aggregates. 4

   c) State the characteristics of good mortar. 3

10. a) What is hydration of cement ? 3

    b) Briefly state the defects of timber with sketch. 7

    c) Write short notes on plywood and blackboard. 5

11. a) What are the main objects of foundation ? 3

    b) Briefly write down the classification of foundation with sketch. 12

12. a) State the rules for good bonding. 4

    b) What are the requirements of good plaster ? 4

c) Give sketches of king-post and queen-post truss. Compare the two. 5

d) What are the characteristics of good oil paints ? 2

13. a) Plan a dog-legged stair for a building in which the vertical distance between the floor is 3.6 m. The stair hall measures 2.5 m × 5 m. Draw the typical plan and cross-section of the stair. 7

b) Write short notes on whitewashing and terrazzo flooring. 8

14. a) What are the rule for bonding ? 2

b) Plan a staircase for a residential building in which vertical distance between each floor is 3.36 m. The size of stair hall is limited to 4.5 m × 3 m. 6

c) Draw a neat sketch showing different compoentns of a door. 3

d) Write short note on any *one* of the following : 4

i) Colour washing

ii) Distempering.

15. a) What do you understand by the grade of concrete mixes ? 3

b) What are the proportions of the following grades of concrete ? 3

M_{10}, M_{15}, M_{20} and M_{25}

c) Determine the fineness modulus of a 5 kg sample of coarse aggregate having the following sieve analysis : 7

IS Sieve No.	76.8 mm	38.4 mm	19.2 mm	9.6 mm	4.8 mm	240 no.
Weight retained in kg	0.0	0.3	1.7	2.1	0.8	0.1

d) Is this aggregate suitable for good concreting ? 2

16. Write short notes on the following :

a) Paints 5

b) Distempers 5

c) Varnishes. 5