



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. |

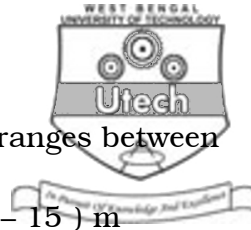
ii) Slump test for concrete is carried out to determine

- |                |                   |
|----------------|-------------------|
| a) strength    | b) durability     |
| c) workability | d) water content. |

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- viii) A foundation is set to be shallow if
- a)  $D/B < 1$
  - b)  $D/B \geq 1$
  - 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.                       $3 \times 5 = 15$

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.  $3 \times 15 = 45$

- 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

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