



Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS/B.TECH(CE-OLD)/SEM-3/CE-306/2011-12**

**2011**

**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.*

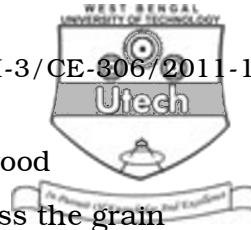
**GROUP – A**

**( Multiple Choice Type Questions )**

1. Choose the correct alternatives for any *ten* of the following :  $10 \times 1 = 10$
- i) The size of modular brick is
    - a) 19 cm × 19 cm × 19 cm
    - b) 23 cm × 11.4 cm × 7.6 cm
    - c) 25 cm × 12.5 cm × 7.6 cm
    - d) 29 cm × 9 cm × 9 cm.
  - ii) Fat lime is obtained by burning
    - a) limestone
    - b) kankar
    - c) marble
    - d) none of these.
  - iii) The age of trees can be predicted by
    - a) length of medulary rays
    - b) counting number of rings
    - c) measuring the diameter of pith
    - d) the thickness of bark.



- iv) Seasoning of timber is necessary to
- a) increase the fire resistance
  - b) increase the vermin resistance
  - c) reduce the microbial substances
  - d) expel the moisture present in timber.
- v) Which of the following woods is not suitable for making bridge ?
- a) Babool
  - b) Nageshwar
  - c) Sal
  - d) Teak.
- vi) A gauged mortar is obtained by adding which of the following ingredients to cement ?
- a) Sandstone
  - b) Sand and surkhi
  - c) Sand and lime
  - d) Surkhi alone.
- vii) For complete hydration of cement, the  $w/c$  ratio needed is
- a) less than 0.25
  - b) more than 0.25 but less than 0.35
  - c) more than 0.35 but less than 0.45
  - d) more than 0.45 but less than 0.60.
- viii) The compacting factor test of cement concrete determines its
- a) Strength
  - b) Porosity
  - c) Degree of compaction under loads
  - d) Workability.



- ix) Knots reduce the tensile strength of wood  
a) along the grain                      b) across the grain  
c) tangential to the grain      d) none of these.
- x) In fireproof paints, the main constituent is  
a) Aluminium power                      b) Red lead  
c) Copper powder                      d) Asbestos fibres.
- xi) Distemper is used to coat  
a) external concrete surface  
b) interior surfaces not exposed to weather  
c) wood work  
d) compound walls.
- xii) Varnish is a homogeneous solution of resin in  
a) kerosene oil                      b) alcohol  
c) naphtha                      d) linseed oil.

**GROUP – B**

**( Short Answer Type Questions )**

Answer any *three* of the following.                       $3 \times 5 = 15$

2. Discuss in brief “hydration of lime”.
3. What is workability of concrete and what are the factors affecting workability ?
4. Discuss seasoning of timber.
5. Describe various types of foundations.
6. Compare English Bond and Flemish Bond.
7. What are the defects in painting ?



**GROUP – C**

**( Long Answer Type Questions )**

Answer any *three* of the following.  $3 \times 15 = 45$

8. a) State the characteristics and uses of a 1st class brick.  
b) Classify different types of mortars used in engineering works.  
c) State the characteristics of a good mortar.  $5 + 6 + 4$
9. a) Classify building lime as per BIS : 712-1984.  
b) Compare fat lime with hydraulic lime.  
c) What is bulking of sand ? How does it affect concrete mix ?  
d) What are the requirements of a good timber ?  
 $3 + 4 + 5 + 3$
10. a) Write down the typical chemical composition of Ordinary Portland Cement and discuss the function of each constituent.  
b) What is curing of concrete and why is it required ?  
c) What are the characteristics of good oil paints ?  
d) Write short note on any one of the following :  
(i) Plywood  
(ii) Preservation of timber.
11. a) Draw a figure showing details of steel roof truss.  
b) Write short notes on the following :  
(i) A.C. Sheets  
(ii) G.I. Sheets.  $7 + 8$
12. a) State the requirement of good plaster.  
b) What are the defects in plastering ?  
c) Write characteristics of an ideal paint.  $5 + 5 + 5$