

## B.Arch. Examination, 2017

(1<sup>st</sup> Year, 1<sup>st</sup> Semester)

## MATERIALS AND METHODS OF CONSTRUCTION-I

Full Marks: 100

Time: Three Hours

The figures in the margin indicate full marks

**Question No.1 & 8 is compulsory and to answer any four from the remaining questions**

- 1 (a) (i) The greater the percentage of \_\_\_\_\_, the more refractory the clay will be.  
(ii) A brittle material is one for which the ultimate strain is \_\_\_\_\_% and for ductile material the ultimate strain is \_\_\_\_\_%.  
(iii) The term terracotta means \_\_\_\_\_  
(iv) The best tree for veneers is \_\_\_\_\_.  
(v) \_\_\_\_\_ method of quarrying is suitable for costly, soft and stratified Rocks.  
(vi) Fourth class bricks are also called \_\_\_\_\_ bricks.  
(vii) Marble is a metamorphic rock whose parent rock is \_\_\_\_\_.  
(viii) The relation between Length (L), Breadth (B) of a brick and Thickness of mortar (T) is \_\_\_\_\_.  
(ix) IPS flooring means \_\_\_\_\_  
(x) The raking of joints in plastering is known as \_\_\_\_\_ 10
- (b) (i) Explain bonding in brick masonry and its various techniques. Illustrate with Sketches. 05  
(ii) Explain Ultimate strength, ductility, stiffness, toughness and elasticity from a Stress- Strain diagram of concrete. 05  
(iii) What is the difference between centering and shuttering? 05
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2. (i) Define natural bed of a stone and its importance in construction showing examples of Stone masonry and Stone arch construction 3  
(ii) Explain seasoning of stone. 3  
(iii) Highlight the characteristics and application of the following stones in building construction : Granite, Slate, Sandstone, Mooram & kota stone 5  
(iv) Explain with sketches the important features for making earthquake resistant stone masonry buildings. 4
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3. Briefly describe ( any 5 ) ( 5x3= 15)  
i. Dressing of Stone  
ii. Quarrying  
iii. Preservation of stone  
iv. Artificial Stone  
v. Stone veneering  
vi. Scale of hardness of stones

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| 4.    | (i) Differentiate between dry rots and wet rots ? How are they caused and prevented.   | 3          |
|       | (ii) Explain ASCU treatment in timber  | 3          |
|       | (iii) Write short notes on lamin board and veneers.  | 3          |
|       | (iv) How are trees classified based on its mode of growth? Give two examples of each and their uses as building materials.           | 6          |
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| 5.    | Differentiate between the following: (any 5)   | ( 5x3= 15) |
|       | i. King closer & Queen Closer  |            |
|       | ii. Ashlar Masonry & rubble masonry  |            |
|       | iii. Softwood & hardwood   |            |
|       | iv. Natural Seasoning & Artificial seasoning   |            |
|       | v. Tangential sawing & radial sawing   |            |
|       | vi. Knots & Shakes   |            |
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| 6.    | Briefly explain the following : (any 5)  | ( 5x3= 15) |
|       | i. Why do we keep the frog upside in a brick masonry wall construction?  |            |
|       | ii. Bull's Trench Kiln and its important aspects.  |            |
|       | iii. Importance of castellated beams   |            |
|       | iv. Surface & Concealed condensation   |            |
|       | v. Embodied energy of building materials.  |            |
|       | vi. Green Building materials   |            |
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| 7.    | (i) What are the properties of first class bricks?   | 2          |
|       | (ii) Sketch and state the uses of coping brick, bull nose brick and quoin closer.  | 3          |
|       | (iii) What is efflorescence in bricks? What are its causes and remedies?   | 3          |
|       | (iv) Write short notes on refractory bricks, earthenware and porcelain.  | 3          |
|       | (v) What are the differences between common bricks and engineering bricks?   | 4          |
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| 8.    | (i) Draw the plans , elevation and isometric view for a T joint brick masonry in Rat Trap Bond. (Size of brick 250mm x 125mm x 75mm) | 7.5        |
|       | (ii) Draw a section through external wall of a load bearing wall showing all details.  | 7.5        |