312(S)

December 2017

BUILDING MATERIAL & CONSTRUCTION

Time Allowed: 3 Hours   *Full Marks: 70*

Answer to Question No.1 is compulsory and to be answered first.
This answer is to be made in separate loose script(s) provided for the purpose.
Maximum time allowed is 45 minutes, after which the loose answer scripts will be collected and
fresh answer scripts for answering the remaining part of the question will be provided.
On early submission of answer scripts of Question No.1,
a student will get the remaining script earlier.
Answer <u>any five</u> questions from Group-A & B, taking <u>at least two</u> from each group.

1.   Answer the following questions (any twenty):   1x20

Write whether the following statements are True or False:

i)   Sandstone is metamorphic rock.
ii)   Picked jhama is slightly over burnt brick.
iii)   A pug mill is used for moulding brick earth.
iv)   Slump test for concrete is carried out to determine strength.
v)   Maximum amount of bulking of sand is obtain by adding 40% water by weight.
vi)   Brick should be laid with their frogs downwards.
vii)   Low heat cement is suitable for making thin concrete structure.
viii)   Plywood is made from teakwood only.
ix)   Fillers lessen the cost of paint.
x)   Stone masonry is more fire resistance than brick masonry.

Choose the correct answer from the given alternatives:

xi)   Red colour is impacted to brick due to – (a) iron oxide (b) silica (c) lime (d) magnesium oxide.

xii)   The maximum percentage of ingredient in cement is that of – (a) iron oxide (b) silica (c) lime (d) magnesium oxide.

xiii)   Granite is an example of – (a) sedimentary rock (b) metamorphic rock (c) igneous rock (d) aqueous rock.

xiv)   Stone used for ornamental work must be – (a) soft (b) hard (c) light (d) heavy.

xv)   The commonly used raw material in the manufacture of cement is – (a) slate (b) sandstone (c) limestone (d) basalt.

xvi)   Bulking of sand is caused due to – (a) surface moisture (b) viscosity (c) air void (d) clay contents.

xvii)   A badly mixed cement concrete results in – (a) segregation (b) honey combing (c) bleeding (d) none of these.

xviii) Seasoning of timber is essential to remove – (a) knots from timber (b) sap from timber (c) twisted fibre from timber (d) roughness of timber.

xix)   The brick laid with its length parallel to the face of the wall is known as – (a) header (b) stretcher (c) closer (d) none of these.

Fill in the blanks:

xx)   The size of modular brick is _____.

xxi) The commonly used lime in white washing is _____.
xxii) Slump test for concrete is carried out to determine the _____ of concrete.
xxiii) The process of reducing the moisture content of timber is called_____.
xxiv) Plaster of Paris is obtained by heating_____.
xxv) In residential building, the damp proof course is generally provided at _____ level.

Group-A

2. a) Describe in short the different classification of traditional clay bricks. State also their characteristics and uses.
    b) State the uses of the following – (i) fire-clay bricks, (ii) fly-ash brick.   8+2

3. a) State four characteristics of first class brick.
    b) What is bulking of sand? How you can determine this in field?
    c) Write short notes on any two of the following – (i) water-cement ratio, (ii) curing of concrete, (iii) workability.   2+2+(3x2)

4. a) What are the basic ingredients required for manufacture of Portland cement? State their proportions. https://www.wbscteonline.com
    b) Give the chemical composition of Portland cement.
    c) State the use of low heat cement.
    d) Write precautionary measure to be taken for storing and staking of cement.   2+2+2+4

5. a) What is seasoning of timber? What is the object of seasoning of timber?
    b) What do you mean by preservation of timber? Name the different method of preservation of timber.   2+4+2+2

6. a) What is controlled concrete? How it differs from ordinary concrete?
    b) Write the different constituent of – (i) oil painting, (ii) varnish.
    c) State uses of any two of the following – (i) HYSD, (ii) cast iron, (iii) expanded metal, (iv) polymer.   3+(2x1½)+(2x2)

Group-B

7. a) Define-construction planning.
    b) Name two types of shallow foundation and two types of deep foundation.
    c) State the method of determining the width and depth of foundation of a building.
    d) Find the width & depth of a foundation carrying a load of 160Kn/m run. The safe bearing capacity of soil is 200Kn/m². Use Rankin's formula.
            Take, γ=20Kn/m³ & θ=30°
    Self weight of footing @10% of total load.   2+2+2+4

8. a) State the cause of dampness in a building.
    b) Name the different bond used in brick work.
    c) State the principles followed in brick masonry construction.   2+4+4

9. a) State the purpose of providing lintel in building. Explain with sketches the difference between a lintel and an arch.
    b) What is a damp proof course and where it is provided?
    c) What is scaffolding? Name the different type of scaffolds.   (2+4)+2+2

10. a) Name the different types of door. State also where each type is found suitable.
    b) Draw a neat dimensioned sketch of a fully glazed window on wooden frames in elevation only showing different parts. Assume size of window.   4+6

11. a) What are the requirement of a good stair?
    b) State the basic difference between plastering and pointing.
    c) State at least four important qualities of a good floor.   4+3+3

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