BUILDING MATERIALS
(CIVL 4181)

Time Allotted : 3 hrs **Full Marks : 70**

Figures out of the right margin indicate full marks.

Candidates are required to answer Group A and any 5 (five) from Group B to E, taking at least one from each group.

Candidates are required to give answer in their own words as far as practicable.

Group – A
(Multiple Choice Type Questions)

1. Choose the correct alternative for the following: **10 × 1 = 10**

(i) Percentage of iron oxide in a good brick earth lies between
(a) 10-20% (b) 5-6% (c) less than 1% (d) 20-30%.

(ii) Fat lime is
(a) 25% CaO (b) 55% CaO (c) 75% CaO (d) 95% CaO.

(iii) Di-calcium silicate (C_2S)
(a) Hydrates rapidly (b) Generates less heat of hydration
(c) Reacts with water only (d) Hardens rapidly.

(iv) The aggregate which passes through a 4.75 mm. sieve is known as:
(a) Coarse aggregate (b) Fine aggregate
(c) Well graded aggregate (d) Gap graded aggregate.

(v) Proportion of cement and sand in mortar for masonry work is
(a) 1:4 (b) 1:3 (c) 1:6 (d) 1:2.

(vi) An imaginary line passing through the vertical joints in the alternate courses in brick masonry is known as
(a) Quoin (b) Arrises (c) Bat (d) Perpends.

(vii) The area of shutter enclosed between the adjacent rails is known as
(a) Jamb (b) Mullion (c) Lock rail (d) Panel.

(viii) A cross wooden member of the door at floor level to provide lateral stability to the frame is called
(a) Top rail (b) Bottom rail
(c) Threshold (d) Sill.

(ix) Minimum width of landing should be
(a) Equal to width of stairs (b) Half the width of stairs
(c) Twice the width of stairs (d) One fourth the width of stairs.

(x) The type of pile which is driven at an inclination to resist inclined forces is known as
(a) Sheet pile (b) Friction pile
(c) End bearing pile (d) Batter pile.

Group – B

2. (a) What is 'Frog' and why is it provided?

(b) Briefly explain any three tests conducted on bricks in laboratories to assure their qualities.

(c) Write down Bogue's compound and their functions.

2 + 6 + 4 = 12

3. (a) What is bulking of sand? How does it affect concrete mix?

(b) Write down the precautions to be taken for proper storage of cement.

(2 + 2) + 8 = 12

Group – C

4. (a) What is the purpose of using sand in mortar?

(b) Write short note on the following:
(i) Anti-corrosive paint (ii) Bituminous paint.

(c) What is alloy? Describe the properties and uses of some of the steel alloys.

3 + (2 × 2) + (2 + 3) = 12

5. (a) What is slaked lime?

(b) What are the requirements of ideal varnish?

(c) Write a note in details about the reinforcing steel used in reinforced cement concrete.

3 + 3 + 6 = 12

Group – D

6. (a) Discuss in details about 'Pile foundation' and use proper diagrams whenever required.

(b) Write short notes on (i) Queen closer, (ii) King closer, and (iii) Bevelled closer in brick masonry.

6 + (3 × 2) = 12

7. (a) Classify windows based on position.

(b) Define the following types of walls
(i) Partition walls

(ii) Load-bearing walls
(iii) Curtain walls

(c) Write short note on Flemish bond with neat sketch.

3 + (3×2) + 3 = 12

Group – E

8. (a) Plan a dog-legged stair for a building in which the vertical distance between the floors is 3.9 m. The stair hall measures 3 m X 5m. Draw the typical plan and cross-section of stairs.

(b) What is cement concrete flooring?

10 + 2 = 12

9. (a) Compare between AC sheet and GI sheet.

(b) Write short notes on:
(i) Timber floor (ii) Brick flooring.

6 + (2 × 3) = 12

Department & Section	Submission link:
ME A	https://classroom.google.com/c/OTUwNzE1NjYxMjJa/a/Mjc0NTYzMjMxNTA2/details
ME B	https://classroom.google.com/c/OTUwNzE1NjYxMjJa/a/Mjc0NTYzMjMxNTA2/details