

**BUILDING MATERIALS
(CIVL 4221)**

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) The crushing strength of first class brick is
 - (a) 3 N/mm²
 - (b) 5.5 N/mm²
 - (c) 10.5 N/mm²
 - (d) 7.5 N/mm²
- (ii) The frog of the brick in a brick masonry is generally kept on
 - (a) bottom face
 - (b) top face
 - (c) shorter side
 - (d) longer side.
- (iii) Le Chatelier's device is used for determining the
 - (a) setting time of cement
 - (b) soundness of cement
 - (c) tensile strength of cement
 - (d) compressive strength of cement.
- (iv) The lime which has the property of setting in water is known as
 - (a) fat lime
 - (b) hydraulic lime
 - (c) hydrated lime
 - (d) quick lime.
- (v) The main ingredients of Portland cement are
 - (a) lime and silica
 - (b) lime and alumina
 - (c) silica and alumina
 - (d) lime and iron.
- (vi) When paint is applied in three coats, the first coat is known as
 - (a) stopping
 - (b) finishing coat
 - (c) under coat
 - (d) priming coat
- (vii) The vertical portion between each tread on stair is called
 - (a) going
 - (b) nosing
 - (c) winder
 - (d) riser.
- (viii) Among the following which is the inclined member of a truss
 - (a) Principal Rafter
 - (b) Cleats
 - (c) Dragon Beam
 - (d) Gable.

- (ix) Nosing is the outer projecting edge of a
(a) riser (b) tread
(c) landing (d) baluster.
- (x) Which footing is used in load bearing masonry construction?
(a) Isolated (b) Strap
(c) Strip (d) Pile.

Group- B

2. (a) Explain the process of Hydration of cement. What are the harmful substances present in brick earth? [(C03)(Remember/LOCQ)]
(b) Write a short note on alkali-aggregate reaction. Briefly explain the consistency test of cement. [(C05,C03)(Remember/LOCQ)]
(4 + 2) + (3 + 3) = 12
3. (a) Write a short note on the following:
(i) Ordinary Portland cement.
(ii) Impact value test of aggregates. [(C03,C05)(Remember/LOCQ)]
(b) Name the deleterious materials that are present in aggregates. What is slaking of lime? [(C02,C06)(Understand/IOCQ)]
(3 + 3) + (3 + 3) = 12

Group - C

4. (a) What are the different methods to protect steel from rusting? [(C05)(Remember/LOCQ)]
(b) Write short note on TMT bar. [(C01,C02)(Remember/LOCQ)]
(c) Write down the properties and area of application of cement mortar. [(C02)(Remember/LOCQ)]
3 + 4 + 5 = 12
5. (a) Write short notes on the following:
(i) Distemper, (ii) Varnish, (iii) Plaster of Paris. [(C06)(Remember/LOCQ)]
(b) Briefly explain the process of seasoning of timber. [(C01)(Remember/LOCQ)]
(3 + 3 + 3) + 3 = 12

Group - D

6. (a) Name different types of shallow and deep foundations. [(C06)(Remember/LOCQ)]
(b) Explain the ledged and braced door. [(C06)(Remember/LOCQ)]
(c) Write short note on Load bearing wall. [(C06)(Understand/LOCQ)]
4 + 5 + 3 = 12
7. (a) What is a pile foundation? Where it is used? [(C06)(Understand/LOCQ)]

- (b) Write short notes on the following:
 (i) Header bond (ii) Stretcher bond. [(C06)(Understand/LOCQ)]
- (c) What is load bearing wall? Why a load bearing wall cannot be demolished without taking proper precautions? [(C06)(Analyze/IOCQ)]
- 3 + 4 + (2 + 3) = 12**

Group - E

8. (a) Briefly describe the factors that are to be taken into consideration while selecting the flooring materials. [(C02)(Understand/LOCQ)]
- (b) Briefly describe the classifications of stairs with neat sketch. [(C06)(Understand/LOCQ)]
- 6 + 6 = 12**
9. (a) Write short notes on the following:
 (i) GI sheets (ii) AC sheets. [(C02)(Remember/LOCQ)]
- (b) What is tread and riser of a stair? Explain with neat sketch. [(C06)(Understand/LOCQ)]
- (c) What is queen-post truss? [(C06)(Remember/LOCQ)]
- (2 × 3) + 4 + 2 = 12**

Cognition Level	LOCQ	IOCQ	HOCQ
Percentage distribution	88.54	11.46	0

Course Outcome (CO):

After the completion of the course students will be able to:

1. Gain knowledge regarding the various building and general construction products and their quality, durability and availability.
2. Gain knowledge regarding the various types of properties, uses and variety of materials used in the construction industry.
3. Study the behavior of concrete at its fresh and hardened state.
4. Study about the concrete design mix.
5. Expose themselves to various quality control aspects of the civil engineering materials.
6. Learn and use the terms common in the building industry.

*LOCQ: Lower Order Cognitive Question; IOCQ: Intermediate Order Cognitive Question; HOCQ: Higher Order Cognitive Question

