

P720/3

Building construction theory

Trial questions

March 2020

Attempt all questions exhaustively

1. Write short notes on the following.

a) In relation to the building team

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|------------------------|--------------------|
| i. Client | iv. Labourers |
| ii. Architect | v. Contractor |
| iii. Quantity surveyor | vi. Sub-contractor |

b) In relation to site

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|--------------|-------------|
| i. Elevation | iii. Aspect |
| ii. Prospect | iv. Access |

c) In relation to foundations

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|----------------------|-----------------------|
| i. Settlement | iii. Bearing pressure |
| ii. Bearing capacity | iv. Backfilling |

2. Explain the following terms as used in the building industry

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|------------------------|---------------------|
| i. Site preparation | vi. Setting out |
| ii. Levelling | vii. Formwork |
| iii. Timbering | viii. Profile board |
| iv. Hoarding | ix. Datum |
| v. Scaffolding shoring | x. Datum post |

3. a) List five equipment used to set out a domestic building

b) Give the function of the following mechanical plant used in site levelling and excavation

- i. auger
 - ii. back actor
 - iii. bulldozer
 - iv. excavator
- 4. a) What is a foundation and what is the purpose of a foundation to a building.
- b) State the two methods of safeguarding the sides of an excavation from collapsing
- c) Outline five factors to be considered when designing foundation to be used on a building
- d) With the aid of sketches, describe the following types of foundations and give two conditions in which they are suitable
 - i. raft foundation
 - ii. deep strip foundation
 - iii. pile foundation
 - iv. isolated pad foundation
- e) mention any four causes of foundation failure
- 5. a) Outline any four functional requirements of the following.
 - i. Ground floor
 - ii. Upper floor
- b) (i) list three most commonly used materials in a hardcore bed
- (ii) State three purposes of a hardcore bed in a foundation
- c) Write short notes on the following in relation to foundations
 - i. DPM
 - ii. Aggregates
 - iii. Reinforcement bars
 - iv. Bricks
- d) Explain any five types of finishes used on floors stating where each is suitably applied.
- 6. a) state four functional requirements of walls
- b) Differentiate between the following
 - i. partition walls and party walls
 - ii. load bearing and non-load bearing walls
 - iii. boundary walls and retaining walls
 - iv. cavity walls and parapet walls

- c) with the aid of sketches, show the following as used in brickwork
 - i. toothing
 - ii. racking back
 - iii. indent
 - iv. hearting
 - v. backing
7. a) differentiate the following
 - i. A brick and a block.
 - ii. Pointing and jointing
 - iii. Rat trap bond and Quetta bond
 - iv. English garden wall bond and Flemish garden wall bond
 b) State any four bonding rules applied in construction
 c) Using sketches only, show the following as used in construction

i. Flemish bond at a T- junction	iii. Bevelled closer
ii. English bond at a quoin	iv. Mitred closer
	v. Queen closer

 d) With the aid of sketches, list four types of finished joints of walls
8. With the aid of sketches, explain the following;

i. Timbering	iv. Turning piece
ii. Scaffolds	v. Pier
iii. Shoring	vi. Suspended timber floor
9. a) (i) Define the term concrete as used in building construction
 (ii) Explain the following types of concrete
 - plain/mass concrete
 - reinforced concrete
 - precast concrete
 - cast-in-situ concrete
 - pre-stressed concrete
 (iii) give the purpose of each of the constituent materials used in mixing concrete
- b) (i) What is batching in respect to concrete production?
 (ii) Give two methods of batching
 (iii) Explain two main methods used in concrete mixing
- c) (i) what is workability in regard to concrete

(ii) Describe any two methods of testing the workability of concrete

(ii) Give any four factors that affect the workability of concrete

10. a) With the aid of sketches, define the following terms as related to roof construction

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|-------------------|---------------|
| i. roof covering | vi. hip |
| ii. common rafter | vii. pitch |
| iii. span | viii. gable |
| iv. eave | ix. fascia |
| v. valley | x. wall plate |

b) State the purpose of each of the following members used in roof construction.

- i. Ridge board
- ii. Battens
- iii. Sprocket piece
- iv. Tilting fillet

c) Illustrate any two methods used to fix ceiling joists to ends of walls

d) Distinguish between the following members in relation to roof construction

- i. Ridge board and ridge
- ii. Jack rafters and hip rafter
- iii. Furring piece and tilting fillet
- iv. Dormer window and skylight

e) Using sectional elevations sketch and explain any three examples of single roof and where they can suitably be used

f) (i) use a suitable sketch to explain the term trimming to an opening in timber upper floor construction, naming all the members used

(ii) Give two possible uses of openings in floors that may cause the need for trimming as explained in (i) above.