

P720/3
Building
Construction
Theory
Paper 3
2 hours

UGANDA ADVANCED CERTIFICATE OF EDUCATION
Pre- Registration Examinations 2016
BUILDING CONSTRUCTION
THEORY
PAPER 3
2 HOURS

Instructions;

- This paper consists of five questions
- Answer **four** questions
- All questions carry equal marks

- a. i) What is the purpose of a foundation to a building? (1 mark)
ii) State the difference between a NATURAL foundation and an ARTIFICIAL foundation. (2 marks)
iii) Outline **five** factors which are considered when designing a foundation to be used on a building structure. (5 marks)
- b. i) Explain how a building foundation can fail. (2 marks)
ii) State **four** causes of foundation failure. (4 marks)
iii) With aid of sketches, describe the following types of foundation and give conditions under which they are suitably applied.
- Wide strip foundation
- Pad foundation
- Pile foundation
- Raft foundation
- c. i) What is the purpose of incorporating D.P.C in a wall? (1 mark)
ii) Give any **four** suitable materials which can be used for horizontal D.P.C. (4 marks)
- d. i) Why does the building regulations require side of excavated trenches to be supported by temporary timbering? (2 marks)
ii) Mention any **four** various members which are used in timbering to trenches and give their suitable sizes. (4 marks)

2. a. i) Distinguish between a **load** bearing wall and a **non-load** bearing wall. (4 marks)
ii) Give any two examples of non-load bearing walls. (2 marks)
iii) State one main characteristic of a load bearing brick-wall. (1 mark)

- b. i) Strength and stability are some of the functional requirements of a wall. Mention any other four. (4 marks)
ii) With the aid of a sketch, explain how the stability of a thin brick boundary can be improved. (3 marks).
iii) Differentiate between a partition and wall and a party wall. (4 marks)

c) Explain the term heading bond as used in brick work and state where it is suitably applied.

- d) Use suitable sketches to explain
i) how a tie brick is used in bonding brick walls. (3 marks)
ii) the difference between single Flemish bond and double Flemish bond. (5 marks)
iii) the difference between raking back and toothing. (4 marks)

3. a. i) Use a suitable sketch to explain the term trimming to an opening in timber upper floor construction, naming all members involved. (8 marks)
ii) Give two possible uses of openings in floors that may cause the need for trimming as explained in (a) (i) above. (2 marks)

- b. i) List any four members found in a roof truss. (2 marks)
ii) Distinguish between a single pitched roof and a double pitched roof and state members used in each case. (5 marks)
iii) Give two examples of single roofs. (2 marks)
iv) Use a suitable sketch to explain the difference between a verge and an eave in roof construction. (3 marks)

c) State the purpose for each of the following members used in roof construction and give their suitable sizes.

- i) wall plate (2 marks)
ii) Rafters (2 marks)
iii) Ridge boards (2 marks)
iv) Battens (2 marks)
v) Tilting fillet (2 marks)

4. a) Give three public places where the floors are stepped. (3 marks)
ii) State any five functional requirements a floor structure should have in order to perform its functions. (5 marks)
iii) Outline any four factors that influence the choice of a floor type

- (concrete or timber) to be used in upper floor construction. (4 marks)
- iv) Mention any two advantages of concrete upper floors over timber upper floors. (2 marks)

- b. i) Explain the purpose of a timber raised ground floor. (2 marks)
ii) What is the purpose of ventilating a raised timber ground floor? (2 marks)
iii) Explain how the ventilation of a raised timber ground floor is done. (3 marks)
- c. i) With aid of sketches, show any three alternative methods of supporting ends of floor joists in timber upper floor. (6 marks)
ii) Explain why it is necessary to strut between floor joists in timber upper floor construction. (2 marks)
iii) Sketch the two methods of strutting between joists in timber upper floor construction and give the suitable sizes of the members used. (4 marks)
5. a) Define the following terms as used in stair construction;
- i) step (2 marks)
 - ii) pitch (2 marks)
 - iii) headroom (2 marks)
 - iv) balustrade (2 marks)
 - v) nosing (2 marks)
- b. i) Sketch and explain what is meant by a straight flight as used in stairs. (4 marks)
ii) Explain when it is necessary for a straight flight to have a landing. (2 marks)
iii) With the aid of suitable sketches, describe the constructional procedure of timber stair and show the following;
- Method of fixing together the threads and risers,
- How the steps are fixed to the stringer. (5 marks)
- c) Distinguish between;
- i) battened doors and paneled. (4 marks)
 - ii) door lining and door frame (4 marks)
 - iii) An architrave and door stop. (4 marks)

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