

Time Allowed; 2 hours.

Instructions; Use the Narration Below to answer Question 1 and any other Two. **Make reasonable assumptions where necessary. USE BESMM 3 OR BESMM 4 AS REFERENCE MATERIAL.**

Your client has approached you to help him supervise and erect an L-shaped two-storey shopping plaza at Kpakungu (230mm thick sandcrete block building). On the ground floor plan, the longer walls of the building measure 30000mm and 23000mm (opposite walls). While the shorter walls measure 20000mm and 13000mm (opposite walls). However, due to lack of funds the client expects the construction to terminate at the first upper floor. The staircase is spiral and located near the shorter side of the building. In preparation for the presentation of the estimated cost of the structure, take off quantities for the elements highlighted below, by first sketching the ground floor plan.

**Note the following:**

- there are 20 steps in the stair to each floor. Each 1500 mm x 300mm step has a thickness of 100mm.
- The Landing connecting to each floor measures 1800 x 1800mm x 100mm thick.
- there are forty columns in each floor of the building each measuring 3600 x 230 x 230mm building
- there are 6 number 900 x 1200mm windows, 7 number 1200 x 1200mm windows and 4 number 600 x 600mm windows at the ground floor.
- all dimensions are centre to centre

1. a) concrete in upper floor (10 marks)  
b) reinforcement in upper floor (10 marks)
2. a) concrete in columns at the ground floor only. (10 marks)  
b) reinforcement in columns only. (10 marks)
3. a) concrete in the steps to the stair case terminating at the roof deck of the ground floor. (10 marks)  
b) reinforcement in the steps to the staircase. (10 marks)
4. a) concrete in lintels to the windows (10 marks)  
b) reinforcement in lintels to the windows (10 marks)  
c) formwork to the soffit of the lintels to the windows (10 marks)