You should have the following for this examination
• one answer booklet

No additional data is attached

General instructions
• This examination paper is of three hours duration.
• This paper consists of eight questions.
• Answer five questions selecting four from Section A and one from Section B.
• All questions carry equal marks. The maximum marks for each section within a question are given against that section.
• An electronic, non-programmable calculator may be used but candidates must show clearly the steps prior to obtaining final numerical values.
• Drawings should be clear, in good proportion and in pencil. Do not use red ink.
Section A

1 a) i) Describe the use of an outline plan of work for building projects. (5 marks)
   ii) Identify the main five work stages in a building project. (5 marks)

   b) When designing school buildings for disabled persons, give five specific features provided in,
      i) car parks (5 marks)
      ii) horizontal movement inside the building. (5 marks)

2 a) i) Describe the use of strip foundations in buildings. (5 marks)
   ii) Sketch a strip foundation and name the components and materials. (6 marks)

   b) It is proposed to construct a three-storeyed building on the land as per the sketch in Figure Q2 below. It was found that subsoil is sandy gravel up to 3 m depth from the formation level.

   ![Figure Q2](image)

   i) By considering the given information in Q2b) above, propose the suitable foundation types for this three storeyed building. (5 marks)
   ii) Identify four types of excavation in the substructure construction by considering the proposed foundation types in Q2bi) above and the levels in Figure Q2. (4 marks)

3 a) i) State four functional requirements of load bearing walls. (4 marks)
   ii) Write the specification for constructing brickwork for load bearing walls. (5 marks)

   b) i) Define a doorframe. (3 marks)
   ii) Sketch a single shutter doorframe of overall size 1200 mm x 2500 mm with 300 mm clear height of louvers on top. (5 marks)
   iii) Name all components on the sketch drawn in ii) above. (3 marks)

4 a) A hip roof with asbestos sheets is to be constructed for a store building by taking 750 mm eaves. The external length and the width of the building are 10 m and 9 m respectively.
   i) State the main timber members used for constructing this roof frame. (3 marks)
   ii) Sketch the plan views of this roof and show the timber members stated in a) i). (6 marks)
   iii) Propose a suitable roof plumbing arrangement for this roof. (5 marks)

   b) i) Identify two methods of constructing ground floor paving. (2 marks)
   ii) Discuss the purpose of providing a cement screed on floor paving. (4 marks)
5 a) Give the meaning of following building services.
   i) HVAC. (3 marks)
   ii) People movers. (3 marks)

b) State two types of pipes which are used for the following services.
   i) Cold water supply. (2 marks)
   ii) Hot water supply. (2 marks)

c) Two groups of sanitary appliances are in each floor of four storeyed flat. Each group consists of a water closet, washbasin and a bath, which are sited close to the stack.
   i) Propose a suitable arrangement of disposal of soil and wastewater with the aid of a clear sketch. (5 marks)
   ii) Explain briefly the pollution caused by sanitation. (5 marks)

6 a) i) Sketch the sectional elevation of a passenger lift. (6 marks)
   ii) Name all main components in a) i). (4 marks)

b) i) Explain the use of portable fire extinguishers in buildings. (5 marks)
   ii) Describe the consumer control unit with a sketch. (5 marks)
Section B

7  a) Define,
   i) building line  
   ii) street line  
   iii) floor area.  
   (2 marks)

   b) i) Describe the importance of building By-laws.  
        ii) Describe briefly, building design in general.  
        (5 marks)

   c) Give four key responsibilities of the client in a construction project.  
      (4 marks)

8  a) i) Explain the use of life cycle cost analysis for construction projects.  
       (5 marks)

       ii) State the four roles of a value manager.  
           (4 marks)

       b) i) Describe building maintenance.  
            (5 marks)

           ii) Explain the purpose of the annual maintenance programme of a building.  
              (4 marks)

           iii) Give the two types of nominal maintenance.  
                (2 marks)