

GAUTENG DEPARTMENT OF EDUCATION
SENIOR CERTIFICATE EXAMINATION

BUILDING CONSTRUCTION SG

TIME: 3 hours

MARKS: 300

REQUIREMENTS:

- Answer book
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- Drawing answer book (702-2/X)
- Drawing instruments
- Pocket calculator
- Answer Sheet SG 702-2/0

INSTRUCTIONS:

- Candidates must answer Section A and any TWO questions from Section B.
 - All calculations and written answers must be done in your answer book.
 - Answer Question 6.3 on Answer Sheet SG 702-2/0. Detach this answer sheet and place it inside your answer book.
 - All drawings must be done in Drawing answer book (702-2/X).
 - Number your answers exactly as the questions have been numbered.
 - Clearly indicate on the drawing paper the number of the question you are answering.
 - Do proper planning.
 - Drawings and sketches must be fully dimensioned and neatly finished with titles and labels to conform with the SABS Recommended Practice for Building Drawings
 - Write your examination number on Answer Sheet SG 702-2/0, Drawing answer book (702-2/X) and your answer book.
 - For the purpose of this examination, the size of a brick should be taken as 220 mm x 110 mm x 75 mm.
 - Measurements not shown or given must be taken as standardized measurements.
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SECTION A
COMPULSORY

Answer ALL questions in this section.

QUESTION 1

The plan of a dwelling is shown in **Figure 1**. The dwelling has a gabled roof covered with corrugated iron and has open eaves with an overhang of 500 mm and a pitch of 30 degrees. The roof has square gutters of 100 mm x 100 mm with downpipes of 75 mm diameter and a fascia board of 200 mm. The superstructure is 2 800 mm high and the substructure 450 mm of which 4 layers of bricks are above ground level. The dwelling has a framed Z-batten door. All the windows must be placed in the correct positions. Use the sizes given in the window schedules.

1.1 Draw, according to a scale of 1:100, a North elevation.

1.2 Draw, according to a scale of 1:100, a West elevation.

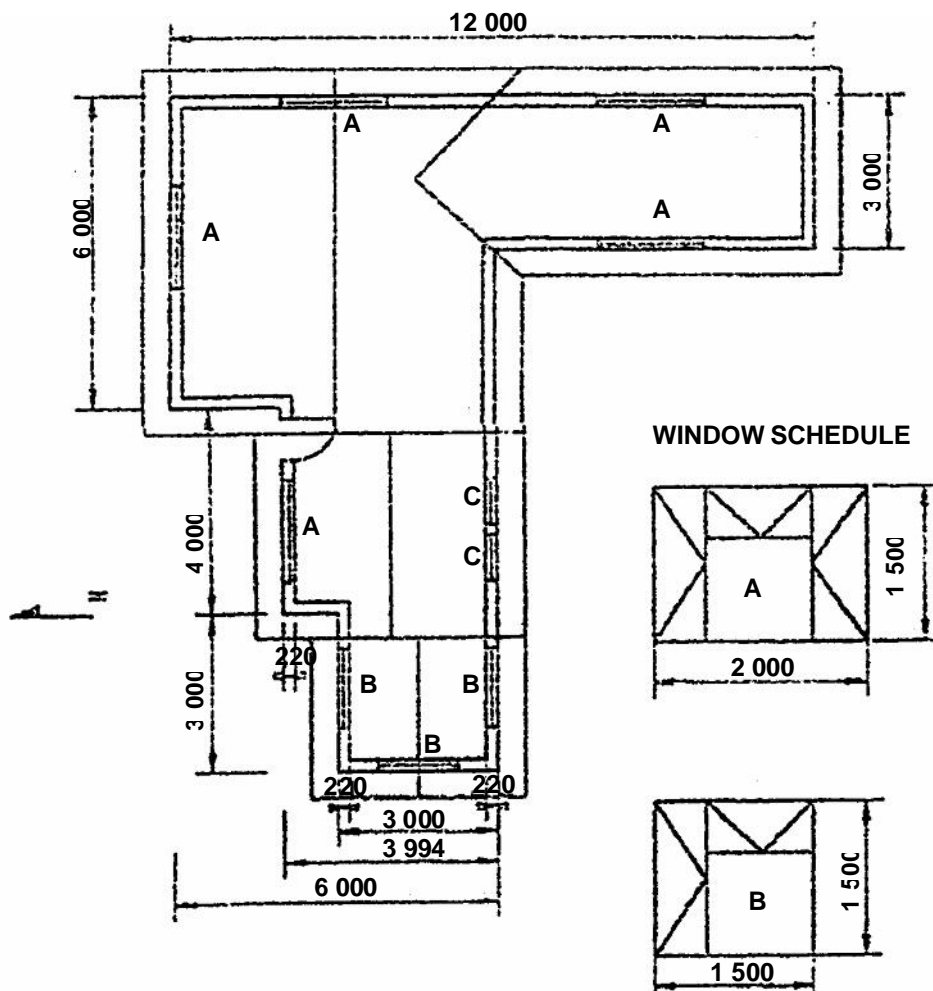


Figure 1

[60]

QUESTION 2

Figure 2 shows a loaded beam which is supported at LR and RR at the ends. The beam has a universal spreaded load of 4 kN/m.

- 2.1 Calculate the reactions at LR and RR.
- 2.2 Calculate the bending moments and shear forces at A, B, C, D and E.
- 2.3 Draw the bending moment and shear force diagrams.

Use the following scales:

Space diagram	1:100
Bending moments diagram	2 mm = 1 kN.m
Shear force diagram	2 mm = 1 kN.

[60]

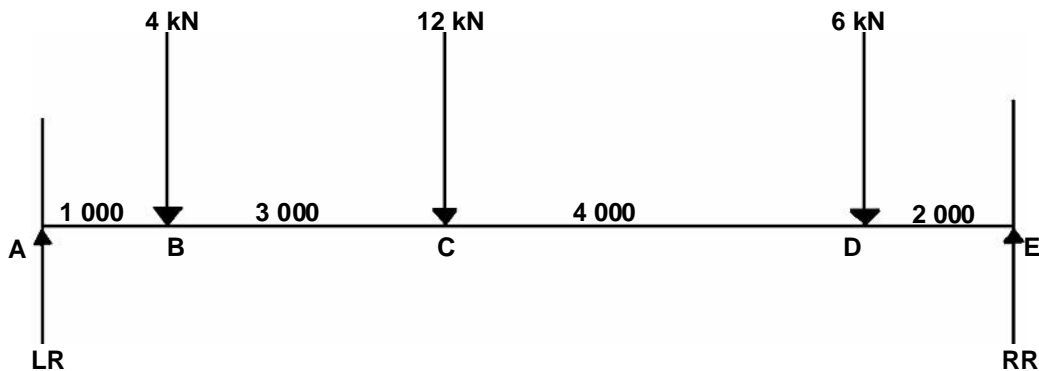


Figure 2

QUESTION 3

- 3.1 List FIVE ways in which injuries on a building site can be eliminated. (10)
- 3.2 Name any FIVE different types of bricks. (10)
- 3.3 Name FIVE safety precautions with which woodwork machines must comply. (10)
- 3.4 Name any TEN characteristics of good quality glass. (20)
- 3.5 Make a neat sectional drawing, in good proportion, of the joint between two 100 mm earthenware drainpipes, approximately 150 mm long. (10)

[60]

SECTION B

Answer any TWO questions from this section.

QUESTION 4

Figure 3 shows a framework that is simply supported at the end with three point loads.

- 4.1 Draw the space diagram to a scale of 1:50.
- 4.2 Draw the force diagram according to a scale of 10 mm = 1 kN.
- 4.3 Copy the table below in your answer book and answer the following question on it. Determine graphically the size and extent of the forces affecting each member of the framework.

Member	Force	Nature
AF		
BG		
CH		
DJ		
EJ		
EF		
FG		
GH		
HJ		

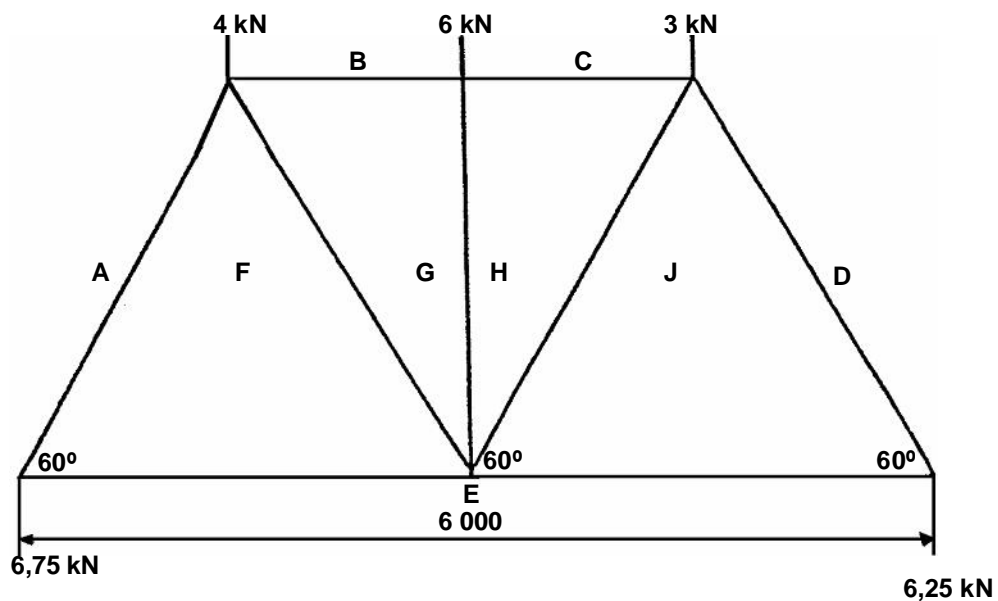


Figure 3

[60]

QUESTION 5

- 5.1 Draw, to a scale of 1:5, a vertical section through the outer wall of a dwelling to show the roof construction. The open eaves project 450 mm and are finished off with a fascia of 230 mm x 25 mm, a 100 mm x 75 mm rectangular gutter, as well as downpipes with a diameter of 75 mm.

The roof is covered with 25 mm thick corrugated sheeting. The inner wall has 12 mm thick plaster, and is finished off with a soft board ceiling 12 mm thick and cornice of 75 mm. (40)

- 5.2 Draw, to a scale of 1:5, a vertical section through the ridge of a South-African type roof truss to show the construction. The rafters are made of 114 mm x 38 mm wood, and the purlins of 75 mm x 50 mm wood. (20)
[60]

QUESTION 6

- 6.1 Show the construction of a septic tank with the aid of a neat sectional sketch drawn in good proportion. (20)

- 6.2 Describe the working process of a septic tank and describe how these tanks are emptied. (10)

- 6.3 Answer sheet SG 702-2/0 on page 7 shows a partial plan of a dwelling with outbuildings. Standard abbreviations are used to show the sanitary fittings.

Draw a suitable and effective drainage system for the dwelling, showing all drainage details by means of standard abbreviations. (30)
[60]

QUESTION 7

- 7.1 List any FIVE important facts to consider when buying timber for roof construction. (10)

- 7.2 List any FIVE characteristics of concrete. (10)

- 7.3 Show the construction of a vacuum tank with the aid of a neat sectional drawing drawn in good proportion. (20)

- 7.4 Give FIVE requirements with which good formwork must comply. (10)

- 7.5 Name any FIVE materials that can be used for a roof. (10)

[60]

TOTAL: 300

P.T.O.

CANDIDATE'S NUMBER / KANDIDAAT SE NOMMER

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ANSWER SHEET / ANTWOORDBLADSG 702-2/0

