TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

UNIVERSITY EXAMINATION FOR:

BACHELOR OF SCIENCE IN CIVIL ENGINEERING

ECE 2207 : ENGINEERING DRAWING III

END OF SEMESTER EXAMINATION

SERIES: DECEMBER 2016

TIME: 2 HOURS

DATE: 15 Dec 2016

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

-Drawing instruments.

This paper consists of five questions.

Attempt any THREE questions.

Do not write on the question paper.

QUESTION ONE (30 Marks)

i. Figure Q1(a) shows bracing connections in a column and a beam. Using a suitable scale, produce the bracing details. (15 marks)

ii. Figure Q1(b) shows a section of a truss. The truss has a pitch of 21˚ and connected together using bolts and nuts at the joints. The size of the members is indicated in the figure. Using a scale of 1:25, reproduce the truss, together with details A and B clearly indicating all the relevant details. (15 Marks)

QUESTION TWO (20 Marks)

A dual carriageway of 7 m width is to be constructed that will have an invert block drain placed at a distance of 5 m from the edge of one side of the carriageway. The road carriageway also has channels and kerb stones at the edges. Using a suitable scale, draw the typical road cross-section for the proposed road.

QUESTION THREE (20 Marks)

Figure Q3 shows a typical wall cross-section of a steel framed composited construction. Using the information given and a suitable scale produce the drawing.

QUESTION FOUR (20 Marks)

Using a scale of 1:1, clearly draw the invert block drain shown in Figure Q4.

QUESTION FIVE (20 Marks)

A drinking water pipeline is to be laid from the intake point to the purification tanks 66 km away. Table 1 shows the results of a topographical survey carried out on the proposed line. Plot the sectional longitudinal profile of the proposed line taking the horizontal and vertical scales as 1:10 and 1:0.5 respectively.

Table 1: Topographical survey data for a drinking water pipeline

Chainage (cm)	Hydraulic level (M)	Reduced level (M)	Survey remarks	Pipe details
0 + 0000	4000	4000	Intake point	
0 + 1000	3999	3960		
0 + 2000	3999	3975		
0 + 2500	3999	3960	Joining to a road	150 mm
0 + 3200	3998.72	3925		
0 + 3500	3998.6	3930		
0 + 3600	3998.56	3930	Stream crossing	
0 + 3800	3998.48	3930	Stream crossing	
0 + 3900	3998.44		Stream crossing	
0 + 4100	3998.36	3920		
0 + 4300	3998.28	3910		
0 + 4400	3998.24	3907.5	Road junction	100 mm
0 + 4800	3998.08	3900	Road junction	
0 + 6100	3997.56	3900		
0 + 6600	3997.36	3890		

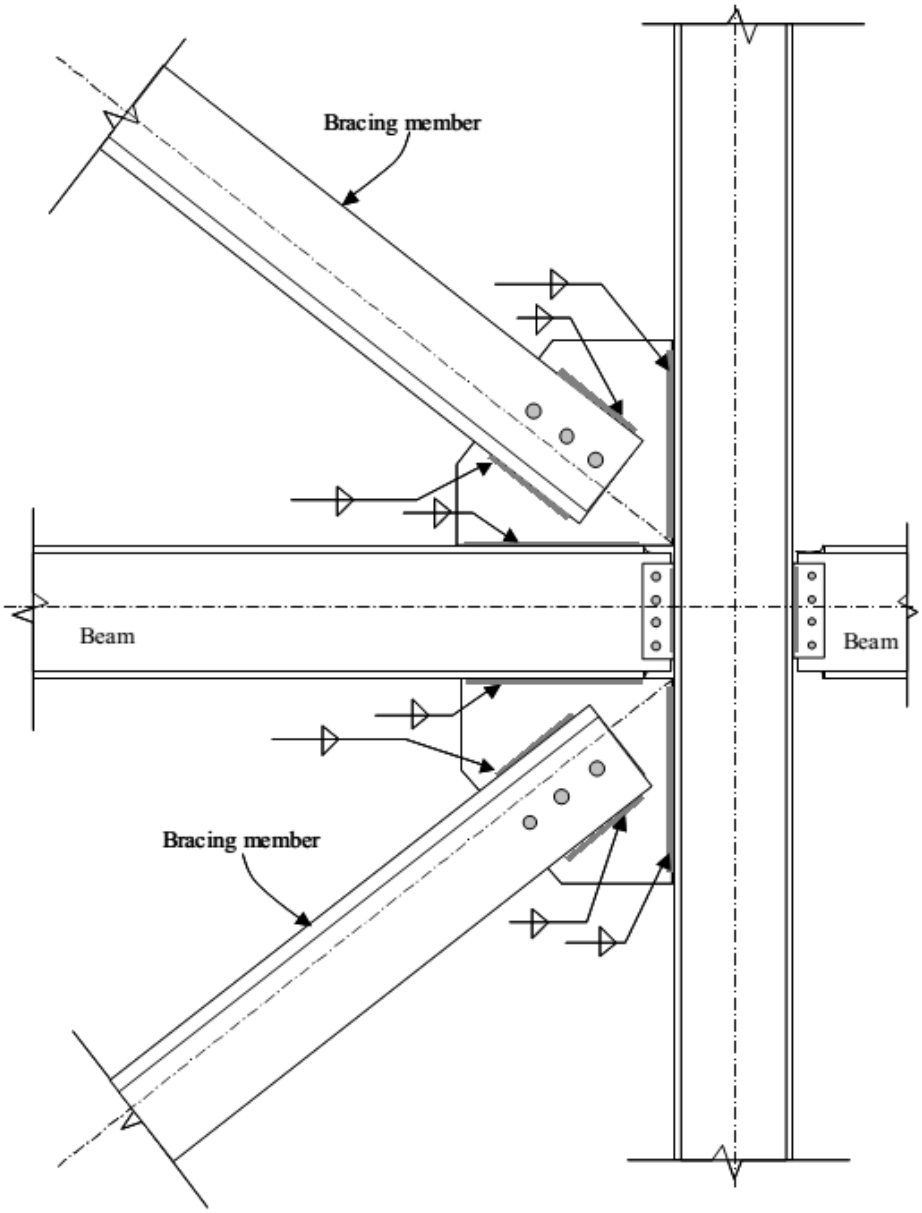

Figure Q1(a)

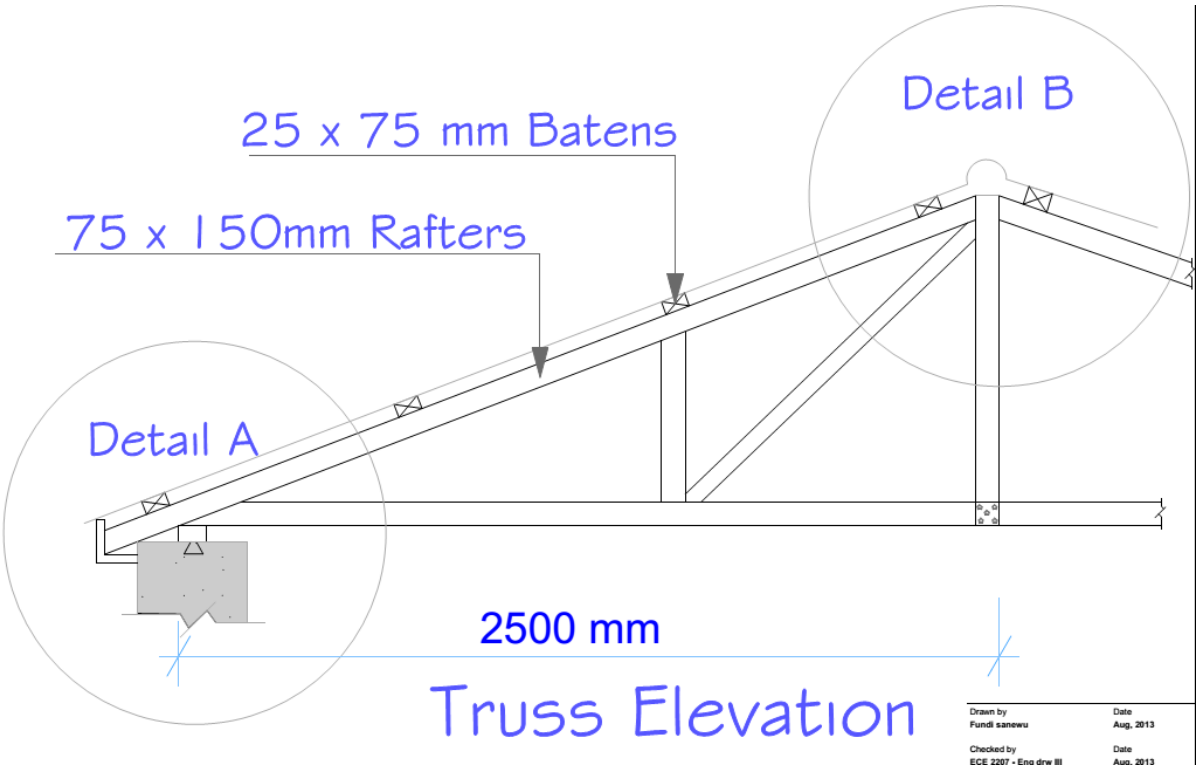

Figure Q1(b)

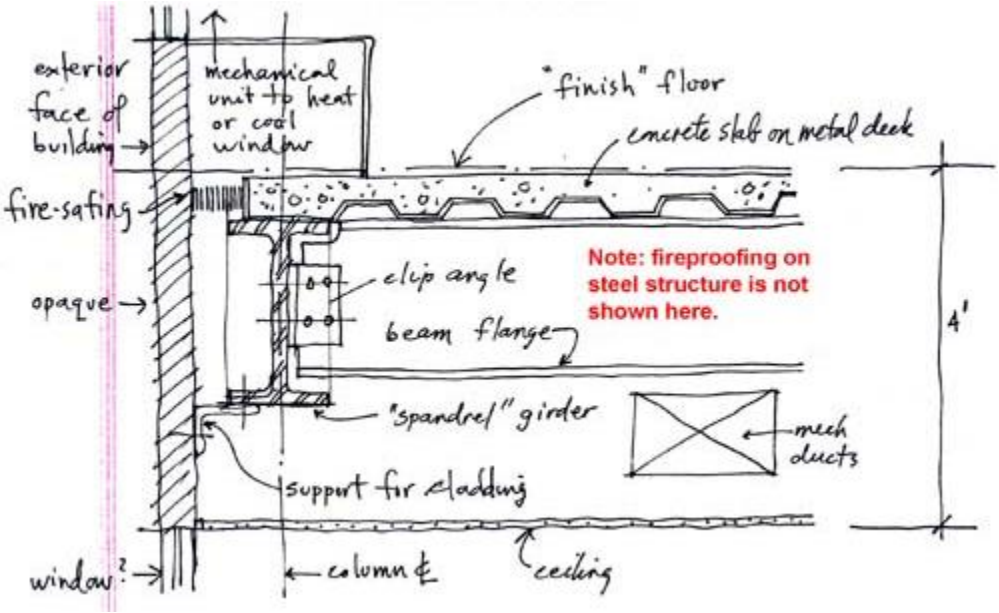

Figure Q3

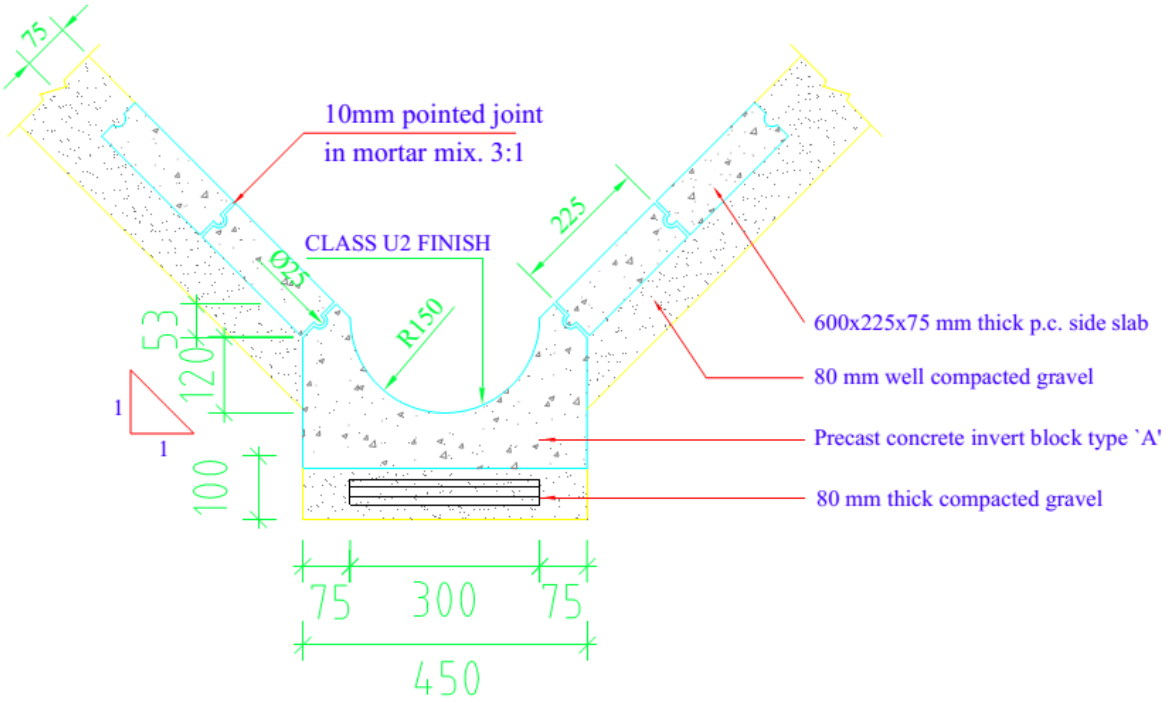
75
10mm pointed joint
in mortar mix. 3:1
CLASS U2 FINISH
225
Ø25
R150
53
120
1
1
100
600x225x75 mm thick p.c. side slab
80 mm well compacted gravel
Precast concrete invert block type `A'
80 mm thick compacted gravel
75
300
75
450

Figure Q4