

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF BUILT ENVIRONMENT
BACHELOR OF QUANTITY SURVEYING (HONOURS) DEGREE
PART IV FIRST SEMESTER APRIL 2009
MEASUREMENT III AQS 4107

TIME: 3 Hours

TOTAL MARKS: 100

INSTRUCTIONS:

Answer Section A and Section B

SECTION A

Question One

Fig P1 shows plumbing layout of cold and hot water supply for a residence. Given that

- Galvanised mild steel pipe shall be used for cold water.
- Hot water pipe shall be of copper to BS PART 1 with fittings conex or other approved compression fittings.
- Hot and cold water valves to be fullway gate valves type to BS 1952.
- All pipework to wall shall be supported by brackets or holderbats spaced at 2m centres.
- Pipes in trenches to be laid 750mm deep.
- Wall height is 3000mm to underside of ceiling.

Required

- (a) Measure cold and hot water supply showing all assumptions made *(35 marks)*
- (b) Prepare a mini bill for the measured items *(15 marks)*

SECTION B

Question 1

- a) Describe the concept of bulking of excavated material. Why is this factor important in the qualification of earthworks? (5 marks)
- b) Using the information given below, determine the volumes of earthworks in the construction of a 20m wide road:-
- The road is 150m long
 - Choose suitable intervals
 - The levels at: 0 chainage is 1.2 m
50m chainage is 1.3m
100m chainage is 1.5m
150m chainage is 1.2 m
 - The final embankment should slope at 1:1:3 (10 marks)

Question 2

The table below shows ground levels and formation levels for a proposed road construction. Embankments are to be built with side slopes of 1:2:5 and the cuttings with the slopes of 1:3:0 the embankment crest width and cutting base width is 13m. It may be assumed that the ground is horizontal across the section

| Chainage | Ground level | Formation level | Chainage | Ground level (m) | Formation level (m) |
|----------|--------------|-----------------|----------|------------------|---------------------|
| 0 | 28 | 35 | 800 | 4 | 11 |
| 100 | 29 | 32 | 900 | 3 | 8 |
| 200 | 32 | 29 | 1 000 | 2 | 5 |
| 300 | 35 | 26 | 1 100 | -5 | 2 |
| 400 | 30 | 23 | 1 200 | -5 | 2 |
| 500 | 19 | 20 | 1 300 | 10 | 5 |
| 600 | 11 | 17 | 1 400 | 15 | 8 |
| 700 | 7 | 4 | 1 500 | 23 | 11 |

Determine the volumes of earthworks using both Simpson Rule and the average end area method. Which method is more accurate? Justify your answer. (20 marks)

Question 3

Take off the structural steel quantities of the roof layout shown in figure S.1. Present the calculations in the form of a standard bill of quantities. (15 marks)

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PART IV SUPPLEMENTARY EXAMINATIONS OCTOBER 2009
MEASUREMENT III AQS 4107

TIME: 3 Hours

TOTAL MARKS: 100

INSTRUCTIONS:

Answer Section A and Section B

SECTION A

Question One

Fig P1 and P2 showing plumbing layout and schematic diagram for cold and hot water supply for an office block.

Required

- (a) Take off sanitary appliances. (15 marks)
- (b) Measure cold and hot water supply showing assumptions made. (35 marks)

SECTION B

Question 1

The table below shows ground levels and formation levels for a proposed road construction. Embankments are to be built with side slopes of 1:2 and the cuttings with the slopes of 1:2,5 the embankment crest width and cutting base width is 13m. It may be assumed that the ground is horizontal across the section

| Chainage | Ground level | Formation level | Chainage | Ground level (m) | Formation level (m) |
|----------|--------------|-----------------|----------|------------------|---------------------|
| 0 | 28 | 35 | 800 | 4 | 11 |
| 100 | 29 | 32 | 900 | 3 | 8 |
| 200 | 32 | 29 | 1 000 | 2 | 5 |
| 300 | 35 | 26 | 1 100 | -5 | 2 |
| 400 | 30 | 23 | 1 200 | -5 | 2 |
| 500 | 19 | 20 | 1 300 | 10 | 5 |
| 600 | 11 | 17 | 1 400 | 15 | 8 |
| 700 | 7 | 4 | 1 500 | 23 | 11 |

Determine the volumes of earthworks using both Simpson Rule and the average end area method. Which method is more accurate? Justify your answer. (20 marks)

Question 2

Using the information given below, determine the volumes of earthworks in the construction of a 15m wide road:-

- The road is 200m long

- The levels at: 0 chainage is 1.2 m
50m chainage is 1.3m
100m chainage is 1.5m
150m chainage is 200m chainage is 1.0m
- The final embankment should slope at 1:1,5

(15 marks)

