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University Examinations 2019/2020

SECOND YEAR, FIRST SEMESTER EXAMINATION FOR DIPLOMA IN CIVIL
ENGINEERING

ECV 2206: CIVIL ENGINEERING QUANTITIES

DATE: OCTOBER 2020

TIME: 1½ HOURS

INSTRUCTIONS: Answer question *one* and any other *two* questions.

QUESTION ONE – (30 MARKS)

- (a) Definition the term Quantity Survey (3 marks)
- (b) Name four Importance of Quantity Survey (4 marks)
- (c) Differentiate between Cost-plus contract and Construction Management Contract (4 marks)
- (d) If 100 bank cubic meter (in place at natural density) of dense clay (30% swell) needs to be moved away, how many loose cubic meters have to be moved away by trucks? And, how many loads of 8 m cubic dump trucks will be needed? (3 marks)
- (e) FIGURE 1 show the foundation layout of a structure. Estimate the excavation needed for the raft foundation under the building below, note that the extra excavation of 1.5 m from all sides required, the excavation depth is 0.8 m. (6marks)

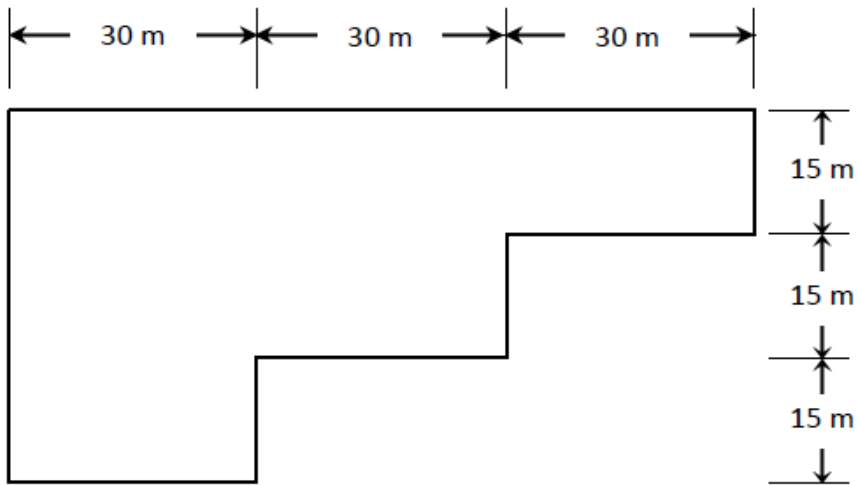


Figure 1

(f) Name four types of contract mostly used? (4 marks)

(g) Name three advantages and three disadvantage of lumpsum contract (6 marks)

QUESTION TWO (15 MARKS)

(a) Surveying was conducted and following data shown in Figure 2 obtained. Calculate the volume of soil to be excavated to reduce the site to a level of 35.62 (5 marks)

35.90	35.86	35.89	35.92	35.90	35.89
35.86	35.84	35.88	35.90	35.90	35.86
35.84	35.85	35.87	35.90	35.88	35.78

Figure2: Grid survey of the proposed site

(b) Figure 3 shows abcde part of a mountain road, required to estimate the volume of excavation for the foundation of 1.2 m width. The depth should not exceed 1.2 m and not less than 0.9 m. The distances between the points a, b, c, d should be the same. Calculate the volume of sand to be excavated? (10 marks)

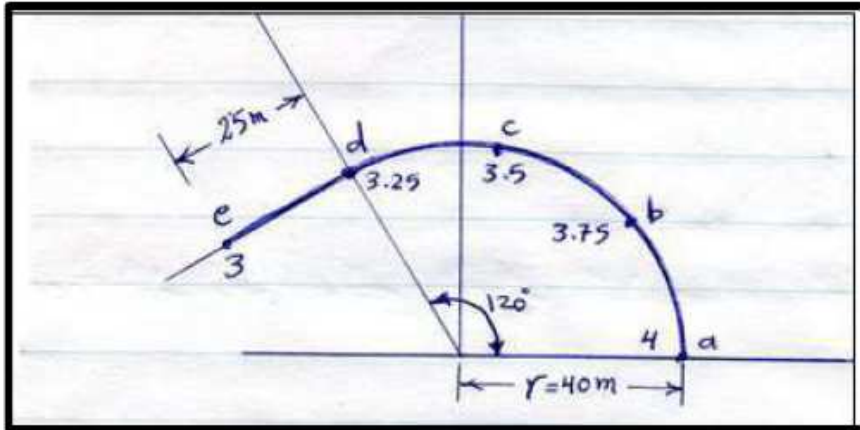


Figure 3

QUESTION THREE (15 MARKS)

(a) Estimate the amount of construction materials needed to construct the retaining wall shown in the figure 4, knowing that the length of the wall 22 m and the mixing ratio is 1:1.5:3. (10marks)

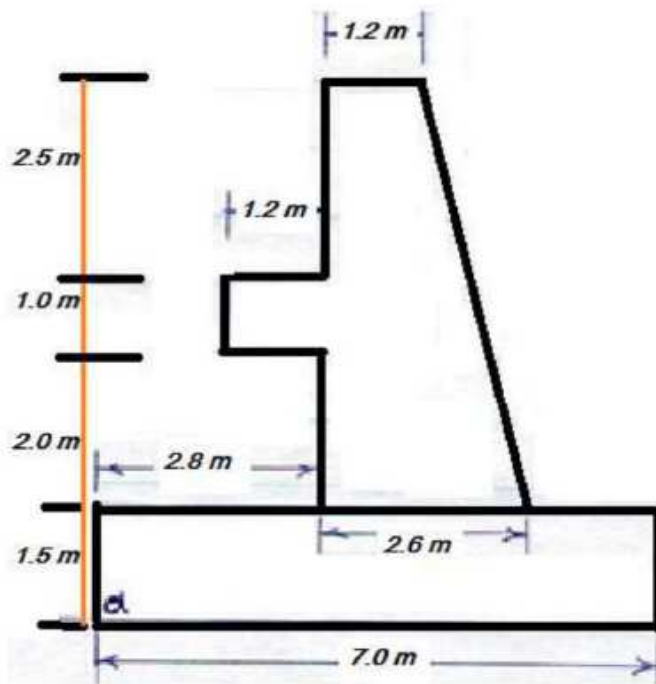


Figure 4

(b) If $(20\text{ m} \times 50\text{ m} \times 20\text{ cm})$ 200 m^3 of compacted sand is required in-place, how many of 8 m^3 loads would be required? The sand has a swell of 15% and shrinkage of 95%. (5 marks)

QUESTION FOUR (15 MARKS)

(c) Calculate the amount of reinforcement in a slab with the following specification (5 marks)

- (i) Slab dimension 2000mm by 3000mm by 200mm
- (ii) Concrete cover 50mm.
- (iii) D12 used as the main reinforcement.
- (iv) D10 used as the distribution bars.
- (v) Reinforcement spacing is 200mm c/c both sides.

(d) A circular slab with a diameter 4meter is used to support a water tank, calculate amount of reinforcement used? Take the size of reinforcement to be 12mm in diameter and spaced at 200mm. (10 marks)