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**University Examinations 2015/2016**

SECOND YEAR SECOND SEMESTER EXAMINATION FOR DIPLOMA IN CIVIL ENGINEERING

**ECV 2252: SOIL MECHANICS II**

**DATE: NOVEMBER 2015 TIME: 11/2 HOURS**

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

**QUESTION ONE (30 MARKS)**

1. Briefly explain five factors that affect weathering in tropical soils. (10 Marks)
2. Briefly discuss with clear explanations, four types and applications of grouping in civil engineering. (8 Marks)
3. Following are results of two consolidated drained triaxial tests on a clay soil sample. Test I f2=82.8 Kn/m2 f1(failure)=329.2Kn/m2

Test II f2=165.6 Kn/m2 f1 (failure)=558.6Kn/m2

Determine the shear, strength parameters  (6 Marks)

1. A six (6) metres high retaining wall is to support a soil with unit weight  soil friction angle  and cohesion Determine the rankine active force per unit length of the wall both before and after the tensile occurs. (6 Marks)

**QUESTION TWO (15 MARKS)**

1. Give five ways in which a retaining wall may fail in. (10 Marks)
2. Give five examples/applications of geotextiles. (5 Marks)

**QUESTION THREE (15 MARKS)**

1. Differentiate between an active earth pressure and passive earth pressure. (6 Marks)
2. State three causes of failure of a retaining wall. (3 Marks)
3. Give two forces/causes that are responsible for failure in embankments. (6 Marks)

**QUESTION FOUR (15 MARKS)**

1. A direct shear test was carried out/conducted on a dry sand and results recorded as follows:

The area of the specimen=50 by 50 (mm)

Normal force (N) Shear force at failure (N)

147 92

245 159

294 179

Draw a graph of shear stress at failure vs normal stress and hence determine the soil friction angle. (10 Marks)

1. Give three advantages of direct shear test and two disadvantages of the same. (5 Marks)