

COURSE CODE: CVE 504

COURSE TITLE: Structural Engineering II

SEMESTER: Second

SESSION: 2019/2020

**ASSIGNMENT TWO: ANSWER ALL QUESTION**

**QUESTION ONE**

a) Define flexural strength

b) A group of four piles supports a 450 x 450 mm rectangular column which transmits an ultimate axial load of 4000 kN. If the pile diameter is 500 mm spaced at 1350 mm Centre - Centre, design the pile cap using fcu =30N/mm2, fy=410N/mm2.

**QUESTION TWO**

a) A cantilever retaining wall has angle of friction 450 and supports a granular materials of saturated density of 1820kg/m3. Check the stability of the wall and determine the overturning and restrained moments. Assume 30-410N/mm3 grade of concrete.

b) Give reasons for the following; (a) Bored piles are enlarged at base (b) Precast piles must be reinforced and design to resist bending moment.

**QUESTION THREE**

**a)** Write a well detailed explanation of the construction procedure including materials used, tests on soil bearing capacity, pile length e.t.c during the construction of Fajuyi Park Bridge, Ado-Ekiti.

b) If a Bridge structure is to be located within Afe Babalola University, suggest a likely location and justify your assertion.

**QUESTION FOUR**

a) Differentiate between HA and HB loading system.

b) Give a mathematical definition of active and passive pressure acting on a retaining wall.

c) A reinforced concrete portal bridge with group of vertical piles shown in Figure Q1 is subjected to pile load of 3000kN is acting vertically at point P. Determine the load distribution of the individual pile if, $\overbar{y}$ =5.5 m , $I\_{xx}=189.5 m$. **[15 Marks]**



BE GUIDED, BE HOME, STAY SAFE & POSITIVE TOO