FEDERAL UNIVERSITY OF TECHNOLOGY

SCHOOL OF ENVIRONMENTAL SCIENCE AND TECHNOLOGY
ARCHITECTURE DEPARTMENT
2016 HARMATTAN SEMESTER EXAMINATIONS
COURSE TITLE: BUILDING SERVICES II

COURSE CODE: ARCH. 507

TIME ALLOWED: 2 HOURS
Total Marks: 70%

Instruction: Answer all questions.

1 A stranded electric conductor has strands of wires electrically in parallel with alternate layers spiraled in opposite direction to prevent unwinding. If the annular space of the conductor in filled with strands of uniform diameter d, with number of concentric layers x as 7, find the total number of strands N in that conductor.

b. Find also the over-all diameter D, of the stranded conductor if the uniform diameter, d, of the strands is 0.5mm.

2. Mention five types of copper conductors you know and explain in detail three (3) of them.

3. The Root mean square voltage across a resistor of value 200Ω is 240V. Fine the maximum current Im that can flow through such a resistor.

4. Show in a simple diagram, the grid system of electricity supply indicating the various levels of voltage available on the transmission and distribution lines.

5. Give three advantages of neutral grounding in generators and transformers.

6. The Load on a building is 8KW and the supply voltage to the building is 240V. If the distance from the incoming supply to the main bus-bar is 12meters, what will be the voltage drop. (Use 2.5mm 2 single core cable and assume a resistance of 2.335 Ohms per 100Gm).