



National Open University of Nigeria
Plot 91, Cadastral Zone, Nnamdi Azikiwe Expressway, Jabi - Abuja
Faculty of Science
2023_1 POP EXAMINATION.

COURSE CODE: ESM322

COURSE TITLE: Water and Waste Water Management

CREDIT: 2Units

TIME ALLOWED: 2 Hours

Instruction: Attempt question number ONE (1) and any other TWO (2) questions. Question number one (1) carries 30marks, while the other questions carry (20) marks each.

1a). Succinctly discuss the different group sources of water according to Ogedengbe (1998) **(21marks)**

1b). Discuss the scope of wastewater concept **(9marks)**

2a) Highlight the interactions between the major cations and anions **(2marks)**

2b). Explain the roles major ions of in water bodies **(10marks)**

2c). Discuss 8 causative agents of water pollution **(8marks)**

3). Discuss how the following contribute to polluting water;

i. Land based activities **(4marks)**

ii. Drainage Basins **(7marks)**

iii. Urban/Industrial areas **(9marks)**

4a). Explain the role of agriculture in polluting water sources**(5marks)**

4b). Discuss the sewer system operation **(5marks)**

4c). List the types of latrine systems exist and how they are treated (5marks)

4d). Using a diagram describe a pour flush latrine**(5marks)**

5a). Define Secondary Treatment**(2marks)**

5b). During the preliminary methods, explain the applications and efficiency of waste water treatment during the following processes **(18marks)**