

**UNIVERSITY OF SWAZILAND**  
**Faculty of Health Sciences**  
**DIPLOMA IN ENVIRONMENTAL HEALTH**  
**SUPPLEMENTARY EXAMINATION PAPER 2013**

**TITLE OF PAPER** : **Fundamentals of Sewage Treatment**

**COURSE CODE** : **EHM 213**

**DURATION** : **2 HOURS**

**MARKS** : **100 MARK**

**INSTRUCTIONS** : **READ THE QUESTIONS & INSTRUCTIONS CAREFULLY**

: **ANSWER ALL FOUR QUESTIONS**

: **EACH QUESTION CARRIES 25 MARKS**

: **WRITE NEATLY & CLEARLY**

: **NO PAPER SHOULD BE BROUGHT INTO NOR OUT OF THE EXAMINATION ROOM**

: **BEGIN EACH QUESTION ON A SEPARATE SHEET OF PAPER**

**DO NOT OPEN THIS QUESTION PAPER UNTIL PERMISSION IS GRANTED BY THE INVIGILATOR**

**EHM 213 FUNDAMENTALS OF SEWAGE MANAGEMENT  
SUPPLEMENTARY EXAMINATION 2013**

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**QUESTION ONE**

1. Using a sketch show the following.
  - a. Drain layout
  - b. Branch drain
  - c. Sewer line
  - d. Point where a drain can be disconnected from the sewer line.

**(20 marks)**
  
2. Draw a diagram showing the drain disconnection from the sewer line? **(5 marks)**

**QUESTION TWO**

- a. You are a Health Inspector employed by the City Council of Mbabane and you are asked to inspect a newly constructed drainage works in a semi-developed urban homestead. Mention ten (10) principles of drains. **(10 marks)**
  
- b. Mention the purpose of each principle of drain you mentioned above **(15 marks)**

**QUESTION THREE**

- c. Explain how floating and sand material (minus organic) suspended in sewage can be removed in the primary treatment of sewage **(10 marks)**
- d. Mention five ways by which screenings from sewage treatment can be disposed **(5 marks)**
- e. What do you understand by sedimentation in sewage treatment and mention three areas in the sewage treatment plant where sedimentation takes place. **(10 marks)**

**QUESTION FOUR**

- a) Sketch the different types of joints used to connect different pipes made of different material. **(10 marks)**
  
- b) With an aid of diagrams show (in each) the different types of:
  - i. traps
  - ii. depth of seal in the drainage works
  - iii. water holding the seals
  - iv. situation when a seal is broken

**(10 marks)**
  
- c) Using a sketch, show five places where inspection chambers are placed in drainage of a house. **(5 marks)**