



**PROGRAMME** : NATIONAL DIPLOMA  
ENVIRONMENTAL HEALTH

**SUBJECT** : ENVIRONMENTAL POLLUTION II  
WASTE, WATER AND SANITATION

**CODE** : ENP 21-1

**DATE** : 13 JANUARY 2017  
SUPPLEMENTARY EXAMINATION

**DURATION** : 3 (THREE) HOURS

**WEIGHT** : 50: 50

**TOTAL MARKS** : 150

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**EXAMINER** : MS R VAN WYK & PROF T. BARNARD

**MODERATOR** : MS C MOKOATLE 4075

**NUMBER OF PAGES** : 4 PAGES

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**INSTRUCTIONS TO STUDENTS:**

1. Answers all the questions, answer all questions in the appropriate format and number accordingly.
  2. Read your questions carefully. You will be penalized if your answers are not properly structured.
  3. You can start with any question, but do not divide sub-questions of the same question.
  4. Please write neatly.
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**SECTION A: WATER**

**QUESTION 1**

- 1.1 Name and describe the four substances that must be removed during water treatment. [8]
- 1.2 Using a flow diagram illustrate the typical steps involved in the treatment of dam or river water. [8]
- 1.3 Describe the difference between water disinfection and water sterilization. [2]
- 1.4 The National Water Act recognizes that water belongs to the whole nation for the benefit of all people. Name and discuss the 3 key principles within the Act (No.36 of 1998). [12]

**(30 MARKS)**

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**QUESTION 2**

- 2.1 Name and describe the four types of processes generally applied in the point-of-use applications of water treatment. [8]
- 2.2 The list of processes mentioned in the previous question can be broadly classified into two categories. The first is used to produce microbiologically safe and clear water and the second is for the advanced treatment of water to further improve the quality of the water.
- 2.2.1 Give two examples of processes that can be used to treat water under emergency conditions. [2]
- 2.2.2 Give two examples of processes used for the advanced treatment of water at the household level. [2]
- 2.3 How would you describe a package water treatment plant? [3]

**(15 MARKS)**

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**SECTION B: WASTEWATER**

**QUESTION 3**

- 3.1 Using a flow diagram illustrate the typical process followed for the treatment of wastewater and describe each of the steps [7x 2 = 14]

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3.2 How would you define wastewater? [1]

(15 MARKS)

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**SECTION C: HYGIENE**

**QUESTION 4**

4.1 Differentiate between waterborne and water washed diseases including example of the type of infection it would cause. [10]

4.2 Illustrate how water and sanitation related diseases get transmitted. [5]

4.3 Name the types of diarrhea we commonly find. [4]

4.4 True or false: Toys can contribute to the spread of disease in homes. [1]

(20 MARKS)

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**SECTION D: SANITATION**

**QUESTION 5**

5.1 Describe the planning process of a typical sanitation programme. [10]

5.2 Define the relationship between IDP and WSDP. (Write abbreviations in full) [4]

5.3 Explain how these can be used effectively to promote planning for sanitation? [6]

(20 MARKS)

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**SECTION E: WASTE MANAGEMENT**

**QUESTION 6**

6.1 Explain the following types of waste:

- a) Agricultural Waste [2]
- b) Industrial Waste [2]
- c) Commercial Waste [2]
- d) Health Care Waste [2]
- e) Municipal Waste [2]

6.2 Briefly explain the objectives of solid waste management. 2x2 = [4]

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6.3. Discuss in detail the waste management process. [26]

6.4 Discuss the importance of waste management to EHPs. [10]

**(50 MARKS)**

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**Total Marks = 150**