



PROGRAM : NATIONAL DIPLOMA
ENVIRONMENTAL HEALTH

SUBJECT : ENVIRONMENTAL POLLUTION III
AIR AND NOISE

CODE : ENP 32-1

DATE : FINAL EXAMINATION
6 NOVEMBER 2014

DURATION : 3 (THREE) HOURS

WEIGHT : 50: 50

TOTAL MARKS : 150

EXAMINER : MR MASEKAMENI MASILU DANIEL

MODERATOR : MR LEGADIMA JACOB

4075

NUMBER OF PAGES : 3 PAGES

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 penalised 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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QUESTION 1 (20 MARKS)

1. With practical examples explain the following concepts

1.1 Air Pollution [10]

1.2 Combustion [10]

QUESTION 2 (36 MARKS)

Globally air pollution resulting from industrial emissions is one of the leading cause of mortality. Most of electricity generation process incorporate coal burning as their major source of energy which is ultimately linked with products of incomplete combustion and greenhouse gases emissions, which threaten man in his life time. 97% of total electricity consumption in South Africa is as a results of coal burning, with 93% produced by Eskom. Please with practical examples and reference to Lethabo power station explain the following concepts:

2.1 Explain electricity generation process at Lethabo Power Station starting from coal mining to ash management [20]

2.2 Electricity generation releases criteria pollutants, kindly explain health and environmental impacts of this pollutant [10]

2.3 Lethabo Power Station is a point source of pollution, apart from this point source explain other two sources of pollution [6]

QUESTION 3: Combustion (28 MARKS)

3. With practical examples clearly explain, critique and elaborate on the following:

3.1 Explain fractional distillation process in fuel refining [10]

3.2 Explain the physical methods of fuel analysis [14]

3.3 Explain the effects of Primary air in combustion [4]

QUESTION 4: Meteorology (35 MARKS)

You are invited by the Executive Director on behalf of the Department of Environmental Affairs to give a public talk to his staff and other stakeholders. In your presentation you are requested to cover the following:

- 4.1 Explain five (5) meteorological factors influencing pollutants dispersion [10]
- 4.2 Explain lapse rates in atmospheric stability [10]
- 4.3 Explain plume behavior and its types [15]

QUESTION 5: Sampling and Noise Management (31 MARKS)

- 5.1 Explain the following term in measurements and monitoring
 - 5.1.1 *Quality assurance* [1]
 - 5.1.2 *Quality control* [1]
 - 5.1.3 *Monitoring* [1]
 - 5.1.4 *Sampling* [1]
 - 5.1.5 *Assessments* [1]
- 5.2 What are the key objectives of monitoring? [10]
- 5.3 Differentiate between indoor dust fall monitoring equipment [6]
- 5.4 Explain the role of the EHP in 'noise mitigation' [10]

GRANT TOTAL = 150