UNIVERSITY OF JOHANNESBURG

SUPPLEMENTARY EXAMINATION

PROGRAM	:	NATIONAL DIPLOMA ENVIRONMENTAL HEALTH
SUBJECT	:	**ENVIRONMENTAL POLLUTION III** **AIR AND NOISE**
CODE	:	**ENP 32-1**
DATE	:	**EXAMINATION MEMORANDUM** 13 JANUARY 2017
DURATION	:	3 (THREE) HOURS
WEIGHT	:	50: 50
TOTAL MARKS	:	150
EXAMINER	:	MR MASEKAMENI MASILU DANIEL
MODERATOR	:	MR. TSHIPAL N.L. 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.

QUESTION 1 (43 MARKS)

1. Air Pollution- is the introduction of harmful pollutants in the atmosphere in larger quantity or sufficient concentration to harm human health and the environment? Air pollutants can be in the form of vapour, gaseous, particulate, biological or chemical state.

1.1. Based on the definition provided expand your knowledge in explaining the concept of air pollution looking at previous and present occurrence within the field. Please demonstrate or deepen your content to industrial evolution, population, development and movement in this sector. [10]

1.2. Environmental economics of air pollution is a fundamental for human right and development. Poor people are exposed to severe air pollution. Agree or Disagree, motivate. [10]

1.3. Vehicles/locomotives are a major source of air pollution in urban centers. Please with practical examples elaborate how vehicles contributes to atmospheric pollution, health consequences and threat to farming [15]

1.4. Burning of fossil fuel to produce electricity is a major contributor to atmospheric pollution and various health effects which threatens human development. How can we reduce emissions from this sources? Focus your answer to combustion efficiency, fuel quality, fuel analysis and Eskom's procedure for minimizing particulate matter emissions.

1.5. Ash management options available for big power plant is an important tool to administer in order to minimize particulate matter dispersion. Please outline ash management process at Eskom power plants [8]

QUESTION 2 (33 MARKS)

2.1. Explain the concept of Draught regulation in combustion. [15]

2.2. Given, that you have the following ash fusions for Bituminous (A) grade coal.

a) <900

b) Below 1300

c) Above 1300

Which production will you advice the use of coal at each Fusion. Please focus your answer in domestic and Industrial. Motivate why coal with such fusion must be used at that production. Consider **economic, emissions and efficiencies** in answering this question. [9]

2.3. How will you use excess air as a control mechanism to supervise boiler operation and performance? At which stage will you decide to reduce or increase excess air during combustion? Use **fuel consumption rate and Temperature**. [9]

QUESTION 3 (29 MARKS)

3.1. Explain the objectives of the NEM, Act 2004 (Act 39 of 2004) [8]

3.2. Explain SANS 1929 and SANS 69 in air pollution regulation [6]

3.3. You are a consultant for company X and you are invited by the board of directors at company B. You are therefore required to make a presentation around ISO 14001. What will you include in your presentation and explain to the management why ISO compliance is important. [15]

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: Noise Management (10 MARKS)

5.1. Briefly discuss the role of the EHP in 'noise mitigation' [10]

TOTAL: 150