

**UNIVERSITY OF KWAZULU-NATAL, DURBAN CENTRE
EXAMINATION: JUNE 2011**

**SCHOOL : ENVIRONMENTAL SCIENCES
LEVEL : HONOURS
MODULE : AIR POLLUTION
CODE : ENVS711**

DURATION: 3 HOURS

TOTAL MARKS: 300

**INTERNAL EXAMINER: DR L RAMSAY
EXTERNAL EXAMINER: PROF S GRAB
UNIVERSITY OF WITWATERSRAND**

**INSTRUCTIONS: ANSWER ANY THREE OF THE FOLLOWING QUESTIONS
(3 X 100 MARKS = 300 MARKS)**

- 1) *"Each pollution problem requires for its solution an individual assessment of local conditions"* (Preston-Whyte and Diab, 1980). Evaluate emission, meteorological and topographical controls on pollution concentrations, using a local case study to strengthen your argument.
- 2) Critically assess the Gaussian plume as a framework for understanding dispersion of a continuous, buoyant plume from a point source.
- 3) Present the formation of photochemical smog as a secondary pollutant process and its implications for local health.
- 4) Discuss the practical and technological choices made by air quality managers in establishing an air quality monitoring network, and the related concerns over data representivity, accuracy and precision.
- 5) *"We do not want to breathe the air of freedom only to choke on hidden fumes"* (Judge Albie Sachs of the South African Constitutional Court). Using the Children's Health Study (2006) to frame your answer, assess the implications of life in an industrial zone for the youth of South Durban.
- 6) In a situation where some pollution is an inevitable outcome of industrial processes, what precautions and steps can industrial managers take in relation to (i) the chemical and physical processes of their plant and (ii) their dealings with local communities to maximize safety and improve local relationships?
- 7) The relationship between risk and response to risk is not always a direct one. Using a local community as a case study, assess the linkages between quantitative risk assessments, local concern and community action.