



**UNIVERSITY OF COLOMBO, SRI LANKA**

**FACULTY OF TECHNOLOGY**

**LEVEL II EXAMINATION IN TECHNOLOGY - SEMESTER II - 2019**

**ET 2012 – AIR POLLUTION AND ANALYTICAL TECHNIQUES**

**One (01) hour**

Answer **all (04) questions.**

Electronic calculators are allowed.

No. of pages: 10

**Important Instructions to Candidates**

- If a page or part of this question paper is not printed, please inform the supervisor immediately
- Enter your index number on all pages of the answer script
- Write the answers to the questions in the space provided in the question paper.
- Electronic devices capable of storing and retrieving text, including electronic dictionaries and mobile phones are not allowed.

**Index No: .....**

Please use this space for any additional information provided by the setter

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**Answer all (04) questions**

1. Air pollutants can be classified in different ways.

i. What are the two types of pollutants based on the origin? Indicate three examples of each category. [Marks 25]

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ii. What are the two types of pollutants based on the state of matter? Indicate two examples of each category. [Marks 25]

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iii. What are the two types of pollutants based on the chemical compositions? Indicate one examples of each category. [Marks 25]

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iv. What are the primary meteorological factors that influence in air pollution? [Marks 25]

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2. Few indoor air pollutants are given below.

Molds and Dust mites	Carbon Monoxide	Formaldehyde
Radon	VOC	Asbestos

i. What do you mean by indoor air quality and outdoor air quality, and which one is more important? [Marks 25]

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ii. Indicate relevant sources of generating each pollutant. One source per each pollutant is sufficient. [Marks 25]

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iii. What are the health effects of those pollutants? One effect per each pollutant is sufficient.

[Marks 25]

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iv. Indicate locally practiced three human activities effects for indoor air pollutant.

[Marks 25]

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3. National Environmental Act, No. 47 of 1980 has introduced the regulations, guidelines and limitations that the industries should follow in order to maintain the environment in clean.

i. Indicate the basic pollutants that have been locally practiced in atmospheric emission standards? [Marks 25]

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ii. What do you understand by “fugitive dust emission standard” included under the Schedule IV in Regulation 4? [Marks 25]

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iii. Discuss the way of monitoring and the limitations given for TSPM levels. [Marks 25]

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iv. Distinguish between ambient air quality standard and stationary source emission standard. [Marks 25]

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4. Figure 1.0 shows the “High Volume Respirable Dust Sampler” use to monitor PM 2.5, PM 10, and TSPM content in ambient air.

i. Define the parameters PM2.5, PM 10 and TSPM [Marks 20]

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ii. Name the places where >PM10 and <PM10 are collected. [Marks 20]

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iii. In addition to the TSPM measurement, the same instrument is used to monitor other two pollutant parameters content in ambient air. Name those two parameters and the additional instrument kit used. [Marks 20]

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iv. What are the other auxiliary instruments/equipment (supportive) used (together with respirable dust sampler) to estimation the TSPM? [Marks 20]

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v. Calculate the TSPM concentration ( $\mu\text{g}/\text{m}^3$ ) based on the below test results obtained on upwind direction of the roofing sheet manufacturing plant. [Marks 20]

- Initial weight of filter paper = 2.763 (g)
- Final weight of filter paper = 2.784 (g)
- Initial weight of dust cup = 16.770 (g)
- Final weight of dust cup = 16.789 (g)
- Sampling Flow Rate = 1.1 ( $\text{m}^3/\text{min}$ )
- Sampling Time = 180 (min)

