



ANDHRA UNIVERSITY

TRANS-DISCIPLINARY RESEARCH HUB

AIR POLLUTION AND CONTROL TECHNOLOGIES

UNIT I

CLASSIFICATION AND PROPERTIES OF AIR POLLUTANTS:

Emission sources -major emissions from Global sources -importance of anthropogenic sources- behavior and fate of air pollutants- photochemical smog-effects of air pollution-health, vegetation and materials damage in India-air pollution standards - Isolation and heat balance of the atmosphere – different types of terrain – effects of terrain features on atmosphere – mechanical and thermal turbulence- Indoor air pollution.

UNIT II

METEOROLOGICAL ASPECTS OF AIR POLLUTION DISPERSIONS I:

Temperature lapse Rates and Stability-wind velocity and turbulence-Plume behavior dispersion of air pollutants- solutions to the atmospheric dispersion, the Gaussian Plume Model..

UNIT III

METEOROLOGICAL ASPECTS OF AIR POLLUTION DISPERSIONS- II:

Air pollution sampling and measurement-types of pollutant sampling and measurement-Ambient air sampling-collection of gaseous air pollutants-collection of particulate pollutants- stack sampling, analysis of air pollutants-Particulate matter, sulfur dioxide- nitrogen dioxide, carbon monoxide, oxidants and ozone- hydrocarbons-

.UNIT IV CONTROL METHODS:

Sources- correction methods- -particulate emission control- gravitational settling chambers-cyclone separators- fabric filters-electrostatic precipitators-wet scrubbers- - control of gaseous emissions-adsorption by solids-absorption by liquids

UNIT V VEHICULAR AIR POLLUTION :

Automobile air pollution – Indian Scenario- Population and pollution loads of vehicles-Automobile Pollution Control-Control at sources-Exhaust gas treatment devices- Alternate fuels comparison-Thermal Reactor-Catalytic Converter- Automobile Emission Control- Legal measures.

Text books:

Air Pollution, H.C.V.Rao, 1990, McGraw Hill Co.

Environmental Pollution Control, C.S.Rao, Wiley Eastern td.,1993

Air Pollution , M.N.Rao McGraw Hill 1993.

Reference Books:

Fundamentals of Air Pollution, Samuel, J.W., 1971, Addison Wesley Publishing Co.

Air Pollution, Kudesia, V.P. International Student Edition McGraw-Hill-Kosakusha Ltd.,Tokyo.

Fundamentals of Environmental Pollution, Krishnan Khanna S.Chand & Company Ltd.,1994

Environmental Air Analysis, Trivedi & Kudesia, Akashdeep, Pub.1992

Air Pollution Control and Engineering, De Nevers, Mc Graw- Hills, 1993



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MODEL QUESTION PAPER

AIR POLLUTION AND ITS CONTROL

Time: 3 Hrs

Max. Marks 100

Answer any five questions.
All questions carry equal marks.

5 X 20 M = 100

- Explain in detail about various classification of air pollution with examples
 - Write the impacts of air pollution on plants
- Give a detailed account on meteorological effects on air pollution
 - Write a note on Indoor air pollution
- Explain how the meteorological factors are influencing the air pollution trends
 - Explain how carbon monoxide analysis conducted
- Write a detail note on various plume behaviors
 - Briefly explain about collection of gaseous pollutants
- Describe in detail to measure ambient air quality monitoring
 - State the ambient air quality standards as per Indian standards
- Explain about wet scrubbers to control of particulate matter
 - Write a note on modeling of air pollution
- What are methods used to control gaseous emissions
 - Describe the effects of smog impacts
- Write a detail note on Automobile pollution control
 - Explain about catalytic converter in control of automobile pollution

