25ESP102/22ESP102N

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2025
(First Semester)

Branch – **ENVIRONMENTAL SCIENCE**

AIR POLLUTION AND MANAGEMENT

Time: Three Hours Maximum: 75 Marks

SECTION-A (10 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	Atmospheric Concentrations of CO_2 today (a) 420 PPM (b) 350 PPM (c) 320 PPM (d) 275 PPM	K1	CO1
	2	The temperature starts to decrease in the mesosphere due to (a) Increasing density of air (b) Ionic reactions (c) Decreasing density of air (d) Absence of zone	K1	CO1
2	3	Which of the following does not have a direct role in climate change (a) Sulphate and nitrate aerosol (b) Black carbon aerosol (c) Surface ozone (d) Nitric oxide	K2	CO2
	4	Which treaty controls the transboundary movement of hazardous wastes (a) Montreal Protocol (b) Basel Convention (c) Kyoto Protocol (d) Agenda 21	K2	CO2
3	5	Which one of the technique is mainly used to measure CO? (a) GCMS (b) High-volume air sampler (c) UV (d) NDIR Sensor	K1	CO3
	6	A-weighted decibel is related to (a) Noise (b) UV rays (c) Acoustics (d) Ionizing radiation	K2	CO3
4	7	The most effective air pollution control technique for the cement industry (a) Fabric filter (b) Cyclone filter (c) ESP (d) Scrubber	K1	CO4
	8	The most common and significant biofuel in India is (a) Methane (b) CNG (c) Bioethanol (d) iso-Butanol	K1	CO4
5	9	The major source of BaP (Benzo-a-pyrene) in atmospheric environment is (a) Residential wood burning (b) Gasoline (c) Coal tar (d) Cooked meat	K2	CO5
	10	The latest Bharat Stage emission standard is (a) BS – IV (b) BS - V (c) BS – VII (d) BS – VI	K2	CO5

Cont...

SECTION - B (35 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Distinguish between adiabatic lapse rate and environmental lapse rate.	K4	CO1
		(OR)		
	11.b.	Categorize macroscale, mesoscale, and microscale motions in the atmosphere with appropriate examples.		
2	12.a.	Distinguish air pollutants based on source, state, origin, and chemical nature. Provide examples for each category.	K4	CO2
		(OR)		
	12.b.	Discover the formation and health/environmental effects of secondary pollutants such as ozone and photochemical oxidants.		
3	13.a.	Discuss and evaluate the principles and techniques for sampling and monitoring of particulate air pollutants.	K5	CO3
		(OR)		
	13.b.	Explain and interpret the procedures and equipment used to measure oxides of nitrogen in the ambient air.		
4	14.a.	Explain the working principles of gravitational settling chambers and cyclone separators. Compare their efficiencies.	K5	CO4
		(OR)		
	14.b.	Explain the design and working of electrostatic precipitators and fabric filters in particulate matter control.		
5	15.a.	Compile the functioning of internal combustion engines and the concept of stoichiometric air-fuel ratio in relation to emissions.	K6	CO5
		(OR)		
	15.b.	Elaborate the role of catalytic converters and diesel particulate filters in vehicular emission control.		

SECTION -C (30 Marks)

Answer **ANY THREE** questions

ALL questions carry **EQUAL** Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	List meteorological parameters and explain their role in air quality degradation.	K4	CO1
2	17	Analyze the differences between black carbon and elemental carbon. Discuss their environmental and health impacts.	K4	CO2
3	18	Compare and assess the air quality standards set by NAAQS (India), EPA (USA), and WHO. Why are such standards necessary?	K5	CO3
4	19	Support the statement "Role of wet scrubbers in a major leap in gaseous pollution control" and how do they differ from dry methods?	K5	CO4
5	20	Compare Bharat Stage emission standards with European standards with the significance of latest standards.	K6	CO5

Z-Z-Z END