INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)
Dundigal, Hyderabad-500043

CIVIL ENGINEERING

TUTORIAL QUESTION BANK

Course Name	:	**AIR POLLUTION AND CONTROL**
Course Code	:	**A70136**
Class	:	**B. Tech IV - I Semester**
Branch	:	**CIVIL ENGINEERING**
Year	:	**2018 – 2019**
Course Coordinator	:	**Mr. Srinivas Angadi, Assistant Professor, Department of CE.**
Course Faculty	:	**Mr. Srinivas Angadi, Assistant Professor, Department of CE.**

OBJECTIVES

To meet the challenge of ensuring excellence in engineering education, the issue of quality needs to be addressed, debated and taken forward in a systematic manner. Accreditation is the principal means of quality assurance in higher education. The major emphasis of accreditation process is to measure the outcomes of the program that is being accredited.

In line with this, Faculty of Institute of Aeronautical Engineering, Hyderabad has taken a lead in incorporating philosophy of outcome based education in the process of problem solving and career development. So, all students of the institute should understand the depth and approach of course to be taught through this question bank, which will enhance learner's learning process.

S No	QUESTION	Blooms taxonomy level	Course Outcomes
	UNIT - I		
Part - A (Short Answer Questions)			
1	Define air pollution and briefly explain its importance of study?	Remember	2
2	What is Acid Rain? List the historic monuments that effected by Acid Rains	Remember	2
3	Write a short note on effects of air pollution on human health.	Understand	1
4	What are the causes of acid rain, with chemical process involved in it?	Understand	2
5	Discuss the remedial measures for the causes of acid rain?	Understand	2
6	What are the effects of acid rain on vegetation?	Remember	1
7	Explain the causes of ozone layer depletion in stratosphere.	Remember	2
8	Explain the effects of ozone layer depletion in stratosphere.	Remember	2
9	Write short notes on Global warming, with its impact on environment	Remember	2
10	Write short notes on ozone layer depletion and effects of ozone layer depletion	Remember	2
11	Briefly explain the effects of air pollution on Plants, with suitable examples	Understand	2

12	Briefly explain the effects of air pollution on Animals	Remember	2
13	Briefly explain the effects of air pollution on Materials	Remember	2
14	Explain primary air pollutants with examples	Remember	2
15	Explain secondary air pollutants with examples	Understand	2
16	What is the Greenhouse effect? What is the need to understand	Understand	2
17	Write short notes on Heat Islands, give example	Understand	2
18	What are the physical forms of Air Pollutant? List them	Understand	2
19	What are the sources of Air Pollution? Classify them.	Understand	2
20	What are the units of measurement of Air Pollution?	Understand	2
21	What are the effects of air pollution? On plants, animals and human	Understand	2
22	What is Eutrophication? List its stages	Understand	2
23	Write short notes on Particulate matter.	Understand	2
24	List some accidents and Episodes of Air Pollution.	Remember	2
25	Give some examples of natural air pollution?		
Part - B (Long Answer Questions)			
1	Discuss the different sources of air pollutants in detail.	Remember	1
2	Briefly explain the effects of air pollution on, (i) Human health (ii) Plants (iii) Animals (iv) Materials	Understand	1
3	Write briefly the effect of air pollution on monuments in India. Discuss its causes for damage.	Understand	2
4	Enumerate classification air pollutants. With suitable example and possible remedies.	Remember	1
5	List some common indoor air pollutants, With suitable example and possible remedies.	Remember	1
6	List some common outdoor air pollutants, With suitable example and possible remedies.	Remember	1
5	Explain air pollution due to automobiles. With suitable example and possible remedies	Remember	2
6	Explain briefly on air pollution episodes of London smog and Bhopal gas tragedy.	Understand	2
7	Explain primary and secondary air pollutants with examples.	Remember	2
8	Explain briefly the harmful effects of sulphur dioxide on human being and plants.	Understand	2
9	Describe the phenomenon of "greenhouse effect", due to carbon dioxide.	Understand	1
10	Discuss the following cases of air pollution episodes Bhopal Gas Tragedy	Understand	1
11	Discuss the following cases of air pollution episodes Los Angeles Smog	Remember	1
12	Describe the classification of Air Pollutants in detail.	Understand	1
13	Brief the Heat Island Compendium. With flow diagram mention its stages.	Understand	2
14	What are the effects of air pollution? Elaborate	Understand	2
Part - C (Problem Solving and Critical Thinking Questions)			
1	List the factors that should be taken into consideration while selecting a site for an industry from the point of minimizing air pollution.	Understand	2
2	Describe the phenomenon of "greenhouse effect", due to carbon dioxide.	Remember	2
3	List out the sources of Natural Sources Vs Manmade sources of Air Pollution. Classify the sources of Air Pollution?	Remember	2

4.	Explain the process of Eutrophication with a neat sketch. In aerobic and anaerobic conditions	Remember	2
UNIT - II			
Part – A (Short Answer Questions)			
1.	Write short notes on Meteorology and air Pollution?	Remember	2
2.	How many parts are involved in air pollution and what are they?	Remember	3
3.	What is Radiation? How it is related to air pollution	Understand	3
4.	What is Conduction? How it is related to air pollution	Remember	3
5.	What is Convection? How it is related to air pollution	Remember	3
6.	How 'Heat island' forms over urban areas? Give its importance and its impact	Remember	3
7.	What is Dispersion of contaminants in air Pollution?	Understand	3
8.	Which is the most commonly used model for the dispersion of gaseous air pollutants and who developed it?	Understand	3
9.	What are the principles on which the Gaussian model is based?	Remember	3
10.	What is the importance of atmosphere?	Remember	3
Part - B (Long Answer Questions)			
1	Explain with a neat sketches, how plume behave in different atmospheric stability condition.	Understand	3
2	Explain with neat sketches, how different atmospheric conditions give rise to different kinds of plumes.	Understand	4
3	Explain the terms (i) Environmental Lapse Rate (ii) Adiabatic Lapse rate (iii) Wind Rose (iv) Inversions	Understand	4
4	Define Wind rose. Explain the importance of wind rose in air pollution studies.	Understand	4
5	Discuss the factors to be considered for locating an industrial plant with reference to the air pollution.	Understand	3
6	Explain the importance of proper planning and zoning of industrial and residential areas from the point of air pollution control.	Understand	3
7	List the meteorological parameters that influence the dispersion of pollutants in atmosphere.	Remember	4
8	Write a note on Atmospheric stability and temperature inversions.	Understand	4
9	What is a wind rose diagram? Explain with a neat sketch.	Remember	3
10	Explain different environmental lapse rates and their effects on dispersion of air pollutants.	Understand	4
11	Sketch and explain different kinds of plumes depending upon different environmental conditions (any four).	Understand	3
12	Explain characteristics of Atmosphere in terms of Air Pollution and Control.	Understand	4
UNIT-III			
Part - A (Short Answer Questions)			
1	Name some of the Effective Methods to Control Air Pollution (explained with diagram).	Remember	5
2	Define Particulate Matter and give its importance.	Understand	5
3	What are the types of raw materials which are responsible for causing Air Pollution?	Understand	5
4	Describe the replacement of raw ore which is used in steel industry.	Understand	5

5	What are the different types of methods of controlling emission at the source?	Understand	5
6	Enumerate the use open hearth furnaces in reducing pollution.	Understand	5
7	Give some examples of industries which are undergone for radical changes	Remember	5
8	Give some examples in involving process changes for controlling of emissions at sources.	Remember	5
9	What are the major sources of dust generation in cement industries?	Understand	5
10	What are the different methods of reduction of air pollutants?	Remember	5
Part - B (Long Answer Questions)			
1	Explain air pollution control equipment-Electrostatic precipitator with sketch.	Understand	5
2	Explain with sketch air pollution control equipment- Spray tower.	Remember	5
3	Explain with sketch air pollution control equipment- Cyclones.	Remember	6
4	Explain with sketch air pollution control equipment- Pipe-type precipitator.	Understand	6
5	Explain 'Process change' Techniques without Emission Control Devices.	Remember	6
6	Explain 'Change in Fuel' Technique without Emission Control Devices.	Understand	6
Part – C (Problem Solving and Critical Thinking)			
1	What are the effective Methods to Control Air Pollution and explain them.	Remember	6
2	Explain Gravitational Settling Chamber	Remember	6
3	Give brief description on function of Cyclone Separators (Reverse flow Cyclone).	Remember	6
Part - A (Short Answer Questions)			
1	How can we reduce the amount of particulates?	Understand	5
2	What are objectives of control equipment in air pollution.	Understand	5
3	List any two source correction methods.	Remember	6
4	List some particulate control equipment?	Understand	6
5	What are the operating problems of control equipment?	Remember	6
6	Give examples of process changes for control at source?	Remember	6
7	How Process change can decrease the Air pollution.	Remember	6
8	How Equipment change can decrease the Air Pollution.	Remember	6
9	In what way Raw material processing have impact on Air pollution.	Remember	6
10	What are functioning problems associated in control of Air Pollution.	Remember	6
Part - B (Long Answer Questions)			
1	Explain 'Improve Dispersion' Technique without Emission Control Devices.	Understand	6
2	Discuss on 'Good Operating Practices' and 'Plant Shutdown/Relocation' Technique without Emission Control Devices.	Remember	6
3	Describe Source Correction Methods (Control at Sources)	Remember	6
4	Discuss shortly on Pollution Control Equipment. How to classify generally the Pollution Control Equipment?	Remember	6

5	Discuss the approach to the control of air pollution by Dilution of the Contaminants.	Understand	6
6	Discuss the techniques on control of air pollution without using Emission Control Devices.	Understand	6
Part – C (Problem Solving and Critical Thinking)			
1	Explain with diagram Fabric Filters (Baghouse Filters).	Remember	6
2	Explain briefly the working of Electrostatic Precipitators along with its working principle.	Remember	6
UNIT-IV			
Part – A (Short Answer Questions)			
1	Brief about the gaseous contaminants in air pollution and its impact on environment.	Understand	7
2	List three Primary gaseous contaminants and its impact on environment.	Understand	7
3	List three Secondary gaseous Contaminants and its impact on environment.	Understand	7
4	Discuss on general methods of control of NO_X and SO_x emissions	Remember	7
5	Which pollutants come from mobile sources? and its impact on environment	Understand	7
6	The combination of nitrogen oxides and hydrocarbons in the presence of sunlight causes and discuss why?	Remember	7
7	Ozone in the environment is elaborate your answer? a) Beneficial at high altitudes b) Harmful at low altitudes c) Both of the above d) Neither of the above	Understand	7
8	What are causes of greatest amount of air pollution? Discuss its impact on environment.	Understand	7
9	What are the different activities can help reduce the amounts of dangerous substances in the air?	Understand	7
10	What is the size of cigarette particles is. Write its effect on human health	Understand	7
11	What is the maximum size of fly ash is. Write its effect on environment	Remember	7
12	Write short note on a secondary air pollutant? and its impact on environment	Understand	7
13	Explain the terrn : “Environmental Lapse Rate (ELR)” and its importnace	Remember	7
14	Explain the terrn “Adiabatic Lapse Rate (ALR)” and its importance	Remember	7
15	Explain the terrn “Wind Rose (WR)” and its importance	Remember	7
16	Explain the terrn “lnversions” and its importance with examples	Remember	7
Part – B (Long Answer Questions)			
1	Describe the process of Adsorption. With suitable examples and its impact on environment	Remember	7
2	Describe the process of Absorption. With suitable examples and its impact on environment	Understand	8
3	Differentiate between physical and chemical adsorption. And its impact on environment	Remember	7
4	Discuss three types of equilibrium graphs to describe adsorption capacity.	Understand	8
5	Discuss the factors affecting the performance of adsorption system.	Remember	8

6	List five different types of adsorbents and their major uses.	Understand	8
7	Describe the process of Absorption in control of air pollutants.	Understand	8
8	Describe the process of Combustion in control of air pollutants.	Remember	8
9	Discuss the general methods of control of NO_x emission. And its impact on environment	Remember	8
10	Discuss the general methods of control of NO_2 emission with its sources of causes	Understand	8
Part – C (Problem Solving and Critical Thinking)			
1	Discuss the following cases of air pollution episodes : Bhopal Gas Tragedy	Understand	8
2	Discuss the following cases of air pollution episodes: Los Angeles Smog.	Understand	8
3	List the factors that should be taken into consideration while selecting a site for an industry the point of minimizing air pollution.	Remember	8
4	Explain with a neat sketch spray tower wet scrubber	Understand	8
UNIT-V			
Part - A (Short Answer Questions)			
1	What is TSPM? Elaborate its importance	Understand	8
2	What is RSPM? Give any applications related to it	Understand	8
3	What is SPM? Mentions its importance in air pollution control	Remember	8
4	What is PM10? Why it is given name PM10 discuss?	Understand	8
5	Write short notes on Stack gas sampling	Remember	8
6	What do you mean by Adsorption by solids	Understand	8
7	What is Ozone layer depletion? What is its important	Remember	8
8	List any four important Water quality standards values.	Understand	8
9	What is Environrnental policy? How far it is implementing in India	Remember	8
Part - B (Long Answer Questions)			
1	What is the difference between TSPM, RSPM, SPM and PM10?	Understand	9
2	Discuss the recommended Criteria for siting the monitoring stations	Understand	9
3	Mention the components of ambient air sampling systems	Remember	9
4	Write briefly the characteristics for ambient air sampling systems.	Remember	9
5	What are the basic considerations for air sampling	Remember	9
6	Briefly discuss the Global warming phenomena and its effects on environment	Understand	9
7	Discuss on the requirements of air monitoring stations for analysis of air pollutants.	Remember	8
8	What is the difference between primary and secondary air pollutants?	Understand	8
9	What is acid deposition? Why is that term better than acid rain?	Understand	8
10	What are the major sources of outdoor pollution?	Understand	8
11	What helps protect humans from air pollutants? Give some successful examples	Remember	8
12	What is a thermal inversion? How do thermal inversions relate to air pollution “events”?	Remember	9

13	How can we cut down or prevent air pollution? Discus with a case study	Remember	9
14	Is dilution a solution to pollution? Is indoor pollution better or worse than outdoor?	Remember	8
Part – C (Problem Solving and Critical Thinking)			
1	Enurnerate the various analytical methods available for monitoring air pollution	Understand	8
2	What are the various approaches to minimize exhaust emission? Explain	Understand	8
3	Explain different methods of gaseous air pollutants sampling from the ambient atmosphere	Understand	8
4	Describe the phenomenon of "greenhouse effect", due to carbon dioxide.	Remember	8
5	What are the basic respects of air sampling? Discuss	Remember	9
6	Explain the procedure for the collection of suspended particulates by high volume sampler.	Remember	9

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