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| Image result for adamas university logo | **ADAMAS UNIVERSITY**  **END SEMESTER EXAMINATION**  (Academic Session: 2020 – 21) | | |
| **Name of the Program:** | M.Tech | **Semester:** | I |
| **Paper Title:** | Air & Noise Pollution | **Paper Code:** | ECE61107 |
| **Maximum Marks:** | 50 | **Time Duration:** | 3 Hrs |
| **Total No. of Questions:** | 29 | **Total No of Pages:** | 02 |
| *((Assume suitable data if required))* | 1. At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, Date of Exam. 2. All parts of a Question should be answered consecutively. Each Answer should start from a fresh page. 3. Assumptions made if any, should be stated clearly at the beginning of your answer. | | |

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| **Group A**  **Answer All the Questions (5 x 1 = 5)** | | | |
| 1 | AQI stands for what? | **R** | **CO1** |
| 2 | Define “Washout or Scavenging”. | **R** | **CO2** |
| 3 | What is Aerosol? | **R** | **CO2** |
| 4 | Which is the major pollutant present in photochemical smog? | **R** | **CO4** |
| 5 | Define sound pressure level. | **R** | **CO3** |
| **Group B**  **Answer Allthe Questions (5 x 2 = 10)** | | | |
| 6 a) | Find the effective height of a chimney. Use below mentioned data :  Actual height of chimney is 190 m, internal diameter of chimney is 1m, wind velocity is 3 m/s, surrounding temperature is 200C, barometric pressure is 103 milllibars, velocity of gas emitting from chimney is 12 m/s and temperature of gas emits from chimney is 1500C. | **R** | **CO1** |
| **(OR)** | | | |
| 6 b) | Discuss about lead as a major pollutant. | **Cr** | **CO1** |
| 7 a) | Discuss about characteristics of three weighting networks. | **Cr** | **CO1** |
| **(OR)** | | | |
| 7 b) | Demonstrate the expression for “Perfect Gas Law”. | **U** | **CO1** |
| 8 a) | Discuss about Hydrocarbons in context of air pollutants. | **Cr** | **CO4** |
| **(OR)** | | | |
| 8 b) | Explain about different types of inversion. | **U** | **CO4** |
| 9 a) | Demonstrate limiting values of noise levels (Leq) corresponding to area/zone category for ambient air quality standards in respect of noise recommended by India’s Environmental Protection Act,1986. | **U** | **CO3** |
| **(OR)** | | | |
| 9 b) | Show the sinusoidal sound waves due to alternate compression and rarefaction of air molecules. | **U** | **CO3** |
| 10 a) | Distinguish between various types of noise related to Noise Rating Systems. | **An** | **CO3** |
| **(OR)** | | | |
| 10 b) | Elaborate about noise abatment. | **Cr** | **CO3** |
| **Group C**  **Answer Allthe Questions (7 x 5 = 35)** | | | |
| 11 a) | Discuss about air pollution controlling process by natural and installing engineering devices from stationary sources. | **Cr** | **CO2** |
| **(OR)** | | | |
| 11 b) | A power plant produce 1000 MW utilizing coal. Plant efficiency is 40%. 1 kg coal burning generates 22 MJ. During operation of burning following pollutants generates; Ash content = 34% from coal, Sulphur content = 4% from coal. Determine the emission rate of sulphur dioxide pollutant from the power plant. **(Mod-2)** | **E** | **CO2** |
| 12 a) | Determine the effective length of a chimney of physical height 180 m with 0.95 m diameter, wind velocity of 2.75 m/sec, 200C air temperature, barometric pressure of 1000 millibars. Velocity of gas emitting from stack is 11.12 m/sec and gas temperature in stack is 1600C. | **E** | **CO2** |
| **(OR)** | | | |
| 12 b) | Develop the equation for minimum chimney height as per Emission Regulations (Part-1) in Indian conditions. | **Ap** | **CO2** |
| 13 a) | Evaluate ***Leq*** from the noise data given below:   |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Time(Sec) | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | | dBA L(t) | 71 | 75 | 70 | 78 | 80 | 84 | 76 | 74 | 75 | 74 | | **E** | **CO3** |
| **(OR)** | | | |
| 13 b) | Show the cumulative distribution curve related to Noise Rating Systems. | **U** | **CO3** |
| 14 a) | Summarize about effects of air pollution on various sectors in atmosphere. | **U** | **CO4** |
| **(OR)** | | | |
| 14 b) | Classify about Plume. | **An** | **CO4** |
| 15 a) | A coal fired 1000 MW power plant is operating around 38% efficiency. The ash and sulphur content in the coal used respectively are 35% and 3%, and the calorific value of 21 MJ/kg of coal. Find the emission rate of SO2 from the plant. | **R** | **CO4** |
| **(OR)** | | | |
| 15 b) | Discuss about “Gravitational settling chambers” to control particulate matter. | **Cr** | **CO4** |
| 16 a) | Explain about “Electrostatic Precipitator” | **U** | **CO1** |
| **(OR)** | | | |
| 16 b) | What is photochemical smog and how it is formed ? | **R** | **CO1** |
| 17 a) | Discuss about air pollution controlling process by natural and installing engineering devices from stationary sources. | **Cr** | **CO2** |
| **(OR)** | | | |
| 17 b) | Explain about unstable , stable and neutral environment. | **E** | **CO2** |

Note: The Sample prepared by assuming 5 COs in a course, considering one CO for one Module.

1. If the COs are higher in numbers that can be managed by equating sub-divisional questions
2. If the COs are lower in numbers, the questions can be increased by equating the number of COs