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Question Paper Code : 90440

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2019
Fifth Semester

Mechanical Engineering

OCE 551 : AIR POLLUTION AND CONTROL ENGINEERING

(Common to Aeronautical Engineering/Agriculture Engineering/Automobile Engineering/Electrical and Electronics Engineering/Industrial Engineering/Industrial Engineering and Management/Materials Science and Engineering/Mechanical Engineering/Medical Electronics/Robotics and Automation Engineering/Chemical Engineering/Chemical and Electrochemical Engineering/Fashion Technology/B.Tech. Food Technology/Handloom and Textile Technology/Information Technology/Pharmaceutical Technology/Textile Chemistry/Textile Technology/Biomedical Engineering/Computer Science and Engineering/Computer and Communication Engineering/Electronics and Communication Engineering/Electronics and Instrumentation Engineering/Electronics and Telecommunication Engineering/Environmental Engineering/Geoinformatics Engineering/Instrumentation and Control Engineering/Manufacturing Engineering/Marine Engineering/Mechanical and Automation Engineering/Mechatronics Engineering/Petrochemical Engineering/Production Engineering/Bio-Technology/Petrochemical Technology/Petroleum Engineering)
(Regulations 2017)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions.

PART - A

(10×2=20 Marks)

1. Define air pollution.
2. Write the effects of air pollution on plants.
3. What are the features of wind rose ?
4. Define lapse rate.
5. Write two advantages of gravity separators.
6. Write the principle involved in cyclone separator.
7. List the types of condensation equipments used in air pollution control.
8. What is bio filtration ?
9. Define Indoor air pollution.
10. Write the ambient air quality standards in respect of noise.



PART - B

(5×13=65 Marks)

11. a) i) Write the sources and classification of air pollutants. (8)
 ii) Discuss the effects of CO and PM_{2.5}. (5)
 (OR)
- b) i) Write the national ambient quality standards for industrial, residential and ecologically sensitive areas. (9)
 ii) Explain the structure of an atmosphere. (4)
12. a) i) Explain with neat sketch the types of plume behavior. (9)
 ii) Explain the types of inversions. (4)
 (OR)
- b) i) Write the assumptions of Gaussian Plume Model. (8)
 ii) Explain the meteorological parameters influencing the air pollution. (5)
13. a) Explain with neat sketch the working principle, advantages and disadvantages of an Electrostatic precipitator. (13)
 (OR)
- b) i) Explain the approaches to air pollution control. (7)
 ii) Discuss the factors to be considered in selection of equipment for control of particulate contaminants. (6)
14. a) i) Explain the principle of absorption and adsorption for control of gaseous pollutants. (8)
 ii) Explain the working principle of a packed tower. (5)
 (OR)
- b) Explain with neat sketch the working principle of a incinerator with its advantages and disadvantages. (13)
15. a) i) Write the sources of indoor air pollution. (7)
 ii) What are the symptoms of sick building syndrome? (6)
 (OR)
- b) i) Explain the effects of noise on human beings. (10)
 ii) Write the methods to eliminate or reduce noise. (3)

PART - C

(1×15=15 Marks)

16. a) Suggest an air pollution control plan for Chennai metropolitan city. (15)
 (OR)
- b) Discuss the control and preventive measures to be taken for noise pollution in a commercial complex. (15)