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Question Paper Code : 71060

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2023.

Fifth/Seventh Semester

Aeronautical Engineering

OCE 551 – AIR POLLUTION AND CONTROL ENGINEERING

(Common to: Aerospace Engineering/ Agriculture Engineering/
Automobile Engineering/ Biomedical Engineering/Computer Science and
Engineering/Computer and Communication Engineering/Electrical and Electronics
Engineering/ Electronics and Communication Engineering/Electronics and
Instrumentation Engineering/Electronics and Telecommunication
Engineering/Environmental Engineering/Geoinformatics Engineering/
Industrial Engineering/Industrial Engineering and Management/Instrumentation
and Control Engineering/ Manufacturing Engineering/Marine Engineering/
Material Science and Engineering/Mechanical Engineering/Mechanical Engineering
(Sandwich)/Mechanical and Automation Engineering/Mechatronics Engineering/
Medical Electronics/Petrochemical Engineering/Production Engineering/ Robotics
and Automation/Artificial Intelligence and Data Science/ Bio Technology/Chemical
Engineering/Chemical and Electrochemical Engineering/Computer Science and
Business System/Fashion Technology/Food Technology/Handloom and Textile
Technology/Information Technology/Petrochemical Technology/Petroleum
Engineering/Pharmaceutical Technology/Textile Chemistry/Textile Technology)

(Regulations 2017)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Write any two effects of air pollution on animals.
2. Write the composition of atmosphere.
3. Define lapse rate.
4. What's wind rose?
5. What are the various types of particulate scrubber?
6. Write the formula to calculate the efficiency of gravity separator.

PART C — (1 × 15 = 15 marks)

7. Mention the types of condensation systems.
8. What are biofilters?
9. Define indoor air pollution.
10. What are the most common sources of noise pollution?

PART B — (5 × 13 = 65 marks)

11. (a) Enumerate the effect of air pollution on human being and plants. (13)
Or
(b) (i) Mention and explain the categories of Air quality index. (7)
(ii) Write the sources and classifications of air pollutants. (6)
12. (a) Explain with neat sketch the plume behavior from a stack with respect to the prevailing lapse rate. (13)
Or
(b) (i) What is adiabatic lapse rate? Discuss the types of adiabatic lapse rate. (7)
(ii) Explain the role of meteorological factors in the dispersion of air pollutants in atmosphere. (6)
13. (a) (i) Discuss in detail the factors affecting the selection of control equipment. (8)
(ii) Enumerate the operational problems in cyclone separator. (5)
Or
(b) Explain with neat sketch the working principle of an electrostatic precipitator with its advantages and disadvantages. (13)
14. (a) (i) Explain the general principle involved in adsorption, absorption and condensation. (8)
(ii) Tabulate the National air quality standards for residential, industrial and sensitive areas. (5)
Or
(b) (i) Explain with neat sketch the working principle of an incinerator. (7)
(ii) Describe the criteria to achieve high performance in gas absorption equipments. (6)
15. (a) (i) Explain the method for control and prevention of noise pollution. (5)
(ii) Discuss the factors responsible for sick building syndrome. (8)
Or
(b) Explain the sources and effects of noise pollution. (13)

16. (a) Prepare a strategy plan to control noise pollution in a metropolitan city. (15)

Or
(b) Illustrate the role of meteorological elements in the dispersion of air pollutants in the atmosphere. (15)