

University Institute of Engineering & Technology
Kurukshetra University, Kurukshetra
(Recognised Under Section 2(f) and 12B of UGC)

No. of pages: 02

THEORY EXAMINATION – January 2021

TIME – 3 Hrs 15 Min

B.Tech – Mechanical Engineering

SEMESTER – 7th

M.M. - 56

PAPER–ME-439

SUBJECT – Environment Pollution & Abatement

INSTRUCTIONS TO BE FOLLOWED

- Allotted time for examination is 3 hours 15 minutes that includes time for downloading the question paper, writing answers, scanning of answer sheets and E-mailing the PDF files to the designated Email ID.
- For all B Tech. Mechanical Engineering Students, the Email ID is:- btechmechuiet@kuk.ac.in
- The candidates will be required to attempt 75% of the question paper (maximum) by choosing to their any best questions accumulating 56 marks.
- The PDF files should be saved as Roll No. and Subject Code. Proper attention should be given while sending the email and in the subject line, the Roll Number and Subject Code should be mentioned.
- Maximum Page Limit should be 20 (Twenty) for attempting the question paper on A4 sheets which could be downloaded and printed from the sample sheets given in the Kurukshetra University Examination guidelines.
- Over-attemptation should be avoided.
- Handwriting should be neat and clean and diagrams should be clear and contrasted.
- The candidate should not write their Mobile No. otherwise Unfair Means Case will be made.
- While attempting the paper, the candidate will use blue/black pen only.
- Before attempting the paper, the candidate will ensure that he/she has downloaded the correct question paper. No complaint for attempting wrong question paper by the candidate will be entertained.
- Candidate must ensure that he/she has put his/her signature on each page of the answer sheet used by him/her. Answer sheet without the signature of the candidate will not be evaluated.

PART-A

Q. No. 1 Answer the following questions (Objective/Short Answer Type Questions)

15x1=15

(i)	Which are the major polluting chemical industries?
(ii)	Write the full form of CPCB and TDS.
(iii)	Classify various sources of air pollution.
(iv)	Write short notes on water quality monitoring.
(v)	Differentiate emissions and effluents with regards to environment pollution.
(vi)	Write four methods/technique to control air pollution
(vii)	Give the advantages of cyclone separator.
(viii)	What is energy balance for pollution minimization?
(ix)	Write the importance of various physical constituents in waste waters
(x)	What are the various factors affecting the operation of trickling filter?
(xi)	What are the common Engineering methods of removing solids from waste water?
(xii)	What are the various factors that affect the removal of VOCs in aeration process?
(xiii)	Discuss human health risks due to Composting.
(xiv)	What are aeration systems?
(xv)	Distinguish between aerobic and anaerobic processes.

PART-B

2	Explain in detail standards for ambient air, noise emission and effluents.	5
3	Explain the working and principle of a cyclone separator with suitable diagram.	5
4	What would be the main steps for waste water treatment? Also name and characterize three most significant components of waste water.	5
5	What is the objective of Sludge treatment? What are the various methods of Sludge treatment?	5

PART-C

6	(a) Consider a facility in your home town. What three steps could be taken in the life cycle to improve air pollution emissions?	5
	(b) List the following in increasing amounts from the exhaust of an idling automobile. O ₂ , NO _x , SO _x , N ₂ , unburnt hydrocarbons, CO ₂ and CO.	5
7	(a) Explain in detail environment laws and rules.	5
	(b) Write a technical note on environment pollution from chemical process industries.	5
8	Explain in detail water recycling & its quality. Write its different motivational factors, benefits & uses of Recycled water.	10
9	Write short notes on following: (3+3+4=10) (a) Electrostatic precipitation and wet gas scrubbing (b) fabric filters and cyclones with regards to air pollution (c) Fugitive emission/effluents	10
10	(a) What would be the major steps for waste water treatment?	5
	(b) Differentiate between Coagulation and Flocculation process.	5
11	Explain filtration, its types and application in waste water treatment? Describe various mechanisms involved in the filtration process.	10
12	(a) Classify lagoons based on degree of mechanical mixing and mention the various design factors that need to be considered for flow through lagoons?	10
	(b) What is Composting? Discuss various processes and phases of Composting. Write about various factors which affect Composting.	
13	(a) What is Composting? Discuss various processes and phases of Composting. Write about various factors which affect Composting.	6
	(b) Describe in brief with regards to solids waste disposal: (i) Aerobic treatment biochemical kinetics (ii) Landfill (iii) Briquetting (iv) Incineration	4