



MUTHAYAMMAL ENGINEERING COLLEGE

(An Autonomous Institution)

(Approved by AICTE, New Delhi, Accredited by NAAC & Affiliated to Anna University)

Rasipuram - 637 408, Namakkal Dist., Tamil Nadu.



MUST KNOW CONCEPTS

MKC

MECH

2019-20

Course Code & Course Name : 16CEE09 & Industrial Waste Management

Year/Sem : II / IV

S.No.	Term	Notation (Symbol)	Concept / Definition / Meaning / Units / Equation / Expression	Units
Unit-I : Introduction				
1.	Industrial waste	-	The waste produced by the industrial activity during a manufacturing of goods	-
2.	Standard effluent disposed on land	-	BOD of waste water to be disposed by dilution in inland surface water is 30	Mg / litre.
3.	Population Equivalent	-	the ratio between the standard BOD (5 days) of industrial sewage to the standard BOD (5 days) of domestic sewage per person per day	-
4.	effects of industrial pollution on human health	-	It cause irritation of eye, nose, throat and respiratory tracts	-
5.	Dilution factor	-	The ratio between the quantities of the dilute water to that of the sewage is known as dilution factor.	-
6.	Bio assay studies	-	The study of the accumulation of pollutants such as insecticides, pesticides and heavy metals	-
7.	Concentration factor	-	The ratio of the concentration of an element in an organism.	-
8.	Biochemical oxygen demand (BOD).	-	The amount of oxygen required for microorganisms to carry out biological decomposition of dissolved solids.	-
9.	Characteristics of Industrial Waste Water	-	BOD (5 days 20oC) (Biological oxygen demand), COD (Chemical oxygen demand) Temperature, Oil and grease	-
10.	Effluent standard for COD and chlorides	-	(i) COD = 250	Mg / litre.
11.	Objectives of the audit	-	The audit's objectives will largely determine the water types and physical locations to be audited.	-

12.	Approaches to volume reduction	-	Classification of wastes,	-
13.	Examples for reusing Industrial effluents	-	(i)The treated effluent can be reused by ground water recharging.	-
14.	By-Product recovery	-	In paper mills, caustic soda be recovered from cooking liquors	-
15.	challenges involved in waste audit	-	Lack of input dates required ,	-
16.	Significance of 3R's	-	Waste minimization can be achieved in an efficient 3Rs "Reduce" followed by "Reuse" and then "recycle" and finally "energy recovery".	-
17.	Reuse	-	Use of items or parts of items which still have potential for use.	-
18.	4R concept	-	The principle of reducing waste, reusing recycling resources and products, and recovers energy is offer called 4R.	-
19.	Significance of cleaner production	-	The precautionary approach-potential polluters must prove that a substance or activity will do no harm.	-
20.	Audit necessary in an industry	-	To save waste (Influent), To provide proper treatment for waste waters. (effluents), To provide safety for workers.	-
21.	Sources of wastes in a dairy plant	-	Bottle washing ,Can be tanker washing, Floor washing, Water softening plant	-
22.	Hazards occurs in electroplating industry	-	Chromium,	-
23.	The industries under red categories	-	Distillery ,Pulp and paper, Dyes and Dye-intermediates, Cement, etc.	-
24.	Black liquor	-	Black liquor is the waste product from the kraft process	-
25.	Reclamation of waste water	-	Reclaimed or recycled water also called wastewater reuse or water reclamation	-
Unit-II : Cleaner Production				
26.	Difference between breweries and distilleries	-	Breweries produce beer, a large number of products of varying origin are obtained in distilleries.	-
27.	Processes involved in distilleries	-	Preparation of 'queen' malt	-
28.	By-products can be	-	The nutrient rich animal feed	-

	recovered from distillery wastewater			
29.	BOD range and the treatment for tannery waste water	-	The BOD range for combined tannery waste is 1725 mg/litre and hourly maximum of 4000 mg/litre.	Mg / litre.
30.	Petrochemicals	-	The chemicals derived from petroleum are often referred to as "petrochemicals".	-
31.	Chemical precipitation	-	In chemical precipitation, soluble contaminants are converted to in soluble forms by chemical reactions.	-
32.	Difference between oxidation/Reduction	-	The treatment process consists of a pair of reactions in which the molecules of one reaction use electrons (oxidation)	-
33.	Electrolysis	-	This process involves immersing cathodes and anodes in a waste liquid	-
34.	Chemical oxidation	-	Chemical oxidation can be used to remove ammonia	-
35.	Organic waste	-	In includes dry animal and vegetable refuse, cow doing, and excreta of birds.	-
36.	Sludge bulking	-	The settled sludge may contain more moisture.	-
37.	Purpose of dewatering	-	E isin handling dewatering sludge.	-
38.	Development of sludge bulking	-	Presence of harmful industrial waste waters especially those containing high carbohydrate content antiseptic or other such properties.	-
39.	Method adopted For disposed of wet digested sludge	-	Disposed by dumping into the sea.	-
40.	Significance of pH of industrial wastage	-	pH adjacent by adding of acidic/basic chemicals is an important part of any waste water treatment	-
41.	Safe handling and disposal of hazardous wastes?	-	Selection of site, Selection of storage, Selection of transport, Selection of treatment methods	-
42.	Landfills in River	-	No landfill shall be constructed with in 100 m of a navi-gable river or stream.	-
43.	Landfills in Public parks	-	No landfill shall be constructed with in 800 m of a public park.	-
44.	Air flotation	-	Used as a secondary oil removal process to remove finally dispersed oil droplets	-
45.	Oil coalescing	-	It can be used either as a primary or	-

			secondary oil removed process removing free phase	
46.	Advantages of land filling method of disposal	-	It is simple and economical, No plant equipment is required,	-
47.	Pulverization	-	The dry refuse is pulverized into power form, without changing its chemical form.	-
48.	Hazardous waste	-	Hazardous waste any type of solid or liquid waste that has the potential to cause harm	-
49.	characteristics hazardous waste	-	Corrosivity, Explosivity, Flammability, Ignitability, Reactivity.	-
50.	Disadvantages of land filling method of disposals	-	Proper sit may not be available nearby, Wind direction not be favourable, Large band areas are required	-

Unit-III : Pollution From Major Industries

51.	Prime merits of effluent treatment plants	-	It needs to be treated so that it can be recycled	-
52.	Environmental legislation	-	Water (prevention and control) Act 1974 as amended in 1978 and 1988	-
53.	Example of Organic chemicals	-	Carbohydrates, Fats, oils, and greases	-
54.	Example of Inorganic chemicals	-	Alkalinity, Chloride, Heavy metals	-
55.	List the outcome diseases	-	Cancers , Chronic kidney disease	-
56.	Sources of Organic chemicals	-	Agricultural wastages, Domestic and industrial	-
57.	Sources of Inorganic chemicals	-	Domestic waster, Industrial waste, domestic waste	-
58.	waste audit	-	efficient and effective organization reduced waste management	-
59.	responsibilities of waste audit firms	-	Verify waste pathways, Identify waste direction opportunities	-
60.	the challenges involved in waste audit	-	Lack of input dates required, Lack of testing facilities, Selection of auditing team members	-
61.	the major components of waste audit	-	Pre-audit activities, Activities at site, Post-audit activities	-
62.	audit necessary in an industry	-	To save waste, To provide proper treatment for waste waters.	-
63.	Recycling	-	"Recycling" means the use of waste itself as a resourcs.	-

64.	Main pollutants from textile mills	-	Starch, Sodium hydroxide, Sodium gums	-
65.	Reclamation of waste water	-	Is the process of converting waste water in to water	-
66.	Brown liquor	-	The equivalent material in the sulfite process is usually called brown liquor	-
67.	Industries under red categories	-	Thermal power plants, Tanneries, and oil refinery, etc	-
68.	Adsorption	-	Remove a wide variety of organic and sometimes inorganic contaminants.	-
69.	Chemical precipitation	-	Soluble contaminants are converted to insoluble forms by chemical reactions.	-
70.	Oxidation	-	the molecules of one reaction use electrons (oxidation) to use toxic.	-
71.	Iron exchange	-	It is used primary for the removed of hardness in water treatment.	-
72.	Chemical oxidation.	-	Remove ammonia reduce the concentration of residual organics	-
73.	List the methods for residue management	-	Thickening, Digestion, Mechanical dewatering ,Disposal	-
74.	Residue management	-	Incineration /composting, Land forming	-
75.	Residue management used.	-	the residue management is used for the disposal of sludge.	-
Unit-IV : Treatment Technologies				
76.	The advantages of incineration method of disposal	-	it is thought that equalization tank also serve the purpose of dilution	-
77.	Hazardous waste	-	This is the most hygienic method, since it ensures complete destruction of pathogens.	-
78.	Non- Hazardous waste	-	Cane or Respiratory condition(Asthma) Heart disease	-
79.	Two characteristics hazardous waste.	-	The non-hazardous material word negatively	-
80.	The various methods of disposal of hazardous waste	-	Corrosivity, reactivity.	-
81.	Bulky waste	-	Reuse of resources, Composting	-
82.	Solid wastes	-	It includes large house hold (Ex. Washing machines, tyres, etc)	-
83.	Combustible wastes	-	Human and animal activities generate many wastes that are discarded as useless.	-

84.	Bulky waste	-	Do not decompose easily and easy the burn	-
85.	Solid wastes	-	It includes large house hold (Ex. Washing machines, tyres, etc)	-
86.	Combustible wastes	-	Human and animal activities generate many wastes that are discarded as useless.	-
87.	Curb side	-	Do not decompose easily and easy the burn	-
88.	Chute	-	Solid wastes are collected from load side platform.	-
89.	Compaction	-	Opening for the discharge of waste materials in high- rise apartment	-
90.	3R	-	Processing of volume reduction	-
91.	4 R	-	Reduce, reuse, recycle	-
92.	Shredding	-	Reduce, Reuse, Recycle, Recovery	-
93.	Pyrolysis	-	Process of reducing solid waste size	-
94.	Material Recovery Facility	-	Thermal processing of waste in complete absent of oxygen	-
95.	Refused Derived Fuel	-	Centralized facility that receives, separates, process and markets recycle materials	-
96.	Bio methanation	-	Used to extract combustible portion of municipal waste	-
97.	Shredding	-	Methanogenes is used to recover the methane gas by composting of solid waste	-
98.	Opticalsortin	-	To convert large sized wastes into smaller pieces	-
99.	Effluent of a septic tank	-	To separate glass from waste stream	-
100.	Sources of Organic chemicals	-	Fit for discharge into any open drain	-

Unit-V : Hazardous Waste Management

101.	Zone of degradation	-	It is found just below the point where sewage is discharged	-
102.	Zone of active decomposition	-	The zone with heavy pollution water becomes grayish darker	-
103.	Zone of recovery	-	The river streams try to recover from its degraded condition	-
104.	Zone of clean water	-	The river attains the original conditions with DO.	-
105.	Oxygen deficit	-	The difference between the actual DO and saturation DO.	-
106.	De-oxygenation curve	-	The curve which represents the depletion of DO with time at given temperature	-

107.	Re- oxygenation	-	In- order o counter balance the consumption of DO.	-
108.	Sewage farming	-	The sewage adds fertilizing value to the land and crops	-
109.	Self- purification of river	-	Sewage water self purified in the river.	-
110.	Sewage sickness	-	Pores of soil gets clogged due to continuous sewage application	-
111.	Ripened sludge	-	The granular, stable, and odorless sludge collected at the bottom of the digestion tank	-
112.	Factors affecting sludge digestion	-	Temperature, pH, Seeding with digested sludge	-
113.	Types of incinerators	-	Multiple hearth furnace, Flash type furnace, Fluid bed furnace, Infra-red furnace	-
114.	Sludge concentrator units	-	To reduce moisture content in the sludge.	-
115.	Types of thickener unit	-	Gravity thickener, Dissolved air floatation unit, Gravity belt thickener, Centrifugal thickener	-
116.	Percolation rate	-	The time in minutes required for sewage of water through that ground by one cm	-
117.	Oxygen sag curve	-	Algebraically adding de-oxygenation and re-oxygenation curve	-
118.	Elutriation of sludge	-	It is the process of washing the sludge water	-
119.	Sludge conditioning	-	The sludge solids are treated with chemicals to prepare sludge for dewatering process	-
120.	Sludge dewatering methods	-	Centrifugation, Vacuum filtration, Sludge drying bed	-
121.	Stages of sludge digestion	-	Acid fermentation, Acid regression, Alkaline fermentation	-
122.	Biological zones in lake	-	Euphotic zone, Littoral zone, Benthic zone	-
123.	DRE	-	Destruction and Removal Efficiency	-
124.	Sludge Digestion Process types	-	Acid fermentation, Acid regression, Alkaline fermentation	-
125.	Skimming tank	-	Removes oil, fat and grease	-
Placement Questions				
126.	Temperature of 5 days BOD	-	20	°C
127.	Drop manholes are	-	Having drains at different levels	-
128.	Rainfall determined by	-	Its intensity, its direction, its frequency	-

129.	The clarigesters are	-	Circular imhoff double storey tanks without bottom hoppers	-
130.	Manhole depth between	-	0.7 to 0.9	m
131.	R.M.O expense include	-	Running , Maintence and Operation expense	-
132.	Detention period of grid chamber	-	1 minutes	-
133.	Clogging of sewer is caused by	-	Silting, low discharge, greasy and oily matters	-
134.	Acid rain pH value	-	5	-
135.	In case of Imhoff tanks	-	rectangular, detention period is 2 hours	-
136.	A manhole is generally provided	-	Bend, junction , change the gradient	-
137.	Removal of oil and grease from sewage	-	Skimming	-
138.	Size of stoneware sewers size	-	10, 15, 20	cm
139.	Result of oxidation process	-	Carbon dioxide, nitrates, sulphates	-
140.	Minimum dia of sewer	-	15	cm
141.	In a tricking filter	-	Biological action is used	-
142.	Porosity of sewer pipes	-	0.013	-
143.	Dry weather flow is	-	Water supply allowance per captia	-
144.	In tricking filter BOD	-	60 - 80 %	-
145.	Aerobic bacterias	-	Oxidize organic matter in sewage	-
146.	Standard BOD of water is taken	-	5 days	-
147.	Dried sewage is used	-	Fertilizer	-
148.	Sewage treatment in septic tanks	-	Anaerobic decomposition	-
149.	Suitable cross section of sewer	-	Egg shaped	-
150.	Flow velocity of detritus	-	0.09	m/sec