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Enrolment No:



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, July 2020

Course/ Program: B.Tech (FSE)
Course Code: HSFS 3010
Subject: Environmental Engineering & Management
No. of page/s:4

Semester : VI
Time : 03 hrs.
Max. Marks: 100

Sl No	Question	Option-1	Option-2	Option-3	Option-4
1	Which of these air pollutants travel over the longest distances?	Coarse Particles	Fine particles	Ultrafine particles	Pollen
2	Stock pollutant is	Easily dissolve in atmosphere	Difficult to dissolve in atmosphere	Partially dissolve in the atmosphere	Non of the above
3	Bhopal gas tragedy struck in the year 1984 due to the leakage of the following gas:	methyl-isocyanate	nitrous oxide	methane	Botha (A) and (B)
4	A device is fitted to motor vehicles to chemically reduce some gases produced by internal combustion engines like NO _x , CO, and HC into less harmful products. Name this device.	2-stroke engines	Catalytic converter	Carburetor	Tail pipe
5	Wet scrubbers are classified into ____ types.	6	2	5	3
6	Which of the following removes both gaseous and particulate contaminants?	Gravitational settling chamber	Dynamic precipitator	Venturi scrubber	Wet scrubber

7	Fluid used in wet scrubbers?	MgSO ₄	NaCl	Water	K ₂ Cr ₂ O ₇
8	Which of the following is incorrect regarding the fabric filter?	They can remove very small particle	They are liable to chemical attack	They have low efficiency in comparison to venturi scrubber	They can handle large volume of gas at relatively high speed
9	Coning plume occurs under _____ conditions?	Super adiabatic	Sub adiabatic	Neutral	Inversion
10	The effective height of stack is given by _____	Plume height / Actual height of the stack	Plume height * Actual height of the stack	Plume height – Actual height of the stack	Plume height + Actual height of the stack
11	_____ is a secondary air pollutant.	PAN	SPM	Sulphur dioxide	Nitrogen dioxide
12	Number of parameters taken into consideration when measuring air quality, in India?	4	3	8	9
13	When Environmental Lapse Rate (ELR) < Adiabatic Lapse Rate (ALR), which of the following occurs?	Sub adiabatic lapse rate	Super adiabatic lapse rate	Neutral lapse rate	Adiabatic lapse rate
14	Which of these air pollutants penetrate deepest into the lungs?	Sulphur dioxide	Coarse particles	Ultrfine particles	Fine particles
15	Which of the following catalyst is used for removing hydrocarbon from gaseous pollutant in combustion unit?	Platinum	Activated alumina	Vanadium	Potassium permanganate
16	Effects of air pollution on human health:	Asthma, Rhinitis and high blood pressure	Insomnia, Rhinitis and cardiac	Pulmonary, cardiac and vascular	Diabetics, Rhinitis and heart attack
17	Which of the following indicates the correct order	Troposphere – Stratosphere –	Exosphere – Thermosphere –	Thermosphere – Stratosphere –	Exosphere – Mesosphere –

	of the principal layers of the earth's atmosphere from top to bottom?	Mesosphere – Thermosphere – Exosphere	Mesosphere – Stratosphere – Troposphere	Troposphere – Mesosphere – Exosphere	Thermosphere – Stratosphere – Troposphere
18	_____ leads to a disease called broncho spasm.	SO ₂	SO ₃	SO ₄	CO ₂
19	The Pollution Standard Index (PSI) scale has span from	0-200	0-300	0-400	0-500
20	_____ gases has the highest affinity for blood haemoglobin.	Carbon dioxide	Oxygen	Carbon Monoxide	Nitrogen
21	Which of the following is produced when electrical discharges pass through oxygen in the air?	Ozone	Chlorofluorocarbons	Methane	Lead compounds
22	The threshold concentration of sulphur dioxide in any industrial activity should not be permitted beyond	2ppm	3ppm	4ppm	5ppm
23	How much higher can be the temperature inside a greenhouse as compared to the outside?	20 °C higher	5 °C higher	10 °C to 15 °C higher	25 °C higher
24	_____ is a powerful irritant which can aggravate the symptoms of people who suffer from respiratory disorders?	carbon monoxide	sulphur dioxide	carbon dioxide	oxides of nitrogen
25	Effects of sulphur dioxide on the human body:	It causes the malfunction of liver and kidney	It breaks down body's immunity towards particulate matter and bacteria	It causes blood cells to dilate thereby affecting blood flow through the circulatory system	All of the above

26	_____ is not a part of adsorption unit?	Multiple fixed bed	Packed towers	Fluidized bed	Moving bed
27	The centrifugal collectors are classified into _____ types.	3	4	5	2
28	Stable condition prevails in which of the following plumes?	Fanning	Lofting	Neutral	Fumigating
29	Air pollutant that effects plants the most?	Fluorine	SO ₂	PAN	HCl
30	Which of the following removes both gaseous and particulate contaminants?	Venturi scrubber	Gravitational settling chamber	Dynamic precipitator	Wet scrubber
31	_____ is used in ceramic industries.	Dynamic precipitator	Electrostatic precipitator	Spray tower	Wet cyclonic scrubber
32	According to EPA of USA, _____ is not one of the six major pollutants.	Ozone	CO ₂	NO	CO
33	Which aspect of water signifies the “ Amount of water”?	Statistic	Qualitative	Psychometric	Quantitative
34	What is the scientific reason behind keeping the water in a copper vessel?	It suppresses the activity of bacteria present in water	It purify the water	It keeps the water cool	It increases mixing of microbes
35	Which of the following attributes of water tells “ water should be free of colour, taste and odour ?	pathological	Aesthetic	conventional	chemical
36	Accidentally a person consumes water that has Nitrate level above 100 mg/unit, from which	Acute Pulmonary Syndrome	Down Syndrome	Blue-Baby Syndrome	Klinefelter Syndrome

	syndrome he can possibly suffer?				
37	The Nitrite reacts with _____ to form _____ which cannot carry oxygen	hemoglobin , CO2	hemoglobin, O2	Oxyhemoglobin , methoglobin	Oxyhemoglobin , Nervoglobin
38	Which of the following statement is correct about deep ground water ?	it has turbidity	depth is less that 30m	have bacteria	does not have heavy metals
39	For which purpose the treated effluent water cannot be used	Gardening	Cooling in industries	Drinking	air conditioning
40	Which of the following determines the Quality of water?	Pollution Load	Chlorination	Coagulation	Turbidity
41	Which water quality parameter illustrates about the Hardness of water?	Chemical	Physical	Ecological	Biological
42	Identify the bacteria which commonly found in the intestines of animals and humans?	Staphylococcus aureus	Candida Albicans	Staphylococcus pneumonia	Escherichia coli
43	Why Turbidity is an important parameter of drinking water quality?	Due to Corona Effect	Due to Photovoltaic Effect	Due to Shielding Effect	Due to Plasma Effect
44	Turbidity of water from Modern water treatment plant which produce crystal clear water is	less that 0 TU	less than 10 TU	less that 1 TU	Less than 5 TU
45	_____s used to measure the turbidity water after purification for drinking purpose and is expressed in terms of NTU.	Anemometer	Potentiometer	Manometer	Nephelometer

46	Due to the presence of which compound Rotten Egg Odour or Taste came in water?	Potassium	manganese	Sulphur	iron
47	In which source the Alkaline material brings bitter taste to the water	Organic	Carbonic	Non- Carbonic	Inorganic
48	Which among the following is not a type of solid present in water?	Suspended Solid	Dissolved Solid	Organic Solid	Volatile Solid
49	Identify the type of solid that take the space in the lattice or voids of H ₂ O	Suspended Solid	Dissolved Solid	Volatile Solid	Total Solid
50	Determine the correct term regarding the Dissolved Oxygen	DO \propto f(1/t)	DO \propto f(t)	DO \propto f(-t)	DO \propto f(T-1)
51	The complete decomposition of organic material by the microorganisms is called _____	Ultimate BOD	CBOD	NBOD	BOD
52	On what factor the rate constant of BOD reaction does not depends	Temperature	Turbidity	Type of organic matter	Type of microbes
53	What is the first step perform during treatment of water	Sedimentation	Filtration	Screening	chlorination
54	On which of the following factor the flow rate of the sedimentation tank depends ?	Flow rate	turbidity	presence of oxygen	hardness
55	The height of the sedimentation tank should be between	6m – 10m	1m – 2m	3m – 5m	5m – 8m

56	Which among the following chemical disinfection process is used to kill the bacteria	Chlorination	Ozonization	Coagulation	Sedimentation
57	In Reverse osmosis the water passes from	less concentrated solution to more concentrated solution	more concentrated solution to less concentrated solution	more concentrated solution to less ionized solution	less concentrated solution to more ionized solution
58	_____ is a gentle mixing process that increases the particle size from sub-microscopic microfloc to visible suspended particle	Floculation	Coagulation	Ozonisation	Eutrofication
59	Sodium hypochlorite and calcium hypochlorite is usually used in	Glycochlorination	Hypochlorination	Biochlorination	Eutrochlorination
60	Which of the following Drawback is not correct about UV Light Filtration	UV radiation does not stay in water.	UV purification offers no residual treatment.	UV radiation stay in water for long time	UV radiation is able to works only if the water is clear
61	The type of settling in which the particles settles individually	Hindered Settling	Flocculent Settling	Discrete Settling	compressed Settling
62	The ratio of volume of waste water divided by volume of waste water + volume of water is called	Hypochlorination	Van't Hoff factor	Dilution Factor	Ultimate BOD
63	What is k signifies in $BOD_L = BOD_5 / (1 - e^{-kt})$	rate constant	Poisson's ratio	gas constant	conductivity
64	Complete the formula for $BOD_w = \{(DO_i - DO_f) - (? - ?)(1 - P)\} / P$	$B_f - B_i$	$B_i - B_f$	$B_f + B_i$	$B_i + B_f$
65	Which among the following chemicals that	Sodium, Calcium	Potassium , magnesium	sulphates, phosphates	Chlorine, Zinc

	cannot be oxidised during assessment of BOD				
66	For standardization of result, the BOD test must be conducted at temperature of	10°C	15°C	35°C	20°C
67	Which process is Costlier among the following	Chlorination	Ozonisation	Hypochlorination	Reverse osmosis
68	Filtration to disinfection comes under which treatment	Secondary treatment	Primary treatment	Tertiary treatment	Auxiliary treatment
69	As per CPCB the standard amount of Chlorine present in water is	2 mg/ litre	1mg/ litre	0.5 mg/ litre	3 mg/litre
70	The metal which causes problem in bones and teeth	Iron	Sodium	Fluoride	Arsenic
71	Which turbidity unit is based on scattering effect	Jackson turbidity unit	Turbidity unit	Nephelometry turbidity unit	Peterson Turbidity unit
72	The expression $\rho_{\text{Solid}} = \rho_{\text{water}}$ tells about , where “ ρ ” is density	volatile solids	Suspended solids	Settlable solids	Dissolved solids
73	Time required for complete decomposition of organic material by the microorganisms is	5 days	10 days	20 days	15 days
74	In order to achieve good Coagulation and formation of microflocs we need	high energy rapid mixing	low energy rapid mixing	high energy gentle mixing	low energy gentle mixing
75	The process of dozing Chlorine to suppress the microbial activity inside the water is	Coagulation	Bioremediation	Filtration	Chlorination

76	How many parameters are used to define population ?	3	4	5	2
77	Number of components of an Ecosystem?	4	2	3	5
78	Transfer of energy in an ecosystem is always?	Multidirectional	Unidirectional	Both	None of the above
79	Environmental factors that affect the rate of release of nutrients into the atmosphere?	Soil and moisture	Soil only	Soil, moisture,pH, Temperature	Soil,moisture,pH
80	Which component is absorbed by producers to make carbohydrates during photosynthesis?	Oxygen	Carbon dioxide	Both oxygen and carbon dioxide	Nitrogen
81	Plant species requires.....to break down the organic matter in the soil and return the inorganic nutrients for absorption.	Soil microbes	Pollen grains	Chlorophyll	None of the above
82	Population interactions can be of.....	Beneficial & Detrimental	Neutral & Beneficial	Beneficial & Neutral	Beneficial,Detrimental & Neutral
83	The interaction where one species is benefitted and other is neither benefitted nor harmed is called	Parasitism	Amensalism	Mutualism	Commensalism
84	The interaction where one species is harmed whereas other is unaffected is called	Amensalism	Competition	Parasitism only	Predation
85	.....can be treated as nature's way of transferring the energy	Commensalism	Amensalism	Predation	Mutualism

	fixed by plants to the higher trophic levels.				
86	.....is associated between fungi and the roots of higher plants.	Cyanobacteria	Mycorrhizae	Penicillium	None of the above
87	The rate of formation of new organic matter by consumer is known as.....	Primary productivity	Parasitic productivity	Mutual productivity	Secondary productivity
88	.....depends on the plant species inhabiting in a particular area.	Secondary productivity	Primary productivity	Productivity	None of the above
89	The net primary productivity of the whole biosphere is.....billion tons(dry weight)organic matter.	178	175	180	170
90	The ecological productivity of oceans is.....than that of land.	Lower	Higher	Equal	None of the above
91	The primary reason that the productivity in oceans is lower than that of land is.....	Wind	Dust	Sunlight	Water
92	Sunlight usually penetrate in the range of?	100-200m	300-500m	100-150m	250-400m
93	How many steps are involved in the process of Decomposition?	6	5	4	3
94	Which of the following steps occur during the decomposition in the soil?	Mineralisation & Catabolism	Humification & Leaching	Mineralisation & Leaching	Humification & Mineralisation

95	.....is colloidal in nature & serve as reservoir of nutrients.	Humus	Ficus	Detritus	None of the above
96	Factors that affect the rate of decomposition ?	Climatic factors only	Chemical composition of detritus & climatic factors	Physical & Chemical composition of detritus	None of the above
97	In a particular climatic condition decomposition rate is slower,if the detritus is rich in.....	Lignin only	Chitin only	Both Lignin & Chitin	Nitrogen & water soluble substances like sugar
98	In a particular climatic condition decomposition rate is quicker,if detritus is rich in.....	Lignin only	Chitin only	Both Lignin & Chitin	Nitrogen & water soluble substances like sugar
99	Food chain is limited to.....trophic levels.	1 to 3	4 to 5	2 to 3	5 to 6
100	Organisms that cannot manufacture its own food are called?	Heterotrophs	Autotrophs	Saprotrophs	None of the above