<table>
<tr><th>Question No.</th><th>Questions</th></tr>
<tr><td>1.</td><td>Producer gas is mixture of :
(1) Carbon monoxide and nitrogen gas
(2) Carbon dioxide and hydrogen gas
(3) Hydrogen and water vapour
(4) Oxygen and nitrogen gas</td></tr>
<tr><td>2.</td><td>The digestion process taking place in a biogas plant is termed :
(1) Anaerobic (2) Oxidation
(3) Reduction (4) Aerobic digestion</td></tr>
<tr><td>3.</td><td>Lead is one of the two most toxic chemicals found in petrol, which can cause brain damage and luekaemia, which is other ?
(1) Sulphur (2) Benzene
(3) Nitrogen oxide (4) SPM</td></tr>
<tr><td>4.</td><td>The presence of hydrogen sulphide in biogas causes :
(1) Reduction in biogas production rate (2) Corrosive effect
(3) Acts as catalyst (4) None of the above</td></tr>
<tr><td>5.</td><td>Match the List I and List II and select the correct answer from the codes given below the lists :
<table>
<tr><th></th><th>List I</th><th>List II</th></tr>
<tr><td>A</td><td>Hard acid</td><td>SO_4^{2-}</td></tr>
<tr><td>B</td><td>Soft acid</td><td>RS^+</td></tr>
<tr><td>C</td><td>Hard base</td><td>$S_2O_3^{2-}$</td></tr>
<tr><td>D</td><td>Soft base</td><td>SO_3</td></tr>
</table>
Codes :
<table>
<tr><th></th><th>A</th><th>B</th><th>C</th><th>D</th></tr>
<tr><td>(1)</td><td>4</td><td>1</td><td>2</td><td>3</td></tr>
<tr><td>(2)</td><td>4</td><td>2</td><td>1</td><td>3</td></tr>
<tr><td>(3)</td><td>3</td><td>2</td><td>1</td><td>4</td></tr>
<tr><td>(4)</td><td>3</td><td>2</td><td>4</td><td>1</td></tr>
</table>
</td></tr>
</table>

Question No.	Questions

6. Match the List I and List II and select the correct answer from the codes given below the lists :

	List-I Particulate of the atmosphere)	List-II (Characteristics of the particulate)
A	Aerosol	1. Combination of smoke of fog
B	Fly ash	2. Minute particles with water
C	Fume	3. Emitted by coal burning
D	Smog	4. Made up of metal vapour

Codes :

	A	B	C	D
(1)	2	3	1	4
(2)	2	3	4	1
(3)	3	4	2	1
(4)	3	4	1	2

7. Match the List I and List II and select the correct answer from the codes given below the lists :

	List I (Element)	List II (Function in the body)
A	Aluminium	1. Needed for normal growth
B	Copper	2. Metabolism of Vitamin B12
C	Cobalt	3. Electron transport enzyme complex
D	Nickel	4. Protein transfer in serum

Codes :

	A	B	C	D
(1)	1	2	3	4
(2)	2	4	1	3
(3)	3	4	2	1
(4)	4	3	2	1

Question No.	Questions

8. Match the List I and List II and select the correct answer from the codes given below the lists :

	List I	List II
A	Food chain	1. Relationship of all the organisms in a given habitat
B	Food web	2. Distinct communities of a particular
C	Biomes	3. Producers, consumers and decomposers is given in a niche
D	Autotroph	4. Photosynthesis

Codes :

	A	B	C	D
(1)	1	2	3	4
(2)	3	1	2	4
(3)	3	4	2	1
(4)	4	3	2	1

9. Match the List I and List II and select the correct answer from the codes given below the lists :

	List I	List II
A	Biomass	1. Indirectly supplies all the energy required for sustaining life on the earth
B	Biogas	2. Good means of storing diffuse and intermittent solar energy
C	Petro-plants	3. An important solution to present energy crisis in rural areas
D	Solar energy	4. Sources of liquid hydrocarbon

Codes :

	A	B	C	D
(1)	4	3	2	1
(2)	3	2	4	1
(3)	2	3	4	1
(4)	4	3	1	2

Question No.	Questions
10.	Match the List I and List II and select the correct answer from the codes given below the lists :

	List I (Pollutant)	List II (Sources)
A	CO	1. Industrial wastage
B	NO_2	2. Crushing and burning of coal
C	SO_2	3. Incomplete burning of carbonaceous fuel
D	H_2S	4. Electric power generators and automobiles, which use fossil fuels

Codes :

	A	B	C	D
(1)	4	3	2	1
(2)	2	3	4	1
(3)	3	4	1	2
(4)	3	4	2	1

11. Acid rain is global concern for the ecologist and environmental conservationists for which of the following reasons ?

(a) The acid pollutants emitted in one country may be deposited as acid precipitation in other countries

(b) Acid rain affects both aquatic system as well vegetation

(c) It has distinct effect on soil microbiology and chemistry

Select the correct answer using the codes given below :

(1) a, b and c (2) a and b

(3) a and c (4) b and c

Question No.	Questions

12. Match the List I and List II and select the correct answer from the codes given below the lists :

	List I (pollutants)	List II (Impacts)
A	Sulphur oxides	1. Irritate eyes and nose, create brown haze, causes visible leaf damage, stunts plant growth
B	Nitrogen oxides	2. Causes headaches, dizziness and nausea, reduces oxygen level in blood, impairs mental processes
C	Carbon monoxide	3. Causes cancer, retards plant growth
D	Hydrocarbon	4. Corrodes metal, causes acute and chronic leaf injury, attacks a wide variety of trees

Codes :

	A	B	C	D
(1)	4	1	2	3
(2)	2	3	4	1
(3)	3	4	2	1
(4)	4	3	1	2

13. Match the List I and List II and select the correct answer from the codes given below the lists :

	List I (water contaminant)	List II (Impacts)
A	Pathogens	1. Lead to the growth of undesired aquatic life
B	Heavy metals	2. Transmit communicable disease
C	Nutrients	3. Are common in landfill leachate and waste water
D	Suspended	4. Lead to the development of sludge deposits

Codes :

	A	B	C	D
(1)	4	3	2	1
(2)	2	3	4	1
(3)	2	3	1	4
(4)	4	3	1	2

Question No.	Questions
14.	Pick out wrong combination : (1) Fe^{+2} - Haemoglobin (2) Mg^{+2} - Photosynthesis (3) Se^{+2} - Kreb's cycle (4) Co^{+2} - Vitamin B_{12}
15.	Blood is isotonic with : (1) 0.16 M NaCl (2) Conc NaCl (3) 50% NaCl (4) 30% NaCl
16.	The migration of the colloidal particles under influence of an electric field is known as : (1) Electrolysis (2) Brownian movement (3) Cataphoresis (4) Dialysis
17.	Which of the following is correct statement about CCl_4 ? (1) CCl_4 is used to extinguish the fire under the name Pyrene (2) CCl_4 resist to hydrolysis while leaving water due to non availability of d-orbital in carbon (3) $CCl_4 \xrightarrow{AgNO_3}$ No ppt (4) All of the above
18.	If the liquid is dispersed in solid medium,then this is called as : (1) Sol (2) emulsion (3) liquid aerosol (4) Gel
19.	In which case, the order of acidic strength is not corrected ? (1) HI > HBr > HCl (2) $HIO_4 > HBrO_4 > HClO_4$ (3) $HClO_4 > HClO_3 > HClO_2$ (4) $HF > H_2O > NH_3$

Question No.	Questions
20.	The correct order of acidic strength of the Carboxylic acid is : (1) Formic acid < benzoic acid < acetic acid (2) Formic acid < acetic acid < benzoic acid (3) Acetic acid < formic acid < benzoic acid (4) Acetic acid < benzoic acid < formic acid
21.	Tetraethyl Lead is added to gasoline to : (1) Lubricate internal engine parts (2) Increase the life of catalytic convertor (3) Prevent engine a knock and improve engine performance (4) Increase the efficiency of gasoline combustion and improve milage
22.	The green house gas CO_2 is chiefly found in : (1) Ionosphere (2) Stratosphere (3) Troposphere (4) Mesosphere
23.	Acid precipitation kills the fish by causing the release of : (1) Carbon monoxide (2) Mercury (3) Aluminum ions (4) Anticoagulants
24.	Which of the following is the correct order of increase in atomic size ? (1) $Mg < Na^+ < F^- < Al$ (2) $Na^+ < F^- < Al < Mg$ (3) $Na^+ < Al < Mg < F^-$ (4) $Na^+ < F^- < Mg < Al$
25.	Which of the following is correctly matched ? (1) Copper-bauxite (2) Iron-galena (3) Mercury-cinnabar (4) Lead-magnetite

Question No.	Questions
26.	Which satellite recorded the presence of an ozone hole ? (1) TIROS-N (2) GOES (3) NIMBUS–7 (4) Landstat-3
27.	Who changed the name of kubabul, one of the popular tree species suited for afforestation, to subabul ? (1) Manibhai Desai (2) Lal Bahadur Shastri (3) A.K.N. Reddy (4) Indira Gandhi
28.	The heavy metal that has seen application as a fungicide and is responsible for a type of poisoning called Hatter's shakes is ? (1) Mercury (2) Lead (3) Cadmium (4) Arsenic
29.	The major route for widespread distribution more persistent pesticide is: (1) soil (2) water (3) living organism (4) atmosphere
30.	Who used the term 'hot dilute soup' for Darwin's warm little pond ? (1) Oparin (2) Haldane (3) Lamarck (4) Wallace
31.	The bird Dodo became extinct because of : (1) its beautiful feather (2) its fearlessness (3) its curved beak (4) its melodious songs
32.	Which place is often referred to as the valley of deaths ? (1) Cubato, Brazil (2) Chernobyl, USSR (3) Palo alto, USA (4) Nainital, India

Question No.	Questions
33.	Of the following mammals, which can survive without water for a whole year ? (1) Wild Ass (2) Gembok (3) Addax (4) None of the above
34.	Which group of plants is sensitive to airborne chemicals and is therefore employed as pollution indicator ? (1) algae (2) lichens (3) fungi (4) bryophytes
35.	The Moh's scale is measure of a mineral's : (1) Color (2) Density (3) Luster (4) Hardness
36.	Which technique can map the concentration of sulphur dioxide over a whole town by operating a gadget from one location ? (1) LIDAR (2) Spectrophotometry (3) GC (4) Mass spectroscopy
37.	What is eco-freeze ? (1) Halting ecological degradation (2) Stopping the ecological disaster (3) Planning an ecological balance (4) Stopping the manufacturing of environment modification weapons
38.	When a falling body has attained terminal velocity, the weight of the body is equal to : (1) Drag force-buoyant force (2) Buoyant force-Drag force (3) Drag force + buoyant force (4) None of the above

Question No.	Questions
39.	Manometer is a device used for measuring : (1) Velocity of a point in a fluid (2) Pressusre at a point in a fluid (3) Discharge of a fluid (4) None of these
40.	The point through which the buoyancy force is acting is called : (1) Centre of pressure (2) Centre of gravity (3) Centre of buoyant force (4) None of these
41.	Notch is a device used for measuring the : (1) Rate of flow through pipes (2) Rate of flow through a small channel (3) Velocity through a pipe (4) Velocity through a sn. all channel
42.	Rotameter is used for measuring : (1) Density of fluid (2) Velocity of fluid in pipes (3) Discharge of fluids (4) Viscosity of fluids
43.	One horse power is equal to : (1) 746 watts (2) 736 watts (3) 550 watts (4) 75 watts
44.	Beat is equal to : (1) One oscillation (2) Twice the oscillation (3) Half the oscillation (4) None of these
45.	A perfect gas obeys (1) Boyle's law (2) Charle's law (3) Boyle's and Charle's law (4) None of these

Question No.	Questions
46.	The sum of internal energy and product of pressure and volume is called : (1) Entropy (2) Enthalpy (3) Heat supplied (4) None of these
47.	The compression ratios for engine is : (1) 5 to 8 (2) 15 to 20 (3) 3 to 6 (4) 30 to 40
48.	One bar is equal to : (1) 1.033 kgf/cm^2 (2) 14.7 kgf/cm^2 (3) 1.0197 kgf/cm^2 (4) 1 kgf/cm^2
49.	Of the following gases, which one suffocates living beings even to death ? (1) carbon dioxide (2) carbon monoxide (3) hydrogen sulphide (4) sulphur dioxide
50.	A gas follows the law PVn = C, of the value of n = 1, the process is known as : (1) adiabatic (2) isothermal (3) isotropic (4) polytrophic
51.	The radioactive isotope of hydrogen is called : (1) Radium (2) Protium (3) Deuterium (4) Tritium
52.	The material used to control neutrons are produced by the use of : (1) Heavy water (2) Paraffin (3) Graphite (4) Thorium

53. Polythene is polymer of :

(1) Isobutane (2) Ethylene

(3) Vinyl chloride (4) Propylene

54. The following residual chlorine compounds are formed during the chlorination of water

(a) NH_3Cl (b) $NHCl_2$

(c) HOCl (d) OCl

(1) b, a, c, d (2) a, b, d, c

(3) a, b, c, d (4) b, a, d, c

55. Match the following :

Set A		Set B	
i	Recarbonation	1	Activated carbon
ii	Chlorination	2	Trihalomethanes
iii	Taste & odour	3	Lime soda process
iv	Temperature inversion	4	Smog

(1) i–2 ii–1 iii–3 iv–4 (2) i–3 ii–2 iii–1 iv–4

(3) i–1 ii–3 iii–4 iv–2 (4) i–4 ii–3 iii–2 iv–1

56. In sanitary landfill, decomposition and chemical changes within organic content of the solid waste goes on. Consequential changes within land fill can be

(a) Temperature changes within land fill

(b) Product of gases like H_2S, CO, CO_2 & CH_4

(c) Destruction of pathogens

(d) Production of other gases like SO_2 and NO_2

Which of these statements are correct ?

(1) a, b, c and d (2) a, b and c

(3) a and b (4) b and c

<table>
<tr><th>Question No.</th><th>Questions</th></tr>
<tr><td>57.</td><td>Methane formers are :
(1) Obligate aerobes (2) Facultative bacteria
(3) Obligate anaerobes (4) None of the above</td></tr>
<tr><td>58.</td><td>Index of pollution in case of stream is :
(1) Color and Turbidity (2) DO and BOD
(3) Flora and Fauna (4) All of the above</td></tr>
<tr><td>59.</td><td>The maximum damage to the "Taj Mahal" is because of the gas :
(1) CO_2 (2) CO
(3) SO_2 (4) All of the above</td></tr>
<tr><td>60.</td><td>Match the following :
<table>
<tr><th colspan="2">Set A</th><th colspan="2">Set B</th></tr>
<tr><td>i</td><td>Acidity</td><td>I</td><td>Particulate matter</td></tr>
<tr><td>ii</td><td>Alum</td><td>II</td><td>Oils and grease</td></tr>
<tr><td>iii</td><td>Cyclone</td><td>III</td><td>Flocculation</td></tr>
<tr><td>iv</td><td>Skimming tank</td><td>IV</td><td>Carbon dioxide</td></tr>
</table>
(1) i–III ii–I iii–IV iv–II (2) i–IV ii–III iii–I iv–II
(3) i–IV ii–II iii–III iv–I (4) i–II ii–III iii–IV iv–I</td></tr>
<tr><td>61.</td><td>For an average Indian city, solid waste generated may be assessed per capita per day as :
(1) 0.2 kg (2) 0.4 kg
(3) 1.0 Kg (4) 2.0 kg</td></tr>
</table>

Question No.	Questions
62.	At break point of chlorination : (1) Chlorine is used to oxidize (2) Residual chlorine is zero (3) Residual chlorine is maximum (4) Residual chlorine reappears
63.	The correct statement of comparison of ultimate BOD, COD, Theoretical oxygen demand (THOD) and 5 day BOD is : (1) $BOD_{\mu} > COD > ThOD > BOD_5$ (2) $COD > ThOD > BOD_{\mu} > BOD_5$ (3) $ThOD > COD > BOD_{\mu} > BOD_5$ (4) $COD > BOD_{\mu} > BOD_5 > ThOD$
64.	The alkalinity of a water sample is 80 mg/L as $CaCO_3$. If the total hardness of the water sample is 112 mg/L as $CaCO_3$. What will be the carbonate and non-carbonate (in mg/L as $CaCO_3$) ? (1) 32 (2) 192 (3) 152 (4) 114
65.	If 20 lb of 10% strength solution is mixed with 30 lb of 1% strength solution. What is the percent strength of the mixture ? (1) 4.6 (2) 6.6 (3) 46 (4) 2.6
66.	Which of the instrument is based on Lambert Beer's law ? (1) Spectrophotometer (2) GLC (3) HPLC (4) AAS

Question No.	Questions
67.	The chlorine dosage for water is 2.7 mg/L. If the chlorine residual after a 30 minute contact time is found to be 0.7 mg/L. What is the chlorine demand (in mg/L) ? (1) 2.0 (2) 1.4 (3) 2.7 (4) 3.4
68.	Which value of coefficient of correlation (r) shows strongest association between x and y variables ? (1) −0.33 (2) −0.950 (3) 0.565 (4) 0.750
69.	Permissible limits of SO_2 in residential areas (24h basis) as per NAAQMS is : (1) 60 mg/m^3 (2) 120 mg/m^3 (3) 80 mg/m^3 (4) 30 mg/m^3
70.	Which of the following industries does not require environmental clearance from the govermment ? (1) Cement industry (2) Paper and pulp industry (3) Sugar industry (4) Distillery
71.	Concentration of CO in vehicular exhaust is approximately : (1) Below 20% (2) 35% (3) 50% (4) Above 70%
72.	The size of the RSPM is : (1) Below 10 μm (2) 15–20 μm (3) 23 μm (4) above 25 μm

Question No.	Questions
73.	The reliability of Gaussian Plume model is : (1) 98% (2) 95% (3) 70% (4) 50%
74.	In the ECD of gas chromatograph the electrons are : (1) Captured by the determinant species (2) Generated by the determinant species (3) Generated by nitrogen gas (4) None of the above
75.	Which prevent the entry of foul gas and allows ventilation ? (1) Intercep ing trap (2) Fresh air inlet (3) Gully trap (4) Flushing cistern
76.	Electrostatic precipitators are used as pollution control device for the removal of : (1) SO_2 (2) NOx (3) Suspended particulate matter (4) Volatile fatty acids
77.	Ozone layer in the upper atmosphere is getting depleted owing to its reaction with pollutant like : (1) Hydrogen peroxide (2) Carbon monoxide (3) Cholofluoro carbon (4) Volatile fatty acids

Question No.	Questions
78.	Choose the correct statement in the following : The rate of 5 day BOD exerted at any time is (a) Directly proportional to BOD satisfied (b) Directly proportional to BOD remaining (c) Inversely proportional to BOD remaining (d) Inversely proportional to BOD satisfied Which of these statements are correct ? (1) a, b, c and d (2) a, b and c (3) a and d (4) b and c
79.	Which of the following pairs are correctly matched ? (1) SPM – a. Blood hemoglobin (2) NO – b. Vegetation (3) CO – c. Respiratory system (4) SO_2 – d. Building materials
80.	Which of the following pairs are correctly matched ? (1) Reverberation time a. Time required to reduce noise by 60dB (2) NIPTS b. Responsible for permanent hearing loss (3) Sound foci c. Formed when sound waves are reflected from the convex surface (4) TTS d. Responsible for temporary hearing loss

Question No.	Questions
81.	Match list I (Treatment Units) with List II (Type of process) and select the correct answer using the codes given below the lists : List I (Treatment Units) a. Trickling filter b. Activated sludge process c. Oxidation ditch d. Oxidation pond List II (Type of process) 1. Symbiotic 2. Extended aeration 3. Suspended growth 4. Attached growth Codes : (1) A 3 B 4 C 2 D 1 (2) A 4 B 3 C 1 D 2 (3) A 3 B 4 C 1 D 2 (4) A 4 B 3 C 2 D 1
82.	Function of algae in oxidation pond is to : (1) Provide a mat over surface of the oxidation pond so as to prevent evaporation of water (2) Provide oxygen for bacteria to degrade organic matter (3) Provide a greenish appearance to the pond (4) Prevent the odour nuisance
83.	When sewage enters a following river, the rapid depletion of dissolved oxygen is due to : (1) Change in temperature of the river (2) The suspended particles in the river and waste (3) Respiratory activity of aquatic plants (4) Microbial activity

Question No.	Questions
84.	Which of the pollutant or pairs of pollutants is formed due to photochemical reactions ? (1) CO alone (2) O_3 and PAN (3) PAN and NH_3 (4) NH_3 and CO
85.	Consider the following pair of the treatment units and impurities removed: (a) Grit chamber — Sand and silt (b) Detritus tank — Organic matter (c) Primary sedimentation tank — Suspended impurities (d) Aeration tank of activated sludge process — Oil and grease Which of the pairs are correctly matched ? (1) a and b (2) a, b, c and d (3) b, c and d (4) a and c
86.	At an incubation temperature of 20°C, if initial DO and final DO values after 5 days incubation period on a 2% sample of sewage, are 8.5 mg/L and 5.5 mg/L, respectively. Then the BOD will be : (1) 50 mg/L (2) 150 mg/L (3) 250 mg/L (4) 350 mg/L
87.	The trap used for water closet is called : (1) Gully trap (2) p-type (3) Intercepting (4) Anti-siphon trap

Question No.	Questions
88.	Match List I (Nature of the solid) with List II (Unit operation or process connected with its removal) and select the correct answer using the codes given below the lists : List I a. Dissolved solids b. Colloidal solids c. Volatile solids d. Settleable solids List II 1. Sedimentation 2. Reverse osmosis 3. Coagulation 4. Digestion Codes : (1) A 2 B 3 C 4 D 1 (2) A 3 B 2 C 4 D 1 (3) A 2 B 3 C 1 D 4 (4) A 3 B 2 C 1 D 4
89.	Which of the materials are used as landfill sealants for the control of gas and leachate movements ? (a) Lime (b) Sand (c) Bentonite (d) Fly ash (e) Butyl rubber Select the correct answer using the codes given below : (1) a, b and c (2) d and e (3) c and e (4) a, b and d
90.	Which of the following air pollutants is/are responsible for photochemical smog ? (a) Oxides of nitrogen (b) Ozone (c) Unburnt hydrocarbons (d) Carbon monoxide Code : (1) a and b (2) c and d (3) b and d (4) a and d

Question No.	Questions
91.	Match List I with List II and select the correct answer using the codes given below the lists : List I — List II a. Sludge disposal — 1. Seeding b. Sludge digestion — 2. Biofilters c. Aerobic action — 3. Laggoning d. Recirculation — 4. Contact bed Codes : (1) A 3, B 1, C 4, D 2 (2) A 3, B 1, C 2, D 4 (3) A 1, B 3, C 2, D 4 (4) A 1, B 3, C 4, D 2
92.	Ringlemann's scale is used to : (1) Measure CO (2) Measure CO_2 (3) Grade density of smoke (4) Grade automobile exhaust gas
93.	Which of the following pair is not correctly matched ? (1) BOD — Strength (2) Methane — Product of anaerobic decomposition (3) COD — Biodegradability of waste water (4) Nitrate — Methamoglobinemia

Question No.	Questions
94.	The atmosphere extends up to height of 10,000 km. It is divided into four thermal layers. (a) Mesosphere (b) Stratosphere (c) Thermosphere (d) Troposphere The correct sequence of these layers starting from the surface of earth upward is (1) a, d, a, c (2) d, b, a, c (3) d, b, c, a (4) b, d, c, a
95.	Coal based thermal power plant stations pollute the atmosphere by adding (1) NOx and SOx (2) NOx, SO_2 and SPM (3) NOx, SO_2, SPM and CO (4) NOx, SPM and CO
96.	Match List I with List II and select the correct answer using the codes given below the lists : List I (Cause) a. Carbon monoxide b. Carbon dioxide c. Methane d. Sulphur dioxide List II (Effect) 1. Acid rain 2. Explosion 3. Asphyxiation 4. Green house effect Codes : (1) A 2 B 3 C 1 D 4 (2) A 3 B 4 C 2 D 1 (3) A 1 B 3 C 4 D 2 (4) A 4 B 2 C 1 D 3

Question No.	Questions
97.	Choose the correct answer : The stabilization of sewage in oxidation pond is due to action of : (1) Aerobic and anaerobic bacteria (2) Algae and bacteria (3) Organic and inorganic compound (4) Algae and protozoa
98.	Inversion is characterized by : (1) Upper cold and lower warm layer (2) Upper warm and lower cold layer (3) Both of the above (4) None of these
99.	Asbestos 'Silent Killer' can cause death of worker due to : (1) Heart attack (2) Lung cancer (3) Kidney failure (4) Brain damage
100.	Which is the first indoor pollutant of which the masses become aware ? (1) Carbon dioxide (2) Formaldehyde (3) Radon (4) Ozone

Question No.	Questions
1.	Acid rain is global concern for the ecologist and environmental conservationists for which of the following reasons ? (a) The acid pollutants emitted in one country may be deposited as acid precipitation in other countries (b) Acid rain affects both aquatic system as well vegetation (c) It has distinct effect on soil microbiology and chemistry Select the correct answer using the codes given below : (1) a, b and c (2) a and b (3) a and c (4) b and c
2.	Match the List I and List II and select the correct answer from the codes given below the lists :

	List I (pollutants)	List II (Impacts)
A	Sulphur oxides	1. Irritate eyes and nose, create brown haze, causes visible leaf damage, stunts plant growth
B	Nitrogen oxides	2. Causes headaches, dizziness and nausea, reduces oxygen level in blood, impairs mental processes
C	Carbon monoxide	3. Causes cancer, retards plant growth
D	Hydrocarbon	4. Corrodes metal, causes acute and chronic leaf injury, attacks a wide variety of trees

Codes :

	A	B	C	D
(1)	4	1	2	3
(2)	2	3	4	1
(3)	3	4	2	1
(4)	4	3	1	2

Question No.	Questions
3.	Match the List I and List II and select the correct answer from the codes given below the lists :

	List I (water contaminant)	List II (Impacts)
A	Pathogens	1. Lead to the growth of undesired aquatic life
B	Heavy metals	2. Transmit communicable disease
C	Nutrients	3. Are common in landfill leachate and waste water
D	Suspended	4. Lead to the development of sludge deposits

Codes :

	A	B	C	D
(1)	4	3	2	1
(2)	2	3	4	1
(3)	2	3	1	4
(4)	4	3	1	2

4. Pick out wrong combination :

(1) Fe^{+2} - Haemoglobin (2) Mg^{+2} - Photosynthesis

(3) Se^{+2} - Kreb's cycle (4) Co^{+2} - Vitamin B_{12}

5. Blood is isotonic with :

(1) 0.16 M NaCl (2) Conc NaCl

(3) 50% NaCl (4) 30% NaCl

6. The migration of the colloidal particles under influence of an electric field is known as :

(1) Electrolysis (2) Brownian movement

(3) Cataphoresis (4) Dialysis

Question No.	Questions
7.	Which of the following is correct statement about CCl_4 ? (1) CCl_4 is used to extinguish the fire under the name Pyrene (2) CCl_4 resist to hydrolysis while leaving water due to non availability of d-orbital in carbon (3) $CCl_4 \xrightarrow{AgNO_3}$ No ppt (4) All of the above
8.	If the liquid is dispersed in solid medium,then this is called as : (1) Sol (2) emulsion (3) liquid aerosol (4) Gel
9.	In which case, the order of acidic strength is not corrected ? (1) $HI > HBr > HCl$ (2) $HIO_4 > HBrO_4 > HClO_4$ (3) $HClO_4 > HClO_3 > HClO_2$ (4) $HF > H_2O > NH_3$
10.	The correct order of acidic strength of the Carboxylic acid is : (1) Formic acid < benzoic acid < acetic acid (2) Formic acid < acetic acid < benzoic acid (3) Acetic acid < formic acid < benzoic acid (4) Acetic acid < benzoic acid < formic acid
11.	Match List I with List II and select the correct answer using the codes given below the lists : List I / List II a. Sludge disposal — 1. Seeding b. Sludge digestion — 2. Biofilters c. Aerobic action — 3. Laggoning d. Recirculation — 4. Contact bed Codes : (1) A 3, B 1, C 4, D 2 (2) A 3, B 1, C 2, D 4 (3) A 1, B 3, C 2, D 4 (4) A 1, B 3, C 4, D 2

Question No.	Questions
12.	Ringlemann's scale is used to : (1) Measure CO (2) Measure CO_2 (3) Grade density of smoke (4) Grade automobile exhaust gas
13.	Which of the following pair is not correctly matched ? (1) BOD — Strength (2) Methane — Product of anaerobic decomposition (3) COD — Biodegradability of waste water (4) Nitrate — Methamoglobinemia
14.	The atmosphere extends up to height of 10,000 km. It is divided into four thermal layers. (a) Mesosphere (b) Stratosphere (c) Thermosphere (d) Troposphere The correct sequence of these layers starting from the surface of earth upward is (1) a, d, a, c (2) d, b, a, c (3) d, b, c, a (4) b, d, c, a
15.	Coal based thermal power plant stations pollute the atmosphere by adding (1) NOx and SOx (2) NOx, SO_2 and SPM (3) NOx, SO_2, SPM and CO (4) NOx, SPM and CO

Question No.	Questions
16.	Match List I with List II and select the correct answer using the codes given below the lists : List I (Cause) a. Carbon monoxide b. Carbon dioxide c. Methane d. Sulphur dioxide List II (Effect) 1. Acid rain 2. Explosion 3. Asphyxiation 4. Green house effect Codes : (1) A 2 B 3 C 1 D 4 (2) A 3 B 4 C 2 D 1 (3) A 1 B 3 C 4 D 2 (4) A 4 B 2 C 1 D 3
17.	Choose the correct answer : The stabilization of sewage in oxidation pond is due to action of : (1) Aerobic and anaerobic bacteria (2) Algae and bacteria (3) Organic and inorganic compound (4) Algae and protozoa
18.	Inversion is characterized by : (1) Upper cold and lower warm layer (2) Upper warm and lower cold layer (3) Both of the above (4) None of these

Question No.	Questions
19.	Asbestos 'Silent Killer' can cause death of worker due to : (1) Heart attack (2) Lung cancer (3) Kidney failure (4) Brain damage
20.	Which is the first indoor pollutant of which the masses become aware ? (1) Carbon dioxide (2) Formaldehyde (3) Radon (4) Ozone
21.	Concentration of CO in vehicular exhaust is approximately : (1) Below 20% (2) 35% (3) 50% (4) Above 70%
22.	The size of the RSPM is : (1) Below 10 μm (2) 15–20 μm (3) 23 μm (4) above 25 μm
23.	The reliability of Gaussian Plume model is : (1) 98% (2) 95% (3) 70% (4) 50%
24.	In the ECD of gas chromatograph the electrons are : (1) Captured by the determinant species (2) Generated by the determinant species (3) Generated by nitrogen gas (4) None of the above

Question No.	Questions
25.	Which prevent the entry of foul gas and allows ventilation ? (1) Intercepting trap (2) Fresh air inlet (3) Gully trap (4) Flushing cistern
26.	Electrostatic precipitators are used as pollution control device for the removal of : (1) SO_2 (2) NOx (3) Suspended particulate matter (4) Volatile fatty acids
27.	Ozone layer in the upper atmosphere is getting depleted owing to its reaction with pollutant like : (1) Hydrogen peroxide (2) Carbon monoxide (3) Cholofluoro carbon (4) Volatile fatty acids
28.	Choose the correct statement in the following : The rate of 5 day BOD exerted at any time is (a) Directly proportional to BOD satisfied (b) Directly proportional to BOD remaining (c) Inversely proportional to BOD remaining (d) Inversely proportional to BOD satisfied Which of these statements are correct ? (1) a, b, c and d (2) a, b and c (3) a and d (4) b and c

Question No.	Questions
29.	Which of the following pairs are correctly matched ? (1) SPM – a. Blood hemoglobin (2) NO – b. Vegetation (3) CO – c. Respiratory system (4) SO_2 – d. Building materials
30.	Which of the following pairs are correctly matched ? (1) Reverberation time a. Time required to reduce noise by 60dB (2) NIPTS b. Responsible for permanent hearing loss (3) Sound fo i c. Formed when sound waves are reflected from the convex surface (4) TTS d. Responsible for temporary hearing loss
31.	The radioactive isotope of hydrogen is called : (1) Radium (2) Protium (3) Deuterium (4) Tritium
32.	The material used to control neutrons are produced by the use of : (1) Heavy water (2) Paraffin (3) Graphite (4) Thorium
33.	Polythene is polymer of : (1) Isobutane (2) Ethylene (3) Vinyl chloride (4) Propylene

<table>
<tr><th>Question No.</th><th>Questions</th></tr>
<tr><td>34.</td><td>The following residual chlorine compounds are formed during the chlorination of water
(a) NH_3Cl (b) $NHCl_2$
(c) HOCl (d) OCl
(1) b, a, c, d (2) a, b, d, c
(3) a, b, c, d (4) b, a, d, c</td></tr>
<tr><td>35.</td><td>Match the following :
<table>
<tr><th colspan="2">Set A</th><th colspan="2">Set B</th></tr>
<tr><td>i</td><td>Recarbonation</td><td>1</td><td>Activated carbon</td></tr>
<tr><td>ii</td><td>Chlorination</td><td>2</td><td>Trihalomethanes</td></tr>
<tr><td>iii</td><td>Taste & odour</td><td>3</td><td>Lime soda process</td></tr>
<tr><td>iv</td><td>Temperature inversion</td><td>4</td><td>Smog</td></tr>
</table>
(1) i–2 ii–1 iii–3 iv–4 (2) i–3 ii–2 iii–1 iv–4
(3) i–1 ii–3 iii–4 iv–2 (4) i–4 ii–3 iii–2 iv–1</td></tr>
<tr><td>36.</td><td>In sanitary landfill, decomposition and chemical changes within organic content of the solid waste goes on. Consequential changes within land fill can be
(a) Temperature changes within land fill
(b) Product of gases like H_2S, CO, CO_2 & CH_4
(c) Destruction of pathogens
(d) Production of other gases like SO_2 and NO_2
Which of these statements are correct ?
(1) a, b, c and d (2) a, b and c
(3) a and b (4) b and c</td></tr>
<tr><td>37.</td><td>Methane formers are :
(1) Obligate aerobes (2) Facultative bacteria
(3) Obligate anaerobes (4) None of the above</td></tr>
</table>

<table>
<tr><th>Question No.</th><th>Questions</th></tr>
<tr><td>38.</td><td>Index of pollution in case of stream is :
(1) Color and Turbidity (2) DO and BOD
(3) Flora and Fauna (4) All of the above</td></tr>
<tr><td>39.</td><td>The maximum damage to the "Taj Mahal" is because of the gas :
(1) CO_2 (2) CO
(3) SO_2 (4) All of the above</td></tr>
<tr><td>40.</td><td>Match the following :
<table>
<tr><th colspan="2">Set A</th><th colspan="2">Set B</th></tr>
<tr><td>i</td><td>Acidity</td><td>I</td><td>Particulate matter</td></tr>
<tr><td>ii</td><td>Alum</td><td>II</td><td>Oils and grease</td></tr>
<tr><td>iii</td><td>Cyclone</td><td>III</td><td>Flocculation</td></tr>
<tr><td>iv</td><td>Skimming tank</td><td>IV</td><td>Carbon dioxide</td></tr>
</table>
(1) i–III ii–I iii–IV iv–II (2) i–IV ii–III iii–I iv–II
(3) i–IV ii–II iii–III iv–I (4) i–II ii–III iii–IV iv–I</td></tr>
<tr><td>41.</td><td>The bird Dodo became extinct because of :
(1) its beautiful feather (2) its fearlessness
(3) its curved beak (4) its melodious songs</td></tr>
<tr><td>42.</td><td>Which place is often referred to as the valley of deaths ?
(1) Cubato, Brazil (2) Chernobyl, USSR
(3) Palo alto, USA (4) Nainital, India</td></tr>
</table>

Question No.	Questions
43.	Of the following mammals, which can survive without water for a whole year ? (1) Wild Ass (2) Gembok (3) Addax (4) None of the above
44.	Which group of plants is sensitive to airborne chemicals and is therefore employed as pollution indicator ? (1) algae (2) lichens (3) fungi (4) bryophytes
45.	The Moh's scale is measure of a mineral's : (1) Color (2) Density (3) Luster (4) Hardness
46.	Which technique can map the concentration of sulphur dioxide over a whole town by operating a gadget from one location ? (1) LIDAR (2) Spectrophotometry (3) GC (4) Mass spectroscopy
47.	What is eco-freeze ? (1) Halting ecological degradation (2) Stopping the ecological disaster (3) Planning an ecological balance (4) Stopping the manufacturing of environment modification weapons
48.	When a falling body has attained terminal velocity, the weight of the body is equal to : (1) Drag force-buoyant force (2) Buoyant force-Drag force (3) Drag force + buoyant force (4) None of the above

Question No.	Questions
49.	Manometer is a device used for measuring : (1) Velocity of a point in a fluid (2) Pressusre at a point in a fluid (3) Discharge of a fluid (4) None of these
50.	The point through which the buoyancy force is acting is called : (1) Centre of pressure (2) Centre of gravity (3) Centre of buoyant force (4) None of these
51.	Tetraethyl Lead is added to gasoline to : (1) Lubricate internal engine parts (2) Increase the life of catalytic convertor (3) Prevent engine a knock and improve engine performance (4) Increase the efficiency of gasoline combustion and improve milage
52.	The green house gas CO_2 is chiefly found in : (1) Ionosphere (2) Stratosphere (3) Troposphere (4) Mesosphere
53.	Acid precipitation kills the fish by causing the release of : (1) Carbon monoxide (2) Mercury (3) Aluminum ions (4) Anticoagulants
54.	Which of the following is the correct order of increase in atomic size ? (1) $Mg < Na^+ < F^- < Al$ (2) $Na^+ < F^- < Al < Mg$ (3) $Na^+ < Al < Mg < F^-$ (4) $Na^+ < F^- < Mg < Al$
55.	Which of the following is correctly matched ? (1) Copper-bauxite (2) Iron-galena (3) Mercury-cinnabar (4) Lead-magnetite

Question No.	Questions
56.	Which satellite recorded the presence of an ozone hole ? (1) TIROS-N (2) GOES (3) NIMBUS–7 (4) Landstat-3
57.	Who changed the name of kubabul, one of the popular tree species suited for afforestation, to subabul ? (1) Manibhai Desai (2) Lal Bahadur Shastri (3) A.K.N. Reddy (4) Indira Gandhi
58.	The heavy metal that has seen application as a fungicide and is responsible for a type of poisoning called Hatter's shakes is ? (1) Mercury (2) Lead (3) Cadmium (4) Arsenic
59.	The major route for widespread distribution more persistent pesticide is: (1) soil (2) water (3) living organism (4) atmosphere
60.	Who used the term 'hot dilute soup' for Darwin's warm little pond ? (1) Oparin (2) Haldane (3) Lamarck (4) Wallace
61.	Notch is a device used for measuring the : (1) Rate of flow through pipes (2) Rate of flow through a small channel (3) Velocity through a pipe (4) Velocity through a small channel

Question No.	Questions
62.	Rotameter is used for measuring : (1) Density of fluid (2) Velocity of fluid in pipes (3) Discharge of fluids (4) Viscosity of fluids
63.	One horse power is equal to : (1) 746 watts (2) 736 watts (3) 550 watts (4) 75 watts
64.	Beat is equal to : (1) One oscillation (2) Twice the oscillation (3) Half the oscillation (4) None of these
65.	A perfect gas obeys (1) Boyle's law (2) Charle's law (3) Boyle's and Charle's law (4) None of these
66.	The sum of internal energy and product of pressure and volume is called : (1) Entropy (2) Enthalpy (3) Heat supplied (4) None of these
67.	The compression ratios for engine is : (1) 5 to 8 (2) 15 to 20 (3) 3 to 6 (4) 30 to 40
68.	One bar is equal to : (1) 1.033 kgf/cm^2 (2) 14.7 kgf/cm^2 (3) 1.0197 kgf/cm^2 (4) 1 kgf/cm^2

Question No.	Questions
69.	Of the following gases, which one suffocates living beings even to death ? (1) carbon dioxide (2) carbon monoxide (3) hydrogen sulphide (4) sulphur dioxide
70.	A gas follows the law PVn = C, of the value of n = 1, the process is known as : (1) adiabatic (2) isothermal (3) isotropic (4) polytrophic
71.	For an average Indian city, solid waste generated may be assessed per capita per day as : (1) 0.2 kg (2) 0.4 kg (3) 1.0 Kg (4) 2.0 kg
72.	At break point of chlorination : (1) Chlorine is used to oxidize (2) Residual chlorine is zero (3) Residual chlorine is maximum (4) Residual chlorine reappears
73.	The correct statement of comparison of ultimate BOD, COD, Theoretical oxygen demand (THOD) and 5 day BOD is : (1) $BOD\mu > COD > ThOD > BOD_5$ (2) $COD > ThOD > BOD\mu > BOD_5$ (3) $ThOD > COD > BOD\mu > BOD_5$ (4) $COD > BOD\mu > BOD_5 > ThOD$

Question No.	Questions
74.	The alkalinity of a water sample is 80 mg/L as $CaCO_3$. If the total hardness of the water sample is 112 mg/L as $CaCO_3$. What will be the carbonate and non-carbonate (in mg/L as $CaCO_3$) ? (1) 32 (2) 192 (3) 152 (4) 114
75.	If 20 lb of 10% strength solution is mixed with 30 lb of 1% strength solution. What is the percent strength of the mixture ? (1) 4.6 (2) 6.6 (3) 46 (4) 2.6
76.	Which of the instrument is based on Lambert Beer's law ? (1) Spectrophotometer (2) GLC (3) HPLC (4) AAS
77.	The chlorine dosage for water is 2.7 mg/L. If the chlorine residual after a 30 minute contact time is found to be 0.7 mg/L. What is the chlorine demand (in mg/L) ? (1) 2.0 (2) 1.4 (3) 2.7 (4) 3.4
78.	Which value of coefficient of correlation (r) shows strongest association between x and y variables ? (1) −0.33 (2) −0.950 (3) 0.565 (4) 0.750
79.	Permissible limits of SO_2 in residential areas (24h basis) as per NAAQMS is : (1) 60 mg/m^3 (2) 120 mg/m^3 (3) 80 mg/m^3 (4) 30 mg/m^3
80.	Which of the following industries does not require environmental clearance from the govermment ? (1) Cement industry (2) Paper and pulp industry (3) Sugar industry (4) Distillery

81. Producer gas is mixture of :

(1) Carbon monoxide and nitrogen gas

(2) Carbon dioxide and hydrogen gas

(3) Hydrogen and water vapour

(4) Oxygen and nitrogen gas

82. The digestion process taking place in a biogas plant is termed :

(1) Anaerobic (2) Oxidation

(3) Reduction (4) Aerobic digestion

83. Lead is one of the two most toxic chemicals found in petrol, which can cause brain damage and luekaemia, which is other ?

(1) Sulphur (2) Benzene

(3) Nitrogen oxide (4) SPM

84. The presence of hydrogen sulphide in biogas causes :

(1) Reduction in biogas production rate (2) Corrosive effect

(3) Acts as catalyst (4) None of the above

85. Match the List I and List II and select the correct answer from the codes given below the lists :

	List I	List II
A	Hard acid	SO_4^{2-}
B	Soft acid	RS^+
C	Hard base	$S_2O_3^{2-}$
D	Soft base	SO_3

Codes :

	A	B	C	D
(1)	4	1	2	3
(2)	4	2	1	3
(3)	3	2	1	4
(4)	3	2	4	1

Question No.	Questions

86. Match the List I and List II and select the correct answer from the codes given below the lists :

	List-I Particulate of the atmosphere)	**List-II (Characteristics of the particulate)**
A	Aerosol	1. Combination of smoke of fog
B	Fly ash	2. Minute particles with water
C	Fume	3. Emitted by coal burning
D	Smog	4. Made up of metal vapour

Codes :

	A	B	C	D
(1)	2	3	1	4
(2)	2	3	4	1
(3)	3	4	2	1
(4)	3	4	1	2

87. Match the List I and List II and select the correct answer from the codes given below the lists :

	List I (Element)	**List II (Function in the body)**
A	Aluminium	1. Needed for normal growth
B	Copper	2. Metabolism of Vitamin B12
C	Cobalt	3. Electron transport enzyme complex
D	Nickel	4. Protein transfer in serum

Codes :

	A	B	C	D
(1)	1	2	3	4
(2)	2	4	1	3
(3)	3	4	2	1
(4)	4	3	2	1

Question No.	Questions

88. Match the List I and List II and select the correct answer from the codes given below the lists :

	List I	List II
A	Food chain	1. Relationship of all the organisms in a given habitat
B	Food web	2. Distinct communities of a particular
C	Biomes	3. Producers, consumers and decomposers is given in a niche
D	Autotroph	4. Photosynthesis

Codes :

	A	B	C	D
(1)	1	2	3	4
(2)	3	1	2	4
(3)	3	4	2	1
(4)	4	3	2	1

89. Match the List I and List II and select the correct answer from the codes given below the lists :

	List I	List II
A	Biomass	1. Indirectly supplies all the energy required for sustaining life on the earth
B	Biogas	2. Good means of storing diffuse and intermittent solar energy
C	Petro-plants	3. An important solution to present energy crisis in rural areas
D	Solar energy	4. Sources of liquid hydrocarbon

Codes :

	A	B	C	D
(1)	4	3	2	1
(2)	3	2	4	1
(3)	2	3	4	1
(4)	4	3	1	2

Question No.	Questions

90. Match the List I and List II and select the correct answer from the codes given below the lists :

	List I (Pollutant)	List II (Sources)
A	CO	1. Industrial wastage
B	NO_2	2. Crushing and burning of coal
C	SO_2	3. Incomplete burning of carbonaceous fuel
D	H_2S	4. Electric power generators and automobiles, which use fossil fuels

Codes :

	A	B	C	D
(1)	4	3	2	1
(2)	2	3	4	1
(3)	3	4	1	2
(4)	3	4	2	1

91. Match list I (Treatment Units) with List II (Type of process) and select the correct answer using the codes given below the lists :

List I (Treatment Units)	List II (Type of process)
a. Trickling filter	1. Symbiotic
b. Activated sludge process	2. Extended aeration
c. Oxidation ditch	3. Suspended growth
d. Oxidation pond	4. Attached growth

Codes :

	A	B	C	D
(1)	3	4	2	1
(2)	4	3	1	2
(3)	3	4	1	2
(4)	4	3	2	1

Question No.	Questions
92.	Function of algae in oxidation pond is to : (1) Provide a mat over surface of the oxidation pond so as to prevent evaporation of water (2) Provide oxygen for bacteria to degrade organic matter (3) Provide a greenish appearance to the pond (4) Prevent the odour nuisance
93.	When sewage enters a following river, the rapid depletion of dissolved oxygen is due to : (1) Change in temperature of the river (2) The suspended particles in the river and waste (3) Respiratory activity of aquatic plants (4) Microbial activity
94.	Which of the pollutant or pairs of pollutants is formed due to photochemical reactions ? (1) CO alone (2) O_3 and PAN (3) PAN and NH_3 (4) NH_3 and CO
95.	Consider the following pair of the treatment units and impurities removed: (a) Grit chamber — Sand and silt (b) Detritus tank — Organic matter (c) Primary sedimentation tank — Suspended impurities (d) Aeration tank of activated sludge process — Oil and grease Which of the pairs are correctly matched ? (1) a and b (2) a, b, c and d (3) b, c and d (4) a and c

Question No.	Questions
96.	At an incubation temperature of 20°C, if initial DO and final DO values after 5 days incubation period on a 2% sample of sewage, are 8.5 mg/L and 5.5 mg/L, respectively. Then the BOD will be : (1) 50 mg/L (2) 150 mg/L (3) 250 mg/L (4) 350 mg/L
97.	The trap used for water closet is called : (1) Gully trap (2) p-type (3) Intercepting (4) Anti-siphon trap
98.	Match List I (Nature of the solid) with List II (Unit operation or process connected with its removal) and select the correct answer using the codes given below the lists : List I / List II a. Dissolved solids — 1. Sedimentation b. Colloidal solids — 2. Reverse osmosis c. Volatile solids — 3. Coagulation d. Settleable solids — 4. Digestion Codes : A B C D / A B C D (1) 2 3 4 1 (2) 3 2 4 1 (3) 2 3 1 4 (4) 3 2 1 4

Question No.	Questions
99.	Which of the materials are used as landfill sealants for the control of gas and leachate movements ? (a) Lime (b) Sand (c) Bentonite (d) Fly ash (e) Butyl rubber Select the correct answer using the codes given below : (1) a, b and c (2) d and e (3) c and e (4) a, b and d
100.	Which of the following air pollutants is/are responsible for photochemical smog ? (a) Oxides of nitrogen (b) Ozone (c) Unburnt hydrocarbons (d) Carbon monoxide Code : (1) a and b (2) c and d (3) b and d (4) a and d

Question No.	Questions
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2.	Rotameter is used for measuring : (1) Density of fluid (2) Velocity of fluid in pipes (3) Discharge of fluids (4) Viscosity of fluids
3.	One horse power is equal to : (1) 746 watts (2) 736 watts (3) 550 watts (4) 75 watts
4.	Beat is equal to : (1) One oscillation (2) Twice the oscillation (3) Half the oscillation (4) None of these
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Question No.	Questions
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24.	The presence of hydrogen sulphide in biogas causes : (1) Reduction in biogas production rate (2) Corrosive effect (3) Acts as catalyst (4) None of the above

Question No.	Questions

25. Match the List I and List II and select the correct answer from the codes given below the lists :

	List I	List II
A	Hard acid	SO_4^{2-}
B	Soft acid	RS^+
C	Hard base	$S_2O_3^{2-}$
D	Soft base	SO_3

Codes :

	A	B	C	D
(1)	4	1	2	3
(2)	4	2	1	3
(3)	3	2	1	4
(4)	3	2	4	1

26. Match the List I and List II and select the correct answer from the codes given below the lists :

	List-I Particulate of the atmosphere)	List-II (Characteristics of the particulate)
A	Aerosol	1. Combination of smoke of fog
B	Fly ash	2. Minute particles with water
C	Fume	3. Emitted by coal burning
D	Smog	4. Made up of metal vapour

Codes :

	A	B	C	D
(1)	2	3	1	4
(2)	2	3	4	1
(3)	3	4	2	1
(4)	3	4	1	2

Question No.	Questions
27.	Match the List I and List II and select the correct answer from the codes given below the lists :

	List I (Element)	List II (Function in the body)
A	Aluminium	1. Needed for normal growth
B	Copper	2. Metabolism of Vitamin B12
C	Cobalt	3. Electron transport enzyme complex
D	Nickel	4. Protein transfer in serum

Codes :

	A	B	C	D
(1)	1	2	3	4
(2)	2	4	1	3
(3)	3	4	2	1
(4)	4	3	2	1

28. Match the List I and List II and select the correct answer from the codes given below the lists :

	List I	List II
A	Food chain	1. Relationship of all the organisms in a given habitat
B	Food web	2. Distinct communities of a particular
C	Biomes	3. Producers, consumers and decomposers is given in a niche
D	Autotroph	4. Photosynthesis

Codes :

	A	B	C	D
(1)	1	2	3	4
(2)	3	1	2	4
(3)	3	4	2	1
(4)	4	3	2	1

Question No.	Questions

29. Match the List I and List II and select the correct answer from the codes given below the lists :

	List I	List II
A	Biomass	1. Indirectly supplies all the energy required for sustaining life on the earth
B	Biogas	2. Good means of storing diffuse and intermittent solar energy
C	Petro-plants	3. An important solution to present energy crisis in rural areas
D	Solar energy	4. Sources of liquid hydrocarbon

Codes :

	A	B	C	D
(1)	4	3	2	1
(2)	3	2	4	1
(3)	2	3	4	1
(4)	4	3	1	2

30. Match the List I and List II and select the correct answer from the codes given below the lists :

	List I (Pollutant)	List II (Sources)
A	CO	1. Industrial wastage
B	NO_2	2. Crushing and burning of coal
C	SO_2	3. Incomplete burning of carbonaceous fuel
D	H_2S	4. Electric power generators and automobiles, which use fossil fuels

Codes :

	A	B	C	D
(1)	4	3	2	1
(2)	2	3	4	1
(3)	3	4	1	2
(4)	3	4	2	1

Question No.	Questions
31.	Match List I with List II and select the correct answer using the codes given below the lists : List I / List II a. Sludge disposal — 1. Seeding b. Sludge digestion — 2. Biofilters c. Aerobic action — 3. Laggoning d. Recirculation — 4. Contact bed Codes : (1) A 3 B 1 C 4 D 2 (2) A 3 B 1 C 2 D 4 (3) A 1 B 3 C 2 D 4 (4) A 1 B 3 C 4 D 2
32.	Ringlemann's scale is used to : (1) Measure CO (2) Measure CO_2 (3) Grade density of smoke (4) Grade automobile exhaust gas
33.	Which of the following pair is not correctly matched ? (1) BOD — Strength (2) Methane — Product of anaerobic decomposition (3) COD — Biodegradability of waste water (4) Nitrate — Methamoglobinemia

Question No.	Questions
34.	The atmosphere extends up to height of 10,000 km. It is divided into four thermal layers. (a) Mesosphere (b) Stratosphere (c) Thermosphere (d) Troposphere The correct sequence of these layers starting from the surface of earth upward is (1) a, d, a, c (2) d, b, a, c (3) d, b, c, a (4) b, d, c, a
35.	Coal based thermal power plant stations pollute the atmosphere by adding (1) NOx and SOx (2) NOx, SO_2 and SPM (3) NOx, SO_2, SPM and CO (4) NOx, SPM and CO
36.	Match List I with List II and select the correct answer using the codes given below the lists : List I (Cause) a. Carbon monoxide b. Carbon dioxide c. Methane d. Sulphur dioxide List II (Effect) 1. Acid rain 2. Explosion 3. Asphyxiation 4. Green house effect Codes : (1) A 2, B 3, C 1, D 4 (2) A 3, B 4, C 2, D 1 (3) A 1, B 3, C 4, D 2 (4) A 4, B 2, C 1, D 3

Question No.	Questions
37.	Choose the correct answer : The stabilization of sewage in oxidation pond is due to action of : (1) Aerobic and anaerobic bacteria (2) Algae and bacteria (3) Organic and inorganic compound (4) Algae and protozoa
38.	Inversion is characterized by : (1) Upper cold and lower warm layer (2) Upper warm and lower cold layer (3) Both of the above (4) None of these
39.	Asbestos 'Silent Killer' can cause death of worker due to : (1) Heart attack (2) Lung cancer (3) Kidney failure (4) Brain damage
40.	Which is the first indoor pollutant of which the masses become aware ? (1) Carbon dioxide (2) Formaldehyde (3) Radon (4) Ozone

Question No.	Questions
41.	For an average Indian city, solid waste generated may be assessed per capita per day as : (1) 0.2 kg (2) 0.4 kg (3) 1.0 Kg (4) 2.0 kg
42.	At break point of chlorination : (1) Chlorine is used to oxidize (2) Residual chlorine is zero (3) Residual chlorine is maximum (4) Residual chlorine reappears
43.	The correct statement of comparison of ultimate BOD, COD, Theoretical oxygen demand (THOD) and 5 day BOD is : (1) $BOD\mu > COD > ThOD > BOD_5$ (2) $COD > ThOD > BOD\mu > BOD_5$ (3) $ThOD > COD > BOD\mu > BOD_5$ (4) $COD > BOD\mu > BOD_5 > ThOD$
44.	The alkalinity of a water sample is 80 mg/L as $CaCO_3$. If the total hardness of the water sample is 112 mg/L as $CaCO_3$. What will be the carbonate and non-carbonate (in mg/L as $CaCO_3$) ? (1) 32 (2) 192 (3) 152 (4) 114
45.	If 20 lb of 10% strength solution is mixed with 30 lb of 1% strength solution. What is the percent strength of the mixture ? (1) 4.6 (2) 6.6 (3) 46 (4) 2.6

Question No.	Questions
46.	Which of the instrument is based on Lambert Beer's law ? (1) Spectrophotometer (2) GLC (3) HPLC (4) AAS
47.	The chlorine dosage for water is 2.7 mg/L. If the chlorine residual after a 30 minute contact time is found to be 0.7 mg/L. What is the chlorine demand (in mg/L) ? (1) 2.0 (2) 1.4 (3) 2.7 (4) 3.4
48.	Which value of coefficient of correlation (r) shows strongest association between x and y variables ? (1) −0.33 (2) −0.950 (3) 0.565 (4) 0.750
49.	Permissible limits of SO_2 in residential areas (24h basis) as per NAAQMS is : (1) 60 mg/m^3 (2) 120 mg/m^3 (3) 80 mg/m^3 (4) 30 mg/m^3
50.	Which of the following industries does not require environmental clearance from the govermment ? (1) Cement industry (2) Paper and pulp industry (3) Sugar industry (4) Distillery
51.	The bird Dodo became extinct because of : (1) its beautiful feather (2) its fearlessness (3) its curved beak (4) its melodious songs

Question No.	Questions
52.	Which place is often referred to as the valley of deaths ? (1) Cubato, Brazil (2) Chernobyl, USSR (3) Palo alto, USA (4) Nainital, India
53.	Of the following mammals, which can survive without water for a whole year ? (1) Wild Ass (2) Gembok (3) Addax (4) None of the above
54.	Which group of plants is sensitive to airborne chemicals and is therefore employed as pollution indicator ? (1) algae (2) lichens (3) fungi (4) bryophytes
55.	The Moh's scale is measure of a mineral's : (1) Color (2) Density (3) Luster (4) Hardness
56.	Which technique can map the concentration of sulphur dioxide over a whole town by operating a gadget from one location ? (1) LIDAR (2) Spectrophotometry (3) GC (4) Mass spectroscopy
57.	What is eco-freeze ? (1) Halting ecological degradation (2) Stopping the ecological disaster (3) Planning an ecological balance (4) Stopping the manufacturing of environment modification weapons

Question No.	Questions
58.	When a falling body has attained terminal velocity, the weight of the body is equal to : (1) Drag force-buoyant force (2) Buoyant force-Drag force (3) Drag force + buoyant force (4) None of the above
59.	Manometer is a device used for measuring : (1) Velocity of a point in a fluid (2) Pressusre at a point in a fluid (3) Discharge of a fluid (4) None of these
60.	The point through which the buoyancy force is acting is called : (1) Centre of pressure (2) Centre of gravity (3) Centre of buoyant force (4) None of these
61.	Concentration of CO in vehicular exhaust is approximately : (1) Below 20% (2) 35% (3) 50% (4) Above 70%
62.	The size of the RSPM is : (1) Below 10 μm (2) 15–20 μm (3) 23 μm (4) above 25 μm
63.	The reliability of Gaussian Plume model is : (1) 98% (2) 95% (3) 70% (4) 50%
64.	In the ECD of gas chromatograph the electrons are : (1) Captured by the determinant species (2) Generated by the determinant species (3) Generated by nitrogen gas (4) None of the above

Question No.	Questions
65.	Which prevent the entry of foul gas and allows ventilation ? (1) Intercepting trap (2) Fresh air inlet (3) Gully trap (4) Flushing cistern
66.	Electrostatic precipitators are used as pollution control device for the removal of : (1) SO_2 (2) NOx (3) Suspended particulate matter (4) Volatile fatty acids
67.	Ozone layer in the upper atmosphere is getting depleted owing to its reaction with pollutant like : (1) Hydrogen peroxide (2) Carbon monoxide (3) Cholofluoro carbon (4) Volatile fatty acids
68.	Choose the correct statement in the following : The rate of 5 day BOD exerted at any time is (a) Directly proportional to BOD satisfied (b) Directly proportional to BOD remaining (c) Inversely proportional to BOD remaining (d) Inversely proportional to BOD satisfied Which of these statements are correct ? (1) a, b, c and d (2) a, b and c (3) a and d (4) b and c

Question No.	Questions
69.	Which of the following pairs are correctly matched ? (1) SPM – a. Blood hemoglobin (2) NO – b. Vegetation (3) CO – c. Respiratory system (4) SO_2 – d. Building materials
70.	Which of the following pairs are correctly matched ? (1) Reverberation time a. Time required to reduce noise by 60dB (2) NIPTS b. Responsible for permanent hearing loss (3) Sound foci c. Formed when sound waves are reflected from the convex surface (4) TTS d. Responsible for temporary hearing loss
71.	Match list I (Treatment Units) with List II (Type of process) and select the correct answer using the codes given below the lists : List I (Treatment Units) a. Trickling filter b. Activated sludge process c. Oxidation ditch d. Oxidation pond List II (Type of process) 1. Symbiotic 2. Extended aeration 3. Suspended growth 4. Attached growth Codes : (1) A 3 B 4 C 2 D 1 (2) A 4 B 3 C 1 D 2 (3) A 3 B 4 C 1 D 2 (4) A 4 B 3 C 2 D 1

Question No.	Questions
72.	Function of algae in oxidation pond is to : (1) Provide a mat over surface of the oxidation pond so as to prevent evaporation of water (2) Provide oxygen for bacteria to degrade organic matter (3) Provide a greenish appearance to the pond (4) Prevent the odour nuisance
73.	When sewage enters a following river, the rapid depletion of dissolved oxygen is due to : (1) Change in temperature of the river (2) The suspended particles in the river and waste (3) Respiratory activity of aquatic plants (4) Microbial activity
74.	Which of the pollutant or pairs of pollutants is formed due to photochemical reactions ? (1) CO alone (2) O_3 and PAN (3) PAN and NH_3 (4) NH_3 and CO
75.	Consider the following pair of the treatment units and impurities removed: (a) Grit chamber — Sand and silt (b) Detritus tank — Organic matter (c) Primary sedimentation tank — Suspended impurities (d) Aeration tank of activated sludge process — Oil and grease Which of the pairs are correctly matched ? (1) a and b (2) a, b, c and d (3) b, c and d (4) a and c

Question No.	Questions
76.	At an incubation temperature of 20°C, if initial DO and final DO values after 5 days incubation period on a 2% sample of sewage, are 8.5 mg/L and 5.5 mg/L, respectively. Then the BOD will be : (1) 50 mg/L (2) 150 mg/L (3) 250 mg/L (4) 350 mg/L
77.	The trap used for water closet is called : (1) Gully trap (2) p-type (3) Intercepting (4) Anti-siphon trap
78.	Match List I (Nature of the solid) with List II (Unit operation or process connected with its removal) and select the correct answer using the codes given below the lists : List I / List II a. Dissolved solids — 1. Sedimentation b. Colloidal solids — 2. Reverse osmosis c. Volatile solids — 3. Coagulation d. Settleable solids — 4. Digestion Codes : (1) A 2, B 3, C 4, D 1 (2) A 3, B 2, C 4, D 1 (3) A 2, B 3, C 1, D 4 (4) A 3, B 2, C 1, D 4
79.	Which of the materials are used as landfill sealants for the control of gas and leachate movements ? (a) Lime (b) Sand (c) Bentonite (d) Fly ash (e) Butyl rubber Select the correct answer using the codes given below : (1) a, b and c (2) d and e (3) c and e (4) a, b and d

Question No.	Questions
80.	Which of the following air pollutants is/are responsible for photochemical smog ? (a) Oxides of nitrogen (b) Ozone (c) Unburnt hydrocarbons (d) Carbon monoxide Code : (1) a and b (2) c and d (3) b and d (4) a and d
81.	Acid rain is global concern for the ecologist and environmental conservationists for which of the following reasons ? (a) The acid pollutants emitted in one country may be deposited as acid precipitation in other countries (b) Acid rain affects both aquatic system as well vegetation (c) It has distinct effect on soil microbiology and chemistry Select the correct answer using the codes given below : (1) a, b and c (2) a and b (3) a and c (4) b and c
82.	Match the List I and List II and select the correct answer from the codes given below the lists :

	List I (pollutants)	List II (Impacts)
A	Sulphur oxides	1. Irritate eyes and nose, create brown haze, causes visible leaf damage, stunts plant growth
B	Nitrogen oxides	2. Causes headaches, dizziness and nausea, reduces oxygen level in blood, impairs mental processes
C	Carbon monoxide	3. Causes cancer, retards plant growth
D	Hydrocarbon	4. Corrodes metal, causes acute and chronic leaf injury, attacks a wide variety of trees

Codes :

	A	B	C	D
(1)	4	1	2	3
(2)	2	3	4	1
(3)	3	4	2	1
(4)	4	3	1	2

Question No.	Questions

83. Match the List I and List II and select the correct answer from the codes given below the lists :

	List I (water contaminant)	List II (Impacts)
A	Pathogens	1. Lead to the growth of undesired aquatic life
B	Heavy metals	2. Transmit communicable disease
C	Nutrients	3. Are common in landfill leachate and waste water
D	Suspended	4. Lead to the development of sludge deposits

Codes :

	A	B	C	D
(1)	4	3	2	1
(2)	2	3	4	1
(3)	2	3	1	4
(4)	4	3	1	2

84. Pick out wrong combination :

(1) Fe^{+2} - Haemoglobin (2) Mg^{+2} - Photosynthesis

(3) Se^{+2} - Kreb's cycle (4) Co^{+2} - Vitamin B_{12}

85. Blood is isotonic with :

(1) 0.16 M NaCl (2) Conc NaCl

(3) 50% NaCl (4) 30% NaCl

86. The migration of the colloidal particles under influence of an electric field is known as :

(1) Electrolysis (2) Brownian movement

(3) Cataphoresis (4) Dialysis

Question No.	Questions
87.	Which of the following is correct statement about CCl_4 ? (1) CCl_4 is used to extinguish the fire under the name Pyrene (2) CCl_4 resist to hydrolysis while leaving water due to non availability of d-orbital in carbon (3) $CCl_4 \xrightarrow{AgNO_3}$ No ppt (4) All of the above
88.	If the liquid is dispersed in solid medium,then this is called as : (1) Sol (2) emulsion (3) liquid aerosol (4) Gel
89.	In which case, the order of acidic strength is not corrected ? (1) $HI > HBr > HCl$ (2) $HIO_4 > HBrO_4 > HClO_4$ (3) $HClO_4 > HClO_3 > HClO_2$ (4) $HF > H_2O > NH_3$
90.	The correct order of acidic strength of the Carboxylic acid is : (1) Formic acid < benzoic acid < acetic acid (2) Formic acid < acetic acid < benzoic acid (3) Acetic acid < formic acid < benzoic acid (4) Acetic acid < benzoic acid < formic acid
91.	The radioactive isotope of hydrogen is called : (1) Radium (2) Protium (3) Deuterium (4) Tritium
92.	The material used to control neutrons are produced by the use of : (1) Heavy water (2) Paraffin (3) Graphite (4) Thorium

<table>
<tr><th>Question No.</th><th>Questions</th></tr>
<tr><td>93.</td><td>Polythene is polymer of :
(1) Isobutane (2) Ethylene
(3) Vinyl chloride (4) Propylene</td></tr>
<tr><td>94.</td><td>The following residual chlorine compounds are formed during the chlorination of water
(a) NH_3Cl (b) $NHCl_2$
(c) HOCl (d) OCl
(1) b, a, c, d (2) a, b, d, c
(3) a, b, c, d (4) b, a, d, c</td></tr>
<tr><td>95.</td><td>Match the following :
<table>
<tr><th colspan="2">Set A</th><th colspan="2">Set B</th></tr>
<tr><td>i</td><td>Recarbonation</td><td>1</td><td>Activated carbon</td></tr>
<tr><td>ii</td><td>Chlorination</td><td>2</td><td>Trihalomethanes</td></tr>
<tr><td>iii</td><td>Taste & odour</td><td>3</td><td>Lime soda process</td></tr>
<tr><td>iv</td><td>Temperature inversion</td><td>4</td><td>Smog</td></tr>
</table>
(1) i–2 ii–1 iii–3 iv–4 (2) i–3 ii–2 iii–1 iv–4
(3) i–1 ii–3 iii–4 iv–2 (4) i–4 ii–3 iii–2 iv–1</td></tr>
<tr><td>96.</td><td>In sanitary landfill, decomposition and chemical changes within organic content of the solid waste goes on. Consequential changes within land fill can be
(a) Temperature changes within land fill
(b) Product of gases like H_2S, CO, CO_2 & CH_4
(c) Destruction of pathogens
(d) Production of other gases like SO_2 and NO_2
Which of these statements are correct ?
(1) a, b, c and d (2) a, b and c
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</table>

Question No.	Questions
97.	Methane formers are : (1) Obligate aerobes (2) Facultative bacteria (3) Obligate anaerobes (4) None of the above
98.	Index of pollution in case of stream is : (1) Color and Turbidity (2) DO and BOD (3) Flora and Fauna (4) All of the above
99.	The maximum damage to the "Taj Mahal" is because of the gas : (1) CO_2 (2) CO (3) SO_2 (4) All of the above
100.	Match the following :

Set A		Set B	
i	Acidity	I	Particulate matter
ii	Alum	II	Oils and grease
iii	Cyclone	III	Flocculation
iv	Skimming tank	IV	Carbon dioxide

(1) i–III ii–I iii–IV iv–II (2) i–IV ii–III iii–I iv–II

(3) i–IV ii–II iii–III iv–I (4) i–II ii–III iii–IV iv–I

Question No.	Questions
1.	Concentration of CO in vehicular exhaust is approximately : (1) Below 20% (2) 35% (3) 50% (4) Above 70%
2.	The size of the RSPM is : (1) Below 10 μm (2) 15–20 μm (3) 23 μm (4) above 25 μm
3.	The reliability of Gaussian Plume model is : (1) 98% (2) 95% (3) 70% (4) 50%
4.	In the ECD of gas chromatograph the electrons are : (1) Captured by the determinant species (2) Generated by the determinant species (3) Generated by nitrogen gas (4) None of the above
5.	Which prevent the entry of foul gas and allows ventilation ? (1) Intercepting trap (2) Fresh air inlet (3) Gully trap (4) Flushing cistern
6.	Electrostatic precipitators are used as pollution control device for the removal of : (1) SO_2 (2) NOx (3) Suspended particulate matter (4) Volatile fatty acids

Question No.	Questions
7.	Ozone layer in the upper atmosphere is getting depleted owing to its reaction with pollutant like : (1) Hydrogen peroxide (2) Carbon monoxide (3) Cholofluoro carbon (4) Volatile fatty acids
8.	Choose the correct statement in the following : The rate of 5 day BOD exerted at any time is (a) Directly proportional to BOD satisfied (b) Directly proportional to BOD remaining (c) Inversely proportional to BOD remaining (d) Inversely proportional to BOD satisfied Which of these statements are correct ? (1) a, b, c and d (2) a, b and c (3) a and d (4) b and c
9.	Which of the following pairs are correctly matched ? (1) SPM – a. Blood hemoglobin (2) NO – b. Vegetation (3) CO – c. Respiratory system (4) SO_2 – d. Building materials
10.	Which of the following pairs are correctly matched ? (1) Reverberation time a. Time required to reduce noise by 60dB (2) NIPTS b. Responsible for permanent hearing loss (3) Sound foci c. Formed when sound waves are reflected from the convex surface (4) TTS d. Responsible for temporary hearing loss

11. The radioactive isotope of hydrogen is called :

(1) Radium (2) Protium

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14. The following residual chlorine compounds are formed during the chlorination of water

(a) NH_3Cl (b) $NHCl_2$

(c) HOCl (d) OCl

(1) b, a, c, d (2) a, b, d, c

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15. Match the following :

Set A		Set B	
i	Recarbonation	1	Activated carbon
ii	Chlorination	2	Trihalomethanes
iii	Taste & odour	3	Lime soda process
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Which of these statements are correct ?

(1) a, b, c and d (2) a, b and c

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17. Methane formers are :

(1) Obligate aerobes (2) Facultative bacteria

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18. Index of pollution in case of stream is :

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i	Acidity	I	Particulate matter
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iv	Skimming tank	IV	Carbon dioxide

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Question No.	Questions
21.	The bird Dodo became extinct because of : (1) its beautiful feather (2) its fearlessness (3) its curved beak (4) its melodious songs
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30.	The point through which the buoyancy force is acting is called : (1) Centre of pressure (2) Centre of gravity (3) Centre of buoyant force (4) None of these
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Question No.	Questions

32. Match the List I and List II and select the correct answer from the codes given below the lists :

	List I (pollutants)	List II (Impacts)
A	Sulphur oxides	1. Irritate eyes and nose, create brown haze, causes visible leaf damage, stunts plant growth
B	Nitrogen oxides	2. Causes headaches, dizziness and nausea, reduces oxygen level in blood, impairs mental processes
C	Carbon monoxide	3. Causes cancer, retards plant growth
D	Hydrocarbon	4. Corrodes metal, causes acute and chronic leaf injury, attacks a wide variety of trees

Codes :

	A	B	C	D
(1)	4	1	2	3
(2)	2	3	4	1
(3)	3	4	2	1
(4)	4	3	1	2

33. Match the List I and List II and select the correct answer from the codes given below the lists :

	List I (water contaminant)	List II (Impacts)
A	Pathogens	1. Lead to the growth of undesired aquatic life
B	Heavy metals	2. Transmit communicable disease
C	Nutrients	3. Are common in landfill leachate and waste water
D	Suspended	4. Lead to the development of sludge deposits

Codes :

	A	B	C	D
(1)	4	3	2	1
(2)	2	3	4	1
(3)	2	3	1	4
(4)	4	3	1	2

Question No.	Questions
34.	Pick out wrong combination : (1) Fe^{+2} - Haemoglobin (2) Mg^{+2} - Photosynthesis (3) Se^{+2} - Kreb's cycle (4) Co^{+2} - Vitamin B_{12}
35.	Blood is isotonic with : (1) 0.16 M NaCl (2) Conc NaCl (3) 50% NaCl (4) 30% NaCl
36.	The migration of the colloidal particles under influence of an electric field is known as : (1) Electrolysis (2) Brownian movement (3) Cataphoresis (4) Dialysis
37.	Which of the following is correct statement about CCl_4 ? (1) CCl_4 is used to extinguish the fire under the name Pyrene (2) CCl_4 resist to hydrolysis while leaving water due to non availability of d-orbital in carbon (3) $CCl_4 \xrightarrow{AgNO_3}$ No ppt (4) All of the above
38.	If the liquid is dispersed in solid medium,then this is called as : (1) Sol (2) emulsion (3) liquid aerosol (4) Gel
39.	In which case, the order of acidic strength is not corrected ? (1) HI > HBr > HCl (2) $HIO_4 > HBrO_4 > HClO_4$ (3) $HClO_4 > HClO_3 > HClO_2$ (4) $HF > H_2O > NH_3$

Question No.	Questions
40.	The correct order of acidic strength of the Carboxylic acid is : (1) Formic acid < benzoic acid < acetic acid (2) Formic acid < acetic acid < benzoic acid (3) Acetic acid < formic acid < benzoic acid (4) Acetic acid < benzoic acid < formic acid
41.	Match List I with List II and select the correct answer using the codes given below the lists : List I — List II a. Sludge disposal — 1. Seeding b. Sludge digestion — 2. Biofilters c. Aerobic action — 3. Laggoning d. Recirculation — 4. Contact bed Codes : (1) A 3 B 1 C 4 D 2 (2) A 3 B 1 C 2 D 4 (3) A 1 B 3 C 2 D 4 (4) A 1 B 3 C 4 D 2
42.	Ringlemann's scale is used to : (1) Measure CO (2) Measure CO_2 (3) Grade density of smoke (4) Grade automobile exhaust gas
43.	Which of the following pair is not correctly matched ? (1) BOD — Strength (2) Methane — Product of anaerobic decomposition (3) COD — Biodegradability of waste water (4) Nitrate — Methamoglobinemia

Question No.	Questions
44.	The atmosphere extends up to height of 10,000 km. It is divided into four thermal layers. (a) Mesosphere (b) Stratosphere (c) Thermosphere (d) Troposphere The correct sequence of these layers starting from the surface of earth upward is (1) a, d, a, c (2) d, b, a, c (3) d, b, c, a (4) b, d, c, a
45.	Coal based thermal power plant stations pollute the atmosphere by adding (1) NOx and SOx (2) NOx, SO_2 and SPM (3) NOx, SO_2, SPM and CO (4) NOx, SPM and CO
46.	Match List I with List II and select the correct answer using the codes given below the lists : List I (Cause) / List II (Effect) a. Carbon monoxide — 1. Acid rain b. Carbon dioxide — 2. Explosion c. Methane — 3. Asphyxiation d. Sulphur dioxide — 4. Green house effect Codes : (1) A 2, B 3, C 1, D 4 (2) A 3, B 4, C 2, D 1 (3) A 1, B 3, C 4, D 2 (4) A 4, B 2, C 1, D 3

Question No.	Questions
47.	Choose the correct answer : The stabilization of sewage in oxidation pond is due to action of : (1) Aerobic and anaerobic bacteria (2) Algae and bacteria (3) Organic and inorganic compound (4) Algae and protozoa
48.	Inversion is characterized by : (1) Upper cold and lower warm layer (2) Upper warm and lower cold layer (3) Both of the above (4) None of these
49.	Asbestos 'Silent Killer' can cause death of worker due to : (1) Heart attack (2) Lung cancer (3) Kidney failure (4) Brain damage
50.	Which is the first indoor pollutant of which the masses become aware ? (1) Carbon dioxide (2) Formaldehyde (3) Radon (4) Ozone

Question No.	Questions
51.	For an average Indian city, solid waste generated may be assessed per capita per day as : (1) 0.2 kg (2) 0.4 kg (3) 1.0 Kg (4) 2.0 kg
52.	At break point of chlorination : (1) Chlorine is used to oxidize (2) Residual chlorine is zero (3) Residual chlorine is maximum (4) Residual chlorine reappears
53.	The correct statement of comparison of ultimate BOD, COD, Theoretical oxygen demand (THOD) and 5 day BOD is : (1) $BOD\mu > COD > ThOD > BOD_5$ (2) $COD > ThOD > BOD\mu > BOD_5$ (3) $ThOD > COD > BOD\mu > BOD_5$ (4) $COD > BOD\mu > BOD_5 > ThOD$
54.	The alkalinity of a water sample is 80 mg/L as $CaCO_3$. If the total hardness of the water sample is 112 mg/L as $CaCO_3$. What will be the carbonate and non-carbonate (in mg/L as $CaCO_3$) ? (1) 32 (2) 192 (3) 152 (4) 114
55.	If 20 lb of 10% strength solution is mixed with 30 lb of 1% strength solution. What is the percent strength of the mixture ? (1) 4.6 (2) 6.6 (3) 46 (4) 2.6

Question No.	Questions
56.	Which of the instrument is based on Lambert Beer's law ? (1) Spectrophotometer (2) GLC (3) HPLC (4) AAS
57.	The chlorine dosage for water is 2.7 mg/L. If the chlorine residual after a 30 minute contact time is found to be 0.7 mg/L. What is the chlorine demand (in mg/L) ? (1) 2.0 (2) 1.4 (3) 2.7 (4) 3.4
58.	Which value of coefficient of correlation (r) shows strongest association between x and y variables ? (1) −0.33 (2) −0.950 (3) 0.565 (4) 0.750
59.	Permissible limits of SO_2 in residential areas (24h basis) as per NAAQMS is : (1) 60 mg/m^3 (2) 120 mg/m^3 (3) 80 mg/m^3 (4) 30 mg/m^3
60.	Which of the following industries does not require environmental clearance from the govermment ? (1) Cement industry (2) Paper and pulp industry (3) Sugar industry (4) Distillery

Question No.	Questions
61.	Match list I (Treatment Units) with List II (Type of process) and select the correct answer using the codes given below the lists : List I (Treatment Units) a. Trickling filter b. Activated sludge process c. Oxidation ditch d. Oxidation pond List II (Type of process) 1. Symbiotic 2. Extended aeration 3. Suspended growth 4. Attached growth Codes : (1) A 3 B 4 C 2 D 1 (2) A 4 B 3 C 1 D 2 (3) A 3 B 4 C 1 D 2 (4) A 4 B 3 C 2 D 1
62.	Function of algae in oxidation pond is to : (1) Provide a mat over surface of the oxidation pond so as to prevent evaporation of water (2) Provide oxygen for bacteria to degrade organic matter (3) Provide a greenish appearance to the pond (4) Prevent the odour nuisance
63.	When sewage enters a following river, the rapid depletion of dissolved oxygen is due to : (1) Change in temperature of the river (2) The suspended particles in the river and waste (3) Respiratory activity of aquatic plants (4) Microbial activity

Question No.	Questions
64.	Which of the pollutant or pairs of pollutants is formed due to photochemical reactions ? (1) CO alone (2) O_3 and PAN (3) PAN and NH_3 (4) NH_3 and CO
65.	Consider the following pair of the treatment units and impurities removed: (a) Grit chamber — Sand and silt (b) Detritus tank — Organic matter (c) Primary sedimentation tank — Suspended impurities (d) Aeration tank of activated sludge process — Oil and grease Which of the pairs are correctly matched ? (1) a and b (2) a, b, c and d (3) b, c and d (4) a and c
66.	At an incubation temperature of 20°C, if initial DO and final DO values after 5 days incubation period on a 2% sample of sewage, are 8.5 mg/L and 5.5 mg/L, respectively. Then the BOD will be : (1) 50 mg/L (2) 150 mg/L (3) 250 mg/L (4) 350 mg/L
67.	The trap used for water closet is called : (1) Gully trap (2) p-type (3) Intercepting (4) Anti-siphon trap

Question No.	Questions
68.	Match List I (Nature of the solid) with List II (Unit operation or process connected with its removal) and select the correct answer using the codes given below the lists : List I a. Dissolved solids b. Colloidal solids c. Volatile solids d. Settleable solids List II 1. Sedimentation 2. Reverse osmosis 3. Coagulation 4. Digestion Codes : (1) A 2 B 3 C 4 D 1 (2) A 3 B 2 C 4 D 1 (3) A 2 B 3 C 1 D 4 (4) A 3 B 2 C 1 D 4
69.	Which of the materials are used as landfill sealants for the control of gas and leachate movements ? (a) Lime (b) Sand (c) Bentonite (d) Fly ash (e) Butyl rubber Select the correct answer using the codes given below : (1) a, b and c (2) d and e (3) c and e (4) a, b and d
70.	Which of the following air pollutants is/are responsible for photochemical smog ? (a) Oxides of nitrogen (b) Ozone (c) Unburnt hydrocarbons (d) Carbon monoxide Code : (1) a and b (2) c and d (3) b and d (4) a and d

Question No.	Questions
71.	Notch is a device used for measuring the : (1) Rate of flow through pipes (2) Rate of flow through a small channel (3) Velocity through a pipe (4) Velocity through a small channel
72.	Rotameter is used for measuring : (1) Density of fluid (2) Velocity of fluid in pipes (3) Discharge of fluids (4) Viscosity of fluids
73.	One horse power is equal to : (1) 746 watts (2) 736 watts (3) 550 watts (4) 75 watts
74.	Beat is equal to : (1) One oscillation (2) Twice the oscillation (3) Half the oscillation (4) None of these
75.	A perfect gas obeys (1) Boyle's law (2) Charle's law (3) Boyle's and Charle's law (4) None of these
76.	The sum of internal energy and product of pressure and volume is called : (1) Entropy (2) Enthalpy (3) Heat supplied (4) None of these
77.	The compression ratios for engine is : (1) 5 to 8 (2) 15 to 20 (3) 3 to 6 (4) 30 to 40

Question No.	Questions
78.	One bar is equal to : (1) 1.033 kgf/cm^2 (2) 14.7 kgf/cm^2 (3) 1.0197 kgf/cm^2 (4) 1 kgf/cm^2
79.	Of the following gases, which one suffocates living beings even to death ? (1) carbon dioxide (2) carbon monoxide (3) hydrogen sulphide (4) sulphur dioxide
80.	A gas follows the law PVn = C, of the value of n = 1, the process is known as : (1) adiabatic (2) isothermal (3) isotropic (4) polytrophic
81.	Tetraethyl Lead is added to gasoline to : (1) Lubricate internal engine parts (2) Increase the life of catalytic convertor (3) Prevent engine a knock and improve engine performance (4) Increase the efficiency of gasoline combustion and improve milage
82.	The green house gas CO_2 is chiefly found in : (1) Ionosphere (2) Stratosphere (3) Troposphere (4) Mesosphere
83.	Acid precipitation kills the fish by causing the release of : (1) Carbon monoxide (2) Mercury (3) Aluminum ions (4) Anticoagulants

Question No.	Questions
84.	Which of the following is the correct order of increase in atomic size ? (1) $Mg < Na^+ < F^- < Al$ (2) $Na^+ < F^- < Al < Mg$ (3) $Na^+ < Al < Mg < F^-$ (4) $Na^+ < F^- < Mg < Al$
85.	Which of the following is correctly matched ? (1) Copper-bauxite (2) Iron-galena (3) Mercury-cinnabar (4) Lead-magnetite
86.	Which satellite recorded the presence of an ozone hole ? (1) TIROS-N (2) GOES (3) NIMBUS–7 (4) Landstat-3
87.	Who changed the name of kubabul, one of the popular tree species suited for afforestation, to subabul ? (1) Manibhai Desai (2) Lal Bahadur Shastri (3) A.K.N. Reddy (4) Indira Gandhi
88.	The heavy metal that has seen application as a fungicide and is responsible for a type of poisoning called Hatter's shakes is ? (1) Mercury (2) Lead (3) Cadmium (4) Arsenic
89.	The major route for widespread distribution more persistent pesticide is: (1) soil (2) water (3) living organism (4) atmosphere
90.	Who used the term 'hot dilute soup' for Darwin's warm little pond ? (1) Oparin (2) Haldane (3) Lamarck (4) Wallace

91. Producer gas is mixture of :

(1) Carbon monoxide and nitrogen gas

(2) Carbon dioxide and hydrogen gas

(3) Hydrogen and water vapour

(4) Oxygen and nitrogen gas

92. The digestion process taking place in a biogas plant is termed :

(1) Anaerobic (2) Oxidation

(3) Reduction (4) Aerobic digestion

93. Lead is one of the two most toxic chemicals found in petrol, which can cause brain damage and luekaemia, which is other ?

(1) Sulphur (2) Benzene

(3) Nitrogen oxide (4) SPM

94. The presence of hydrogen ulphide in biogas causes :

(1) Reduction in biogas production rate (2) Corrosive effect

(3) Acts as catalyst (4) None of the above

95. Match the List I and List II and select the correct answer from the codes given below the lists :

	List I	List II
A	Hard acid	SO_4^{2-}
B	Soft acid	RS^+
C	Hard base	$S_2O_3^{2-}$
D	Soft base	SO_3

Codes :

	A	B	C	D
(1)	4	1	2	3
(2)	4	2	1	3
(3)	3	2	1	4
(4)	3	2	4	1

Question No.	Questions

96. Match the List I and List II and select the correct answer from the codes given below the lists :

	List-I Particulate of the atmosphere)	**List-II (Characteristics of the particulate)**
A	Aerosol	1. Combination of smoke of fog
B	Fly ash	2. Minute particles with water
C	Fume	3. Emitted by coal burning
D	Smog	4. Made up of metal vapour

Codes :

	A	B	C	D
(1)	2	3	1	4
(2)	2	3	4	1
(3)	3	4	2	1
(4)	3	4	1	2

97. Match the List I and List II and select the correct answer from the codes given below the lists :

	List I (Element)	**List II (Function in the body)**
A	Aluminium	1. Needed for normal growth
B	Copper	2. Metabolism of Vitamin B12
C	Cobalt	3. Electron transport enzyme complex
D	Nickel	4. Protein transfer in serum

Codes :

	A	B	C	D
(1)	1	2	3	4
(2)	2	4	1	3
(3)	3	4	2	1
(4)	4	3	2	1

Question No.	Questions
98.	Match the List I and List II and select the correct answer from the codes given below the lists :

	List I	List II
A	Food chain	1. Relationship of all the organisms in a given habitat
B	Food web	2. Distinct communities of a particular
C	Biomes	3. Producers, consumers and decomposers is given in a niche
D	Autotroph	4. Photosynthesis

Codes :

	A	B	C	D
(1)	1	2	3	4
(2)	3	1	2	4
(3)	3	4	2	1
(4)	4	3	2	1

99. Match the List I and List II and select the correct answer from the codes given below the lists :

	List I	List II
A	Biomass	1. Indirectly supplies all the energy required for sustaining life on the earth
B	Biogas	2. Good means of storing diffuse and intermittent solar energy
C	Petro-plants	3. An important solution to present energy crisis in rural areas
D	Solar energy	4. Sources of liquid hydrocarbon

Codes :

	A	B	C	D
(1)	4	3	2	1
(2)	3	2	4	1
(3)	2	3	4	1
(4)	4	3	1	2

Question No.	Questions
100.	Match the List I and List II and select the correct answer from the codes given below the lists :

	List I (Pollutant)	List II (Sources)
A	CO	1. Industrial wastage
B	NO_2	2. Crushing and burning of coal
C	SO_2	3. Incomplete burning of carbonaceous fuel
D	H_2S	4. Electric power generators and automobiles, which use fossil fuels

Codes :

	A	B	C	D
(1)	4	3	2	1
(2)	2	3	4	1
(3)	3	4	1	2
(4)	3	4	2	1

Maharshi Dayanand University Rohtak
Deptt. of Environmental Sciences

M. Phil / Ph. D / URS Entrance Examination
Answer Key

Answer Key of Env Sci.				
Sr no.	A	B	C	D
1	1	1	2	4
2	1	1	3	1
3	2	3	2	4
4	2	3	3	1
5	2	1	3	2
6	1	3	2	3
7	4	4	2	3
8	1	4	3	2
9	3	2	2	3
10	4	4	2	1
11	1	1	3	3
12	1	3	2	4
13	3	3	4	2
14	3	2	3	1
15	1	2	3	2
16	3	2	3	1
17	4	2	4	3
18	4	2	1	2
19	2	2	4	3
20	4	2	2	2
21	3	4	1	2
22	2	1	1	1
23	4	4	2	3
24	3	1	2	2
25	3	2	2	4
26	3	3	1	1
27	4	3	4	2
28	1	2	1	3
29	4	3	3	2
30	2	1	4	3
31	2	3	1	1
32	1	4	3	1
33	3	2	3	3
34	2	1	2	3
35	4	2	2	1
36	1	1	2	3
37	2	3	2	4
38	3	2	2	4
39	2	3	2	2
40	3	2	2	4
41	2	2	2	1
42	3	1	4	3
43	2	3	3	3
44	3	2	1	2
45	3	4	1	2

Gupta

Bahadur
20.12.18

46	2	1	1	2
47	2	2	1	2
48	3	3	2	2
49	2	2	1	2
50	2	3	3	2
51	3	3	2	2
52	4	2	1	4
53	2	4	3	3
54	1	3	2	1
55	2	3	4	1
56	1	3	1	1
57	3	4	2	1
58	2	1	3	2
59	3	4	2	1
60	2	2	3	3
61	2	2	4	4
62	4	3	1	2
63	3	2	4	2
64	1	3	1	2
65	1	3	2	4
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68	2	3	2	1
69	1	2	3	3
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71	4	2	4	2
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73	4	3	2	2
74	1	1	2	3
75	2	1	4	3
76	3	1	2	2
77	3	1	2	2
78	2	2	1	3
79	3	1	3	2
80	1	3	4	2
81	4	1	1	3
82	2	1	1	2
83	2	2	3	4
84	2	2	3	3
85	4	2	1	3
86	2	1	3	3
87	2	4	4	4
88	1	1	4	1
89	3	3	2	4
90	4	4	4	2
91	1	4	3	1
92	3	2	4	1

Gents

20.12.18

93	3	2	2	2
94	2	2	1	2
95	2	4	2	2
96	2	2	1	1
97	2	2	3	4
98	2	1	2	1
99	2	3	3	3
100	2	4	2	4

Geeta

Behera

20.12.18