Module Name : PhD Environmental Technology-E
Exam Date : 20-Sep-2020 Batch : 12:30-14:30

Sr. No.	Client Question ID	Question Body and Alternatives	Marks	Negative Marks
Objective Question				
1	1	How many grams of $KMnO_4$ (M. W. = 158) per litre of solution are needed to prepare 0.01N solution, $KMnO_4$ which is to be used as oxidant in alkaline medium? A1 : 1.58 g A2 : 0.316 g A3 : 3.16 g A4 : 1.58/2 g	4.0	1.00
Objective Question				
2	2	If p^o and p are the vapour pressures of the solvent and solution respectively and n_1 and n_2 are the mole fractions of the solvent and solute respectively, then? A1 : $p = p^o n_1$ A2 : $p = p^o n_2$ A3 : $p^o = p n_2$ A4 : $p = p^o (n_1 / n_2)$	4.0	1.00
Objective Question				
3	3	If a compound has a negative heat of solution, at high temperature it dissolves A1 : More rapidly and is more soluble A2 : More rapidly and is less soluble A3 : Less rapidly and is less soluble A4 : Less rapidly and is more soluble	4.0	1.00
Objective Question				
4	4	100 cm^3 of 0.1 N HCl solution was mixed with 100 cm^3 of 0.2 N NaOH solution. The resulting solution will be?	4.0	1.00

		A1 : 0.1 N and basic A2 : 0.5 N and basic A3 : 0.1 N and acidic A4 : 0.05 N and acidic		
Objective Question				
5	5	In the case of osmosis, solvent molecules move from? A1 : Higher vapour pressure to lower vapour pressure A2 : Higher concentration to lower concentration A3 : Lower vapour pressure to higher vapour pressure A4 : One region to another	4.0	1.00
Objective Question				
6	6	A liquid can exist only? A1 : Between triple point and critical temperature A2 : At any temperature above the m.p. A3 : Between melting and critical temperature A4 : Between boiling point and melting temperature	4.0	1.00
Objective Question				
7	7	The temperature at which the vapour pressure is equal to the external pressure is called? A1 : Critical temperature A2 : Boiling point A3 : Freezing point A4 : Saturation point	4.0	1.00
Objective Question				

8	8	Smoke is an example of? A1 : Gas dispersed in liquid A2 : Gas dispersed in solid A3 : Solid dispersed in gas A4 : Solid dispersed in solid	4.0	1.00
Objective Question				
9	9	One mole of ethyl alcohol was treated with one mole of acetic acid at 25^{o}C. Two-third of the acid changes into acid at equilibrium. The equilibrium constant for the reaction will be? A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
10	10	In an exothermic reaction, high yield is produced at? A1 : High temperature A2 : Low temperature A3 : Low concentration A4 : None of these	4.0	1.00
Objective Question				
11	11	Which of the following reaction is not affected by pressure? A1 : $PCl_3 + Cl_2 \leftrightarrows PCl_5$ A2 : $N_2 + 3H_2 \leftrightarrows 2NH_3$ A3 : $N_2 + O_2 \leftrightarrows 2NO$ A4 $2SO_2 + O_2 \leftrightarrows 2SO_3$	4.0	1.00

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Objective Question				
12	12	In a reaction 2X + Y → M + N the concentration of Y is triple. Now the rate constant of the reaction will? A1 : Increase three times A2 : Decrease three times A3 : Increase 6 times A4 : Increase 9 times	4.0	1.00
Objective Question				
13	13	In the reaction A → B, if the concentration of A is increased four times the rate of reaction is doubled. The order of the reaction is? A1 : 1 A2 : 0 A3 : 1/2 A4 : 2	4.0	1.00
Objective Question				
14	14	The enzyme catalysed reaction is faster than metal catalysed reaction because its activation energy is? A1 : Greater than A2 : Lower than A3 : Same as that of metal catalysed reaction A4 : None of these	4.0	1.00
Objective Question				
15	15	The rate of reaction, A+2B→Products is given by $-\frac{d[A]}{dt} = k\,[A]\,[B]^2$. If B is present in large excess, the order is? A1 : 0 A2 : 1	4.0	1.00

		A3 : 2 A4 : 3		
Objective Question				
16	16	In a reversible reaction, a catalyst? A1 : Increases the rate of forward reaction A2 : Increases the rate of backward reaction A3 : Increases the rate of forward and backward reaction equally A4 : None of these	4.0	1.00
Objective Question				
17	17	As a general rule, adding a catalyst to a reacting system A1 : Increase the yield of the product A2 : Decreases the yield of the product A3 : Does not affect the yield of product A4 : Increases and decreases to yield irregularly	4.0	1.00
Objective Question				
18	18	Which of the following is intensive property? A1 : Temperature A2 : Molarity A3 : Density A4 : All of these	4.0	1.00
Objective Question				
19	19	When a gas is subjected to adiabatic expansion, it gets cooled due to? A1 : Fall in temperature	4.0	1.00

		A2 : Loss of K.E A3 : Decrease in velocity A4 : Energy used in doing work		
Objective Question				
20	20	When ice melts into water, entropy? A1 : Becomes zero A2 : Decreases A3 : Increases A4 : Remains the same	4.0	1.00
Objective Question				
21	21	A process in which no heat enters or leaves the system is called A1 : Isothermal A2 : Isobaric A3 : Adiabatic A4 : Isochoric	4.0	1.00
Objective Question				
22	22	Among ice, water and vapour, which will have maximum entropy? A1 : Vapour A2 : Ice A3 : Water A4 : None of these	4.0	1.00
Objective Question				
23	23	Which of the following is not correct when zinc piece is added to copper sulphate solution? A1 Copper is precipitated and solution becomes colourless	4.0	1.00

		: A2 : Zinc is more electropositive than copper A3 : More electropositive metal displace less electropositive metals from their salt solutions A4 : Copper displaces zinc from $CuSO_4$ solution		
Objective Question				
24	24	A solution of pH 9.0 is one thousand times as basic as a solution of pH? A1 : 6 A2 : 7 A3 : 4 A4 : 10	4.0	1.00
Objective Question				
25	25	Precipitation takes place when the product of concentrations of ions? A1 : Exceeds their solubility product A2 : Is less than their solubility product A3 : Equals their solubility product A4 : None of these	4.0	1.00
Objective Question				
26	26	Which of the following is a derived unit? A1 : Mass A2 : Velocity A3 : Length A4 : Time	4.0	1.00
Objective Question				
27	27	If $x=at+bt^2$, where x is in metres and t is in hour (hr), the units of b will be:	4.0	1.00

		A1 : metre A2 : $\frac{\text{metre}}{\text{hr}}$ A3 : $\frac{\text{metre}}{\text{hr}^2}$ A4 : $\frac{\text{metre}^2}{\text{hr}}$		
Objective Question				
28	28	When a 1 Newton force acts on a 1 kg body that is able to move freely, the body receives: A1 : A speed of 1 m/sec A2 : An acceleration of 1 m/sec^2 A3 : An acceleration of 980 cm/sec^2 A4 : An acceleration of 1 cm/sec^2	4.0	1.00
Objective Question				
29	29	A child weighing 25 kg slides down a rope hanging from the branch of a tree. If the force of friction against him is 200N, what is the child's acceleration? [Take g = 10 m/s^2] A1 : 22.5 m/s^2 A2 : 8 m/s^2 A3 : 5 m/s^2 A4 : 2 m/s^2	4.0	1.00
Objective Question				
30	30	Choose the wrong statement: A1 : weight of a body is greater at the poles and less at equator A2 : weight of the body is greater in planes and less on hill tops A3 : weight of a body on the moon is less than that on the earth is more on sun A4 : none of these	4.0	1.00

Objective Question				
31	31	Soap helps in better cleaning of clothes because: A1 : It reduces the surface tension of solution A2 : It gives strength to solution A3 : It absorbs the dirt A4 : Chemical of soaps change	4.0	1.00
Objective Question				
32	32	The viscosity of falling rain drop attains limited value because of: A1 : upthrust of air A2 : viscosity force exerted by air A3 : surface tension effects A4 : air currents in atmosphere	4.0	1.00
Objective Question				
33	33	According to the kinetic theory of gases, which of the following statements is wrong? A1 : All molecules of a gas are identical A2 : Collisions between the molecules of a gas and that of the molecules with the walls of the containers are perfectly elastic A3 : The molecules do not exert appreciable force on one another except during collision A4 : The pressure exerted by a gas is due to the collisions between the molecules of the gas	4.0	1.00
Objective Question				
34	34	The thermometer suitable to measure 4000 ^{o}C is: A1 : Mercury thermometer A2 : Total radiation pyrometer A3 : Gas thermometer	4.0	1.00

		A4 : Vapour pressure thermometer		
Objective Question				
35	35	Water evaporates under the atmospheric pressure. If now the same water is placed under vacuum, then the rate of evaporation: A1 : Will decrease A2 : Will remain unchanged A3 : Will increase A4 : None of these	4.0	1.00
Objective Question				
36	36	When a sealed glass vessel filled with water at $4^{o}C$ is cooled, it breaks because: A1 : of anomalous expansion A2 : of contraction of the glass A3 : both A4 : none of these	4.0	1.00
Objective Question				
37	37	The complete conversion of a given quantity of heat into useful mechanical work occurs: A1 : often A2 : seldom A3 : never A4 : depends on the device	4.0	1.00
Objective Question				
38	38	While measuring the thermal conductivity of a liquid, we keep the upper part hot and lower cool so that: A1 : convection may be stopped A2 : radiation may be stopped	4.0	1.00

		A3 : heat conduction is easier downwards A4 : it is easier and more convenient to do so		
Objective Question				
39	39	A cylinder fixed rigidly at one end has a tangential force applied to its other end. The shape and volume of the cylinder remain unaltered. The strain produced in the cylinder is: A1 : Longitudinal A2 : Volumetric A3 : Shear A4 : Zero	4.0	1.00
Objective Question				
40	40	In an ordinary heater if the length of the coil is halved, then a given quantity of water will boil in: A1 : less time A2 : more time A3 : same time A4 : cannot be compared because specific resistance of material of wire is not given	4.0	1.00
Objective Question				
41	41	If temperature of a substance is decreased, its resistance decreases and finally becomes zero. Such substance is called: A1 : conductor A2 : super-conductor A3 : semi-conductor A4 : insulator	4.0	1.00
Objective Question				
42	42	A wire has a resistance 10 Ω. It is stretched by one-tenth of its original length. Then its resistance will be: A1 : 10 Ω	4.0	1.00

		A2 : 12.1 Ω A3 : 9 Ω A4 : 11 Ω		
Objective Question				
43	43	In the equation PV=RT, V stands for the volume of: A1 : any amount of gas A2 : one gram of gas A3 : one gram mole of gas A4 : one litre of gas	4.0	1.00
Objective Question				
44	44	A fluid of density 'r' and viscosity η is flowing through a pipe of diameter 'd' with a velocity 'v'. Reynold number R is: A1 : $R = 2rdv/\eta$ A2 : $R = rdv/\eta$ A3 : $R = rdv/\eta^2$ A4 : $R = 2\eta rv/d$	4.0	1.00
Objective Question				
45	45	Water is flowing through a tube of non-uniform cross-section. If the radius of the tube at the entrance and exit is in the ratio 3 : 2 then the ratio of velocity of liquid entering and leaving the tube is: A1 : 8:27 A2 : 4:9 A3 : 1:1 A4 : 9:4	4.0	1.00
Objective Question				

46	46	According to the kinetic theory of gases, which of the following statements is wrong? A1 : All molecules of a gas are identical A2 : Collisions between the molecules of a gas and that of the molecules with the walls of the containers are perfectly elastic A3 : The molecules do not exert appreciable force on one another except during collision A4 : The pressure exerted by a gas is due to the collisions between the molecules of the gas	4.0	1.00
Objective Question				
47	47	There is a hole of area A at the bottom of a cylindrical vessel. Water is filled upto a height h and water flows out in t sec. If water is filled to a height 4h, it will flow out in time: A1 : t A2 : 4t A3 : 2t A4 : t/4	4.0	1.00
Objective Question				
48	48	If you float on your back on water, your weight is: A1 : Zero A2 : Equal to your normal weight A3 : Half your normal weight A4 : Greater than the weight of water you displace	4.0	1.00
Objective Question				
49	49	Streamline flow is more likely for liquids with: A1 : High density and low viscosity A2 : Low density and high viscosity A3 : High density and high viscosity A4 : Low density and low viscosity	4.0	1.00

Objective Question				
50	50	With increase in temperature, the viscosity of: A1 : gases decreases and liquid increases A2 : gases increases and liquid decreases A3 : both gases and liquid increases A4 : both gases and liquid decreases	4.0	1.00
Objective Question				
51	51	The value of tan $(B - C)$ + tan $(C - A)$ + tan $(A - B)$ is A1 : 0 A2 : 1 A3 : tan A tan B tan C A4 : tan$(B - C)$tan$(C - A)$tan$(A - B)$	4.0	1.00
Objective Question				
52	52	50^{th} percentile of a distribution coincides with its A1 : mean A2 : median A3 : mode A4 : quartile	4.0	1.00
Objective Question				
53	53	The maximum possible area that can be enclosed by a wire of length 20 cm. By bending it into the form of a sector in square cms. is A1 : 10 A2 : 25 A3 : 30	4.0	1.00

		A4 : None of these		
Objective Question				
54	54	If u = $(x^{1/4} + y^{1/4})/(x^{1/6} + y^{1/6})$ and $x\frac{\partial u}{\partial x}+y\frac{\partial u}{\partial y}=ku$, then k = A1 : 1/4 A2 : 1/12 A3 : 1/24 A4 : 1/6	4.0	1.00
Objective Question				
55	55	The straight lines $x+y=0, 3x+y-4=0, x+3y-4=0$ form a triangle which is _____ A1 : Isosceles A2 : Equilateral A3 : Right angled A4 : None of these	4.0	1.00
Objective Question				
56	56	A coin tossed three times. The probability of obtaining at least two heads is A1 : $\frac{3}{8}$ A2 : $\frac{7}{8}$ A3 : $\frac{5}{8}$ A4 : $\frac{1}{2}$	4.0	1.00
Objective Question				
57	57	The value of $y''(1)$, when $x^3-2x^2y^2+5x+y-5=0$ and $y(1)=1$, is given by A1 : 22/27	4.0	1.00

		A2 : -182/23 A3 : 8 A4 : -238/27		
Objective Question				
58	58	A matrix is A1 : A collection of real numbers A2 : A collection of real or complex numbers A3 : An array of real numbers A4 : An array of real or complex numbers	4.0	1.00
Objective Question				
59	59	The period of sin x cos x is A1 : π A2 : 2π A3 : $\pi/2$ A4 : none of these	4.0	1.00
Objective Question				
60	60	If α is a vector and x is a non-zero scalar, then A1 : $x\alpha$ is a vector in the direction of α A2 : $x\alpha$ is a vector collinear to α A3 : $x\alpha$ and α have independent direction A4 : None of these	4.0	1.00
Objective Question				
61	61	A particle is moving on a line, where its position s in metres is a function of time t in seconds given by $s=t^3 + at^2 + bt + c$, where a, b, c are constants. It is known that at t=1 seconds, the position of the particle is given by s=7 m, velocity is 7 m/s and acceleration is 12 m/s^2. The values of a, b, c are	4.0	1.00

		A1 : -3, 2, 7 A2 : 3, -2, 5 A3 : 3, 2, 1 A4 : None of these		
Objective Question				
62	62	If $y = \sin^n x \cos nx$, then dy/dx A1 : $n\sin^{n-1}x \cos (n+1)\, x$ A2 : $n\sin^{n-1}x \sin (n+1)\, x$ A3 : $n\sin^{n-1}x \cos (n-1)\, x$ A4 : $n\sin^{n-1}x \cos nx$	4.0	1.00
Objective Question				
63	63	If tangent to the curve $x = at^2$, $y = 2at$ is perpendicular to x-axis then its point of contact is A1 : (a, a) A2 : $(0, a)$ A3 : $(a, 0)$ A4 : $(0, 0)$	4.0	1.00
Objective Question				
64	64	The tangent to the curve $y = e^{2x}$ at the point (0, 1) meets the x-axis at A1 : $(0, a)$ A2 : $(2, 0)$ A3 : $(-1/2, 0)$ A4 : None of these	4.0	1.00

Objective Question				
65	65	The differential coefficient of $f(\log x)$ w.r.t. x , where $f(x)=\log x$ is A1 : $x/\log x$ A2 : $\log x/x$ A3 : $(x \log x)^{-1}$ A4 : $(\log x)^{-1}$	4.0	1.00
Objective Question				
66	66	The area enclosed by the curve $y^2 = 4x$ and the line $y = x$ is A1 : 2/3 A2 : 4/3 A3 : 1/2 A4 : 8/3	4.0	1.00
Objective Question				
67	67	The distance between the lines $3x+4y = 9$, and $6x+8y = 15$ is A1 : 3/2 A2 : 3/10 A3 : 6 A4 : 10/3	4.0	1.00
Objective Question				
68	68	Solution of the differential equation $\frac{dy}{dx}+\frac{3x+2y-5}{2x+3y-5}=0$ is A1 : $3x^2+3y^2+4xy-10x+10y = c$ A2 : $x^2+4xy-y^2-4x+6y = c$ A3 : $(x+2y)^2+3y = c$	4.0	1.00

		A4 : $3x^2+y^2+xy-10x-10y = c$		
Objective Question				
69	69	$\int x^2 e^{2x} dx =$ A1 : e^{2x} [$2x^2$-2x+1]+c A2 : 1/2 e^{2x} [$2x^2$-2x+1]+c A3 : 1/4 e^{2x} [$2x^2$+2x-1]+c A4 : None of these	4.0	1.00
Objective Question				
70	70	The diagram used to estimate mode graphically is A1 : Histogram A2 : Frequency Curve A3 : Ogine A4 : Bar diagram	4.0	1.00
Objective Question				
71	71	A tree is broken by wind, its upper part touches the ground at a point 10 m from the foot of the tree and makes an angle of 45^o with the ground. The entire length of the tree is A1 : 15 metres A2 : 20 metres A3 : 10 (1+√2) metres A4 : 10 (1+√3/2) metres.	4.0	1.00
Objective Question				
72	72	Given the sets A = {1, 2, 3}, B = {3, 4}, C = {4, 5, 6}, then A∪(B∩C) is A1 : {3}	4.0	1.00

		A2 : {1, 2, 3, 4} A3 : {1, 2, 5, 6} A4 : {1, 2, 3, 4, 5, 6}		
Objective Question				
73	73	The number of ways, in which a student can choose 4 courses out of 9 courses, when 2 courses are compulsory, is A1 : 36 A2 : 35 A3 : 126 A4 : 6	4.0	1.00
Objective Question				
74	74	Let the vectors 2**i** + 3**j** - 4**k** and a**i**+ b**j**+ c**k** be perpendicular. Then A1 : $a = 2, b = 3, c = -4$ A2 : $a = 4, b = 4, c = 5$ A3 : $a = 4, b = 4, c = -5$ A4 : $a = 2, b = 4, c = -5$	4.0	1.00
Objective Question				
75	75	Let A be a square matrix. Then $A+A^T$ will be A1 : the identity matrix A2 : diagonal matrix A3 : symmetric matrix A4 : skew-symmetric	4.0	1.00
Objective Question				
76	76	Which of the following has the highest global warming potential: A1 CO	4.0	1.00

		: A2 : CO_2 A3 : CH_4 A4 : Cl_2		
Objective Question				
77	77	Hardness in water is due to: A1 : monovalent anions A2 : monovalent cations A3 : divalent anions A4 : divalent cations	4.0	1.00
Objective Question				
78	78	When the temperature of a water-body increases, the dissolved oxygen ___ A1 : increases A2 : decreases A3 : remains the same A4 : none of these	4.0	1.00
Objective Question				
79	79	Nitrification is a process in which A1 : Ammonia is converted to Nitrate A2 : Ammonia is converted into nitrogen A3 : nitrogen is converted into Ammonia A4 : Nitrate is converted into Ammonia	4.0	1.00
Objective Question				
80	80		4.0	1.00

		Among the following devices which one is the most suitable for controlling emission of particulates having diameter less than 1 μ.? A1 : Cyclone A2 : Venturi Scrubber A3 : Bag filter A4 : Electrostatic precipitator		
Objective Question				
81	81	The substance responsible for the 'Minamata' disaster was A1 : Copper A2 : Chromium A3 : Mercury A4 : Zinc	4.0	1.00
Objective Question				
82	82	The main atmosphere layer near the surface of earth is A1 : Troposphere A2 : Mesosphere A3 : Ionosphere A4 : Stratosphere	4.0	1.00
Objective Question				
83	83	Reuse is A1 : recycling of resources for gaining energy and materials A2 : using a productagain and again in its original form A3 : extracting resources from waste for secondary purposes. A4 Converting waste materials into raw material for manufacturing	4.0	1.00

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Objective Question				
84	84	The absence of which of the following will make life impossible for fish in a water body: A1 : Hardness A2 : Acidity A3 : Alkalinity A4 : Dissolved oxygen	4.0	1.00
Objective Question				
85	85	Effluent from tanneries contains which toxic heavy metal? A1 : Ni A2 : Zn A3 : Cr A4 : Pb	4.0	1.00
Objective Question				
86	86	Ozone hole is caused by A1 : DDT A2 : PET A3 : CDC A4 : CFC	4.0	1.00
Objective Question				
87	87	Which among the following is most expected in ‘acid rain’? A1 : H_2SO_4 A2 : HF A3 : Acetic acid	4.0	1.00

		A4 : Benzoic acid		
Objective Question				
88	88	The presence of pesticides in drinking water and colas was brought to public attention by A1 : Sunita Narayan A2 : Amartya Sen A3 : Sir Vidyadhar Naipaul A4 : Vandana Shiva	4.0	1.00
Objective Question				
89	89	Energy flow in ecosystem is A1 : Unidirectional A2 : Bidirectional A3 : Multidirectional A4 : None of these	4.0	1.00
Objective Question				
90	90	An association between two individuals or populations whereboth are benefitted and where neither can survive without the otheris A1 : competition A2 : commensalism A3 : mutualism A4 : protocoperation	4.0	1.00
Objective Question				
91	91	Red data book contains data of A1 : all plant species A2 : all animal species	4.0	1.00

		A3 : economically important species A4 : threatened species		
Objective Question				
92	92	Biodiversity A1 : increases towards the equator A2 : decreases towards the equator A3 : remains same throughout the planet A4 : has no effect on change in latitude	4.0	1.00
Objective Question				
93	93	What is the animal symbol of W. W. F (World Wildlife Fund)? A1 : Red Panda A2 : Giant Panda A3 : Tiger A4 : Kangaroo	4.0	1.00
Objective Question				
94	94	The source of energy in an ecosystem is A1 : ATP A2 : Sunlight A3 : D.N.A A4 : R.N.A	4.0	1.00
Objective Question				
95	95	Noise is measured using sound meter and the unit is A1 : hertz	4.0	1.00

		A2 : decibel A3 : joule A4 : sound		
Objective Question				
96	96	The occurrence of pesticides like DDT in higher trophic levels istermed as A1 : bioremediation A2 : biomagnification A3 : biological enhancement A4 : biopollution	4.0	1.00
Objective Question				
97	97	Which is not a primary pollutant A1 : Ammonia A2 : Peroxy Acyl Nitrate A3 : sulphur dioxide A4 : hydrogen sulphide	4.0	1.00
Objective Question				
98	98	Which of the following is a secondary pollutant A1 : CO_2 A2 : CO A3 : O_3 A4 : SO_2	4.0	1.00
Objective Question				
99	99	Carbon mono oxide is a pollutant because it A1 it reacts with O_2	4.0	1.00

		: A2 : it inhibits glycolysis A3 : makes nervous system inactive A4 : reacts with haemoglobin		
Objective Question				
100	100	The major pollutant from automoblie exhaust is A1 : NO A2 : CO A3 : SO_2 A4 : H_2S	4.0	1.00