Sr No.	MTech Environmental Engineering and Management
1	Which term will replace the question mark in the series: ABD,DGK,HMS,MTB,SBL, ?
Alt1	ZKU
Alt2	ZKW
Alt3	ZAB
Alt4	XKW

2	Choose word from the given options which bears the same relationship to the third word, as the first two bears: Illiteracy: Education:: Flood:?
Alt1	Rain
Alt2	Bridge
Alt3	Dam
Alt4	River

3	Select the lettered pair that has the same relationship as the original pair of words: Sip : Gulp
Alt1	Touch: Push
Alt2	Cup: Class
Alt3	Tent: Hut
Alt4	Soup: Water

4	Select the lettered pair that has the same relationship as the original pair of words: Low : Cattle
Alt1	Sheep: Beef
Alt2	Gaggle: Chicken
Alt3	Grunt: Hogs
Alt4	Flock: Goat

5	Find out the number that has the same relationship as the numbers of the given pair: 8 : 81 : : 64 : ?
Alt1	125
Alt2	137
Alt3	525
Alt4	625

6	Spot the defective segment from the following:
Alt1	It's time
Alt2	the students dispersed
Alt3	to go to home
Alt4	after study hours

7	There is no -------- in our car and it is already crowded.
Alt1	room
Alt2	place
Alt3	seat

Alt4	space

8	Newton ---------- loved his pet dog very much.
Alt1	a scientist
Alt2	the scientist
Alt3	scientist
Alt4	one scientist

9	Choose the option closest in meaning to the given word: JINGOISM
Alt1	deism
Alt2	chauvinism
Alt3	extremism
Alt4	pacifism

10	Choose the antonymous option you consider the best: QUACK
Alt1	bizarre
Alt2	procurer
Alt3	charlatan
Alt4	authority

11	In a village there are 1000 persons. Out of which 800 are literates. Out of 1000,700 are criminals. There are 550 literate criminals in that village. How many Illiterate non criminals are there?
Alt1	150
Alt2	250
Alt3	50
Alt4	200

12	Average weight of A,B,C is 45; Average weight of A&B is 40; Average weight of B&c is 43, Weight of B is
Alt1	17
Alt2	20
Alt3	26
Alt4	31

13	Which of the following cannot be the Median of the three positive Integers X,Y & Z ?
Alt1	X
Alt2	Z
Alt3	X+Z
Alt4	(X+Z)/3

14	How many Zero's are there in the product 1*2*3*------*10
Alt1	2
Alt2	10
Alt3	5

Alt4	6

15	A,B,C,D work on a project. Together A,B &C can complete in 100 days; Together B,C &D can complete in 101 days; Together C,D & A can complete in 102 days; together D,A & B can complete in 103 days . Rank them from the best to the worst performer.
Alt1	C>B>A>D
Alt2	C>A>B>D
Alt3	D>B>A>C
Alt4	D>A>B>C

16	22 Students are evenly spaced on the circumference of a big circle. They are numbered 1to 22. which number is opposite to 17?
Alt1	8
Alt2	5
Alt3	7
Alt4	6

17	The fare of a luxury cab is Rs. X for the first five Kilometres and Rs,13/- per Kilometre thereafter. If a passenger pays Rs.2402/- for a journey of 187 kilometres, what is the value of X ?
Alt1	Rs.29
Alt2	Rs.39
Alt3	Rs.36
Alt4	Rs.31

18	An HR Company employs 4800 people out of which 45 per cent are males and 60 per cent of males are either 25 years or older. How many males are employed in that company who are younger than 25 years ?
Alt1	2640
Alt2	2160
Alt3	1296
Alt4	864

19	A person buys a shirt with marked price Rs.400/- at 20% discount. In order to make a profit of 20% the person should sell the shirt for
Alt1	Rs.400/-
Alt2	Rs.384/-
Alt3	Rs.320/-
Alt4	Rs.480/-

20	The following information is given:(i) Five friends P, Q, R. S and T travelled to five different cities of Chennai, Calcutta, Delhi, Bangalore and Hyderabad by five different modes of transport of Bus, Train, Aeroplane, Car and Boat from Mumbai. (ii) The person who travelled to Delhi did not travel by boat. (iii) R went to Bangalore by car and Q went to Calcutta by aeroplane.(iv) S travelled by boat whereas T travelled by train. (v) Mumbai is not connected by bus to Delhi and Chennai. Which of the following combinations of place and mode is not correct ?

Alt1	Delhi — Bus
Alt2	Calcutta — Aeroplane
Alt3	Bangalore — Car
Alt4	Chennai — Boat

21	Which of the following is a dimensionless quantity?
Alt1	Stress
Alt2	Quantity of heat
Alt3	Strain
Alt4	Specific heat

22	The physical quantities, not having the same dimensions, are:-
Alt1	Momentum and Planck's constant
Alt2	Torque and work
Alt3	Strain and coefficient of friction
Alt4	Stress and Young's Modulus

23	If curve $y = x^2 + bx + c$ touches the straight line $y = x$ a the point (1, 1), then b and c are given by:-
Alt1	1, 1
Alt2	-1, 1
Alt3	2, 1
Alt4	1, 2

24	Suppose the sun expands, so that its radius becomes 100 times its present radius and its surface temperature becomes half of its present value. The total energy emitted by it will increase by a factor of:-
Alt1	16
Alt2	1000
Alt3	256
Alt4	625

25	A particle is moving in a straight line according to the formula $s=t^3-9t^2+3t+1$, Where s is measured in metres and t in seconds. When the velocity is -24 m/s, the acceleration is:-
Alt1	-36 m/s2
Alt2	0 m/s2
Alt3	48 m/s2
Alt4	36 m/s2

26	The greatest value of $f(x)=2x^3-3x^2-12x+1$ in the interval [-2, 5] is:-
Alt1	8
Alt2	114
Alt3	108
Alt4	121

27	Maximum area of a rectangle of perimeter 176 cm is:-
Alt1	1936 cm2
Alt2	2110 cm2

Alt3	1854 cm2
Alt4	3600 cm2

28	The transmission of heat by molecular collision is called:-
Alt1	Radiation
Alt2	Convection
Alt3	Condensation
Alt4	Conduction

29	Air pollution is not caused by:-
Alt1	hydroelectric power
Alt2	industries
Alt3	pollen grains
Alt4	automobiles

30	$$\int_2^4 \frac{dx}{\sqrt{\{(x-2)(4-x)\}}} =$$
Alt1	1
Alt2	$\pi /2$
Alt3	0
Alt4	π

31	If two compounds have the same empirical formula but different molecular formulae, they must have :-
Alt1	same viscosity
Alt2	same vapour density
Alt3	different molecular weights
Alt4	different % composition

32	Which of the following is not a reducing agent?
Alt1	NO2
Alt2	CO2
Alt3	H2O2
Alt4	SO2

33	If energy (E), velocity (v) and force (F) be taken as fundamental quantity, then what are the dimensions of mass ?
Alt1	E v2
Alt2	E v-2
Alt3	F v-1
Alt4	F v-2

34	The process which is catalyzed by one of the products is known as:-
Alt1	negative catalysis

Alt2	auto-catalysis
Alt3	anti-catalysis
Alt4	acid catalysis

35	A car moves along a straight line whose motion is given by S = 12t + 3 t2- 2t3, where (s) is in meters and (t) is in seconds . The velocity of the car at start will be:-
Alt1	9 m/sec
Alt2	12 m/sec
Alt3	16 m/sec
Alt4	7 m/sec

36	"Parsec" is the unit of:-
Alt1	Angular momentum
Alt2	Distance
Alt3	Time
Alt4	Frequency

37	A stone is released from the top of a tower, reaches the ground in 4 sec. The height of the tower is (g = 10m/sec2) :-
Alt1	160 m
Alt2	20 m
Alt3	40 m
Alt4	80 m

38	Disease caused by eating fish found in water contaminated with industrial waste having mercury is:-
Alt1	osteosclerosis
Alt2	hasimatos disease
Alt3	brights disease
Alt4	minamata disease

39	Transition elements are hard because of :-
Alt1	Vander Waal's forces
Alt2	ionic bonds
Alt3	covalent bonds
Alt4	hydrogen bonds

40	"If external force on a body is zero, its acceleration is also zero" is a statement or consequence of the:-
Alt1	Newton's second law of motion
Alt2	Newton's first law of motion
Alt3	First Law of thermodynamics
Alt4	Newton's thirds law of motion

41	Which of the following is a good conductor of electricity?
Alt1	graphite
Alt2	diamond

Alt3	amorphous carbon
Alt4	silicon

42	A particle is moving on a line, where its position s in metres is a function of time t in seconds given by s=t3 + at2 + 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/s2. The values of a, b, c are
Alt1	3, 2, 1
Alt2	3, -2, 5
Alt3	-3, 2, 7
Alt4	3, 2, -1

43	Locus of a point such that the ratio of its distances from two fixed points is constant is:
Alt1	a straight line
Alt2	a parabola
Alt3	an ellipse
Alt4	a circle

44	Which one of the following is a molecular crystal?
Alt1	quartz
Alt2	diamond
Alt3	dry ice
Alt4	rock salt

45	The error in the measurement of mass and velocity of a moving body are 2% and 3 % respectively. Error , in kinetic energy obtained by measuring mass and speed ,will be:-
Alt1	0.08
Alt2	0.02
Alt3	0.12
Alt4	0.1

46	A 100m long train is moving with uniform velocity of 45 km/hr. The time taken by the train to cross a bridge of length 1 km is:-
Alt1	68 sec
Alt2	78 sec
Alt3	88 sec
Alt4	58 sec

47	The ratio of Hydrogen and Oxygen in water molecule by volume is:-
Alt1	0.084027778
Alt2	0.167361111
Alt3	0.043055556
Alt4	0.125694444

48	Which of the following is not a characteristic of the fundamental units?
Alt1	They change with change of conditions
Alt2	They are easily reproductive
Alt3	They are well defined

	Alt4	They are not related to each other

	49	The tangent to the curve y = e2x at the point (0, 1) meets the x-axis at:-
	Alt1	(0,-1/2)
	Alt2	(0, 2)
	Alt3	(-1/2, 0)
	Alt4	(2, 0)

	50	A line passes through (2, 2) and is perpendicular to the line 3x+y=3. Its y intercept is:-
	Alt1	4/3
	Alt2	1/3
	Alt3	1
	Alt4	2/3

	51	Bleaching action of chlorine in presence of moisture is:-
	Alt1	reduction
	Alt2	substitution
	Alt3	oxidation
	Alt4	hydrolysis

	52	Lead in water may cause:-
	Alt1	arthritis
	Alt2	hair falling
	Alt3	fever
	Alt4	kidney damage

	53	Hess's law deals with:-
	Alt1	rates of reaction
	Alt2	change in heat of a reaction
	Alt3	influence of pressure on volume of a gas
	Alt4	equilibrium constants

	54	World Ozone day is celebrated on:-
	Alt1	March 16
	Alt2	June 16
	Alt3	December 16
	Alt4	September 16

	55	

$$\text{If } u = f(y-z,\ z-x,\ x-y) \text{ then } \frac{\partial u}{\partial x} + \frac{\partial u}{\partial y} + \frac{\partial u}{\partial z} =$$

	Alt1	3
	Alt2	0
	Alt3	1

Alt4	$\dfrac{\partial f}{\partial x} + \dfrac{\partial f}{\partial y} + \dfrac{\partial f}{\partial z}$

56 If (x,y,z)=(x2+y2+z2)-1/2, then fxx+fyy+fzz=

Alt1	∞
Alt2	-1
Alt3	0
Alt4	1

57 The product of the roots of the equation mx2 + 6x + (2m - 1) = 0 is -1. Then m =

Alt1	-1/3
Alt2	1/3
Alt3	1
Alt4	-1

58 The three fundamental quantities are:-

Alt1	Mass, length and time
Alt2	Mass, force and length
Alt3	Mass, pressure and energy
Alt4	Momentum, force and torque

59 The positive values of a which satisfies:-
$$\int_{o}^{a} (3x^2 + 4x - 5)\,dx = a^3 - 2, \text{ are}$$

Alt1	1, 2
Alt2	2, 1/2
Alt3	1, -2
Alt4	2, -1/2

60 The principal quantum number of an atom represents:-

Alt1	orbital angular momentum
Alt2	spin angular momentum
Alt3	size of the orbital
Alt4	space orientation of the orbital

61 Entropy of the Universe is:-

Alt1	zero
Alt2	continuously increasing
Alt3	constant
Alt4	continuously decreasing

62 A catalyst in the finely divided form is most effective because:-

Alt1	more energy gets stored in the catalyst
Alt2	more active centres are formed
Alt3	less surface area is available
Alt4	none

63	The value of a for which the difference of the roots of the equation ax2+(a-1)x+2=0 is min, is given by:-
Alt1	5
Alt2	1/5
Alt3	-1/5
Alt4	-5

64	Argon is used:-
Alt1	in radiotherapy for treatment of cancer
Alt2	in filling airships
Alt3	to obtain low temperature
Alt4	in high temperature welding

65	The numerical ratio of displacement to the distance covered by a particle is always:-
Alt1	Equal to or less than one
Alt2	Less than one
Alt3	Equal to one
Alt4	Equal to or greater than one

66	A U- tube contains water and methylated spirit separated by mercury. The mercury columns in the two arms are in level with18 cm of water in one arm and 20 cm in other arm. The density of spirit is (density of water 1g/cm3).
Alt1	1.2 g/cm3
Alt2	0.3 g/cm3
Alt3	0.9 g/cm3
Alt4	0.6 g/cm3

67	From a solution of CuSO4, the metal used to recover copper is:-
Alt1	Sodium
Alt2	Silver
Alt3	Iron
Alt4	Mercury

68	If y=axn+1 + bx-n, then $x^2 \dfrac{d^2 y}{dx^2} =$
Alt1	n(n+1)y
Alt2	n(n-1)y
Alt3	ny
Alt4	n2y

69	A tree is broken by wind, its upper part touches the ground at appoint 10 m from the foot of the tree and makes an angles of 45° with the ground. The entire length of the tree is:-
Alt1	10 (1+√3/2) metres
Alt2	10 (1+√2) metres
Alt3	15 metres
Alt4	20 metres

70	Solution of the differential equation (dy/dx) + (y/x) = sin x is:-
Alt1	x(y - cos x) = sin x + c
Alt2	x(y + cos x) = cos x + c
Alt3	x(y + cos x) = sin x + c
Alt4	x(y + cos x) = -sin x + c

71	The Value of $\int_0^{\pi/2} \dfrac{dx}{1+\tan^3 x}$ is:-
Alt1	π/2
Alt2	1
Alt3	π/4
Alt4	0

72	The line which is parallel to x-axis and crosses the curve y = √x at an angle of 45° is:-
Alt1	y = 1
Alt2	y = 1/4
Alt3	y = 1/2
Alt4	x = 1/4

73	$\int_0^{2/3} \dfrac{dx}{4+9x^2} =$
Alt1	π/6
Alt2	π/48
Alt3	π/12
Alt4	π/24

74	When 100ml of 1M NaOH and 10ml of 1 N H2SO4 solution are mixed together the resulting solution will be:-
Alt1	acidic
Alt2	strongly acidic
Alt3	neutral
Alt4	alkaline

75	Temporary hardness can be removed by adding:-
Alt1	O2
Alt2	lime
Alt3	slaked lime
Alt4	Carbon

76	Nascent hydrogen consists of:-
Alt1	solvated protons
Alt2	Hydrogen ions in excited state
Alt3	Hydrogen molecules with excess energy
Alt4	Hydrogen atom with excess of energy

77	If thermal conductivity of a conductor is 4, then its thermal resistivity will be:-
Alt1	4
Alt2	1
Alt3	16
Alt4	0.25

78	In a DABC, if $\dfrac{\cos A}{a} = \dfrac{\cos B}{b} = \dfrac{\cos C}{c}$, and the side $a = 2$, then the area of the triangle is:-
Alt1	1
Alt2	√3/2
Alt3	√3
Alt4	2

79	A spherical balloon is being inflated so that its volume increases uniformly at the rate of 40 cm3/min. When radius is 8 cm, the surface area is increasing at the rate:-
Alt1	100 cm2/min
Alt2	10 cm2/min
Alt3	400 cm2/min
Alt4	1 cm2/min

80	Two insulated charged copper sphere A and B each having charge of 6.5 x 10-7C are separated by a distance 50 cm. If they are placed in water of dielectric constant 80, then electrostatic force of repulsion between them is:
Alt1	1.9 x 10-4 N
Alt2	3.8 x 10-4 N
Alt3	3.8 x 10-7 N
Alt4	1.9 x 10-7N

81	In a brown ring test, the brown colour of the ring is due to:-
Alt1	ferrous nitrite
Alt2	nitroso ferrous sulphate

Alt3	ferrous nitrate
Alt4	mixture of NO and NO2

82	A metal plate of area 103 cm2 rest on a layer of oil 6 mm thick. A tangential force of 10-2N is applied on it to move it with a constant velocity of 6 cm/sec. The coefficient of viscosity of the liquid is:-
Alt1	0.9 P
Alt2	0.5 P
Alt3	0.1 P
Alt4	0.7 P

83	A sheet of aluminium foil of negligible thickness is introduced between the plates of a capacitor. The capacitance of the capacitor:-
Alt1	Remains unchanged
Alt2	Decreases
Alt3	Increases
Alt4	Becomes infinite

84	The Value of $\frac{d}{dx}(x^x)$ is
Alt1	xx log x
Alt2	x log x
Alt3	xx log ex
Alt4	x xx-1

85	If doubling the concentration of a reactant A increases the rate 4 times and trebling the concentration of A increases the rate 9 times, the rate is proportional to:-
Alt1	square of concentration of A
Alt2	cube of concentration of A
Alt3	underoot of concentration of A
Alt4	concentration of A

86	The value of a so that f(x)=sin2ax/x2,x≠0,f(0)=1, is continuous at x=0 is:-
Alt1	only -1
Alt2	only 1
Alt3	±1
Alt4	0

87	The metal always found in the free state is:-
Alt1	gold
Alt2	copper
Alt3	sodium
Alt4	silver

88	A carnot engine has an efficiency of 25%. If energy is fed into the engine at the rate of 1 kw , then output of the engine is:-
Alt1	750 W
Alt2	1250 W
Alt3	40 W
Alt4	250 W

89	Air is streaming over both the aeroplane wings such that its speed is 85 m/sec over the upper surface and 75 m/sec at the lower surface. If the wings are 10m long and have an average width of 2m, then lift of wind on aeroplane is (take density of air : 1.5 kg/m3)
Alt1	12 kN
Alt2	72 kN
Alt3	24 kN
Alt4	48 kN

90	If a reversible engine and an irreversible engine are operating between the same temperature, then efficiency of:-
Alt1	Both the engines will be 100%
Alt2	Irreversible engine will be greater
Alt3	Reversible engine will be 100%
Alt4	Reversible engine will be greater

91	If $x = \sin\theta\sqrt{(\cos 2\theta)}$, $y = \cos\theta\sqrt{(\sin 2\theta)}$, then dy/dx at $\theta = \pi/4$ is:-
Alt1	-1
Alt2	0
Alt3	1
Alt4	∞

92	When solid potassium cyanide is added in water, the:-
Alt1	the pH will increase
Alt2	electrical conductivity will not change
Alt3	the pH will decrease
Alt4	pH will remain same

93	The metallic lusture exhibited by sodium is explained by:-
Alt1	oscillation of loose electrons
Alt2	diffusion of Na+ions
Alt3	excitation of free protons
Alt4	existence of body centred cubic lattice

94	If the equations $x^2 + 2x + 3\lambda = 0$ and $2x^2 + 3x + 5\lambda = 0$ have a non-zero common root, then $\lambda =$
Alt1	1
Alt2	-1
Alt3	-3
Alt4	3

95	The value of y''(1), when $x^3-2x^2y^2=5x=y-5=0$ and $y(1)=1$, is given by:-

Alt1	-238/27
Alt2	22/27
Alt3	-182/23
Alt4	8

96	A circle is inscribed in a triangle with sides 8 cm, 15 cm and 17 cm. The radius of the circle is:-
Alt1	6 cm
Alt2	5 cm
Alt3	3 cm
Alt4	2 cm

97	$$\int x^2 e^{x^3} \cos(e^{x^3})dx =$$
Alt1	$\frac{1}{3}\sin(e^{x^3})$
Alt2	$\sin(e^{x^3})$
Alt3	$3\sin(e^{x^3})$
Alt4	$-\frac{1}{3}\sin(e^{x3})$

98	If the pressure of 250 cc of dry oxygen measured at 700 mm and at constant temperature be raised to 875 mm, then volume occupied by the gas will be:-
Alt1	200 cc
Alt2	100 cc
Alt3	300 cc
Alt4	400 cc

99	Solution of the equation dy/dx+(1/x) y=x2y6 is:-
Alt1	$s^5 y^5 = \frac{5}{2} x^2 + c$
Alt2	xy=c
Alt3	$x^5/y^5 = 5x^2 + c$
Alt4	$1/(x^5 y^5) = 5/(2x^2) + c$

100	The letter 'D' in D - Glucose signifies:-
Alt1	that it is a monosaccharide
Alt2	configuration at a particular chiral Carbon
Alt3	configuration at all chiral Cs
Alt4	dextrorotatory