SET A

1	In logical reasoning, truth or falsehood is usually associated with	
	A	arguments
	B	inferences ✓
	C	syllogism
	D	propositions
2	Which of the following statements are true? (i) Some arguments while not be completely valid are almost valid (ii) A sound argument may be invalid (iii) A cogent argument may have a probably false conclusion (iv) A statement may be true or false	
	A	(i) and (ii)
	B	(i), (iii) and (iv)
	C	(iv) alone
	D	(iii) and (iv)
3	'A' is true because of 'B' is true; 'B' is true because of 'A' is true. This type of argument is termed as	
	A	circular argument
	B	inductive argument
	C	deductive argument
	D	none of these
4	Instructions to give answer of the subsequent question • (a) If only assumption (i) is implicit • (b) If only assumption (ii) is implicit • (c) If both (i) and (ii) are implicit • (d) If either (i) or (ii) is implicit Statement: The automobile companies decreased prices of their products, besides offering many attractive financing schemes. Assumptions: (i) This will boost the market demand that is now sluggish. (ii) There is high competition in the market.	
	A	Only assumption (i) is implicit
	B	Only assumption (ii) is implicit
	C	Both (i) and (ii) are implicit
	D	Either (i) or (ii) is implicit

	Instructions to give answer of the subsequent questions (Question No. 5 – Question No. 7) In each question below are given two statements followed by two conclusions numbered I and II. You have to take the two give statement to be true even if they seem to be at variance from commonly known facts and then decide which of the give conclusions logically follows from the two give statements, disregarding commonly known facts. Read both the statements and the answers:	
5	Statements: Necessity is the mother of all inventions. Conclusions I: There can be no invention without there being a mother. II: mother is a necessity.	
	A	only I is implied
	B	only II is implied
	C	both I and II are implied
	D	neither I nor II is implied
6	Statements: Most teachers are hardworking. Conclusions I: some teachers are hardworking. II: Some teachers are not hardworking	
	A	only I is implied
	B	only II is implied
	C	both I and II are implied
	D	neither I nor II is implied
7	Statements: Most of the Indian states existed before independence. Conclusions I: Some Indian states existed before independence II: All Indian states did not exist before independence	
	A	only I is implied
	B	only II is implied
	C	both I and II are implied
	D	neither I nor II is implied
8	A series of number follows some rule and the series is 15, 18, 24, --?, 45. The missing number of the series is	
	A	27
	B	30
	C	33
	D	36
9	A series of number follows some rule and the series is 23, 33, 46, 62, 81, 103, ..?. The missing number of the series is	
	A	126
	B	130
	C	133
	D	128
10	Find the missing letters in the following series: QAR, RAS, SAT, TAU, ...	
	A	UAV
	B	TAS
	C	UAT
	D	TAT

11	If the side of square is increased by 25%, then its area is increased by	
	A	50%
	B	25%
	C	56.5%
	D	none of the above
12	If F is the brother of A, C is the daughter of A, K is the sister of F and G is the brother of C, then who is the uncle of G?	
	A	F
	B	K
	C	C
	D	none of these
13	Shalini walked 15 m towards south, took right turn, and walked 3 m. She took a right turn again and walked before stopping. Which direction did Shalini face after stopping?	
	A	west
	B	south
	C	east
	D	north
14	A train completed half a trip at 30 miles/hour and the other half at 60 miles/hour. If the whole trip was 20 miles, how much time did the train take to complete the trip?	
	A	90 min
	B	60 min
	C	45 min
	D	30 min
15	A train whose length is 320 m is running at a speed of 36 kmph. How much time will it take to pass a pole?	
	A	30 s
	B	32 s
	C	36 s
	D	40 s
16	The rate at which a new organic matter is synthesize available to the consumers in an ecosystem is called	
	A	gross primary production
	B	net primary production
	C	primary production
	D	organic matter production
17	The physical space occupied by an organism and its functional role in the community as well as its position in environmental gradient is known as	
	A	ecological niche
	B	habitat niche
	C	phonological niche
	D	regeneration niche
18	The example of the detritus food chain is seen in	
	A	mangroves
	B	photo autotrophs
	C	saprotrophs
	D	green plants
19	The chemo-autotrophs uses heat energy in the absence of sun light to convert dissolved hydrogen sulphide and carbon dioxide into	
	A	inorganic compounds
	B	inorganic & organic compounds
	C	organic compounds
	D	toxic compounds

chemo-autotrophs — $H_2S + CO_2$

20	The energy transferred from one trophic-level to the other is only	
	A	about 20%
	B	about 25%
	C	about 10% ✓
	D	about 5%
21	Identify the incorrect statement Food chain and food web plays a very important role in the ecosystem because	
	A	it shows biological magnifications of all chemicals
	B	it helps to maintain ecological balance
	C	nutrient cycle takes place through them
	D	energy flow takes place through them
22	The process of succession takes place in a systematic order of sequential steps. The steps involved (which are not in a sequence) are as follows: 1. Nudation 2. Invasion 3. Reaction 4. Competition and coactions 5. Stabilization The correct order of sequence is	
	A	1, 2, 3, 4, 5
	B	1, 2, 4, 3, 5.
	C	1, 3, 4, 2, 5
	D	1, 2, 3, 5, 4
23	In terrestrial biodiversity of earth surface, the largest ecological units present in different geographical areas is known as	
	A	bio diversity hot spots
	B	ecological balance
	C	biomes
	D	biogeography
24	What percentage of food eaten by consumers is oxydized for energy?	
	A	50 – 80%
	B	40 – 60%
	C	60 – 90%
	D	10 – 40%
25	Nutrients such as carbon, nitrogen, sulphur, oxygen, hydrogen, phosphorous etc. move in circular paths through biotic and abiotic components and are known as	
	A	geochemical cycles
	B	inorganic constituents cycles
	C	biogeochemical cycles
	D	chemical cycles
26	In nitrogen cycle, the organic nitrogen is converted to nitrogen by ammonifying and nitrifying bacteria in sequential steps. Identify the correct sequence from the following options	
	A	organic nitrogen – ammonia - nitrite nitrogen - nitrate nitrogen - nitrogen
	B	organic nitrogen – ammonia - nitrate nitrogen - nitrite nitrogen - nitrogen
	C	ammonia - organic nitrogen - nitrite nitrogen - nitrate nitrogen - nitrogen
	D	ammonia - organic nitrogen - nitrate nitrogen - nitrite nitrogen - nitrogen
27	A phenomenon of increased variety and intensity of plants at the common junction is known as	
	A	ecotone
	B	stratification
	C	ecological niche
	D	edge effect

28	Identify the incorrect statement from the following given options: The oligotrophic lakes such as Sambar lake of Rajasthan is characterized by	
	A	poor nutrients availability
	B	rich nutrient availability
	C	presence of high salt content
	D	availability of small number of plants and animals
29	Which one of the following is not an ex-situ conservation location?	
	A	national parks
	B	botanical gardens
	C	wild life sanctuaries
	D	biosphere reserves
30	Various types of ecosystem diversities are defined in the following options. Identify the option which gives incorrect definition	
	A	the variation of genes in species is called genetic diversity
	B	the diversity within the community is called alpha diversity
	C	the diversity among the communities is called beta diversity
	D	the diversity of habitats over a small geographic area is called gamma diversity
31	The environmental lapse rate (ELR) is characterized by negative lapse rate, when	
	A	ambient temperature remains constant with altitude
	B	ambient temperature increases with altitude
	C	ambient temperature decreases with altitude
	D	ambient temperature decreases linearly with altitude
32	The poly nuclear aromatic hydrocarbon is considered as air pollutant because of	
	A	causes respiratory problem
	B	highly corrosive in nature
	C	irritating property
	D	potentially carcinogenic
33	The deterioration of monuments and sculptures are caused by	
	A	the exposure of carbon monoxide at high concentration for long period of time
	B	the exposure of carbon dioxide
	C	sulphuric acid mists
	D	metallic compounds
34	The atmosphere is said to be stable, when the	
	A	environmental lapse rate is less than the adiabatic lapse rate
	B	environmental lapse rate is more than the adiabatic lapse rate
	C	environmental lapse rate is equal to the adiabatic lapse rate
	D	none of these
35	When the inversion layer prevail below the stack and an unstable layer occurs at the top of the stack, then the plume is said to be	
	A	lofting plume
	B	fumigating plume
	C	coning plume
	D	looping plume
36	The symptoms of acute lead poisoning include	
	A	weakness
	B	a blue line along the gums
	C	vomiting and bloody diarrhea
	D	vomiting and headache

37	An ozone depleting chemical which is used in fire extinguishers is	
	A	nitrogen oxide
	B	hallon ✓
	C	chlorofluorocarbon
	D	methyl bromide
38	Green house gases are	
	A	transparent for both solar radiations as well as long wave radiations from earth surface
	B	absorbers of long wave radiations from the earth surface
	C	good absorbers of solar radiations causing warming of the earth's atmosphere
	D	none of these
39	The high pressure systems which are accompanied by clear skies, light winds and stable environment may prove ELR < ALR	
	A	to be good for dispersion of pollutants
	B	to be good for mixing and rapid dispersion of pollutants
	C	to be bad for dispersion of pollutants
	D	to be nearly better for the dispersion of pollutants
40	In the upper region of stratosphere the temperature increases with the altitude as a	
	A	sun is nearer in comparison of earth
	B	result of presence of ozone
	C	ultraviolet rays trapped by CO_2 molecules
	D	high concentration of carbon dioxide
41	The degree of stability of the atmosphere depends on the rate of change of	
	A	ambient pressure
	B	ambient temperature with altitude ✓
	C	relative humidity
	D	none of these
42	The subsidence inversion is more dangerous than the radiation inversion and may occur at	
	A	modest altitude
	B	high altitude
	C	low altitude ✓
	D	anywhere
43	In Gaussian plume model, the values of horizontal dispersion and vertical dispersion coefficients depend on	
	A	temperature and pressure
	B	temperature and humidity
	C	stability and downwind distance
	D	wind speed and wind direction
44	The photochemical smog is formed in the atmosphere as a secondary pollutant in presence of sunlight and favourable environmental conditions. Which of the following is not a major constituent of photochemical smog? VOC ✗	
	A	PAN . Polyacetyl Nitrile
	B	ozone ✓
	C	HC
	D	CO
45	The prescribed standard for 24 hourly average value of particulate matter having particle size 2.5 µm ($PM_{2.5}$) for residential area is	
	A	120 µg/m³
	B	60 µg/m³
	C	80 µg/m³ ✓
	D	30 µg/m³

46	The color produced in water by the colloidal suspension is termed as	
	A	true color
	B	apparent color
	C	light color
	D	dark color
47	In water borne diseases, the symptom of infection caused by protozoa is	
	A	Infectious hepatitis
	B	Leptospirosis
	C	gastrointestinal disorder
	D	shigellosis
48	The water sample 'A' and 'B' have pH 6 and pH 3, respectively. How many times sample B is acidic than sample A	
	A	3
	B	30
	C	300
	D	1000
49	The pseudo hardness is caused due to excessive presence of	
	A	mineral ions
	B	potassium ions
	C	sodium ions
	D	strontium ions
50	In determination of microbial contamination, the Thomas Equation used to estimate the MPN is	
	A	$MPN/_{100}\ ml = \frac{No.of\ positive\ tubes\ *\ 1000}{\sqrt{ml\ of\ sample\ in\ negative\ tubes\ *\ ml\ of\ samples\ in\ all\ tubes}}$
	B	$MPN/_{100}\ ml = \frac{No.of\ positive\ tubes\ *\ 100}{\sqrt{ml\ of\ sample\ in\ negative\ tubes\ *\ ml\ of\ samples\ in\ all\ tubes}}$
	C	$MPN/_{100}\ ml = \frac{No.of\ negative\ tubes\ *\ 1000}{\sqrt{ml\ of\ sample\ in\ positive\ tubes\ *\ ml\ of\ samples\ in\ all\ tubes}}$
	D	$MPN/_{100}\ ml = \frac{No.of\ negative\ tubes\ *\ 100}{\sqrt{ml\ of\ sample\ in\ positive\ tubes\ *\ ml\ of\ samples\ in\ all\ tubes}}$
51	The desirable limit of fluoride in drinking water as per IS 10500: 2012 is	
	A	1.0 mg/l
	B	0.5 mg/l
	C	1.5 mg/l
	D	2.0 mg/l
52	During non monsoon periods, the combined sewers will have to run at low discharges at about	
	A	1/10 to 1/20
	B	1/20 to 1/25
	C	7/10 to 8/10
	D	2/3 to 4/5
53	In combined sewerage system, egg shaped sewers are preferred due to their	
	A	economical construction
	B	more stable structure
	C	easier maintenance
	D	accommodation of good flow velocity during the dry weather flow condition
54	In house hold drainage systems, the traps are generally used to	
	A	restrict the flow of water
	B	prevent entry of foul gases in the house
	C	trap the solid wastes
	D	provide a partial vacuum

55 The steps involved in laying a sewer in a trench are given below:

1. Settling sight rails over the trench
2. Transferring the centre line of the sewer to the bottom of a trench
3. Placing the sewer in the trench
4. Driving pegs to the level of the invert line of the sewer

The correct sequence of these steps is

A	1 , 2 , 3 , 4
B	1 , 3 , 2 , 4
C	2 , 1 , 4 , 3
D	2 , 3 , 4 , 1

56 The change in rate of reaction (k) values with temperature can be evaluated by the empirical equation of

A	$K_T = K_{20}\,\theta^{20^\circ - T}$
B	$K_T = K_{20}\,\theta^{T - 20^\circ}$
C	$K_T = K_{20}\,\theta^{T/20^\circ}$
D	$K_T = K\theta\,(T - 20)$

57 A fresh sewage of 500 kg contains total solids, approximately, equal to

A	0.25 – 0.5 kg
B	1 – 2.5 kg
C	2.5 – 5.0 kg
D	5 – 10 kg

58 The specific gravity of sewage is

A	equal to 1.0
B	approximately, equal to 1.4
C	less than 1.0
D	none of these

59 The minimum dissolved oxygen content required for the survival of aquatic life in river stream is

A	8 mg/l
B	14 mg/l
C	4 mg/l
D	6 mg/l

60 The prescribed effluent discharge standard of BOD_5 to inland surface water is

A	20 mg/l
B	30 mg/l
C	50 mg/l
D	none of these

61 The dry weight of solid waste may be obtained by drying the waste in an oven at

A	77 °C for 24 hour
B	105 °C for 24 hour
C	77 °C for 1 hour
D	180 °C for 1 hour

62 SCS is the solid waste collection system in which the containers used for the storage of the wastes

A	hauled to the processing, transfer or disposal sites
B	remains at the point of waste generation
C	moves with transportation vehicles
D	close to disposal system

aerobic - 20°C - 30°C

63	In an anaerobic digestion the optimum temperature which has to be maintained is	
	A	30 °C to 35 °C
	B	20 °C to 35 °C
	C	15 °C to 30 °C
	D	25 °C to 40 °C
64	The major parameters involved in composting process of solid waste are	
	A	temperature, pH, water content and agitation
	B	aeration, temperature, pH, water content, density
	C	aeration, temperature, water content, waste characteristics
	D	temperature, pH, waste characteristics
65	The thermal treatment technique of solid waste namely pyrolysis is applied in	
	A	the presence of excessive oxygen
	B	the absence of oxygen
	C	the presence of partial oxygen and hydrogen
	D	the hydrogen deficient condition
66	The calorific value of Refuse Derived Fuel (RDF) depending upon the percentage of the organic matter in the waste and is approximated as	
	A	800 – 1000 kcal/kg
	B	3000 – 4000 kcal/kg
	C	1000 – 1500 kcal/kg
	D	5000 – 6000 kcal/kg
67	The typical density of municipal solid waste used for development of management system ranges from	
	A	150 to 350 kg/m^3
	B	250 to 450 kg/m^3
	C	350 to 550 kg/m^3
	D	450 to 650 kg/m^3
68	Plasma arc process works at extremely high temperature environment, the temperature ranges from	
	A	5000 to 14000 ^{0}C
	B	1000 to 1500 ^{0}C
	C	1500 to 2000 ^{0}C
	D	none of these
69	Vermi-technology is used for the eco-friendly treatment of municipal solid waste, a tripartite system which involves	
	A	solid waste, microbes and earthworms
	B	solid waste, vessel and earthworms
	C	biomass, microbes and earthworms
	D	enzymes, microbes and earthworms
70	As per CPHEEO manual the rate of generation of municipal solid waste used for the development of solid waste management plan ranges from	
	A	0.1 to 0.4 kg/capita/day
	B	0.3 to 0.6 kg/capita/day
	C	0.05 to 0.3 kg/capita/day
	D	none of these
71	The solid waste generated from healthcare facility contains non-hazardous and hazardous waste. The percentage of biomedical waste ranges from	
	A	10 – 25%
	B	20 – 25%
	C	20 – 40%
	D	30 – 45%

72 The anaerobic method of mechanical composting widely adopted by municipal authorities throughout India is

A Indore method of composting
B Bangalore method of composting
C Mangalore method of composting
D Nagpur method of composting

73 Identify the incorrect statement:

The landfilling is done for the following type of waste:

A mixed waste not found suitable for waste processing
B pre-processing and post-processing rejects from waste processing sites
C non-hazardous waste not being processed or recycled
D bio-waste/garden waste in the municipal solid waste

74 A landfill design life comprises of an active period, closer period and post closer period. The active period may typically ranges from

A 10 to 25 years depending on the availability of land area
B 10 to 15 years depending on the availability of land area
C 5 to 10 years depending on the availability of land area
D 20 to 30 years depending on the availability of land area

75 Identify the incorrect statement for the following:

The minimum requirement of single composite liner system in municipal solid waste landfills should have

A a geo-membrane of thickness 1.5 mm or more
B a protection layer of silty soil having thickness 20 cm to 30 cm
C a leachate drainage layer 50 cm thick made of granular soil having permeability greater than 10^{-2} mm/sec
D a compact clay barrier or amended soil barrier of 1 m thickness having permeability of less than 10^{-6} mm/sec

76 The zero decibel sound pressure level represents

A zero acoustic pressure
B zero acoustic power
C the lowest pressure fluctuation normally discernible by human beings
D none of these

77 The loudness level is the sound pressure level a frequency of

A 100 Hz
B 1000 Hz
C 10000 Hz
D none of these

78 An octave band is a frequency band with upper and lower cutoff frequencies having a ratio of

A 1.5
B 2.0
C 2.5
D 3.0

79 The reference power for determining the sound power level is

A 100 W
B 1 W
C 0.00002 W
D 10^{-12} W

Rms

80	A healthy human ear responds to a very wide range of SPL from - the threshold of hearing at zero dB, and painful at	
	A	80 – 90 dB
	B	90 – 100 dB
	C	130 – 140 dB
	D	100 – 120 dB
81	Two machines are working in a noisy environment and their cumulative noise level is 58 dBA. If the environmental noise level is also 58 dBA, the summation of noise levels is	
	A	61 dBA
	B	66 dBA
	C	59 dBA
	D	118 dBA
82	The sound pressure level is measured at a distance of 10 m from the source and found to be 90 dBA. The sound pressure level at a distance of 80 m from the source would be	
	A	81 dBA
	B	84 dBA
	C	72 dBA
	D	none of these
83	The weighting network that is used to filter out certain frequencies of sound in our day to day sound measurement is of	
	A	A type
	B	B type
	C	C type
	D	none of these
84	The prescribed permissible noise level, Leq for residential area at day time is	
	A	45 dBA
	B	55 dBA
	C	65 dBA
	D	50 dBA
85	The noise of aircraft is described in terms of Perceived Noise Levels (PNL), a scale of noisiness, expressed in pNdB, which is approximately	
	A	3 units greater than the dB(A) value for the noise
	B	13 units greater than the dB(A) value for the noise
	C	6 units greater than the dB(A) value for the noise
	D	10 units greater than the dB(A) value for the noise