Uka Tarsadia University (Diwaliba Polytechnic)
Diploma in Environmental Engineering
Objective Type Questions (Environmental Monitoring)

Unit 1

1) Environmental monitoring involves the _____ of one or more measurements that are used to assess the status of an environment.

   (a) Collection
   (b) Segregation
   (c) Disposal
   (d) analysis

2) Risk assessment is a process that has been formalized to estimate the risk of adverse health effects caused by exposure to _____ and microorganism.

   (a) Hazardous fumes
   (b) Harmful chemicals
   (c) colours
   (d) vapours

3) Determining the level of contaminants in an airshed to compare with _____and guidelines.

   (a) regulatory
   (b) toxic
   (C) standard
   (d) resource

4) A monitor is a type of _____

   (a) semaphore

   (b) low level synchronization construct

   (c) high level synchronization construct

   (d) none of the above

5) A monitor is characterized by _____

   (a) a set of programmers defined operators

   (b) an identifier

   (c) the number of variables in it

   (d) all of the above

6) A procedure defined within a _____ can access only those variables declared locally within the _____ and its formal parameters.

   a) process, semaphore

b) process, monitor
c) semaphore, semaphore
d) monitor

7) The monitor construct ensures that _____
a) only one process can be active at a time within the monitor
b) n number of processes can be active at a time within the monitor
c) the queue has only one process in it at a time
d) all of the mentioned

8) Results based management includes:
a) Planning, implementing and monitoring
b) Planning and monitoring and evaluation
c) The monitoring and evaluation phase only
d) The planning phase only

9) The different steps of project or program cycle are:
a) Plan, implement, monitor, evaluate
b) Initial assessment, planning, implementation, evaluate
c) Initial assessment, planning, implement, monitor, evaluate
d) Planning, implement, monitor, evaluate

10) What does a monitoring and evaluation framework include?
a) Objectives, assumptions, indicators and a summary of activities
b) Objectives and indicators
c) Goal and objectives
d) Goal, objectives and indicators

11) What are the types of environmental monitoring?
a) Soil erosion monitoring
b) Biological
c) Disposal
d) a and b both

12) Environmental monitoring is designed to help us understand the natural environment and ……..
a) protect it from any negative outcomes of human activity
b) understand ecological and parameter observation
c) carbon and nitrogen cycle
d) none of above

13) Environmental impact assessments and results can _____determine

whether or not projects are given the all clear.

a) Indirect
b) Directly
c) Reverse
d) None of above

14) What are the major causes of environmental problems?

a) Ozone Depletion, Greenhouse Effect
b) Construction
c) Sewer waste
d) None of above

15) Environmental _____Evaluation is a process to facilitate management decisions regarding an organization.

a) contribution
b) performance
c) data
d) area

16) Monitor air quality and evaluate air emissions to protect _____and the environment from air pollution.

a) Public health
b) Public area
c) Working area
d) Working notice

17) _____ is designed to help us understand the natural environment.

a) Environmental monitoring
b) Environmental hearing
c) Environmental notice
d) None of above

18) _____is the regular observation and recording of activities taking place in a project or programme.

a) Working
b) Area
c) Monitoring
d) Notice

19) What are types of monitoring?

a) Technical monitoring
b) Financial Monitoring
c) Advance monitoring

d) a and b both

20) Environmental monitoring involves the assessment of the _____of the environment in order to control the risk of pollution.

a) Quality

b) Quantity

c) Area

d) Size

21) Monitoring is use for satellites to track changes in the landscape over time.

a) Chemical

b) Physical

c) Biological

d) Aromatic

22) Environmental Monitoring tracks changes in _____, temperature and weather patterns.

a) Climate

b) Area

c) Work

d) Size

23) Conditions which directly affect individual fish are calling _____variables. a) Secondary

b) Primary

c) Tertiary

d) Advance

24) Environmentally-related changes in the natural mortality rate of post-recruits obviously cannot be excluded as having great potential to affect _____ size.

a) Area

b) Work

c) Population

d) All 0f above

25) Primary productivity depends on such factors as insolation, nutrients temperature, circulation and _____processes.

a) mixing

b) working

c) standard

d) quality

26) _____ and dispersal of physical microstructure is related to various processes including solar insolation, tidal currents and wind-induced turbulent mixing.

a) Working

b) Standard
c) Development
d) Dispersion

27) _____ provide basic data on the state of the marine environment.
a) Observation
b) Standard
c) Prediction
d) Impact

28) Cost to fishery programmes is low because ……..
a) their use for farming is a by-product of other programmes.
b) southeast trade winds in the central equatorial Pacific generates a large-scale perturbation
c) their use for fisheries is a by-product of meteorological programmes.
d) None of above

29) Coastal installations offer _____and cost-effective means of monitoring the coastal marine environment.
a) expensive
b) valuable
c) non valuable
d) cheap

30) Dedicated ships represent a rather _____ mode of data collection.
a) high cost
b) low cost
c) medium cost
d) None of above

31) Health monitoring is to ascertain if damage is present or not based on
a) simple damage classifier such as outlier analysis
b) measured dynamic or static characteristics of a system to be monitored
c) working hazardous monitoring program
d) none of above

32) Variability in _____properties can be a result of time-varying environmental and operational conditions.
a) economic
b) evaluate
c) dynamic
d) organise

33) Environmental or operating variability is an issue there are _____different situations for data normalization.

a) three
b) four
c) five
d) two

34) Monitoring for the purposes of national environmental standards can only be carried out with …….

a) the low accuracy method in schedule 1 regulation
b) high-precision instrumental methods in accordance with Schedule 2 of the regulations.
c) High quality of data generation and prediction
d) All of above

35) Methods that involve lower resolution instruments can be used for an initial _____survey.

a) prediction
b) scoping
c) screening
d) advance

36) _____ monitoring may require a higher level of sensitivity.

a) Compliance
b) Advance
c) Detail
d) None of above

37) _____ methods that provide continuous records of contaminant levels.

a) Low resolution
b) High resolution
c) Medium resolution
d) All of above

38)_____ monitoring involves the assessment of the quality of the environment in order to control the risk of pollution.

a) Biological
b) Physical
c) Environmental
d) Chemical

39) Purpose of Environmental Monitoring (EM) is to establish alert and action limits and _____.

a) continuously validate the integrity of the cleaning
b) verify the value and price
c) working solution
d) hazardous and toxic effect

40) Assess the status of an environment that changes _____ and temporally. a) access
b) spatially
c) working
d) hazardous

41) Identify and implement changes to work activities and the use of resources that _____.
a) will reduce the negative and increase the positive impact on the environment.
b) Will possible area implementation
c) Process changes
d) None of above

42) Environmental monitoring is designed to help us understand the natural environment and _____
a) Resource of other positive attributes
b) protect it from any negative outcomes of human activity
c) increase humidity
d) increase water resources

43) Environmental monitoring is the process of sampling and
a) Identify and implement changes to work activities
b) Identify environmental attributes
c) analysing specific environmental media for evidence of contaminant levels over time
d) all of above

44) _____ is the regular observation and recording of activities taking place in a project or programme.
a) Monitoring
b) Data
c) Information
d) Resource

45) Purpose of environmental law is to protect and _____the environment.
a) Gathering
b) Preserve
c) Negotiated
d) Pasteurization

46) Environmental monitoring is subject to _____ analysis.
   a) statistical
   b) geometric
   c) increase
   d) decrease

47) _____ are used to identify the air quality and the levels of pollution.
   a) Water monitor
   b) Noise monitor
   c) Air monitor
   d) Soil monitor

48) _____ method used depends on the type of environment, the sampling material, and the future use of the data collected.
   a) Collective
   b) Sampling
   c) Preservation
   d) All of above

49) Environmental quality monitoring is the _____of information at set locations. a) Preservation
   b) Data
   c) Sample
   d) Collection

50) Monitoring, survey and surveillance are all based on data collection, evaluation and .
   a) Reporting
   b) Preservation
   c) Collection
   d) Gathering

Unit 2

1) Grab sample is one _____at particular time and place.
   a) replaced
   b) collected
   c) transferring
   d) generation

2) _____is required for certain test that must be performed at sampling site.

a) Grab sample

b) Composite sample

c) Integrated composite sample

d) None of above

3) _____may be fixed volume and flow proportioned sample.

a) Integrated sample

b) Composite sample

c) Garb sample

d) All of above

4) Composite sampling consists of a collection of numerous individual discrete samples …….

a) taken at regular intervals over a period of time usually 24 hours

b) taken month intervals over period of 2 days

c) taken long time
d) none of the above

5) _____ is any individual sample collected without compositing or adding other samples.
   a) Composite sample
   b) Grab sample
   c) Integrated sample
   d) Soil sample

6) Composite samples are collected over time, either by_____ sampling or by mixing discrete samples.
   a) different interval
   b) monthly
   c) yearly
   d) continuous

7) Sample _____at a particular time and place can represent only the composition of the source at that time and place.
   a) Collected
   b) Generated
   c) Gathering
   d) Data

8) composite sample representing a_____period is considered standard for most determinations.
   a) 48 hr
   b) 10 hr
   c) 2 hr

9) Sample bottles/containers must be clearly _____and identified.
   a) labelled
   b) quantifies
   c) size
   d) None of above

10) _____is defined as an individual aliquot (volume of water) taken over a period of time not to exceed 15 minutes.
   a) Composite sample
   b) Grab sample
   c) Integrated sample

d) Quality control

11) _____ is process oriented and _____ is product oriented.

a) QA
b) QC
c) Data
d) a and b both

12) Sampling points should be selected such that the samples taken are representative of the ….

a) different sources from which water is obtained by the public or enters the system
b) different city of area which affected
c) river
d) stream

13) Sampling points should be uniformly distributed throughout a _____distribution system.

a) Area
b) Size
c) Land
d) Pipe

14) Time between sampling and analysis should be kept to a _____.

a) minimum
b) maximum
c) neutral
d) All of the above

15) _____ bottles must be clean but need not be sterile.

a) Glass
b) Sample
c) Soil
d) Plastic

16) Large variations occur in a short duration of time, sampling needs to be done _____.

a) Frequently
b) Yearly
c) 6 months
d) Never

17) _____should be used only for water samples and never for the storage of chemicals or other liquids.

a) Gases container
b) Sample container
c) Solvent
d) Standard reagent

18) Depth sampler, which is sometimes called a grab sampler, is designed in such way that ….
a) it can retrieve a sample from any predetermined depth
b) it can consume water
c) it is depending on soil
d) all of the above

19) Sampling depth is measured from the water surface to the_____ of the sampler.
a) higher
b) lower
c) middle
d) none of above

20) _____of the sample should be measured and recorded immediately after the sample is taken.
a) Temperature
b) Colour
c) Odour
d) Solid

21) _____bottles should be resealed and stored in a clean, cool, dark environment and protected from recontamination.
a) Plastic
b) Air
c) Soil
d) Sample

22) Sample collection and bacteriological analysis will be less than _____.
a) 2 hours
b) 4 hours
c) 6 hours
d) 5 hours

23) samples should simply be kept in a _____, dark place.
a) dry
b) cool
c) other
d) none of the above

24) The sample _____form should be filled for each sampling occasion at monitoring station.
   a) Identification
   b) Data
   c) Value
   d) Area

25) Samples will be collected from well mixed section of the river _____below the water surface.
   a) 10 cm
   b) 20 cm
   c) 40 cm
   d) 30 cm

26) Samples are refrigerated at _____ prior to analysis unless method SOPs indicate other storage conditions.
   a) 4^0C
   b) 2^0C
   c) 8^0C
   d) 10^0C

27) All methods of preservation may be inadequate when applied to _____ matter.
   a) Dissolve
   b) Suspended
   c) Mixed
   d) None of the above

28) Aluminium, cadmium, chromium, copper, iron, lead, manganese, silver, and zinc, which are …….
   a) Collected in use bottle and do not preserve it
   b) Storage in oven and add acid
   c) best collected in a separate clean bottle and acidified with nitric acid to a pH below 2.0
   d) all of the above

29) Samples are kept in the _____ until time of analysis.
   a) Cool condition
   b) Oven
   c) Medium
   d) All of the above

30) Samples that require analysis at room temperature (25^0C) are brought out of refrigeration and ….
   a) Put in oven

b) Add distilled water
c) Storage it outside
d) allowed to warm to the desired temperature before beginning analysis

31) Liquid samples should be shipped in plastic containers, if possible and….
a) the caps on the containers should be secured with tape
b) caps of container should not seal
c) it is disposal in sink
d) it is disposal in river

32) When replicate samples are prepared in the field, it is necessary to
a) Separate that mixture
b) Add distilled water and dilute it
c) homogenize the sample prior to separation into replicates
d) all of the above

33) water samples may need filtering and _____.
a) Basic
b) Neutral
c) Acidification
d) All of the above

34) laboratory layout with both the reception and the sample collection room located .....
A) at the entrance saves time and energy
B) rooms where manipulation or analysis of samples takes place
C) consume time

D) large area required

35) Sampling points should be located in such a way that water can be sampled from _____and reservoirs, etc.
a) Pipeline
b) Reserve tanks
c) Ground
d) Surface

36) _____ is not available the transportation time must not exceed 2 hours.
a) Water
b) Area

c) Plastic box

d) Ice

37) Wastewater samples will typically be collected either by directly filling the sample container or ……

a) by using an automatic sampler or other device

b) by using chemical

c) pressure pump

d) all of the above

38) Sample should be collected near the centre of the flow channel at approximately _____percent of the water depth.

a) 20 – 40%

b) 40 – 60 %

c) 60 – 80%

d) 80 -100%

39) _____should be representative of the wastewater conditions at the time of sample collection.

a) Composite sample

b) Grab sample

c) Integrated sample

d) All of the above

40) Sample _____ depends on the type and number of analyses to be performed.

a) storage

b) Technique

c) Volume

d) Area

41) _____are collected over time either by continuous sampling or by mixing discrete samples.

a) Grab samples

b) Integrated samples

c) Dehydration samples

d) Composite samples

42) composite sampling applications the _____may be used to collect time composite or flow proportional samples.

a) automatic samplers

b) radioactive samplers

c) pressure gauge samplers
d) all of the above

43) _____must be added to the metals blank container for proper preservation.
a) Sodium
b) Formaldehyde
c) Nitric acid
d) Calcium carbonate

44) Samples for bacteriological analyses must always be collected directly into the prepared _____or plastic sample container.
a) glass
b) PVC
c) dark bottle
d) All of the above

45) The sample container should be kept_____ until it is to be filled.
a) opened
b) unopened
c) direct
d) indirect

46) A grab sample is a _____sample which is collected at a specific location at a certain point in time.
a) create
b) uncreate
c) decomposed
d) discrete

47) composite sample is made by thoroughly _____several grab samples.
a) mixing
b) unmixing
c) create
d) uncreate

48) composite sample may be made up of samples taken at different_____ or at different points in _____.
a) location
b) time
c) size
d) a and b both

49)_____may be used to reduce the analytical cost by reducing the number of samples.

a) Composite sample
b) Grab sample
c) Integrated sample
d) Rapid sample

50)_____is prepared by taking a representative portion of the original sample, usually by a mixing and dividing process.

a) Rapid sample
b) Reduced sample
c) Composite sample
d) Grab sample

Unit 3:

1) Quality control (QC) is a procedure or set of procedures intended to ensure that
   a) manufactured product or performed service adheres to a defined set of quality criteria or meets the requirements of the client or customer
   b) recycling or disposing of the waste adds to the cost of production,
   c) uncover defects from the decision to allow or deny product release
   d) none of above
2) _____ standard is a reagent for which we can dispense an accurately known amount of analyte.
   a) Secondary
   b) Primary
   c) Stock
   d) None of above
3) The molar mass of carbon is 12 g mol^{-1}. How many moles are there in 3g of carbon?
   a) 0.25 mol
   b) 0.22 mol
   c) 0.30 mol
   d) 0.18 mol
4) The concentration of a solution is expressed as the number of moles in which of the following volumes?
   a) 1 dL
   b) 1ml

c) 1 litre

d) All of above

5) 25 mL is equivalent to how many litres (L)?

a) 0.025

b) 0.25

c) 0.0025

d) All of above

6) How many moles of HCl are there in 10 mL of a solution with a concentration of 0.5 mol L^{-1}?

a) 0.01 mol

b) 0.02 mol

c) 0.04 mol

d) 0.05 mol

7) Stock or standard solution is a concentrated solution with an accurately known

a) Concentration

b) Dilution

c) Serial

d) Molar

8) working solution is obtained by the accurate dilution of a _____ or secondary standard solution.

a) Multiple

b) Primary

c) Advance

d) Dilute

9) Working solutions are made up in _____quantities for use in the short term.

a) Long

b) Medium

c) Small

d) None of above

10) _____ is a reagent that is extremely pure, stable, it not a hydrate/has no water of hydration, and has a high molecular weight.

a) Primary standard

b) Secondary standard

c) Serial dilution

d) Working reagent

11)_____is a standard that is prepared in the laboratory for a specific analysis.

a) Primary standard
b) Secondary standard
c) Serial dilution
d) Working reagent

11) Standard can be of _____ types.

a) 1
b) 3
c) 4
d) 2

12) A primary standard should be _____pure.

a) >99.8 %
b) 99 %
c) 98 %
d) All of above

13) solution of known concentration is called the _____solution.

a) Serial
b) Dilution
c) Standard
d) None of above

14) Primary standard is highly _____and cheaply available.

a) Pure
b) Impure
c) Dilute
d) Standard

15) Oxalic acid, Mohr's salt, potassium dichromate are some examples of _____ standards.

a) Secondary
b) Primary
c) Advance
d) All of above

16) Substances whose standard solutions cannot be prepared directly are called _____ standards.

a) Secondary

b) Primary
c) Dilute
d) Stock

17) _____ is defined as the number of gram equivalent of solute dissolved in one litre of the solution.
a) Molarity
b) Molality
c) Normality
d) Stock

18)_____is defined as the number of gram moles of solute dissolved in one litre of the solution.
a) Molarity
b) Normality
c) Molality
d) Dilution

19)One of the commonly known titrations is the _____titration.
a) Alkaline
b) Acid
c) Base
d) b and c both

20) _____ is a chemical substance that undergoes a colour change at the endpoint.
a) Indicators
b) Stock
c) Standard
d) Reagent

21) Strong acid is titrated against a _____ .
a) weak base
b) weak acid
c) strong base
d) dilute acid

22) Strong acid reacts with a weak base to form a _____solution.
a) Basic
b) Acidic
c) Neutral
d) None of above

23) _____ are solutions that contain a known and accurate amount of a substance or element.

a) Dilute solutions
b) Secondary solution
c) Stock solution
d) Standard solutions

24) _____ solution is a solution with a high purity and less reactivity.

a) Primary standard
b) Secondary standard
c) Stock solution
d) None of above

25) Primary standards are reagents that can involve in_____ reactions.

a) Physical
b) Chemical
c) Biological
d) Neutral

26) _____ of solutions is a concept of analytical chemistry that is required for the accuracy of a titration.

a) Derivation
b) Stock
c) Standardization
d) Non standardization

27) Primary standards are less_____ .

a) hygroscopic
b) Hydroscopic
c) Neutral
d) Base

28) A secondary standard has a _____purity than a primary standard.

a) High
b) Less
c) Medium
d) None of above

29) Anhydrous sodium hydroxide is a _____standard.

a) Primary
b) Advance
c) Stock
d) Secondary

30) Which of the following are primary standard?

a) Oxalic acid
b) Potassium permanganate
c) Potassium dichromate
d) Sodium hydroxide

31) _____ are commonly used to help identify and determine the concentration of a substance whose concentration is unknown.

a) Solutions
b) Chemicals
c) Paint
d) Data

32) Primary standard is a compound of sufficient purity in which total amount of impurities does not exceed _____.

a) 0.08 – 0.09 %
b) 0.01-0.02 %
c) 0.1 – 0.8 %
d) All of the above

33) _____should have high relative molecular mass so that weighing errors are neglible.

a) Stock solution
b) Concentration
c) Molarity
d) Primary standard

34) Methyl orange is a weak base and is yellow in colour in the _____form.

a) Unionised
b) Ionised
c) Reactive
d) All of the above

35) When titration between strong base and weak acid is to be performed then _____is a good indicator.

a) methyl orange
b) phenolphthalein

c) EBT
d) EDTA

36) stock solution is a highly _____ solution.
a) primary
b) secondary
c) concentration
d) All of the above

37) Solutions are always _____.
a) Primary
b) Secondary
c) Advance
d) None of above

38) Primary standard solution and secondary standard solution are used in _____analysis.
a) quantitative
b) qualitative
c) steady
d) inflow

39) A solution of hydrogen peroxide is 15.2% by mass. What is the molarity of the solution? Assume that the solution has a density of 1.01g/mL..
a) 4.95 M
b) 3.72 M
c) 6.02 M
d) 5.00 M

40) Which of the following choices is characteristic of molality?
a) Moles of solute per liter of solution
b) Equivalents per liter
c) Useful in experiments with significant temperature changes
d) Useful in experiments without significant temperature changes

41) When 10 moles of solute are dissolved in one litre of solution, then solution is _____.
a) 8M
b) 10M
c) 12M
d) 2M

42) What do you mean by M/1000 solution?
a) 1/1000 moles of solute are present in one litre of solution

b) 1/100 moles of solute are present in one litre of solution
c) 1/10000 moles of solution prepare
d) All of the above

43) What is the unit of Mole-fraction ?
a) it is unit less
b) moles/L
c) moles/kg
d) none of the above

44) What is unit of molality?
a) Moles/L
b) Moles/kg
c) l/kg
d) none of above

45) which one of these is correct …….
a) Mass of solution = molality/times
b) Mass of solution = molarity/times
c) Mass of solvent = molarity /times
d) Volume of solution = molality/times

46)_____ is the number of moles of a substance per liter of solution, also known as molar concentration.

a) Molarity
b) Molality
c) Normality
d) None of above

47) A solution with a 3 molar/kg molality is often defined as _____

a) 1M
b) 2M
c) 3M
d) 4M

48) Molarity is the number of moles of a substance per liter of solution, also known as _____concentration.

A) Normal
B) Molar
C) Molal
D) None of above

49) Molality is the favoured concentration transmission approach because....

a) the solution's mass of solute and solvent does not change.
b) The solution molar change
c) Concentration change
d) None of above

UNIT 4

1) _____arise due to human mistakes.

a) Gross errors
b) Systematic errors
c) Random errors
d) None of above

2) Zero error, and bias of an instrument are examples of systematic errors

a) Gross errors
b) Systematic errors
c) Random errors
d) None of above

3) Systematic errors can be corrected by _____.

a) value
b) calibration
c) reference
d) area

4) Instrument may have an _____error.

a) One
b) Two
c) Zero

d) Four

5) _____ can also be due to improper design of the measuring scheme.
a) Gross errors
b) Random errors
c) Value errors
d) Systematic errors

6) we measure the same input variable a number of times, keeping all other factors affecting the measurement same …….
a) the same measured value would not be repeated
b) the value affects the instrument
c) collect information of instrument
d) none of above

7) Limiting error is an important parameter used for specifying the _____of an instrument.
a) Value
b) Data
c) Accuracy
d) Mitigation

8) The systematic errors of an instrument can be reduced by making
a) the sensitivity of instrument to environmental input as low as possible
b) the sensitivity of instrument to environmental input as high as possible
c) systematic errors does not depend on the sensitivity of instrument
d) None of these

9) Suitable method for the reduction of systematic errors is/are …….
a) instrument must be designed carefully
b) by introducing an equal and opposite environmental input for compensating the effect of environmental input in a measurement system
c) by adding high gain feedback to measurement system
d) All of above

10) If the instrument is used in wrong manner while application, then it will results in ……
a) Systematic error
b) Instrument error
c) Random error
d) Environmental error

11) The undesirable characteristics of an measuring system is/are.....

a) Drift

b) Dead zone

c) Non linearity

d) All of these

12) Calibration of instrument is an important consideration in measurement system, errors due to instruments being out of calibration can be rectified by...

a) Increasing the frequency of recalibration

b) Increasing the temperature coefficient

c) Increasing the susceptibility of measuring instrument

d) Decreasing the frequency of recalibration

13) Random errors in a measurement system are due to …….

a) Environmental changes

b) Use of uncalibrated instrument

c) Poor cabling practices

d) Unpredictable effects

14) The error between mean of finite data set and mean of infinite data set is known as....

a) True error of the mean

b) Standard error of the mean

c) Finite error

d) Infinite error

15) In a measurement system,.....

a) a single measurement component may have both random errors and systematic errors

b) a measurement system consists of several components with each component having separate errors

c) both the statement (a) & (b) are true

d) neither statement (a) nor statement (b) are true

16) _____ is a measure of the variation between any estimated population value that is based on a sample rather than true value for the population

a) Standard Error

b) Deviation

c) Mean error

d) Other error

17) Systematic errors can also be detected by measuring already known_____.

a) qualities

b) quantities

c) area

d) size

18) _____ is something you have done which is considered to be incorrect or wrong.

a) Value
b) Size
c) Error
d) All of above

19) _____ errors are natural errors.

a) Random
b) Human
c) Gross
d) Systematic

20)_____ is an action which is inaccurate or incorrect.

a) Value
b) Error
c) Area
d) None of above

21) Systematic error occurs due to.....

a) Overuse of instrument
b) Careless use of instrument
c) Human sight
d) a and b both

22) Measurement which is close to true value is ……

a) Accurate
b) Average
c) Precise
d) Error

23) Systematic errors can remove by

a) buying new instrument
b) breaking the instrument
c) dusting the instrument
d) recalibrated the instrument

24) _____ is how close a value is to its true value.

a) Accuracy

b) Precision
c) Data
d) Value

25)_____ is how close a series of measurements of the same thing are to each other.

a) Data
b) Information
c) Accuracy
d) Precision

26) Accuracy is the ability of the instrument to measure the _____value.

a) Direct
b) Accurate
c) Indirect
d) Other

27) Accuracy can be obtained by taking the _____ readings.

a) Big
b) Medium
c) Small
d) None of above

28) Small reading reduces the _____of the calculation.

a) Value
b) Error
c) Size
d) Area

29) Point accuracy means the accuracy of the_____is only at the particular point on its scale.

a) Instrument
b) Report
c) Data
d) None of above

30) Scale range determines the accuracy of the instrument.

a) Accurate
b) Uniform
c) Non statistical
d) All of above

31) Such type of _____of the instruments is determined by identifying the measured value regarding their true value.

a) Accuracy
b) Precision
c) Mitigation
d) None of above

32) The accuracy of the instruments is neglected up to _____percent from the true value.
a) + o.4
b) + 0.5
c) – 0.5
d) b and c both

33) Precision means _____or more values of the measurements are closed to each other.
a) One
b) Two
c) Zero
d) All of above

34) Value of precision differs because of the _____error.
a) Observational
b) Accuracy
c) Data
d) Information

35) Accuracy refers to how close a measurement is to the true or _____value.
a) Neglected
b) False
c) Accepted
d) All of above

36) Precision is_____ of accuracy.
a) dependent
b) independent
c) reverse
d) irreverse

37) _____ of an experiment, object, or value is a measure of the reliability and consistency.
a) Precision
b) Accuracy
c) Data
d) Collection

38) Which can be avoided or whose magnitude can be determined is called as systemic errors.
   a) Precision
   b) Errors
   c) Accuracy
   d) Data
39) When errors occur during operation is called as _____error.
   a) Construction
   b) Information
   c) Operational
   d) Gross
40) Errors occur due to faulty instrument or reagent containing_____.
   a) purities
   b) impurities
   c) reverse
   d) None of above
41) It occurs accidentally or randomly so called as_____error.
   a) indeterminate
   b) determinate
   c) time
   d) data
42) Air fluctuations occurring as students open and close lab doors cause changes in _____ readings.
   a) temperature
   b) pressure
   c) valve
   d) None of above
43) Gross errors are caused by experimenter carelessness or _____.
   a) equipment failure
   b) data failure
   c) outliers
   d) none of above
44) A data set of repetitive measurements is often expressed as a _____ representative number called the mean or average.
   a) Single
   b) Multiple

c) Double
d) None of above

45) _____ is the sum of individual measurements(xi) divided by the number of measurements.
a) Median
b) Mean
c) Medium
d) All of above

46) Precision is the opposite of uncertainty Widely scattered data results in a ……
a) Methodological error is created by using the wrong indicator
b) instrumental error results when a spectrometer drifts
c) large average or standard deviation indicating poor precision
d) none of above

47) Accuracy of a result can be quantified by calculating the percent error
a) percent
b) Data
c) Statistical
d) Geometric

48) _____ are samples of about the same size that are carried through an analysis in exactly the same way.
a) One time
b) Replicates
c) Multiple
d) Republish

49) The _____is the middle value in a set of data that has been arranged in numerical order.
a) Median
b) Mean
c) Statically
d) Geometric

50) Accuracy measures agreement between a result and the _____ value.
a) Rejected
b) Accepted
c) Gathering
d) All of above

Unit 5

1) Water quality monitoring is defined as the _____and analysis of water constituents and conditions.

a) Data
b) Sampling
c) Gathering
d) Working

2) _____ that can nevertheless be affected by human sources, such as dissolved oxygen, bacteria, and nutrients.

a) Water
b) Air
c) Pollution
d) Human

3) Two hydrogen atoms and one _____atom form a molecule of water.

a) Nitrogen
b) Carbon
c) Oxygen
d) Ammonia

4) _____ water may get physically, chemically or biologically contaminated.

a) Rain
b) Surface
c) Ground
d) All of above

5) pH is the term used to express the acidic or _____ condition of a solution.

a) Basic
b) Alkaline
c) Neutral
d) None of above

6) pH scale is represented as ranging from _____ .

a) 0 to 10
b) 0 to 8
c) 0 to 14
d) All of above

7) pH lesser than 7 is _____and more than 7 is a _____solution.

a) Acidic

b) Basic
c) Neutral
d) a and b both

8) Who had invented the pH Scale?
a) S.P.L Sorenson
b) Benjamin Franklin
c) Henry Moseley
d) Wilhelm Rontgen

9) In which of the following field pH scale is important for measurements?
a) Medicine
b) Forestry
c) Food Science
d) All of the above

10) What is the pH value of very strong acid solution?
a) Less than 7
b) Less than 5
c) Less than 2
d) Less than zero

11) Why we measure the pH of sea water?
a) It helps in corrosion research
b) It helps in agricultural activity
c) It helps in fermentation
d) It helps in sterilization

12) Which statement is correct regarding Buffer Solution?
a) It is a solution whose pH change when small amount of an acid or base is added in it
b) It is a solution whose pH does not change when small amount of an acid or base is added in it
c) It does not use pH value as constant in wide variety of chemical applications
d) The solution of methanolic acid is an example of effective buffer solution

13) What is the pH value of pure water?
a) Less than 7
b) Greater than 7
c) Equal to 7
d) Greater than 14

14) How we will come to know that a given solution is acidic?
a) If its pH value is less than 7

b) If its pH value is greater than 7
c) If its pH value is less than 5
d) If its pH value is 5

15) What will be the litmus test if the solution is basic?
a) Red litmus will turn to blue
b) Blue litmus will turn to red
c) No change in colour
d) It will change into orange pink

16) What is the pH value of pure alcohol?
a) 7
b) 7.33
c) 7.80
d) 8

17) What is the ph value of toothpaste?
a) It ranges from 3 to 10 depending upon the additives added in it
b) It ranges from 5 to 12 depending upon the additives added in it
c) It ranges from 7 to 14 depending upon the additives added in it
d) It ranges from 6 to 8 depending upon the additives added in it

18) An acidic solution has:
a) Less concentration of hydrogen ions than hydroxide ions
b) More concentration of hydroxide ions than hydrogen ions
c) More concentration of hydroxyl ions
d) Equal concentration of hydroxide and hydrogen ions

19)Which of the following represents the physical characteristics of water?
a) Chloride content
b) BOD
c) Turbidity
d) COD

20)Which of the following is measured in mg/L?
a) Unit weight
b) Coefficient of cohesion
c) Discharge
d) Turbidity

21)Which of the following instrument is used to measure turbidity?
a) Olfactometer

b) Turbidity meter
c) Colorimeter
d) Spectrophotometer

22) When the sewage becomes stronger, the turbidity of wastewater?
a) Increases
b) Decreases
c) Becomes constant
d) Slightly decrease

23) The size of suspended solids lies in the range of _____
a) $10^{-3} – 10^{-6}$ mm
b) $10^{3} – 10^{6}$ mm
c) $10^{-1} – 10^{-3}$ mm
d) $10^{1} – 10^{3}$ mm

24) Suspended solids are measured by which of the following?
a) Turbidity rod
b) Gravimetric test
c) Chromatography
d) Jackson's turbidity meter

25) The maximum permissible limit for suspended solids is _____
a) 10 mg/l
b) 20 mg/l
c) 30 mg/l
d) 40 mg/l

26) Identify the correct relation between the following?
a) Dissolved solid = Total solid + Suspended solid
b) Dissolved solid = Total solid – Suspended solid
c) Total solid = Dissolved solid / Suspended solid
d) Dissolved solid = Suspended solid – Total solid

27) Which method is used to measure the colour of water?
a) Gravimetric analysis
b) Chromatography
c) Tintometer method
d) Hydrometer analysis

28) 1 TCU (True Colour Unit) is equivalent to _____.
a) The colour produced by 1 g of platinum cobalt
b) The colour produced by 1 mg of platinum cobalt
c) The colour produced by 1 mg of platinum cobalt in 1L of distilled water
d) The colour produced by 1 mg of platinum cobalt in 1mL of distilled water

29) The range of temperature of water that is required to do the temperature test is

_____

a) 10-25^{0}C
b) 0-25^{0}C
c) 10-30^{0}C
d) 20-30^{0}C

30) Which of the following statement is wrong regarding turbidity?
a) It is an extent to which light is absorbed by particles in the water
b) It is expressed in ppm
c) It depends on the fineness of particle present in the water
d) Turbidity rod is a laboratory method to measure turbidity

31) What is the full form of NTU in context with turbidity?
a) Number of transfer unit
b) Neurological turbidity unit
c) Nephelometric turbidity unit
d) Network terminal unit

32) When depth of insertion of turbidity rod increases, the reading in the turbidity rod ___
a) Decreases
b) Increases
c) First decrease, then increase
d) Remains constant

33) _____ is determined by measuring the dissolved oxygen used by microorganisms during the biochemical oxidation of organic matter in 5 days at 20˚C.
a) BOD5
b) COD
c) TOC
d) ThOD

34) How are many forms of nitrogen present in wastewater?
a) 3
b) 4
c) 2
d) 5

35) _____ is determined by measuring the dissolved oxygen used during the chemical oxidation of organic matter in 3 hours.
a) COD
b) BOD
c) ThOD
d) TOC

36) Which of the following is used for a small concentration of organic matter?
a) COD
b) TOC
c) BOD
d) ThOD

37) Which of the following indicates that the water body has been used for waste disposal?
a) Chlorides

b) Nitrates
c) Phosphates
d) Ammonia

38) What is the maximum concentration of total solids present in wastewater?
a) 350 mg/L
b) 720 mg/L
c) 1200 mg/ L
d) 850 mg/L

39) The BOD test is carried out for how many days?
a) 1 day
b) 2 days
c) 5 days
d) 6 days

40) At what temperature the bottles for the BOD test are incubated?
a) 25 degree Celsius
b) 20 degree Celsius
c) 35 degree Celsius
d) 30 degree Celsius

41) What is the mathematical expression of BOD?
a) BOD = [(D1-D2)-(B1-B2)f]/P
b) BOD = [(D1-D2)-(B1-B2)f]
c) BOD = [(D1-D2) f]/P
d) BOD = [(D1-D2)-(B1-B2)]/P

42) In terms of percentage how much BOD is oxidised in 5 days?
a) 90%
b) 70-90%
c) 60-70%
d) 50%

43) How is COD calculated?
a) Waste water is oxidised chemically using sodium in acid solutions
b) Waste water is oxidised chemically using dichromate in acid solutions
c) Waste water is oxidised chemically using bromine in acid solutions
d) Waste water is oxidised chemically using strontium in acid solutions

44) What is the ratio of BOD/COD in untreated waste?
a) 1-3
b) 0.3-0.8
c) 0.1-0.2
d) 3-5

45) What is the ratio of BOD/COD in the final effluent?
a) 0 8-1.2
b) 0.2-0.5
c) 0.1-0.3
d) 0.4-0.6

46) How is TSS calculated?

a) MPN
b) HPLC
c) Filtration
d) Mass spectrometer

47) Which of these is the used as the indicator when the titration is carried out to determine the amount of COD present in a sample?
a) Methyl Orange
b) Methyl blue
c) Phenolphthalein
d) Ferroin

48) Hardness of water is due to the presence of salts of _____.
a) Potassium
b) Chlorine
c) Magnesium
d) Boron

49) Select the incorrect statement from the following option.
a) Water which does not form lather with soap and forms white scum is called hard water
b) Hard water contains dissolved calcium and magnesium salts in it
c) In hard water, cleansing quality of soap is depressed
d) Due to the presence of dissolved hardness-producing salts, the boiling point of water is depressed

50) Hardness of water is conventionally expressed in terms of equivalent amount of _____
a) H_2CO_3
b) $MgCO_3$
c) $CaCO_3$
d) $Na_2 CO_3$

Unit 6

1) Air quality monitoring stations should be _____ degree around TSDF.
a) 100
b) 110
c) 120
d) 130

2) The locations of air quality monitoring stations depend on _____
a) Stack height
b) Wind speed
c) Wind direction
d) Rainfall

3) How many measurements should be taken for SPM in a year?

a) 100
b) 101
c) 102
d) 104

4) Stack gaseous emission for the parameters should be carried out _____ basis.
   a) Annual
   b) Quarterly
   c) Monthly
   d) Hourly

5) Which of the following stack emission has to be monitored continuously?
   a) HCL
   b) C
   c) O
   d) PM

6) How many parameters are taken into consideration when measuring air quality, in India?
   a) 4
   b) 3
   c) 8
   d) 9

7) Which of the following pollutants are considered when measuring air quality?
   a) CO, O_3, $PM_{2.5}$
   b) NH_3, PM_{10}, Pb
   c) NO_2, SO_2
   d) All of the mentioned

8) Which of the following devices is NOT used to control particulate emissions?
   a) Electrostatic precipitator
   b) Bag filters
   c) Catalytic converters
   d) All of the mentioned

9) According to EPA of USA, the following is not one of the six major pollutants?
   a) Ozone
   b) Carbon monoxide
   c) Nitrogen oxides
   d) Carbon di-oxide

10) The major contributor of Carbon monoxide is

a) Motor vehicle
b) Industrial processes
c) Stationary fuel combustion
d) None of the above

11) The function of automobile catalytic converter is to control emissions of ……..
a) carbon dioxide and hydrogen
b) carbon monoxide and hydrogen
c) carbon monoxide and carbon dioxide
d) carbon monoxide and nitrogen dioxide

12) Dust particles are measured by the _____principle of orthogonal light scattering.
a) Physical
b) Chemical
c) Biological
d) None of above

13) _____sensors are known to be reliable and accurate, maintenance free.
a) ozone
b) Carbon dioxide
c) Sulphur dioxide
d) Nitrogen dioxide

14) What is the size range of respirable suspended particulate matter?
a) Less than 1 micrometre
b) Less than 10 micrometre
c) Less than 100 micrometre
d) Less than 0.1 micrometre

15) Which of the following is a viable particulate?
a) Smoke
b) Mist
c) Dust
d) Moulds

16) Which type of particulate is condensed form of vapours?
a) Mist
b) Dust
c) Fumes
d) Smoke

17) What is the size range of atmospheric particulate matter?
a) 0.1 – 10 microns

b) 0.1 – 1 micron
c) 1 – 10 microns
d) 10 – 100 microns

18) In rural areas, what has contributed significantly to particulate pollution?
a) Incomplete combustion in vehicles
b) Using wood for fire and cooking
c) Fertilizers
d) All of the mentioned

19) The particulate matter dispersed in the atmosphere is:
a) Gaseous
b) Mainly gaseous
c) Non-gaseous
d) Mainly non-gaseous

20) In human beings, anoxia is caused due to:
a) SO_2
b) CO
c) CO_2
d) N_2O

21) If there were no CO_2 in the earth's atmosphere, the temperature of earth's surface would have been
a) same as present
b) Less than the present
c) Higher than the present
d) Dependent on the amount of O_2 in the atmosphere

22) Proportion of CO consumption consists of basic components
a) The leaf boundary layer
b) The stomata
c) Radiation exchange
d) All of Above

23) Which of the following leads to a disease called broncho spasm?
a) SO_2
b) SO_3
c) SO_4
d) CO_2

24) Which of the following gases has the highest affinity for blood haemoglobin?
a) Carbon dioxide
b) Oxygen

c) Carbon monoxide
d) Nitrogen

25) Which of the following is responsible for turning yellow Taj Mahal?

a) Nitrogen dioxide
b) Sulphur
c) Chlorine
d) Sulphur dioxide

26) The boiler flue gas is source of

a) HCl
b) NO
c) HF
d) Volatile organic compounds

27) The threshold concentration of sulphur dioxide in any industrial activity should not be permitted beyond

a) 2ppm
b) 3ppm
c) 4ppm
d) 5ppm

28) The major contributor of Carbon monoxide is

a) Motor vehicle
b) Industrial processes
c) Stationary fuel combustion
d) None of the above

29) Which gas is mainly produced due to incomplete burning of wood?

a) CO
b) SO_2
c) NO_2
d) NO_3

30) Which is the major source for sulphur dioxide?

a) Volcanic eruptions
b) Coal and crude oil combustion
c) Burning of petrol
d) Sewage treatment process

31) The permissible concentration of PM 10 in the air is

a) $60\mu g/m^3$
b) $40\mu g/m^3$
c) $50\mu g/m^3$

d) $20\mu g/m^3$

32) Which of the following is/are inorganic gas (es)?

a) Carbon monoxide
b) Hydrogen sulphide
c) Chlorine
d) All of the above

33) If released or formed in the atmosphere, which of the following will least likely result in long-term environmental damage to an ecosystem?

a) Mercury
b) Carbon monoxide
c) Lead
d) Ozone

34) Air pollution increases the risk of _____and heart disease in the population.

a) Respiratory
b) Tumour
c) Skin disease
d) None of above

35) _____ and local agencies should design their monitoring stations with the station operator.

a) Public
b) Supervisor
c) State
d) All of above

36) Air sampling is a necessary process often used in indoor environments and

a) industrial workplaces where chemical agents are produced or used
b) IOH Solutions will ensure that your company's employees are safe by offering
c) released or formed in the atmosphere
d) all of above

37) Air sampling is a _____ method of monitoring workers' exposure to these potential airborne workplace hazards.

a) Hazardous
b) Vital
c) Toxic
d) None of above

38) _____ pollutants are atmospheric substances.

a) Water
b) Soil

c) Air
d) Chemical

39) Air quality monitoring is challenging to enact as
a) it requires the effective integration of multiple environmental data sources.
b) potentially have a negative impact on the environment and organism health
c) often used in indoor environments
d) none of above

40) What is the residence time of carbon monoxide?
a) 11-15 years
b) 1-3 years
c) 5 years
d) Few minutes

41) NOx emitted by automobiles is in the form of _____ .
a) NO
b) N_2O
c) N_2O_3
d) All of above

42) _____ is the greenhouse gas most scientists consider the main air pollutant of the Earth's atmosphere.
a) Sulphur
b) Sulphur dioxide
c) Nitrogen oxide
d) Carbon dioxide

43) _____ are various exhaust gases from vehicles which are air pollutants causing damage to the atmosphere.
a) Carbon monoxide
b) Carbon dioxide
c) Sulphur
d) Hydrogen

44) _____ is caused by solid and liquid particles and certain gases that are suspended in the air.
a) Solid pollution
b) Water pollution
c) Air pollution
d) None of above

45) Carbon monoxide is _____, odourless and can kill within minutes.

a) Colourless
b) Turbidity
c) Solid
d) All of above

46) High quality air pollution data is needed by air regulators and ...
a) Collect air pollution emissions data from designated sources to expand the emissions
b) managers to implement the National Ambient Air Quality Standards
c) improve monitoring capabilities
d) none of above

47) _____ will indicate the status of the quality of air we breathe.
a) Data
b) Information
c) Work
d) Service

48) Air pollution can cause health problems and it can also damage the environment and _____.
a) Service
b) Size
c) Property
d) All of above

49) Emissions of carbon monoxide (CO), nitrogen oxides (NOx) and hydrocarbons (HC) are controlled by _____on new gasoline driven cars.
a) catalytic converters
b) Electrostatic preceptor
c) Centrifugal
d) Gravity chamber

50) Emissions of _____are being reduced through lower sulphur content in gasoline.
a) Nitrogen oxides
b) sulphur oxides
c) ozone
d) carbon

Subject: EM answer kye

Unit 1:

1	a
2	b
3	c
4	c
5	a
6	d
7	a
8	b
9	c
10	a
11	d
12	a
13	b
14	a
15	b
16	a
17	a
18	c
19	d
20	a
21	b
22	a
23	b
24	c
25	a

26	c
27	A
28	c
29	b
30	a
31	b
32	c
33	a
34	b
35	c
36	a
37	b
38	c
39	a
40	b
41	a
42	b
43	c

Unit 2:

44	a
45	b
46	a
47	c
48	b
49	d
50	a

Unit 3:

33	c
34	a
35	b
36	d
37	a
38	b
39	b
40	c
41	d
42	a
43	c
44	a
45	b
46	d
47	a
48	d
49	a
50	b

Unit 4:

1	a
2	b
3	b
4	c
5	d
6	a
7	c
8	a
9	d
10	b
11	d
12	a
13	d
14	b

Unit 5:

1	a
2	b
3	a
4	c
5	a
6	d
7	a
8	b
9	c
10	a
11	b
12	d
13	a
14	c
15	a
16	b
17	a
18	c
19	a
20	d
21	a

22	c
23	b
24	d
25	a
26	b
27	c
28	a
29	b
30	d
31	c
32	a
33	b
34	d
35	a
36	b
37	c
38	b
39	a
40	a
41	d
42	b
43	a
44	a
45	b
46	c
47	a
48	c
49	b
50	a

1	b
2	a
3	c
4	a
5	b
6	c
7	d

1	b
2	a
3	b
4	a
5	b
6	d
7	a
8	a
9	a
10	b
11	d
12	a
13	d
14	a
15	b
16	a
17	b
18	a
19	c
20	a
21	d
22	a
23	b
24	a
25	d
26	a
27	b
28	c
29	a
30	d
31	a
32	c

15	c
16	a
17	b
18	c
19	a
20	b
21	d
22	a
23	d
24	a
25	d
26	b
27	c
28	b
29	a
30	b
31	a
32	d
33	b
34	a
35	c
36	b
37	a
38	b
39	c
40	b
41	a
42	b
43	a
44	a
45	b
46	c
47	a
48	b
49	a
50	b

Unit 6:

35	c
36	a
37	b
38	c
39	a
40	b
41	a

8	a
9	d
10	d
11	a
12	b
13	c
14	a
15	a
16	b
17	a
18	b
19	c
20	d
21	b
22	a
23	c
24	b
25	c
26	b
27	c
28	c
29	a
30	d
31	c
32	a
33	a
34	b
35	a
36	b
37	a
38	c
39	c
40	b
41	a
42	c
43	b
44	b
45	c
46	c
47	d
48	c
49	d
50	c

42	d
43	a
44	c
45	a
46	b
47	a
48	c
49	a
50	b

1	c
2	a
3	d
4	b
5	a
6	c
7	d
8	c
9	d
10	a
11	a
12	a
13	b
14	b
15	d
16	c
17	a

18	b
19	c
20	b
21	b
22	d
23	b
24	c
25	d
26	b
27	d
28	a
29	a
30	b
31	a
32	d
33	b
34	a