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

Unit 1

1. Which of the following are the primary causes of water pollution?

(a) Plants

(b) Animals

(c) Human activities

(d) None of these

Sol: (c) Human activities.

2) _____pollution occurs when pollutants are discharged directly or indirectly into water bodies.

a) Water

b) Air

c) Noise

d) Soil

3) Effect of polluted water on large scale of_____animals.

a) Aquatic

b) lion

c) birds

d) dog

4) Which of the following is a waterborne disease?

(a) Typhoid

(b) Cholera

(c) Diarrhoea

(d) All of the above

Sol: (d) All of the above

5) _____is include all living organisms.

a) Biotic environment

b) Abiotic environment

c) aquatic environment

d) none of above

6) How much of the water on Earth is available as fresh water for drinking?

a) 100%

b. 50%

c. 25%

d. 1%

7) Which of the following diseases or infections is caused due to poor water hygiene?

(a) Leprosy
(b) Trachoma
(c) Conjunctivitis
(d) All of the above

8) Which of the following is not a waterborne disease?
(a) Measles
(b) Typhoid
(c) Cholera
9) There are four main categories of water pollution is pathogens, inorganic compounds, organic material and macroscopic pollutants.

10) Water pollution depletes aquatic ecosystems and triggers unbridled proliferation of phytoplankton in lakes.

11) _____substances from farms, towns, and factories readily dissolve into and mix with it,
(d) Hepatitis

causing water pollution.

a) toxic

b) gases

c) vapour

d) combustion

12) When contamination originates from a single source, it's called_____source pollution.

a) point

b) non-point

c) submerge

d) separate

13) Nonpoint source pollution is contamination derived from diffuse sources.

14) water pollution causes an algal bloom in a lake or marine environment.

15) these harmful algal blooms can also produce neurotoxins that affect wildlife, from whales to sea turtles.

16) polluted water is water whose composition has been changed to the extent that it is unusable.

17) Rising global temperatures caused by CO_2 emissions heat the water, reducing its oxygen content.

18) Water pollution depletes aquatic ecosystems and triggers unbridled proliferation of phytoplankton in lakes.

19) Fishing in polluted waters and the use of waste water for livestock farming and agriculture can introduce toxins into foods which are harmful to our health when eaten.

20) Nitrogenous chemicals are responsible for cancer and blue baby syndrome

21) Mortality rate due to cancer is higher in rural areas than urban areas because urban inhabitants use treated water for drinking while rural people don't have facility of treated water and use unprocessed water.

22) Contaminated water has large negative effects in those women who are exposed to chemicals during pregnancy.

23) Untreated drinking water and fecal contamination of water is the major cause of diarrhea.

24) Shigellosis is a bacterial disease caused by *Shigella bacteria.*

25) Hepatitis is a viral disease caused by contaminated water and infects the liver.

26) Gastroenteritis is caused by different viruses including rotaviruses, adenoviruses, calciviruses and Norwalk virus.

Unit 2

1) Most beakers are made from_____glass.
   a) Borosilicate
   b) Vacuum
   c) Glass
   d) Boron

મોટાભાગના બીકર _____ ³લાસમાથી બનાવવામા આવ છ.

એ) બોરોિસલીકટ બી) વ

મ

સી) ³લાસ્ડ)

બોરોન

2) _____is one of the most common and useful pieces of chemistry lab glassware.
a) Vacuum flask
b) Erlenmeyer flask
c) Boron flask
d) Glass flask

_____આ એક રસાયણશા™ લેબ ³લાસવરનો સૌથી સામાaય અને ઉપયોગી 3કડો છ.

એ) વ મ $લા ક

બી) એલ ંનમેયર $લા ક સી) બોરોન

$લા ક

ડ) ³લાસ $લા ક

3) _____measures one specific volume with high precision.
a) Volumetric flask
b) Erlenmeyer flask
c) Boron flask
d) Glass flask

_____ઉ³ચ ચોકસાઇ સાથ એક િવિશ ટ વો એ) વો માપક માપે છ.

$લા ક

બી) એલ ંનમેયર $લા ક સી) બોરોન $લા

ક

ડ) ³લાસ $લા ક

4) _____is commonly calibrated using a liquid of known, specific density and an analytical balance.
a) Glassware
b) Plastic
c) Waste

d) All of the above

_____ â ણીતા, યો2સ ઘનતા અને િવ૭લેષણા૦મક સ૩ર ને સામાaય ર તે લનના ™વાહ નો ઉપયોગ કાલ□ે કરવામ◌ા આવ છ.

એ) ³લાસવર બી)

લા ટક સી) કચરો

ડ) ઉપરોhત તમામ

5) _____is holding small samples or mixtures (liquid, solid and gas), For containing small-scale reactions.
a) Beaker
b) Flask
c) Test tube
d) Petri dish

_____નાના નfl૧ાઓ અથવા િમRણો (™ વાહ , ન2ર અને ગસ) ધરાવ છ, ૂમાનાના-પાયે □તhયાઓ છ.

a) બીકર બી)

$લા ક

સી) ટ ટ ટKબ)

પેડ ડ શ

6) _____is store stock solutions of chemicals, for mixing, for displaying.
a) Reagent bottle
b) Test tube
c) Petri dish
d) Flask

_____એ રસાયણોના સએ) ર હ ટોર સો શ aસ છ, િમRણ માટ, ™ દિશ'ત કરવા માટ.

એજaટ બોટલ

બી) ટ ટ ટKબી) પેડ

ડ શડ) $લા ક

7) _____is adjustable heating source, essentially an electric stove top.
a) Gas
b) Hot plate
c) Stirrer
d) All of the above

_____એ એડજ ટબલ હ ાગ flોત છ, આવ9યક$પે ઇલેhક ટોવનો ટોચ. એ) ગસ

બી) હોટ લેટ

સી) જગાડવો

ડ) ઉપરોhત તમામ

8) _____defines the accuracy and quality of measurements recorded using a piece of equipment.
a) calibration
b) Curve
c) Value
d) Error

_____સાધનોના 3કડાની મદદથી રકોડ કરલ માપનની ચોકસાઈ અને ણવ ાને 'યા વાિયત કર છ.

એ) કાલ□ેશન બી)

વળાક સી) fl ૂ ય

ડ) Qલ

9) _____are effective against inorganic salts and other carbonates.
a) Bleaching
b) Acid cleaning
c) Alkaline cleaning
d) None of above

_____અકાબ□િનક ાર અને અaય કાબા નેટ સામે અસરકારક છ. એ) લીચગ

બી) ચિસડ સફાઈ

સી) આ કલાઇન સફાઈડ)

ઉપરોhત કઈ નહ

10) _____solution can be poured from one vessel to another and then returned to its original container.
a) Filling
b) Wasting
c) Cleaning
d) None of above

_____સો શન એક જહાજથી બીà જહાજમા રડવામા આવ છ અને પછ તેના fl◌ાટનર પર પાછા આવ છ.

એ) ભરK બી)

બગાડK

સી) સફાઇ

ડ) ઉપરોhત કઈ નહ

27) What is the best instrument for measuring volume of the equipment listed below?

A) Beaker

B) Erlenmeyer flask

C) Burette

D) Evaporating dish

28) Glassware can be soaked in a detergent solution to remove grease and loosen most contaminations.

a) true

b) false

29) Class A signifies a compliance with applicable construction and accuracy requirements.

true

b) false

30) Class B flasks are general purpose instruments with the same basic design as Class A.

a) true

b) false

31) 25 mL Class A Transfer Volumetric Pipet has a capacity tolerance of ± 0.03 ml.

a) true

b) false

32) A watch glass is a round, concave glass dish used for evaporation in chemistry.

a) true

b) false

33) Burettes are larger than a pipette, it has a stopcock at the bottom to control the release of liquid.

a) true

b) false

34) _____is hand held, hinged instrument, similar to tweezers, made of metal.

a) Forceps

b) glass

c) beaker

d) dropper

35) _____which are relatively small cylindrical vessels also used to store, heat and mix chemicals.

a) Test tubes

b) Burette

c) Flask

d) Pipette

36) _____is designed to allow for even heating and stirring.

a) round bottom

b) glass

c) cylinder

d) beaker

37) _____is used in liquid-liquid extractions to separate immiscible liquids of different densities.

a) Flask

b) separatory funnel

c) beaker

d) burette

38) Rubber and neoprene are not used in pieces with standard necks.

a) true

b) false

39) _____stoppers are used to seal equipment with ground glass fittings.

a) Plastic

b) Ceramic

c) Glass

d) Neoprene

40) Chemical, reagents or broth cultures should be pipetted by_____.

a. mouth

b) pipetter

c) ear

d) nose

42) _____Used as a platform to elevate glassware above a Bunsen burner

a) Tripod stand

b) Retort stand

c) funnel

d) beaker

43) A wire mat that distributes heat evenly to the base of a glass container_____.

A) metal tong

b) safety mat

c) gauze mat

d) wire mat

44) Used for accurately measuring the volume of liquids

a) beaker

b) crucible

c) flask

d) measuring cylinder

45) For accurately transferring liquids into glassware and also used in the process of filtration_____

a) separating funnel

b) funnel

c) desiccator

d) crucible

46) Triangular shaped glass container commonly used in mixing solutions_____.

a) tripod

b) conical flask

c) evaporating dish

d) burette

47) Shallow porcelain dish commonly used when heating solutions _____

a) evaporating basin

b) watch glass

c) crucible

d) beaker

48) An instrument used to produce magnified images of small objects_____.

a) microscope

b) watch glass

c) retort stand

d) beaker

49) Glass lidded container used in biology for culturing micro-organisms _____

a) watch glass

b) crucible

c) beaker

d) petri dish

50) Small lidded porcelain container used for heating small amounts of solids_____.

a) watch glass

b) crucible

c) evaporating dish

d) petri dish

51) Shallow glass dish that can be used as a lid for beakers and in evaporating solutions_____.

a) Evaporating basin

b) Pipe clay triangle

c) Watch glass

D) beaker

52) Used for holding test tubes upright for hands free observation or for storing test tubes _____.

a) Wooden tongs

b) Test tube rack

c) Stirring rod

d) beaker

53) Used for transferring small amounts of liquids

a) Spatula

b) Pipette

c) Stirring rod

d) flask

54) Used for transferring small amounts of solid chemicals

a) Stirring rod

b) Pipette

c) Spatula

d) burrete

55)Used in conjunction with a boss head and clamp for holding glassware when heating with a Bunsen burner

a) Retort stand

b) Tripod

c) Clamp

d) bureete

56) Round bodied container used for heating liquids

a) Florence flask

b) Conical flask

c) Beaker

d) clamp

57) A commonly used heating device in science

a) Blow torch

b) Microscope

c) Bunsen burner

d) rod

58) Used in conjunction with a funnel to separate mixtures

Separating funnel

Filter paper

Stirring rod

burner

59) Used to hold small solids over a Bunsen burner

Wooden tongs

Test tube rack

Metal tongs

flask

60) Instrument used for measuring temperature

Microscope

Bunsen burner

Thermometer

Rod meter

61) A device used for holding a clamp or ring onto a retort stand

Tripod

Boss head

Pipe clay triangle

burner

Chapter 3

1) water contains_____.
   ંિન ચાદત પાણીમા _____હોય છ.
   a) poison
   b) bacteria
   c) minerals
   d) pure water without minerals
2) Dematerialised water plant removes all the impurities from the water including _____.
   ઽમોઽલાઇCઽ જળ લાaટ _____સાહત પાણીની બધી અ Cઓને દર કર છ.
   a) heavy metal and sodium
   b) nitrogen
   c) oxygen
   d) carbon

3) _____membrane is a membrane that will allow some atoms or molecules to pass but not others.
_____એક પટલ છ ૈ કટલાક અ અથવા પરમા ઓને પસાર થવા દશ પરT અaયને નહ .
   a) Semi permeable
   b) Oxide
   c) Hydrogen
   d) Nano

3) A standard provides a_____that can be used to determine unknown concentrations or to calibrate analytical instruments.
   ધોરણ એ _____Qરો પાડ છ ૈનો ઉપયોગ અ unknownાત સાદ્રતા તા ન2 કરવા ંિવ9લેષણાcમક સાધનોને કાલ□ કરવા માટ થઈ શક છ.
   a) Calibration
   b) Reference
   c) Criteria
   d) Standard
4) A primary standard is a reagent that is extremely_____.
   □ાથિમક ધોરણ એ એક ર એજaટ છ ૈ Qબ જ _____છ.
   a) contaminated
   b) pure
   c) stable
   d) b and c both
5) _____is example of primary standard.
   _____એ □ાથિમક ધોરણA ઉદાહરણ છ.
   a) Sodium carbonate
   b) Hydroxide

c) Acetic acid
d) Hydrochloric acid

6) _____standard is a standard that is prepared in the laboratory for a specific analysis.
_____ધોરણ એ એક ધોરણ છ ૂં યો2સ ંિવ9લેષણ માટ ™ યોગશાળામ◌ા તૈયાર થયેલ છ.

a) Primary
b) Secondary
c) Lower concentration
d) Higher concentration

7) _____is removes bacteria, organic and inorganic particles, viruses, minerals, etc.
a) Distilled water
b) Reverse osmosis
c) Freezing
d) Evaporation.

8) _____is a very effective method and will remove 99.9% of contaminants.

_____એ એક Qબ જ અસરકારક પCંત છ અને તે 99.9% દષણોને દ૨ કરશ.

a) Distillation
b) Drying
c) Evaporation
d) Condensation

9) _____on a gas increases, the volume of the gas decreases because the gas particles are forced closer together.
a) Pressure
b) Temperature
c) Volume
d) Amount

10) A standard solution can also be made by_____.
™ માણQત સો શન _____6ારા પણ બનાવી શકાય છ.

a) Concentration
b) Dilution
c) Reference
d) Mixing

11) _____water is water that has been boiled into vapor and condensed back into liquid in a separate container.
_____ પાણી ૂં બા પમ◌ા ઉકાળવામ◌ા આવ છ અને એક અલગ કaટનરમ◌ા પાછા ™ વાહ મ◌ાધ્ય કરવામ◌ા આવ છ.

a) Distilled
b) Demineralized
c) Quality
d) Quantity

12) _____is a technology that is used to remove a large majority of contaminants from water by pushing the water under pressure through a semi-permeable membrane.

_____એ એક તકનીક છ ૂ નો ઉપયોગ પાણી 6ારા મોટાભાગના દષકોને દર કર અધ-અભેn પટલ 6ારા દબાણ હઠળ

દર કર શકાય છ.

a) Distilled water
b) Reverse osmosis
c) Dematerialized water
d) Equalization

13) Distilled water is an example of _____
(a) Pure Substance
(b) Mixture
(c) Impure Substance
(d) Compound

14) Distilled water is the one which has been boiled to vapours, these vapours are further condensed to_____into a separate jar.
a) Solid
b) Liquid
c) Semi solid
d) None of above

15) Use jars or beakers made from glass which can tolerate high_____of flame and steam.
a) Pressure
b) Velocity
c) Area
d) Temperature

16) _____is simply the tap water which has undergone treatment processes to lower the mineral content.
a) Distilled water
b) Reverse osmosis
c) Dematerialized water
d) Equalization

17) _____water plants do not require much storage space.
a) Distilled water
b) Reverse osmosis
c) Dematerialized water
d) Equalization

18) _____is usually standardized against a primary standard.
a) Secondary standard
b) Pure form
c) Tertiary standard
d) None of above

19) Which of the following is a bad conductor of electricity?
a) Distilled water
(b) Silver nitrate

(c) Sulphuric acid
(d) Copper sulphate

20) Pure or distilled water is a
(a) poor conductor
(b) good conductor
(c) both (a) and (b)
(d) none of these

21) Distilled water reacts with or affects the_____of lab experiments.
a) Accuracy
b) Data
c) Value
d) error

22) The residue left in the round bottom flask in the process of distillation is_____.

(a) volatile

(b) non-volatile

(c) both

(d) none of the above

23) Distillation is the best method to separate liquids having sufficient difference in their_____.

(a) solubility

(b) melting point

(c) boiling point

(d) none of the above

24) _____is a solution containing a precisely known concentration of an element or a substance.

a) primary solution

b) standard solution

c) dilution solution

d) concentrated solution

25) standard solution_____must remain constant all the time.

a) concentration

b) dilution

c) suspended

d) fix

26) The volume of a given amount of gas is inversely proportional to its pressure when temperature is held constant_____law.

a) Boyle's

b) Avogadro's

c) Charles's

d) none of above

27) The volume of a given gas sample is directly proportional to its absolute temperature at constant pressure_____law.

a) Boyle's

b) Avogadro's

c) Charles's

d) none of above

28) Temperature and pressure are equal volumes of all_____contain the same number of molecules.

a) gases

b) area

c) density

d) length

29) As the bubbles rise, the pressure decreases, so their volume_____.

a) increases

b) decreases

c) constant

d) none of above

30) The number of particles in the gas increases as the volume_____.

a) increases

b) decreases

c) constant

d) none of above

31) Relation between the pressure, volume, amount, and temperature of a gas under conditions derived by combination of the_____laws.

a) simple gas

b) Avogadro's

c) Charles's

d) none of above

Unit 4

1) Which of the following instrument is used to measure turbidity?
નીચેનામાથી કયા સાધનનો ઉપયોગ અ પ ટતાને માપવા માટ થાય છ?
   a) Olfactometer
   b) Turbidity meter
   c) Colorimeter
   d) Spectrophotometer
2) _____is amount of cloudiness in the water.
_____ એ પાણીમા વાદળછા ™ માણ છ.
   a) Turbidity
   b) Colour
   c) Odour
   d) Temperature
3) Colour measurement is required for_____control.
_____ નિયt ણ માટ રગ માપન જ$ર છ.
   a) Quality
   b) Quantity
   c) Temperature
   d) Odour
4) Colour are seen when object is heated to_____temperature.
ઓ ઠ hટને _____તાપમાનમા ગરમ કરવામા આવ tયાર રગ દખાય છ.
   a) Higher
   b) Lower
   c) Medium
   d) None of above
5) _____of transmitted light is inversely proportional to the concentration of the suspended particle.
™ સારત ™ કાશA _____ નિલબત કણોની સાG તાના વિપારત ™ માણસર છ.
   a) Light
   b) Flow
   c) Intensity
   d) wavelength
6) What is principal of Turbidimetry?
ટબfiમેડ નો આચાય' છ?

a) Light scattered

b) Light transmitted

c) A and B

d) None of the above

7) What is the standard for TDS for aesthetic considerations?

સાદય'લ ી િવચારણા માટ ટ ડ એસA ધોરણ છ?

a) 250 mg/l
b) 500 mg/l
c) 750 mg/l
d) 1000 mg/l

8) The water temperature should preferably be less than___degree Celsius.

પાણીA તાપમાન □ધાaયપણ _____ ી સૌ સયસથી ઓ હોK જોઈએ.

a. 10
b. 15
c. 25
d. 30

9) In filtration, the amount of dissolved solids passing through the filters is_____.

Cકરણમા, ગાળકોમાથી પસાર થતા ઓગળલા ઘન પદાથની મા ટ _____છ.

a. Difference between total solids and suspended solids
b. Sum of total solids and suspended solids
c. Independent of suspended solids
d. None of the above

10) Turbidity is the measure of relative_____of a liquid.

a) Darkness
b) Clarity
c) Improveness

d) None of above

11) Turbidity can provide_____and shelter for pathogens.

a) Food
b) Health
c) Air
d) Temperature

12) The following unit is not used to measure turbidity of water?

a) NTU
b) JTU
c) ATU
d) FTU

13) Dissolved_____are those that pass through a water filter.

a) Turbidity
b) Colour
c) Solids
d) temperature

14) Jacksons turbidity meter in generally is based on light absorption.

a) Scattered
b) Absorption
c) Pass
d) Filter

14) portable water allowable turbidity is between_____mg/ltr.

a) 5 to 10
b) 4 to 6
c) 1 to 2
d) 3 to 6

15) Pure water is always_____.

a) Tasteless
b) Behaviorless
c) Controless
d) Ph less

16) suspended solids can be referred to materials which are not_____in water.

a) Suspended
b) Dissolved
c) Fix
d) Free foam

17) The increase in weight of the filter is represent_____.

a) Tss
b) Tds
c) Colour
d) turbidity

18) Turbidity more than_____can be visible to the average person while turbidity in muddy water.

a) 5 NTU
b) 2 NTU
c) 1 NTU
d) 3 NTU

19) One color unit is equivalent to the color produced by a 1 mg/L solution of_____.

a) Sodium
b) Metal
c) Platinum
d) Copper

20) _____color is measured after filtering the water sample to remove all suspended material .

a) True
b) Apparent
c) Dark
d) Brown

21) _____color is the entire water sample color and consists of both dissolved and suspended components color.

a) True
b) Apparent
c) Dark
d) Brown

22) Color is graded on scale of_____color units.

a) 0 to 70
b) 1 to 15
c) 2 to 50
d) 75 to 100

23) Volatile solids are those solids lost on ignition _____

A) 100^0C
B) 500^0C
C) 700^0C
D) 300^0C

24) Suspended organic solids which are_____anaerobically may release obnoxious odours.

a) Degraded
b) Soluble
c) Mixed
d) liquid

25) The pore size of the filter paper used for filtration is _____

a) 2.0 µm or smaller
b) 2.0 µm or bigger
c) 2.0 µm
d) 20.0 µm

26) The type of crucible used for the experiment is made of_____.

a) Porcelain
b) Clay
c) Silver
d) Iron

27) Total Suspended Solids are mostly responsible for _____

a) Turbidity
b) colour
c) Odour
d) Taste

28) Always the Total Suspended Solids value will be_____.

a) Less than Total Dissolved Solids
b) Greater than Total Dissolved Solids
c) Less than Total Solids

d) Greater than Total Solid

29) Turbidity or water clarity testing can provide information about the bacteriological safety of water.

a) true
b) false

30) Which method is used to measure the color of water?

a) Gravimetric method
b) chromatography
c) Tintometer method
d) hydrometer method

31) True color is equivalent to_____.

a) the color produced of 1gm platinum cobalt
b) the color produced of 1mg platinum cobalt
c) the color produced of 1mg platinum cobalt in 1 L distilled water
d) the color produced of 1mg platinum cobalt in 1 ml distilled water

32) Which of the following statement is wrong regarding turbidity?

a) it is expressed in ppm
b) it is extent to which light is absorbed by particles in water
c) turbidity rod is laboratory method to measure turbidity
d) none of above

33) What is 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

34) The permissible limit of turbidity of domestic water is_____ppm.

a) 1-5 NTU
B) 5-10 NTU
C) 10-50 NTU
D) 10-30 NTU

35) The maximum permissible limit of suspended solids is_____.

a) 10 mg/l
b) 20 mg/l
c) 30 mg/l
d) 40 mg/l

36) When the sewage becomes stronger, the turbidity of wastewater?

a) Increases
b) Decreases
c) Becomes constant
d) Slightly decrease

37) Which color indicates the fresh sewage?

a) Pink
b) Red
c) Black
d) Grey

38) In India, the average temperature of sewage is _____
a) 10°C
b) 20°C
c) 40°C
d) 80°C
39) Identify the incorrect statement from the following?
a) High odor intensity indicates odorless water
b) Fresh sewage is odorless
c) Turbidity can be measured by turbidity rod
d) NTU is a unit of turbidity
40) _____represents the number of dilutions required to reduce odor.
a) Dispersion
b) Threshold odor number
c) BOD
d) COD
41) 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
42) Total dissolved solids is a measure of the dissolved matter in a water that remains after all the water has been evaporated.
A) TRUE
B) FALSE
43) The filtrate is evaporated to a constant weight condition in an oven maintained at a temperature of 180°C to remove mechanically occluded water.
A) TRUE
B) FALSE
44) Insoluble particles of soil, inorganic and organic materials and other micro-organisms impede (obstruct) passage of light by scattering and absorbing the light rays.
A) TRUE
B) FALSE
45) Turbidity measurements are useful to determine whether a supply requires special treatment by chemical coagulation before public water supply.
A) TRUE
B) FALSE
46) In natural water bodies, turbidity is not interfering with light penetrations and pathogenic reactions of aquatic plants.
A) TRUE
B) FALSE

1) Temporary hardness is caused due to_____.

અ થાયી કાઠનતા _____ને કારણ થાય છ

a. Magnesium carbonate
b. Calcium sulphate
c. Magnesium sulphate
d. Magnesium chloride

2) Range of pH scale is_____.

પીએચ કલની રaજ _____છ.

a) 7 to 10
b) 0 to 10
c) 0 to 14
d) 7 to 14

3) pH of neutral salt is_____.

તટ થ મીઠાની પીએચ _____છ.

a. 7
b. <7
c. >7
d. 0

4) The PH value of the drinking water is about_____.

પીવાના પાણીની PH કમત લગભગ _____છ.

a) 6.5-8.5
b) 5.5-6.5
c) 4.5-5.5
d) 3.5-4.5

5) In_____when the eater is heated then the soluble salts turns into insoluble ones and removed by filtration.

_____મા Bયાર ખાનાર ગરમ થાય છ cયાર G'ય ાર અG'ય રિશ્રણોમા ફરવાય છ અને ગાળણiiયા 6ારા દર ફરવામા આવ છ.

a) Temporary hardness
b) Permanent hardness
c) Non-carbonate
d) Non-alkaline

6) All carbonate and bicarbonates are_____.

બધા કાબા'નેટ અને બાયકાબા'નેટ _____છ.

a)Alkaline
b) Acidic
c) Highly acidic
d) Neutral

7) The hardness of moderately hard water is about_____.

સાધારણ સખત પાણીની કાઠનતા લગભગ _____છ.

a 75-150ppm
b) 75-120ppm
c) 75-130ppm
d) 75-100ppm

8) Chlorides are estimated by titration with a standard silver nitrate solution by using _____as an indicator.

a) Potassium manganate
b) Potassium chloride
c) Potassium chromate
d) Potassium dichromate

9) Carbonate hardness can be removed by adding lime to water.

a) True
b) False

10) Which of the following statement is wrong regarding permanent hardness?

a) It is also called carbonate hardness
b) It is due to the presence of sulfates, chlorides and nitrates of calcium and magnesium
c) It cannot be removed by boiling
d) It requires special methods of water softening to get removed

11) One degree of hardness is equivalent to____ppm.

a) 2
b) 1
c) 10
d) 100

12) What is the indicator used in EDTA method?

a) Potassium chromate
b) Potassium dichromate
c) Potassium chloride
d) Eriochrome black T

13) What is the concentration of H+ ions in moles/L in water if the pOH value is 6?

a) 10^{-6}
b) 10^{-7}
c) 10^{-8}
d) 10^{-9}

14) The permissible dose of chloride in domestic sewage is _____

a) 120ppm
b) 10ppm
c) 1ppm
d) 250ppm

15) Who had invented the pH Scale?

A. S.P.L Sorenson
B. Benjamin Franklin

C. Henry Moseley
D. Wilhelm Rontgen

16) which of the following field pH scale is important for measurements?
A. Medicine
B. Forestry
C. Food Science
D. All of the above

17) 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

18) 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

19) 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 methanoic acid is an example of effective buffer solution.

20) What is the pH value of saliva after meal?
A. 4.8
B. 5.8
C. 6.8
D. Less than 4

21) What is the pH value of pure water?
A. Less than 7
B. Greater than 7
C. Equal to 7
D. Greater than 14

22) 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

23) 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.

24) 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.

25) What is the pH value of pure alcohol?
A. 7
B. 7.33
C. 7.80
D. 8

26) Kw is the ionisation constant for water and its value is:
A. 1×10^{-7}
B. 1×10^{7}
C. 1×10^{14}
D. 1×10^{-14}

27) 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

28) In a well operated anaerobic digester, the volatile acid is 250 mg/L. What should the bicarbonate alkalinity be?

a) 250 mg/L
b) 500 mg/L
c) 2,500 mg/L
d) 25,000 mg/L

29) Which source of water is free from hardness and surface impurities?
a) Surface water
b) Underground water
c) Rain water
d) Sea water

30) Which of the following indicator is pink in basic medium?
a) Methyl orange
b) Phenolphthalein
c) Starch
d) Litmus paper

31) The temporary hardness in water is due to _____
a) OH^-
b) CO_3^{2-}
c) H^+
d) HCO_3^-

32) With respect to the constituents causing alkalinity in water, which of the following situation never arises?
a) CO_3^{2-} and HCO_3^- together
b) HCO_3^- and OH^- together
c) OH^- only
d) OH^- and CO_3^{2-} together

33) What is the disadvantage of using high alkaline water?
a) It may lead to infections
b) It may lead to electrolysis
c) It may lead to caustic embrittlement
d) It may lead to indigestion

34) The alkalinity due to hydroxide ion when P > M/2 will be _____
a) M-2P
b) 2(M-P)
c) Nil
d) 2P-M

35) The alkalinity due to bicarbonate ion when P < M/2 will be _____
a) M-2P
b) 2(M-P)
c) Nil
d) 2P-M

36) The alkalinity due to carbonate ion is 2P when?
a) P = M
b) P > M/2
c) P = M/2
d) P < M/2

37) Alkalinity is a measure of the ability of water to neutralize the acids.
a) True
b) False

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

39) 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

40) Select the incorrect statement from the following option.
a) Permanent hardness is due to dissolved chlorides and sulphates of calcium and magnesium

b) It can be removed by mere boiling of water
c) It is also known as non-alkaline hardness
d) The difference between the total hardness and the alkaline hardness gives the non-alkaline hardness

41) _____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

42) Which of the following indicates that the water body has been used for waste disposal?
a) Chlorides
b) Nitrates
c) Phosphates
d) Ammonia

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) 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) Ferroin
d) Phenolphthalein

45) Oil and grease is the presence of inorganics in wastewater.
a) True
b) False

46) What is the colour of the emulsion?
a) White
b) Grey
c) Black
d) Yellow

47) What is the size of the oil droplets?
a) Less than 50 microns
b) Less than 40 microns
c) Less than 30 microns
d) Less than 20 microns

Unit 6

1) Which of the following is a better test to identify Coliforms?
b) Coliform index
c) Multiple tube fermentation

d) MPN test
e) Membrane filter technique

2) What is the temperature at which MPN test is performed?
a) 35 ^{0}C
b) 37 ^{0}C
c) 40 ^{0}C
d) 45 ^{0}C

3) The number of bacterial colonies by Agar plate count test should not exceed_____per ml for potable water.
a) 1
b) 10
c) 100
d) 1000

4) The number of bacterial colonies by Agar plate count test should not exceed_____per ml for potable water.
a) positive
b) negative
c) continued
d) discarded

5) The number of bacterial colonies by Agar plate count test should not exceed_____per ml for potable water.
a) Saturated dissolved oxygen
b) Maximum dissolved oxygen
c) Optimal dissolved oxygen
d) Peak dissolved oxygen

6) BOD is a measure of_____.
a) industrial wastes passed into water bodies
b) amount of carbon monoxide combined with hemoglobin
c) extent of pollution with organic matter
d) amount of oxygen required by plants during night

7) small inverted tube placed in a broth of sugar-containing media that is used to detect gas production by a microorganism called_____.
a) Durham tube
b) colloidal tube
c) silica
d) copper

8) _____include bacteria that are found in the soil, in water that has been influenced by surface water and in human or animal waste.
a) Total coliforms
b) Fecal coliforms
c) Escherichia coli
d) None of above

9) Coliform bacteria _____

a) Grow in the intestines of people and warm blooded animals
b) Usually cause diseases
c) Respond to water treatment differently than do most other pathogens
d) Exist only in water that contains pathogens

10) The biochemical oxygen demand is computed by_____.
a) Dissolved oxygen / Dilution factor
b) Dissolved oxygen + Dilution factor
c) Dissolved oxygen – Dilution factor
d) Dissolved oxygen * Dilution factor

11) Following are types of microorganisms that can be pathogenic (disease-producing) in drinking water:
a) Bacteria
b) Virus
c) protozoa
d) all of above

12) The full form of BOD is _____
a) Biodegradable oxygen demand
b) Biochemical oxygen demand
c) Bandwidth on demand
d) None of above

13) Which type of bacteria has a rod-shaped structure?
a) Bacilli
b) Cocci
c) Spirilla
d) Vibrio

14) _____represents the bacterial density that is most likely to be present in water.
a) BOD
b) COD
c) MPN
d) Coliform index

15) Which of the following is the disease caused by bacterial infections?
a) Amoebic dysentery
b) Infectious hepatitis
c) Typhoid fever
d) Poliomyelitis

16) Which bacteria cause the reddish-brown deposits in the tank?
a) Escherichia coli bacteria
b) Bacterium coli bacteria
c) Iron bacteria
d) Sulphur bacteria

17) Gelatin liquefying bacteria are helpful in the manufacturing of photographic films.
a) True
b) False

18) _____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

19) The_____the concentration of dissolved oxygen, the better the water quality.
A) lower
B) higher
C) medium
D) equal

20) Dissolved oxygen has no_____effect on public health.
a) Level
b) Equal
c) direct
d) indirect

21) Bacteria that require oxygen for their metabolism are called bacteria.
a) Aerobic
b) Anaerobic
c) Facultative
d) None of above

22) The energy released during the anaerobic oxidation of organic matter is _____kilo calories.
a) 26
b) 254
c) 360
d) 484

23) Which of the following is formed from oxidation of organic matter in the presence of oxygen?
a) NO_3
b) SO_4
c) H_2S
d) NH_2

24) The number of stages required for the completion of aerobic oxidation is _____
a) 1

b) 2
c) 3
d) 4

25) Which of the following is formed from the anaerobic oxidation of organic matter?
a) NO_3
b) SO_4
c) H_2S
d) NH_2

26) The decomposition of nitrogenous organic matter in the absence of oxygen gives _____
a) Nitrites and water
b) Carbon dioxide and water
c) Nitrates and ammonia
d) Nitrogen, ammonia and organic acids

27) The aerobic decomposition of sulfurous organic matter gives _____
a) Nitrites and water
b) Carbon dioxide and water
c) Sulfates and water
d) Nitrogen and Ammonia

28) Partially oxidized sewage contains _____
a) Nitrites and Nitrates
b) Nitrates and sulfur
c) Sulfates and nitrates
d) Nitrites and sulfur

29) Which of the following is formed due to the reduction of sulfurous organic matter?
a) Hydrogen sulfide
b) Hydrochloric acid
c) Sulfuric acid
d) Sulfur dioxide

30) Which of the following is formed due to the anaerobic decomposition of carbonaceous organic matter?
a) Nitrites
b) Carbon dioxide
c) Water
d) Nitrogen

31) Methane is formed due to the reduction of _____
a) Nitrates
b) Sulfates
c) Carbon dioxide
d) Organic acids

32) The aerobic decomposition of nitrogenous organic matter gives _____

a) Nitrites and water
b) Carbon dioxide and water
c) Nitrates and ammonia
d) Nitrogen and ammonia

33) Select the correct statement_____.

A) 5 day BOD is the ultimate BOD
B) 5 day BOD is greater than 4 day BOD keeping other conditions same
C) 5 day BOD is less than 4 day BOD keeping other conditions same
D) BOD does not depend on time

34) _____is the amount of oxygen needed to stabilize organic matter using microorganisms.

a) COD
b) BOD
c) THOD
d) DO

35) Biological indicator of water and pollution is the group of bacteria called _____.

a. coliforms
b. acid
c. organic
d. none of above

36) A particular species of coliforms found in domestic sewage is_____.

a) E.coli
b) Plasma
c) Protozoa
d) Algae

37) After incubation, colonies of coliform bacteria each containing millions of organisms will be visible.

a) True
b) False

38) viruses can live as long as 41days in water and wastewater at _____

A) 20^0C
40^0C
80^0C
90^0C

39) E. coli are almost exclusively found in the intestines of warm-blooded animals where they are able to live and reproduce.

a) True
b) False

40) _____is used to filter and thus retain any coliform bacteria that may be present in the sample.

a) Filter membrane
b) E.coli
c) Cod
d) Virus

41) The sample is diluted in different tubes of different sample concentration and inoculated in_____.
a) incubation
b) lactose broth
c) bacteria
d) virus

42) The MPN index is used to show the number of bacteria in the water.

a) true

b) false

43) The_____test is a screening test to sample water for the presence of coliform organisms.

a) presumptive

b) durham

c) incubation

d) dilution

44) If the presumptive test is negative, no further testing is performed, and the water source is considered microbiologically safe.

a) true

b) false

45) Some microorganisms other than coliforms also produce acid and gas from lactose fermentation.

a) true

b) false

46) Coliforms produce colonies with a greenish metallic sheen which differentiates it from non-coliform colonies.

true

b) false

47) _____strains is the indicator organism used to indicate faecal contamination.

a) Escherichia coli
b) virus
c) protozoa
d) algae

48) EPA guidelines for coliforms in drinking water are_____CFU/100 ml.

a) 0
b) 1
c) <1
d) >1

49) Main bacteria present in human and animal faecal coliform determinations should be complemented with the quantification of enterococci.

true

b) false

50) Any tube in the series shows acid and gas, the water is considered unsafe.

true

a) false

51) Most probable number (MPN) analysis is a statistical method based on the random dispersion of microorganisms per volume in a given sample.

true

a) false

52) Bacteria are unicellular organisms belonging to the prokaryotic group where the organisms lack a few organelles and a true nucleus.

a) true

b) false

53) They are responsible for many of the infectious disease like pneumonia, tuberculosis, diphtheria, syphilis.

a) true

b) false

54) Bacteria can be divided into several types based on several characteristics such as shape, cell wall composition, mode of respiration, and mode of nutrition.

a) true

b) false

55) BOD (Bio Chemical Oxygen Demand) of safe drinking water must be:
(a) 0
(b) 50 ppm
(c) 100 ppm
(d) 200 ppm

56) Which bacteria is used to convert ammonia to Nitrate?
(a) Coliphage
(b) Nitrosomonas
(c) Nitrobacter
(d) E – Coli

57) Standard B. O. D. is measured at
(a) 20°C – 1 day
(b) 25°C – 3 day
(c) 20° C – 5 day
(d) 30° C – 5 day

58) Facultative bacteria are those which:
(a) Can survive with or without free oxygen
(b) Flourish and thrive in the absence of free oxygen
(c) Require oxygen for their survival
(d) None of the above

59) The dissolved oxygen in stream is maximum at –
(a) Noon
(b) Morning
(c) Midnight
(d) Same throughout the day

60) A waste water sample of 2 ml is made up to 300 ml is BOD with distilled water Initial DO of the sample is 8mg/l and after 5 days it is 28mg/l. What is its BOD?

894 mg/l
(b) 900 mg/l

(c) 300 mg/l
(d) 1200 mg/l

61) A BOD level of_____is considered very good.

A) 2-3 PPM

B) 1-2 PPM

C) 3-4 PPM

D) 5-6 PPM