BHARATI VIDYAPEETH INSTITUTE OF TECHNOLOGY
Question Bank
Program: - Instrumentation

Semester: - II **Course Name: -ASE(22211)**

Applied Chemistry(22211)

Q 1) Water which does not produce lather with soap is _____
a) Mineral water
b) Hard water
c) Soft water
d) Distilled water

Q 2) Permanent hardness of water is caused by the presence of_____
a) Bicarbonates of calcium and magnesium
b) Carbonates of sodium and potassium
c) Chlorides and sulphates of calcium and magnesium
d) Phosphates of sodium and potassium

Q 3) Highly alkaline water in boilers causes_____
a) Corrosion
b) Scale and sludge formation
c) Priming and foaming
d) Caustic embrittlement

Q 4) coagulant like alum is added to water to remove_____
a) biological impurities
b) fioating minerals
c) colloidal impurities
d) all of these

Q 5) In ozonization_____is used to sterilize water.
a) Oxygen gas
b) Ozone gas
c) Solid ozone
d) Chlorine gas

Q 6) Temporary hardness of water is caused by the presence of_____
a) Chlorides of calcium and magnesium
b) Sulphates of calcium and magnesium
c) Bicarbonates of calcium and magnesium
d) Carbonates of sodium and potassium

Q 7) screening is the process of removing _____from water.
a) Scale and sludge
b) Floating material
c) Suspended particles
d) Hardness

Q 8) In zeolite process for treatment of hard water exhausted zeolites can be regenerated by using____
a) 10 % calcium chloride solution
b) 10 % magnesium sulphate solution
c) 10 % magnesim chloride solution
d) 10 % sodium chloride solution

Q 9) Permanent hardness is also known as _____

a) Carbonate hardness
b) Non carbonate hardness
c) Both (a) and (b)
d) None of these

Q 10) When soft,lose,slimy deposits are formed inside the boiler and do not stick up permanently then they are known as_____

a) Resins
b) Zeolites
c) Scales
d) Sludges

Q 11) Which of the following chemical is added in the process of coagulation?

a) Aluminium sulphate
b) Aluminium oxide
c) Calcium chloride
d) None of these

Q 12) In ion exchange process of water softening, exhausted cation exchanger resin is regenerated by using_____

a) Dilute acid
b) Alkali
c) Sand
d) Coal

Q 13) The amount of oxygen consumed by aerobic bacteria which cause aerobic biological decomposion of sewage is known as_____

a) Bio chemical oxygen demand (B.O.D.)
b) Dissolved oxygen (D.O.)
c) Chemical oxygen demand (C.O.D.)
d) None of these

Q 14) The principle of chlorination is_____

a) Formation of nascent oxygen
b) Formation of oxygen molecules
c) Formation of chlorine gas
d) Formation of hydrochloric acid

Q 15) Sedimentation is a physical process used to remove_____

a) Colloidal particles
b) Suspended particles
c) Microorganisms
d) All of the above

Q 16) The Purest form of naturally occurring water is _____

a) Rainwater
b) Riverwater
c) Pond or Lake water
d) Well Water

Q 17) Sterilization of water can be done by _____

a) Chlorination
b) Aeration
c) Using UV Rays
d) All of these

Q 18) Boilers do not the trouble of _____ while using hard water to generate steam.

a) Scale and sludge formation
b) Corrosion
c) lubrication
d) Priming and foaming

Q 19) Reverse osmosis is a water purification technique that uses _____

a) Coagulant
b) Raisins
c) Semi permeable membrane
d) Lime soda

Q 20) In ion exchange process of water softening, exhausted anion exchanger resin is regenerated by using _____

a) Dilute acid
b) Alkali
c) Sand
d) zeolite

Applied Physics (22211)

1) Capacitance of capacity of a conductor is defined as the (CO1)

a) ratio of potential to charge b) sum of potential and charge

c) Product of charge and potential d) ratio of charge to potential

2) Capacity of parallel plate condenser is given by

a) $C = \varepsilon_0 kAd$ b) $C=\frac{kA}{\varepsilon_0 d}$ c) $C=\frac{\varepsilon_0 kA}{d}$ d) $C=\frac{\varepsilon_0 kd}{A}$

3) Capacitance of Capacitor with dielectric material 'k' is -------- capacitance of a capacitor Without dielectric {i.e. air}

a) K times more than b) k times less then c) Equal to d) twice

4) Capacitor stores ---------

a) large charge at lower potential b)small charge at higher potential

c) small charge at small potential d)large charge at higher potential

5) Energy of charged condenser is given by …….

a) $E=2CV^2$ b) $E=1/2\ CV$ c) $E=1/2\ CV^2$ d) $E=1/2\ C^2\ V$

6) E.M.F of a cell is defined as the potential difference between two terminals of the cell when …….

a) The circuit is close b) the circuit is open

c) High current is drawn d) low resistance is connected

7) The opposition offered by electrolyte to flow of charges from negative electrode to positive electrode of a cell through electrolyte is called as……

a) External resistance b) circuit resistance c) Internal resistance of cell

d) none of these

8) Kirchhoff's 1st Law or junction rule state that in any network of conductor in an electrical circuit ……

a) Product of current is 0 b) algebraic sum of potential is 0

c) Algebraic sum of current is 0 d) product of potential is 0

9) Kirchhoff's 2nd Law or loop rule state's that in a close loop of network of conductor , the algebraic sum of product of current and resistance of each part of close loop is ……

a)product of e. m. f. in the circuit b) ratio of e. m. f. in the circuit

c) algebraic sum of e. m. f. in the circuit d)sum of currents

10) Balancing condition of wheatstone's network with R_1, R_2, R_3 and R_4 in cyclic order is……..

a) $\frac{R_1}{R_2} = \frac{R_3}{R_4}$ b) $\frac{R_1}{R_2} = \frac{R_4}{R3}$ c) $\frac{R_1}{R_4} = \frac{R_3}{R_2}$ d) $R_1R_2 = R_3R_4$

11)Principle of potentiometer is fall of potential is……..

a) directly proportional to length of wire b) inversely proportional to length of wire

c) directly proportional to area of wire d) inversely proportional to area of wire

12) If area of parallel plat condenser is $1m^2$ and distance between plates is 0.1mm then capacitance of condenser if its dielectric constant is 5 and $\varepsilon_0 = 8.9\times 10^{-12}$ will be…….

a) $44.5\times 10^{-6}F$ b) $44.5F$ c) $44.5\times 10^{-9}F$ d) $44.5\times 10^{-12}F$

13) If two capacitors of capacitance C each are connected in series then its capacitance will be……

a) C b) C/3 c) C/2 d) C/4

14) If a capacitor of capacity 20μF is connected across 10v battery then charge drawn by a capacitor will be…….

a) 50μC b) 100 μC c) 200 μC d) 300 μC

15) Two condensers have equivalent capacitance of 8 μF when connected in parallel and 2 μF when connected in series then individual capacitances will be……

a) 2 μF, 4 μF b) 4μF, 4μF c) 1μF, 8μF d) 1μF, 1μF

16) If a battery of e.m.f.10v is connected across a resistance of 100 ohm drop a resistance observed across a resistance is 9.8v, then internal resistance of a cell will be…..

a) 2 ohm b) 5ohm c) 10ohm d) 20ohm

17) The maximum electric field that a dielectric medium can withstand without breakdown is called as ….

a) Saturation field b) dielectric strength c) utmost field d) optimized field

18) When a number of capacitances connected in parallel then effective capacitance……..

a) Increases b) decreases c) remain same d) Increases or decreases

19) capacitance of a condenser is inversely proportional to ……..

a) area of plate b) dielectric material between them c) Distance between them

d) current through the circuit

20) When a number of capacitances connected in series then effective capacitance……..
a) Increases b) decreases c) remain same d) Increases or decreases

21) potential difference between two metal plates is …..in bringing unit positive charge from plate B to A against electric field.
a) work done b) force applied c) time taken d) efforts taken

22) A 10 µF capacitor is connected to 10v battery, electrostatic energy stored in the capacitor will be…
a) $100\times 10^{-6}J$ b) $500\times 10^{-6}J$ c) $1000\times 10^{-6}J$ d) $250\times 10^{-6}J$

23)energy of charged condenser is given by…..
a) $E=2Q^2/C$ b)$E=Q^2/2C$ c) $E=Q/C^2$ d) $E=1/2QC$

24) law of condenser in parallel state that equivalent capacitance of parallel combination is given by…
a) Sum of capacitances of condensers b) product of capacitances of condensers
c) Sum of reciprocal of individual capacitances d) ratio of individual capacitances

25) A condenser is an arrangement of two conductors separated by….
a) conductor b) semiconductor c) insulator d) silver

26) The process of spontaneous emission of radioactive substance is known as……
a) Photoelectric emission b) thermo emission c) radioactivity d) LASER

27) The process by which an unstable atomic nucleus losses energy by emitting radiations, such as α, β, γ radiations is known as
a) Photoelectric emission b) thermo emission c) radioactivity d) LASER

28)All naturally occurring element whose atomic number are greater than ……..are radioactive.
a) 12 b) 32 c) 52 d) 82

29) Doubly ionized helium atoms are……..
a) α Particles b) β particles c) γ particles d) photons

30) When radioactive element radiate radiations then it get converted into new element which is……
a) Also radioactive b) not a radioactive c) compound d) a mixture

31) The mass of α Particles is……
a) $6.645\times 10^{-27}kg$ b) $6.645\times 10^{27}kg$ c) $2.2\times 10^{-10}kg$ d) $2.2\times 10^{10}kg$

32) The charge of α Particles is……

a) $3.2 \times 10^{19} C$ b) 3.2×10^{-19}C c) 3.2×10^{14}C d) 3.2×10^{-14}C

33) Penetrating power of α Particles is less and it is …… times than β particles.

a) 10 b) 100 c) $\frac{1}{10}$ d) $\frac{1}{100}$

34) The range of β Particles is…… α Particles, its range in air at N.T.P.is 1meter.

a) Equal to b) less than c) more than d) less than or equal to

35) γ-rays are…….

a) Positively charged b) negatively charged c) more than d) none of these

36) As per law of radioactive disintegration (decay) which atom will disintegrate first is…….

a) Stimulated disintegration b) spontaneous disintegration

c) stimulated integration d) spontaneous integration

37) The rate of decay of radioactive atoms is ……. Number of atoms present.

a) Equal to b) inversely proportional c) Directly proportional d) not proportional

38) The number of radioactive substance decreases …… with time.

a) exponentially b) linearly c) speedily d) slowly

39) Radioactive disintegration equation is……..

a) $\frac{dt}{t}$ = -λdN b) $\frac{dt}{dt}$ = -λ dN c) $\frac{dN}{N}$ = λ dt d) $\frac{dN}{N}$ = -λdt

40) The decay constant is defined as the reciprocal of that time duration in which the number of atoms of radioactive substance falls to……. of its original value.

a) 12% b) 25% c) 37% d) 50%

41) The time in which half of the radioactive sustenance is disintegrated is called as……..

a) Reduced life b) life time c) double life period d) half-life period

42) The distant between the center of to successive cooperation is called as…….

a) frequency b) period c) wavelength d) amplitude

43) The time taken by a particle to complete one oscillation is called as ……. Of oscillation.

a) Frequency b) period c) wavelength d) amplitude

44) Longitudinal sound wave travel in the form of alternate ……..

a) Crest and trough b) compression and rarefactions

c) crest and compression d) trough and rarefaction

45) Photons having higher frequency that is higher penetrating power than x-ray are known as …….

a) Radio waves b) micro waves c) γ-rays d) infra rays

46) Half-life period of radioactive substance is given by $T_{1/2}$ is equal to…,,,,,

a) $\frac{0.693}{\lambda}$ b) $\frac{\lambda}{0.693}$ c) $\frac{\lambda}{2}$ d) $\frac{2}{\lambda}$

47) The relation between velocity, period and wavelength is……..

a) n= v λ b) v= n λ c)v= n/λ d) v=λ/n

48) γ-rays show the phenomenon of ……

a) less production b) high production c) no production d) pair production

49) α Particles are represented as……..

a) ${}_1He^2$ b) ${}_2He^3$ c) ${}_2He^4$ d) ${}_2He^2$

50) when a radioactive element radiates radiation then it gets converted into new element which is also radioactive. This change is ……

a) Reversible b) irreversible c) stimulated d) none of these