PROVISIONAL ANSWER KEY

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Question1:-Which theory assumes that the substrate plays a role in determining the final shape of the enzyme?

A:-Rate theory

B:-Occupancy theory

C:-Induced fit theory

D:-Activation-aggravation theory

Correct Answer:- Option-C

Question2:-Paper chromatography is an example of _____ chromatography.

A:-Solid-Liquid

B:-Liquid-Liquid

C:-Gas-Liquid

D:-Solid-Solid

Correct Answer:- Option-B

Question3:-To perform t-test which of the following softwares can be utilized. Choose the most appropriate answer from the options given below:

1. MS-Excel
2. Unix
3. SPSS
4. MS Equations

A:-(1) and (2) only

B:-(2), (3) and (4) only

C:-(1) and (3) only

D:-(1), (3) and (4) only

Correct Answer:- Option-C

Question4:-The F-test is used _____.

A:-For rejection of data

B:-For testing of significance

C:-For obtaining best fitting line

D:-For completion of data

Correct Answer:- Option-B

Question5:-Which of the following titrations will have the equivalence point at a pH more than 8?

A:-CH_3COOH and $NaOH$

B:-HCl and $NaOH$

C:-CH_3COOH and NH_3

D:-HCl and NH_3

Correct Answer:- Option-A

Question6:-Among the following, which is not a prodrug?

A:-Omeprazole

B:-Valacyclovir

C:-Alprazolam

D:-Propranolol

Correct Answer:- Option-D

Question7:-A scatter diagram represent the relationship between _____ and _____.

A:-Cause, effects

B:-Cause, problem

C:-Effects, output

D:-Production, productivity

Correct Answer:- Option-A

Question8:-In case of HPLC mobile phase is

A:-He gas

B:-Air

C:-Organic solvent

D:-Nitrogen gas

Correct Answer:- Option-C

Question9:-The speed of migration of ions in electric field depends upon

A:-Shape and size of molecule

B:-Magnitude of charge and shape of molecule

C:-Magnitude of charge shape and mass of molecule

D:-Magnitude of charge and mass of molecule

Correct Answer:- Option-B

Question10:-0.63 g of oxalic acid is added to 100 ml 0.1 N KOH solution. The resulting solution will be

A:-Neutral

B:-Alkaline

C:-Acidic

D:-None of these

Correct Answer:- Option-A

Question11:-Which of the following is not true about High Pressure Liquid Chromatography (HPLC)?

A:-It requires high pressure for the separation of the species

B:-There is no need to vaporise the samples

C:-It is performed in columns

D:-It has high sensitivity

Correct Answer:- Option-B

Question12:-Indeterminate error is also called

A:-Random error

B:-Accidental error

C:-Both (1) and (2)

D:-None

Correct Answer:- Option-C

Question13:-Analgin is a

A:-Oxazole derivative

B:-Isoxazole derivative

C:-Imidazole derivative

D:-Pyrazole derivative

Correct Answer:- Option-D

Question14:-What does correlation coefficient measure?

A:-The difference between the predicted and actual of the dependent variable

B:-The strength and the direction of linear relationship between two variables

C:-The degree to which one variable causes changes in another variable

D:-The proportion of the variance in the dependent variable that is explained by the independent variable

Correct Answer:- Option-B

Question15:-A concentration term which does not change with increase or decrease of temperature is

A:-Molality

B:-Parts per million

C:-Normality

D:-Mass fraction

Correct Answer:- Option-A

Question16:-Which sentence is false about EDTA?

A:-Alkali medium is required for complex ion as EDTA will ionizes more in alkali

medium.

B:-EDTA form complexes with all metal ions.

C:-Alkali medium is required for complex ion as EDTA will ionizes more in acidic medium.

D:-Ethylene diamine tetra acetic acid (EDTA) and its disodium salts are versatile complexometric agents.

Correct Answer:- Option-C

Question17:-In centrifugation, which of the following force is not used?

A:-Electrostatic force

B:-Gravitational force

C:-Centripetal force

D:-Centrifugal force

Correct Answer:- Option-A

Question18:-Which of the following will improve the efficiency of separating process in liquid chromatography?

A:-Increase in sample size and increase in column diameter

B:-Reduction in sample size and increase in column diameter

C:-Increase in sample size and decrease in column diameter

D:-Decrease in sample size and decrease in column diameter

Correct Answer:- Option-D

Question19:-Which of the following is not a column type liquid chromatography?

A:-Gel permeation

B:-Paper

C:-Liquid solid

D:-Ion exchange

Correct Answer:- Option-B

Question20:-Which of the following is not a type of detector used in gas chromatography?

A:-Argon ionization detector

B:-Thermal conductivity detector

C:-Electron capture detector

D:-UV visible spectrometric detector

Correct Answer:- Option-D

Question21:-Which of the following error is caused by poor calibration of the instrument?

A:-Random error

B:-Gross error

C:-Systematic error

D:-Precision error

Correct Answer:- Option-C

Question22:-Which of the following is an anti histamine drug?

A:-Chlorpheniramine maleate

B:-Ciprofoxacin

C:-Chloramphenicol

D:-Chloroquin

Correct Answer:- Option-A

Question23:-Antiseptic chloroxylenol is

A:-5-Chloro-3, 4 dimethyl phenol

B:-3-Chloro-4, 5 dimethly phenol

C:-4-Chloro-2, 5 dimethly phenol

D:-4-Chloro-3, 5 dimethly phenol

Correct Answer:- Option-D

Question24:-_____ is a H_2 receptor blocker.

A:-Ranitidine

B:-Chlorpheniramine

C:-Cetrazine

D:-Fexofenadine

Correct Answer:- Option-A

Question25:-NSAID is class of which of the following drugs?

A:-Imipramine

B:-Acetaminophen

C:-Alfentanyl

D:-Morphine

Correct Answer:- Option-B

Question26:-_____ is not a sulphonamide drug.

A:-Nimesulide

B:-Valdecoxib

C:-Rofecoxib

D:-Celecoxib

Correct Answer:- Option-C

Question27:-Dopamine is biosynthesized from?

A:-L-Alanine

B:-L-Tyrosine

C:-L-Phenylalanine

D:-L-DOPA

Correct Answer:- Option-B

Question28:-Which of the following techniques is an analysis of the relationship between two variables to help provide the prediction mechanism?

A:-Standard error

B:-Correlation

C:-Regression

D:-None of the above

Correct Answer:- Option-C

Question29:-β1-receptors are located in?

A:-Heart

B:-Lungs

C:-Kidney

D:-Adrenal gland

Correct Answer:- Option-B

Question30:-Chloramphenicol is obtained from

A:-*Streptomyces capreolus*

B:-*Streptomyces venezulae*

C:-*Streptomyces orchidaceus*

D:-*Streptomyces griceus*

Correct Answer:- Option-B

Question31:-Select the spectroscopic method which enable accurate determination of ionization energies of atoms

A:-Atomic Absorption Spectroscopy

B:-Atomic Emission Spectroscopy

C:-Plasma Emission Spectroscopy

D:-Photoelectron Spectroscopy

Correct Answer:- Option-D

Question32:-Pick out the underlying principle of AAS

A:-The absorption of resonance wavelength by the ground state metal atoms present in a flame

B:-The absorption of resonance wavelength by metal ions present in the salt

C:-Emission of resonance wavelength after excitation of metal atoms

D:-The re-emission of resonance wavelength by free metal atoms in gaseous state

Correct Answer:- Option-A

Question33:-Which of the following statement is/are incorrect about hollow cathode lamp?

(i) It is the resonance line source in AAS.
(ii) It has an emitting anode made of the element being studied.
(iii) It has an emitting cathode made of the element being studied.
(iv) The anode is in the form of a cylinder.

A:-Only (i) and (iii)

B:-Only (ii) and (iv)

C:-Only (ii)

D:-Only (iii) and (iv)

Correct Answer:- Option-B

Question34:-The photoelectron spectrum of argon is generated by using a helium source of energy 21.22 eV. What will be the binding energy of argon if its kinetic energy is 5.4 eV?

A:-5.4 eV

B:-26.62 eV

C:-15.82 eV

D:-10.61 eV

Correct Answer:- Option-C

Question35:-In X-ray photoelectron spectroscopy, irradiation of atoms by X-rays leads to:

A:-Photoionisation through the ejection of valance electrons

B:-Ejection of the core electrons

C:-Excitation of the valance electrons

D:-Emission of characteristic X-rays by core electrons.

Correct Answer:- Option-B

Question36:-Which of the following is not a background correction method in AAS?

A:-Deuterium arc method

B:-Stark effect method

C:-Zeeman effect method

D:-Smith-Hieftje system

Correct Answer:- Option-B

Question37:-Pick out most appropriate statements regarding ICP - AES

(i) Produces lesser number of excited atoms compared to Flame Emission Spectroscopy
(ii) Self-absorption is practically absent compared to Flame Emission Spectroscopy
(iii) Inductively Coupled Plasma (ICP) generally has inferior detection limits to Direct Current
Plasma (DCP).
(iv) Suitable for simultaneous multi-elemental determination

A:-Only (i) and (iii)

B:-Only (iii) and (iv)

C:-Only (ii) and (iii)

D:-Only (ii) and (iv)

Correct Answer:- Option-D

Question38:-Flame temperature greater than 2000 K is an essential requirement of flame spectroscopy. Which among the following fuels produce highest flame temperature?

A:-Acetylene + Air

B:-Hydrogen + Air

C:-Acetylene + Nitrous oxide

D:-Propane + Nitrous oxide

Correct Answer:- Option-C

Question39:-Fluorescence spectrum usually consists of only one band with many closely spaced lines that corresponds to transition from lowest vibrational levels of E_1 to different vibrational levels of E_0 . This is because

A:-Internal conversion and vibrational relaxation process are very slow compared to fluorescence.

B:-Internal conversion and vibrational relaxation process are very fast compared to fluorescence.

C:-Vibrational relaxation is very slower than fluorescence.

D:-Internal conversion process is slower but vibrational relaxation is faster compared to fluorescence.

Correct Answer:- Option-B

Question40:-Molecular fluorescence band mostly consists of lines that are lower in energy than the band of absorbed radiation. This is termed as

A:-Quenched fluorescence

B:-Anti-Stokes shifted fluorescence

C:-Stokes shifted fluorescence

D:-Enhanced fluorescence

Correct Answer:- Option-C

Question41:-In Scanning Electron Microscopy (SEM), the signals are generated from
(i) Back scattered electrons
(ii) Absorbed electrons
(iii) Transmitted electrons
(iv) Secondary electrons

A:-Only (i)

B:-Only (iv)

C:-Only (ii) and (iii)

D:-Only (i) and (iv)

Correct Answer:- Option-D

Question42:-Energy Dispersive X-ray Spectroscopy is used to find out the elemental composition of a specimen by probing characteristic X-rays. The EDX spectrum is a plot of

A:-Emitted X-ray intensity against its energy

B:-Emitted X-ray frequency against its amplitude

C:-Absorbed X-ray wavelength against its energy

D:-Emitted X-ray intensity against its wavelength

Correct Answer:- Option-A

Question43:-Which of the following is a scanning probe characterization method?

A:-Transmission Electron Microscopy

B:-Scanning Electron Microscopy

C:-Atomic Force Microscopy

D:-Field Emission Microscopy

Correct Answer:- Option-C

Question44:-Selected area electron diffraction (SAED) is a crystallographic experimental method, which is associated with

A:-SEM

B:-AFM

C:-STM

D:-TEM

Correct Answer:- Option-D

Question45:-In the X-ray diffraction pattern of body-centered cubic lattice

A:-Diffraction lines for which $(h+k+l)$ is an odd integer are present

B:-Diffraction lines for which $(h+k+l)$ is an odd integer are absent

C:-Diffraction lines are observed only from planes for which *h*, *k* and *l* are either all odd or all even

D:-Equally spaced six lines followed by an extinction are present.

Correct Answer:- Option-B

Question46:-Noble metal nanoparticles are generally characterized by localized surface plasmon resonance (LSPR). Which of the following spectroscopic method is useful to detect various factors that affect the LSPR?

A:-IR spectroscopy

B:-X-ray fluorescence spectroscopy

C:-Raman spectroscopy

D:-UV-Visible absorbance spectroscopy

Correct Answer:- Option-D

Question47:-Which of the following statement is incorrect about scanning tunneling

microscopy (STM)?

A:-The working principle is quantum tunneling.

B:-An image is formed due to variation in tunneling current as the tip moves across the surface.

C:-The tunneling current exponentially depends on the distance from the probe to surface

D:-The tunneling current is independent on the distance from the probe to surface

Correct Answer:- Option-D

Question48:-Pick out the selection rules that govern hyperfine transition in ESR spectra

A:-$\Delta m_s = 0$ and $\Delta m_1 = \pm 1$

B:-$\Delta m_s = 0$ and $\Delta m_1 = 0$

C:-$\Delta m_s = \pm 1$ and $\Delta m_1 = 0$

D:-$\Delta m_s = +1$ and $\Delta m_1 = \pm 1$

Correct Answer:- Option-C

Question49:-Assuming as isotropic system, the hyper fine ESR spectrum of an aqueous solution of Cu^{2+} consists of a $\left(^{63}Cu, I = \frac{3}{2}\right)$

A:-Singlet

B:-Doublet

C:-Triplet

D:-Quartet

Correct Answer:- Option-D

Question50:-DPPH (α, α' - diphenyl picryl hydrazil radical) can be used for calibrating the ESR spectra. The ESR spectrum of DPPH consists of

A:-quartet with intensity ratio 1:3:3:1

B:-quintet with intensity ratio 1:2:3:2:1

C:-quintet with intensity ratio 1:4:6:4:1

D:-quartet with equal intensity

Correct Answer:- Option-B

Question51:-Thermomechanical Analysis can be used for the determination
(I) Viscoelastic properties
(II) Glass transition temperature
(III) Phase transformation

A:-Only (I)

B:-Only (II) and (III)

C:-All of the above

D:-None of these

Correct Answer:- Option-C

Question52:-Match the compound with the correct fragmentation peak
m/z = 108 (molecular ion), 107, 79, 77, 51

A:-Ethyl benzene

B:-Benzyl alcohol

C:-Xylene

D:-Toluene

Correct Answer:- Option-B

Question53:-The function of which enzyme is inhibited by cyanide poisoning

A:-Super Oxide dismutase

B:-Cytochrome oxidase

C:-Ascorbate oxidase

D:-Carbonic anhydrase

Correct Answer:- Option-B

Question54:-Which of the following is true about LD 50?
(I) It is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.
(II) It is the amount of chemical administered (e.g., milligrams) per 100 grams (for smaller animals) or per kilogram (for bigger test subjects) of the body weight of the test animal which proves to be fatal.

A:-Only (I)

B:-Only (II)

C:-None of these

D:-Both (I) and (II)

Correct Answer:- Option-D

Question55:-The tension probe used in thermo-mechanical analysis is made of

A:-Glass

B:-Polymer

C:-Fibre

D:-Graphite

Correct Answer:- Option-A

Question56:-How many peaks is expected for 1, 2 dichloropropane in $^{1}HNMR$?

A:-3

B:-4

C:-5

D:-2

Correct Answer:- Option-B

Question57:-An example of a low energy pure Beta emitter

A:-C-14

B:-Ra-226

C:-N-15

D:-U-238

Correct Answer:- Option-A

Question58:-Which of the following shows highest stretching frequencies in IR for exocyclic olefinic double bond?

A:-methylene cyclobutane

B:-methylene cyclopentane

C:-methylene cyclohexane

D:-methylene cyclopropane

Correct Answer:- Option-D

Question59:-In organophosphate toxicity which of the following statements are correct
(I) Antidote is intravenous injection of atropine
(II) IF RBC cholinesterase level is more than 50% of normal, it indicates organophosphate
toxicity

A:-Only (I)

B:-Only (II)

C:-Both (I) and (II)

D:-Neither (I) nor (II)

Correct Answer:- Option-A

Question60:-o-nitroacetanilide or p-nitroacetanilide which shows absorption at longer wavelength and why?

A:-o-nitroacetanilide due to intramolecular H-bonding

B:-p-nitroacetanilide due to intermolecular H-bonding

C:-o-nitroacetanilide due to conjugation

D:-p-nitroacetanilide due to conjugation

Correct Answer:- Option-A

Question61:-In a particular Neutron Activation Analysis two aliquots containing 3 ml river water were taken. To one, 1 ml of standard solution containing 1 µg of $^{28}Al^{3+}$ was added and to other, 1 ml of deionized water was added. Both were subjected to homogenous neutron flux. On counting the γ radiation from ^{28}Al the counting rate of first aliquot was 4000 cpm and second was 1000 cpm. Calculate the weight of Al in the 3ml sample of river water.

A:-0.25 µg

B:-0.40 µg

C:-0.55 µg

D:-0.33 µg

Correct Answer:- Option-D

Question62:-Coding regions of a gene are called

A:-Chromosome

B:-Exons

C:-Introns

D:-Chromatin

Correct Answer:- Option-C

Question63:-Calculate the chemical shift in ppm for a proton in a 120 MHz instrument if it shows resonance at 300 Hz in 60 MHz.

A:-2.5 ppm

B:-2 ppm

C:-5 ppm

D:-1.5 ppm

Correct Answer:- Option-C

Question64:-Which of the following is a step not involved in DNA finger printing?

A:-Gel electrophoresis

B:-DNA transcription

C:-Polymerase Chain Reaction

D:-Restriction fragment length polymorphisms

Correct Answer:- Option-B

Question65:-Sensitivity of Neutron Activation Analysis depends on
(I) Neutron activation cross section
(II) Isotope abundance
(III) Neutron flux
(IV) Counter efficiency

A:-II, III, IV

B:-I, II, III

C:-All of above

D:-None of above

Correct Answer:- Option-B

Question66:-The modulus in the Plateau region in DMA analysis of a polymer sample

A:-not depending on cross linking

B:-depends on cross linking alone

C:-depends on crystallinity alone

D:-depends on both crystallinity and crosslinking

Correct Answer:- Option-D

Question67:-Identify the correct number of peaks for ortho, meta and para dichlorobenzene in $^{13}CNMR$

A:-4, 3, 1

B:-3, 4, 2

C:-3, 3, 1

D:-3, 4, 1

Correct Answer:- Option-B

Question68:-which of the following statements regarding Arsenic is false?

A:-Pentavalent Arsenic is more toxic than trivalent Arsenic

B:-After absorption Arsenic binds to the sulfydryl groups of tissue proteins.

C:-Dermal pigmentation is consistently seen in chronic arsenic poisoning

D:-Antidote is chelation therapy with British Anti Lewisite

Correct Answer:- Option-A

Question69:-Pencillin in a mixture was determined by adding 0.2 mg of ^{14}C having a specific activity of 6.86×10^{3} cpm/mg. After equilibration 0.1 mg of pure penicillin was obtained. The material had an activity of 343 cpm. Calculate the milligrams of penicillin in the sample.

A:-0.1 mg

B:-0.3 mg

C:-0.2 mg

D:-0.43 mg

Correct Answer:- Option-C

Question70:-In DEPT Subspectra, DEPT-90, how many peaks are obtained for isopentylacetate

A:-2

B:-5

C:-1

D:-3

Correct Answer:- Option-C

Question71:-Estimation of chromium in samples uses which of the reagent and method

A:-Dimethylglyoxime in Atomic Absorption Spectroscopy

B:-Diphenyl carbazide in Atomic Absorption Spectroscopy

C:-Dimethylglyoxime in UV-V is Spectroscopy

D:-Diphenyl carbazide in UV-V is Spectroscopy

Correct Answer:- Option-D

Question72:-(I) Assertion : Neutron probes help in better management of land in agriculture.

(II) Reason : It measure soil moisture accurately

A:-Assertion is true and II is the correct reason

B:-Assertion is true but II is not the correct reason

C:-Assertion is not true but reason is true

D:-Both Assertion and Reason are false

Correct Answer:- Option-A

Question73:-Which of the following statements about Anabolic Steroids is wrong?

A:-Anabolic steroids help build muscle tissue and increase body mass

B:-Anabolic steroids are a chemical derivative of testosterone

C:-Anabolic steroids are corticosteroids

D:-Use of these steroids is illegal and banned by most sports organizations

Correct Answer:- Option-C

Question74:-Which of the following shows peak at m/z = 58 due to Mc Lafferty Rearrangement?

A:-2-pentanone

B:-3-pentanone

C:-3-methyl-2-butanone

D:-None of above

Correct Answer:- Option-A

Question75:-The half-life of Ra-226 is 1600 years. Calculate the time for its decomposition into 6.25% of initial amount?

A:-3200 years

B:-6400 years

C:-4800 years

D:-8000 years

Correct Answer:- Option-B

Question76:-Which of the following statements is wrong?

A:-TOCSY spectrum divides the proton signals into groups so that overlapping multiplets can be resolved

B:-TOCSY is used for studying structure of macromolecules

C:-Intensity of the peaks is related to number of bonds connecting the protons

D:-If we want to determine which proton is coupled which other proton COSY is better than TOCSY

Correct Answer:- Option-C

Question77:-In forensic analysis the species origin of blood is determined by
(I) Precipitin tube method
(II) Double disc diffusion method
(III) Crossover Electrophoresis

A:-Only (I) and (II)

B:-Only (I) and (III)

C:-Only (II) and (III)

D:-All of above

Correct Answer:- Option-D

Question78:-(I) Assertion : Deborah Number is used in Dynamic Mechanical Analysis to determine
viscoelastic behaviour of a polymer.
(II) Reason : It determines the relaxation time of the polymer.

A:-Assertion I is correct and II is the correct reason

B:-Assertion is correct but II is not the correct reason

C:-Assertion is incorrect but reason is true

D:-Both Assertion and Reason are incorrect

Correct Answer:- Option-A

Question79:-Total number of vibrational modes for XeF_2

A:-2

B:-3

C:-4

D:-1

Correct Answer:- Option-A

Question80:-Which of the following is a phytotoxin found in castor seed?

A:-Podophyllin

B:-Colchicine

C:-Ricin

D:-Crotin

Correct Answer:- Option-C

Question81:-When 1 mol $CoCl_3.5NH_3$ is treated with excess $AgNo_3$, 2 mol $AgCl$ are obtained. The formula of the complex is

A:-$\left[CoCl_2(NH_3)_5\right]^+Cl^-$

B:-$\left[CoCl(NH_3)_5\right]^{2+}2Cl^-$

C:-$\left[Co(NH_3)_5\right]^{3+}3Cl^-$

D:-$\left[CoCl_3(NH_3)_3\right]2NH_3$

Correct Answer:- Option-B

Question82:-For the reaction, $M^{2+}+2F^-\rightarrow MF_2$, where M is a first transition element, if the lattice energy is plotted against atomic number, the shape of the graph will be

A:-Linear

B:-Single humped curve

C:-Double humped curve

D:-Triple humped curve

Correct Answer:- Option-C

Question83:-A normal spinel structure will be formed if

A:-M^{3+} ion has higher CFSE in an octahedral field compared to M^{2+} ion

B:-M^{3+} ion has lower CFSE in an octahedral field compared to M^{2+} ion

C:-M^{3+} ion has higher CFSE in a tetrahedral field compared to M^{2+} ion

D:-M^{3+} ion has lower CFSE in a tetrahedral field compared to M^{2+} ion

Correct Answer:- Option-A

Question84:-Which of the following species not expected to be a ligand?

A:-NO

B:-CO

C:-NH_4^+

D:-H_2O

Correct Answer:- Option-C

Question85:-Select the diamagnetic species

A:-$\left[Mn(CN)_6\right]^{3-}$

B:-$\left[Cr(H_2O)_6\right]^{3+}$

C:-$\left[FeCl_6\right]^{4-}$

D:-None of the above

Correct Answer:- Option-D

Question86:-The magnetic moment of $\left[CoF_6\right]^{3-}$ is

A:-3.8 BM

B:-4.9 BM

C:-2.6 BM

D:-5.7 BM

Correct Answer:- Option-B

Question87:-The high spin-low spin crossover point in Tanabe-Sugano diagram occur for a d^4 system at

A:-2.7 Dq/B

B:-2.2 Dq/B

C:-2.0 Dq/B

D:-1.8 Dq/B

Correct Answer:- Option-A

Question88:-The purple colour of MnO_4^- ion is due to

A:-d-d transition

B:-ligand to metal charge transfer

C:-metal to ligand charge transfer

D:-All of the above

Correct Answer:- Option-B

Question89:-The crystal field stabilization energy of low spin d^6 configuration will be

A:-$2\Delta_0 - 2P$

B:-$2.4\Delta_0 - 2P$

C:-$2.4\Delta_0 - 3P$

D:-$0.4\Delta_0 - 3P$

Correct Answer:- Option-C

Question90:-Which of the following configuration shows Jahn-Tellar distortion in an octahedral field?

A:-d^6 high spin

B:-d^5 high spin

C:-d^6 low spin

D:-None of the above

Correct Answer:- Option-A

Question91:-Physisorption is favoured by

A:-negative ΔH

B:-high pressure

C:-higher critical temperature of the adsorbate

D:-All the above

Correct Answer:- Option-D

Question92:-Which of the following process will not occur at the interface of phases?

A:-homogeneous catalysis

B:-heterogeneous catalysis

C:-crystallisation

D:-corrosion

Correct Answer:- Option-A

Question93:-The half-life of the first order homogeneous reaction $SO_2Cl_2 \rightarrow SO_2 + Cl_2$, is 10 minutes. How long will it take for the concentration of the reactant to be reduced to 1% of the initial value?

A:-33.2 minutes

B:-infinity

C:-66.46 minutes

D:-62.4 minutes

Correct Answer:- Option-C

Question94:-The surface tension of dilute solution of a solute varies linearly with the solute concentration *c* as $\gamma=\gamma_0-\alpha c$, where γ_0 is the surface tension of the solvent and α is a constant. The expression for surface excess is

A:-$(\gamma-\gamma_0)$/RT

B:-$(\gamma_0-\gamma)$/RT

C:-$(2\gamma-\gamma_0)$/RT

D:-$(\gamma_0-\gamma)$/2RT

Correct Answer:- Option-B

Question95:-In the acid hydrolysis reaction, $A+H_2O+H^+\rightarrow$ Products, where, $[H+]=0.2$ mol dm^{-3} and H_2O is present in large excess, the pseudo first order rate constant is $1.0\times10^{-5}s^{-1}$. The true rate constant will be

A:-$5.5\times10^{-8}\ dm^6\ mol^{-2}\ s^{-1}$

B:-$9\times10^{-7}\ dm^6\ mol^{-2}\ s^{-1}$

C:-$4.5\times10^{-7}\ dm^6\ mol^{-2}\ s^{-1}$

D:-$10\times10^{-6}\ dm^6\ mol^{-2}\ s^{-1}$

Correct Answer:- Option-B

Question96:-In the base catalysed hydrolysis of ethyl acetate, a plot of logarithm of rate constant versus square root of ionic strength of the solution will be

A:-linear and parallel to *x* axis

B:-linear with positive slope

C:-linear with negative slope

D:-None of the above

Correct Answer:- Option-A

Question97:-Which of the following statements is not true for a catalyst?

A:-It catalyses the forwards and backward reactions to the same extent

B:-It does not change the equilibrium constant of a reaction

C:-It alters ΔG of the reaction

D:-It reduces activation energy

Correct Answer:- Option-C

Question98:-The volume of nitrogen gas at 1 atm. and 273 K required to cover the surface of an adsorbent as monolayer is 0.1 dm^3 /g of the adsorbent. If each nitrogen molecule occupies $10\times10^{-20}m^2$, the surface area of the adsorbent is

A:-210 m^2

B:-536 m^2

C:-324 m^2

D:-268 m^2

Correct Answer:- Option-D

Question99:-The half life of a reaction is doubled as the initial concentration of the reactant is doubled. The order of the reaction will be

A:-zero order

B:-first order

C:-second order

D:-third order

Correct Answer:- Option-A

Question100:-Low energy electron diffraction (LEED) is a technique employed for studying

A:-dipole moment of a molecule

B:-atomic geometry of a surface

C:-magnetic moment of a molecule

D:-dielectric properties of a surface

Correct Answer:- Option-B