PROVISIONAL ANSWER KEY

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Question1:-**Which of the following statements are true about plant secondary metabolites ?**
i. Secondary metabolites help in the formation of primary metabolite.
ii. Secondary metabolites are essential for normal growth and development.
iii. Secondary metabolites are involved in plant defense.
iv. Specific secondary metabolites are restricted to one plant species or related group of species.

A:-i and ii

B:-i and iii

C:-iii and iv

D:-ii and iv

Correct Answer:- Option-C

Question2:-The number of carbon atoms in monoterpenes, diterpenes, sesquiterpenes, triterpenes and hemiterpenes are

A:-5, 10, 20, 30 and 3 respectively

B:-10, 20, 15, 30 and 5 respectively

C:-5, 10, 15, 20 and 25 respectively

D:-10, 20, 30, 40 and 50 respectively

Correct Answer:- Option-B

Question3:-Phytohormone gibberellins belongs to

A:-Flavonoids

B:-Terpenes

C:-Alkaloids

D:-None of the above

Correct Answer:- Option-B

Question4:-Which of the following plant secondary metabolites are formed from isoprene units ?

A:-Cyanogenic glycosides

B:-Terpenoids

C:-Flavonoids

D:-None of the above

Correct Answer:- Option-B

Question5:-Two most abundant organic substances on earth are

A:-RuBisCO and starch

B:-Cellulose and lignin

C:-Lignins and lignans

D:-Cellulose and starch

Correct Answer:- Option-B

Question6:-Extraction procedure suitable for thermolabile compounds in plants
i. Soxhlet extraction.
ii. Maceration.
iii. Decoction.
iv. Supercritical extraction.

A:-i and ii

B:-ii and iv

C:-ii and iii

D:-i and iv

Correct Answer:- Option-B

Question7:-Which of the following is a purine derivative ?

A:-Cocaine

B:-Cinchonine

C:-Nicotine

D:-Caffeine

Correct Answer:- Option-D

Question8:-Requirement of a good solvent for solvent extraction of plant secondary metabolites

A:-Should be non-volatile

B:-Should dissolve both the compound-to-be-extracted and the impurities efficiently

C:-Should have good solubility for the compound-to-be-extracted and less solubility for other impurities

D:-Should chemically react with the compound-to-be-extracted but not with the impurities

Correct Answer:- Option-C

Question9:-Extraction of 20 g dried plant leaf powder using 250 ml ethyl acetate resulted in an extract, which on drying provided 50 mg solvent-free extract. The percentage yield of the extract would be

A:-2.5%

B:-25%

C:-0.4%

D:-40%

Correct Answer:- Option-A

Question10:-A researcher tested a plant extract for phytochemical screening and got green colour with Wagner's reagent and yellow coloured precipitate with lead acetate. What can you infer based on these results ?

A:-Presence of alkaloids and presence of flavonoids

B:-Absence of alkaloids and presence of flavonoids

C:-Absence of alkaloids and absence of flavonoids

D:-None of the above

Correct Answer:- Option-B

Question11:-2-D electrophoresis is a combination of

A:-Isoelectric precipitation and native PAGE

B:-Isoelectric focusing and SDS PAGE

C:-Isoelectric focusing and immunoelectrophoresis

D:-None of the above

Correct Answer:- Option-B

Question12:-Advantage of nested PCR

A:-Help in the amplification of less-abundant genes

B:-Reduces non-specific amplification

C:-High accuracy, specificity and sensitivity

D:-All of the above

Correct Answer:- Option-D

Question13:-Quartz cuvettes are preferred over glass cuvettes because

A:-Quartz is more transparent

B:-Quartz is less fragile and less expensive

C:-Quartz is more temperature sensitive

D:-None of the above

Correct Answer:- Option-A

Question14:-Principle of Atomic Absorption spectrometry is

A:-Molecules containing metal atoms can absorb radiation, which is measured

B:-Free atoms in a sample generated by an atomizer absorb radiation, which is measured

C:-Free atoms in a sample generated by an atomizer absorb radiation and emit another and the emitted light is measured

D:-None of the above

Correct Answer:- Option-B

Question15:-Gold coating is used in sample preparation for scanning electron microscopy for
i. Protecting the sample from disintegration.
ii. Preventing surface charging.
iii. Storing for future use.
iv. To promote the emission of secondary electrons.

A:-i and ii

B:-ii and iii

C:-i and iv

D:-ii and iv

Correct Answer:- Option-D

Question16:-In a sample, electron spin resonance spectroscopy can measure

A:-Beryllium

B:-Any diamagnetic material

C:-Free radicals

D:-None of the above

Correct Answer:- Option-C

Question17:-Which of the following statement is true, when comparing GC-MS and LC-MS ?

A:-GC-MS can identify wide range of compounds compared to LC-MS

B:-LC-MS is limited to volatile or low-molecular weight compounds

C:-GC-MS run takes more time than LC-MS

D:-None of the above

Correct Answer:- Option-D

Question18:-Among the different fixatives used, Osmium tetroxide is considered best. However, it is mostly limited by

A:-Slow penetration rate because of its large size

B:-Low stability which lead to its degradation

C:-Stabilizes membrane lipids along with proteins

D:-Impaired fixation

Correct Answer:- Option-A

Question19:-Optimum length of a PCR primer is between 18-30 bps because

A:-Longer primers are less specific and shorter primers cause production of lower amounts of products

B:-Longer primers are difficult to synthesize and shorter primers degrade easily

C:-Longer primers are less efficient in binding to the template during annealing and shorter primers are less specific

D:-Longer primers and shorter primers cause less-specific binding to the template

Correct Answer:- Option-C

Question20:-According to Beer-Lambert's law, when a beam of light passes through a solution, the absorbance of light is directly proportional to the

A:-Concentration of solution

B:-Molar absorption coefficient

C:-Path length

D:-All of the above

Correct Answer:- Option-D

Question21:-The SI unit of enzyme catalytic activity is

A:-IU

B:-Katal

C:-Specific activity

D:-None of these

Correct Answer:- Option-B

Question22:-Pyruvate carboxylase is an example for

A:-Isomerase

B:-Lyases

C:-Ligase

D:-Hydrolase

Correct Answer:- Option-C

Question23:-Allosteric activator of ATCase is

A:-ATP

B:-CTP

C:-GTP

D:-None of these

Correct Answer:- Option-A

Question24:-The inhibitor that binds to the enzyme-Substrate complex is

A:-Competitive inhibitor

B:-Non-competitive inhibitor

C:-Uncompetitive inhibitor

D:-Allosteric inhibitor

Correct Answer:- Option-C

Question25:-Type of inhibition of malonate on succinate dehydrogenase is

A:-Competitive

B:-Uncompetitive

C:-Non competitive

D:-None of these

Correct Answer:- Option-A

Question26:-Mutarotation of glucose is an example of

A:-Acid-base catalysis

B:-Covalent catalysis

C:-Metal ion catalysis

D:-None of these

Correct Answer:- Option-A

Question27:-The catalytic residues of lysozyme are

A:-Gln 35 and Asp 52

B:-Glu 35 and Asp 52

C:-Glu 52 and Asp 35

D:-None of these

Correct Answer:- Option-B

Question28:-A diagnostic test for the presence of the active site of serine protease is its reaction with

A:-Di isopropyl phosphor fluoride (DIPF)

B:-Iodoacetamide

C:-Tosyl phenylalanine chloro methyl ketone

D:-None of these

Correct Answer:- Option-A

Question29:-The enzyme used in the treatment of leukemia is

A:-Arginase

B:-Urease

C:-Asparaginase

D:-None of these

Correct Answer:- Option-C

Question30:-Lactate dehydrogenase is used for the diagnosis of

A:-Myocardial infarction

B:-Infective hepatitis

C:-Muscular dystrophy

D:-All of these

Correct Answer:- Option-D

Question31:-Which carbohydrate at the end of the chain determines blood group A

antigenicity ?

A:-Galactose

B:-N-acetyl galactosamine

C:-Glucose

D:-None of these

Correct Answer:- Option-B

Question32:-A GTP binding protein required for the release of a clathrin coated vesicle from the membrane is

A:-Actin

B:-Dynamin

C:-Vimentin

D:-None of these

Correct Answer:- Option-B

Question33:-Which gene is known as the guardian of genome ?

A:-pRB

B:-p53

C:-E2f

D:-None of these

Correct Answer:- Option-B

Question34:-The best studied oncogene whose product act as a transcription factor is

A:-SRC

B:-MYC

C:-both (1) and (2)

D:-None of these

Correct Answer:- Option-B

Question35:-The absolute measures of dispersion include

A:-Standard deviation

B:-Mean deviation

C:-Both (1) and (2)

D:-None of these

Correct Answer:- Option-C

Question36:-Blast that compares a protein sequence with a protein database is

A:-Blastp

B:-tblastn

C:-Both (1) and (2)

D:-None of these

Correct Answer:- Option-A

Question37:-Antibody is immobilized on a microtiter well and sample containing antigen is added in

A:-Indirect ELISA

B:-Sandwitch ELISA

C:-Competitive ELISA

D:-None of these

Correct Answer:- Option-B

Question38:-Direct agglutination reaction for detecting typhoid bacilli is

A:-VDRL test

B:-WIDAL test

C:-Mantoux test

D:-None of these

Correct Answer:- Option-B

Question39:-Antibiotics are sterilized by

A:-Autoclaving

B:-Filtration

C:-Radiation

D:-None of these

Correct Answer:- Option-B

Question40:-Glucose transporter is an example for

A:-Active transport

B:-Passive transport

C:-Facilitated diffusion

D:-None of these

Correct Answer:- Option-C

Question41:-The word transcriptome means what ?

A:-Quantifying mRNA from various genes

B:-Quantifying translated proteins from genes

C:-Quantifying total genes

D:-Quantifying total errors in transcription

Correct Answer:- Option-A

Question42:-Which of the following is not a non-covalent drug target binding ?

A:-Hydrogen bonding

B:-Electrostatic interactions

C:-Dispersion forces

D:-Hydrophilic effect

Correct Answer:- Option-D

Question43:-An experimental approach to drug discovery is

A:-High throughput screening

B:-Chemical similarity for target ligand

C:-Structure based discovery

D:-All the above

Correct Answer:- Option-A

Question44:-Drugs NOT exhibiting saturated metabolism at or near the commonly employed concentrations include

A:-Aspirin

B:-Fluoxetine

C:-Verapamil

D:-Gentamicin

Correct Answer:- Option-D

Question45:-Drug which is not targeting a membrane transporter is

A:-Glipizide

B:-Sertraline

C:-Omeprazole

D:-Digoxin

Correct Answer:- Option-A

Question46:-Which of the following is not a ligand gated ion channel ?

A:-Glycine

B:-P2X

C:-Transient receptor potential channel

D:-Secretin

Correct Answer:- Option-D

Question47:-Which of the following is a genotoxic agent ?

A:-Phorbol esters

B:-Dioxins

C:-Asbestos

D:-Aflatoxin B

Correct Answer:- Option-D

Question48:-Which of the following is NOT an orally available metal chelator ?

A:-Dimercaprol

B:-Succimer

C:-Trientine

D:-Deferasirox

Correct Answer:- Option-A

Question49:-Which of the following transport system is an example for passive transport system ?

A:-ABC transporter

B:-Na^+/K^+ ATPase

C:-SLC co-transporters

D:-SLC transporter

Correct Answer:- Option-D

Question50:-In the metabolism of Phenytoin, the V_{max} to CYP2C9 is increased by

A:-Competitive inhibition

B:-Decreased plasma protein binding

C:-Hepatic cirrhosis

D:-Enzyme induction

Correct Answer:- Option-D

Question51:-Energy of a radiation of wavelength 300 nm is

A:-33333 cm^{-1}

B:-6.62 × $10^{-19} J$

C:-6.62 × 10^{-11} erg

D:-Both 1 and 2

Correct Answer:- Option-D

Question52:-Microwave spectrum can be expected for

A:-CO

B:-N_2

C:-O_2

D:-CH_4

Correct Answer:- Option-A

Question53:-Number of fundamental vibrational frequencies expected for a non-linear molecule having 4 atoms

A:-4

B:-5

C:-6

D:-7

Correct Answer:- Option-C

Question54:-Which of the following statements is/are correct ?
i. Pure rotational spectrum of a diatomic molecule will consists of a number of equally spaced
lines with separation of 2B.
ii. Q branch is absent in vibrational-rotational spectra.
iii. Energy of the lowest vibrational level is zero.

A:-Both (i) and (ii)

B:-Both (i) and (iii)

C:-Both (ii) and (iii)

D:-Only (iii)

Correct Answer:- Option-A

Question55:-Shift of absorption band to the shorter wavelength is called

A:-Red shift

B:-Blue shift

C:-Bathochromic shift

D:-Hypochromic shift

Correct Answer:- Option-B

Question56:-The separation between first lines of Stokes and Anti-Stokes line in the rotational Raman spectrum is

A:-2B

B:-4B

C:-6B

D:-12B

Correct Answer:- Option-D

Question57:-Mutual exclusion principle is not applicable to

A:-CO_2

B:-C_2H_2

C:-H_2

D:-CO

Correct Answer:- Option-D

Question58:-A compound shows a proton-NMR peaks at 120 Hz downfield from the TMS peak in a spectrometer operating at 60 MHz. Chemical shift (δ) in ppm is

A:-1

B:-2

C:-4

D:-6

Correct Answer:- Option-B

Question59:-The ESR spectrum of triphenylmethyl radical consists of

A:-2 lines

B:-16 lines

C:-196 lines

D:-216 lines

Correct Answer:- Option-C

Question60:-The spectroscopic technique used to establish the presence of intermolecular hydrogen bonding is

A:-UV

B:-IR

C:-ESR

D:-Mossbauer

Correct Answer:- Option-B

Question61:-In which of the following electrodes, potential value depends on pH of the solution ?

A:-Glass electrode

B:-Quinhydrone electrode

C:-Calomel electrode

D:-Both 1 and 2

Correct Answer:- Option-D

Question62:-Which of the following statements is/are correct ?
i. In emulsion, both dispersion medium and dispersed phase are liquids.
ii. Gel consists of solid dispersion medium and liquid dispersed phase.
iii. In sol, the dispersion medium is liquid and dispersed phase is solid.
iv. In foam, the dispersion medium and dispersed phase are gas and liquid respectively.

A:-Bot (i) and (iv)

B:-Both (ii) and (iv)

C:-Both (iii) and (iv)

D:-(i), (ii) and (iii)

Correct Answer:- Option-D

Question63:-Principle of ultramicroscope depends on

A:-Tyndalll effect

B:-Brownian movement

C:-Surface tension

D:-Refractive index

Correct Answer:- Option-A

Question64:-Which of the following ions has highest coagulation power towards As_2S_3 sol. ?

A:-PO_4^{3-}

B:-$\left[Fe(CN)_6\right]^{4-}$

C:-Mg^{2+}

D:-Al^{3+}

Correct Answer:- Option-D

Question65:-Certain gels liquefy on shaking to form the corresponding solution and reset to the gel. This phenomenon is called

A:-Imbibition

B:-Syneresis

C:-Thixotropy

D:-Swelling

Correct Answer:- Option-C

Question66:-Which of the following statements regarding the absolute configuration is/are correct ?
i. D-glyceraldehyde has S configuration.
ii. D-lactic acid has S configuration.
iii. Absolute configuration of meso tartaric acid is 2R, 3R.

A:-Only (i)

B:-Only (ii)

C:-Only (iii)

D:-Both (i) and (iii)

Correct Answer:- Option-B

Question67:-The least stable conformer of cyclohexane is

A:-Boat form

B:-Twist boat form

C:-Half chair form

D:-Chair form

Correct Answer:- Option-C

Question68:-Claisen rearrangement involves

A:-1, 3-sigmatropic rearrangement

B:-3, 3-sigmatropic rearrangement

C:-1, 5-sigmatropic rearrangement

D:-2, 2-sigmatropic rearrangement

Correct Answer:- Option-B

Question69:-Which of the following is anti aromatic ?

A:-Cyclooctatetraene

B:-Tropylium cation

C:-Pentalene

D:-Azulene

Correct Answer:- Option-C

Question70:-Decreasing order of acid strength of the following organic acids is
i. Propanoic acid.
ii. 2-chloropropanoic acid.
iii. 3-chloropropanoic acid.
iv. 2, 2-dichloropropanoic acid.

A:-i > ii > iii > iv

B:-iv > iii > ii > i

C:-iv > ii > iii > i

D:-i > iv > ii > iii

Correct Answer:- Option-C

Question71:-Which of the following is/are correct about Flame Atomic Absorption Spectroscopy ?
i. The most useful radiation source is the hollow-cathode lamp.
ii. Electrodeless-discharge lamps are useful sources of atomic line spectra.
iii. The atoms producing emission lines in the hollow-cathode lamp are at a significantly lower
temperature than the analyte atoms in the flame.
iv. A rotating circular chopper may be placed between the flame and detector for modulating
the radiation to eliminate interferences.

A:-All of the above (i to iv) are correct

B:-All except (iv) are correct

C:-Only (i) and (iii) are correct

D:-Only (i) and (iv) are correct

Correct Answer:- Option-B

Question72:-If a solution has a transmittance of 20%, what is its absorbance ?

A:-1.3010

B:-1.699

C:-0.699

D:-–0.3010

Correct Answer:- Option-C

Question73:-Which of the following pair represent the two main types of electron sources used in Transmission Electron Microscopy (TEM) ?

A:-Thermionic emitters and field emission guns

B:-Photocathodes and Schottky emitters

C:-Cold field emitters and LaB_6 sources

D:-Sputtered sources and plasma sources

Correct Answer:- Option-A

Question74:-Why is the objective lens considered the most important lens in a TEM ?

A:-It is responsible for magnifying the final image of the specimen

B:-It provides the initial beam of electrons required for imaging

C:-It forms the first real and magnified image of the specimen, which is then further magnified by subsequent lenses

D:-It corrects spherical aberrations in the electron beam

Correct Answer:- Option-C

Question75:-In Atomic Force Microscopy (AFM), which of the following statements best describes the impact of the "spring constant" of the AFM cantilever on the imaging process and force
measurements ?

A:-A higher spring constant increases the cantilever's sensitivity to surface forces, leading to higher-resolution imaging but potentially causing sample damage due to increased force

B:-A lower spring constant increases the cantilever's sensitivity to surface forces, allowing for more accurate force measurements and reducing the risk of sample damage, but may lead to lower-resolution imaging

C:-The spring constant of the cantilever has no significant impact on the imaging resolution but affects the imaging speed by controlling the scanning frequency

D:-A higher spring constant decreases the cantilever's sensitivity to surface forces, improving imaging resolution while reducing the risk of sample damage

Correct Answer:- Option-B

Question76:-In Differential Thermal Analysis (DTA), how is an exothermic reaction depicted on a thermogram compared to an endothermic reaction ?

A:-An exothermic reaction shows a peak above the baseline, indicating heat release, while an endothermic reaction shows a peak below the baseline, indicating heat absorption

B:-An exothermic reaction shows a peak below the baseline, indicating heat release, while an endothermic reaction shows a peak above the baseline, indicating heat absorption

C:-Both exothermic and endothermic reactions produce peaks above the baseline; the peak direction indicates heat absorption or release

D:-The thermogram does not show peaks; it only displays a continuous curve representing temperature changes

Correct Answer:- Option-B

Question77:-The use of supercritical carbon dioxide in green chemistry primarily follows which principle ?

A:-Prevention of Waste

B:-Use of Renewable Feedstocks

C:-Design for Energy Efficiency

D:-Safer Solvents and Auxiliaries

Correct Answer:- Option-D

Question78:-In the host-guest complex formed between cyclodextrin and benzene, which interaction is most critical for stabilizing benzene within the cyclodextrin cavity ?

A:-Dipole-dipole interactions

B:-Dipole-induced dipole interactions

C:-Hydrogen bonding

D:-London dispersion forces

Correct Answer:- Option-D

Question79:-Which characteristic of carcerands is most important for the formation of stable inclusion complexes with guest molecules ?

A:-High flexibility - Allows easy rearrangement to fit various guest sizes

B:-Symmetric structure - Ensures uniform binding sites and prevents selective binding

C:-Fixed cavity size - Provides a well-defined space that matches the size of the guest

D:-Hydrophobic outer surface - Increases solubility in aqueous environments

Correct Answer:- Option-C

Question80:-Which principle best explains the variability in binding affinities for different ligands when they interact with the same protein ?

A:-Induced fit model - Describes how protein structures adapt to optimize interactions with different ligands

B:-Lock-and-key model - Suggests that the protein and ligands have complementary shapes that fit together without change

C:-Allosteric regulation - Refers to changes in protein activity induced by binding at a site distinct from the active site

D:-Competitive inhibition - Explains how inhibitors decrease ligands binding by competing with the ligands for the active site

Correct Answer:- Option-A

Question81:-Ethyl-p-toluate give a peak in Mass spectrum with high intensity at

A:-m/z = 160

B:-m/z = 91

C:-m/z = 39

D:-m/z = 115

Correct Answer:- Option-B

Question82:-What does gradient elution refers ?

A:-Change in Column pressure

B:-Controlling the column temperature

C:-Varying the mobile phase composition

D:-Changing the stationary phase

Correct Answer:- Option-C

Question83:-In partition chromatography the mobile and stationary phases are _____ and _____ respectively.

A:-Liquid and solid

B:-Solid and Liquid

C:-Gas and solid

D:-Liquid and Liquid

Correct Answer:- Option-D

Question84:-The column efficiency can be increased

A:-with increase in the number of plate count

B:-with smaller plate height

C:-with increase in the length of column

D:-all the above

Correct Answer:- Option-D

Question85:-Give the Molecular formula of geraniol

A:-$C_{10}H_{18}O$

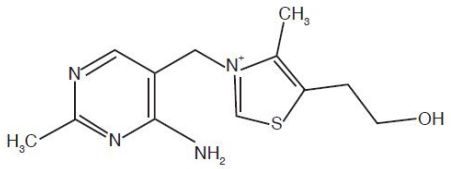
B:-$C_8H_{20}O$

C:-$C_9H_{18}O$

D:-$C_{12}H_{22}O$

Correct Answer:- Option-A

Question86:-The Given structure is



A:-Biotin

B:-Thiamine

C:-Retinol

D:-Niacin

Correct Answer:- Option-B

Question87:-Spray reagent used for the detection of alkaloids

A:-Dragendorff reagent

B:-Boroxyl reagent

C:-Benzidine reagent

D:-Antimony (III) chloride

Correct Answer:- Option-A

Question88:-The spin value of $_{F^{19}}$ nucleus

A:-I = 3/2

B:-I = 1

C:-I = 1/2

D:-I = 5/2

Correct Answer:- Option-C

Question89:-Number of vibrational degrees of freedom for benzene

A:-12

B:-18

C:-9

D:-30

Correct Answer:- Option-D

Question90:-Ibuprofen can be separated using _____ chromatography.

A:-Reverse phase

B:-Normal phase

C:-Chiral column

D:-Preparatory TLC

Correct Answer:- Option-C

Question91:-Term symbol and effective magnetic moment of $_{Sm^{3+}}$ are

A:-$^{6}H_{\frac{5}{2}}$ and 0.84 BM

B:-$^{6}H_{\frac{5}{2}}$ and 1.73 BM

C:-$^{4}F_{\frac{5}{2}}$ and 0.84 BM

D:-$^{4}F_{\frac{5}{2}}$ and 1.73 BM

Correct Answer:- Option-A

Question92:-Number of lines expected in the EPR spectrum of bis(salicylaldimine) Copper (II) complex is

A:-15

B:-25

C:-$_{4}^{-}$

D:-9

Correct Answer:- Option-A

Question93:-In $_{Mn_2\ Fe(CO)_{14}}$ the number of Mn-Mn bonds and terminal CO bonds attached to Fe are _____ and _____

A:-1 and 7

B:-0 and 4

C:-1 and 3

D:-0 and 3

Correct Answer:- Option-B

Question94:-In $Mo(CO)_6$ and Mo(diene) $(CO)_3$, the carbonyl stretching frequency is at

A:-$1760cm^{-1}$ and $2000cm^{-1}$ respectively

B:-$1730cm^{-1}$ and $1760cm^{-1}$ respectively

C:-$2000cm^{-1}$ and $1760cm^{-1}$ respectively

D:-$1760cm^{-1}$ and $1730cm^{-1}$ respectively

Correct Answer:- Option-C

Question95:-In $Fe_3(CO)_{12}$ the three iron atoms are at corners of _____ and the number of bridging CO is _____

A:-isosceles triangle and 3

B:-equilateral triangle and 2

C:-equilateral triangle and 3

D:-isosceles triagnle and 2

Correct Answer:- Option-D

Question96:-Number of NMR signals given by the compound formed when the product of the reaction between Fe $(CO)_5$ and 1, 3– butadiene is reacted with HCl

A:-2

B:-1

C:-4

D:-3

Correct Answer:- Option-C

Question97:-Which of the following statements is true about Creutz-Taube complex ?

A:-It has the formula $\left[Fe(H_2O)NO\right]^{2+}$ and is an charge transfer complex

B:-It has the formula $KFe\left[Fe(CN)_6\right]$ and is an intervalence complex

C:-It has pyrazine as the bridging ligand and is an intervalence complex

D:-It has the formula $KFe\left[Fe(CN)_6\right]$ and is a charge transfer complex

Correct Answer:- Option-C

Question98:-Which of the following statements is correct ?
1. Hemerythrin is dioxygen binding protein and contain porphyrin rings.
2. Hemerythrin is a non heme protein which binds O_2 reversibly.
3. Oxyhemerythrin is diamagnetic and contains Fe(III) ions.
4. Hemocyanin is a O_2 binding protein.

A:-1, 3, 4

B:-2, 3, 4

C:-1, 2, 3

D:-1, 2, 4

Correct Answer:- Option-B

Question99:-Which of the following statements are correct ?

1. Octahedral complexes having electronic configurations $t_2g^1eg^0$ and $t_2g^4\ eg^2$ show orbital contribution to magnetic moment.
2. Tetrahedral complexes having electronic configuration $e^2t_2^1$ and $e^4t_2^4$ show orbital contribution to magnetic moment.
3. Electronic configurations $t_2g^6\ eg^3$ and $t_2\ \ g^6\ eg^1$ for low spin complexes show Jahn teller distortion.
4. In outer sphere electron transfer reactions the coordination sphere of the metal ion changes.

A:-1, 2, 3

B:-1, 4 only

C:-1, 3, 4

D:-3, 4 only

Correct Answer:- Option-A

Question100:-Which of the following pair of compounds show quadrupole splitting in Mossbauer spectroscopy ?

A:-$FeSO_4.7H_2O$ and $FeCl_3$

B:-$FeSO_4\ .\ 7H_2O$ and $K_3Fe(CN)_6$

C:-$FeCl_3$ and $K_3Fe(CN)_6$

D:-$K_3Fe(CN)_6$ and $K_4Fe(CN)_6$

Correct Answer:- Option-B