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ODISHA POLICE COMBINED POLICE SERVICE EXAMINATION 2018

Candidate User ID :

Exam Date : 12/07/2022

Exam Name : Combined Police Service Examination
2018 – Paper 3

Test Centre Name : SRI GURU TRUST CUTTACK

Exam Timing : 09:30 AM TO 12:30 PM

Note: Questions answered are highlighted with selection

- 1 1 amu = ____
- 931 eV
 - 9.31 eV
 - 931 MeV (Correct Answer)
 - 9.31 Bev
- 2 Which is not a computer's property
- electronic
 - binary
 - turning machine
 - Imaginary (Correct Answer)
- 3 Quantum computer can perform ____.
- reversible operation (Correct Answer)
 - irreversible operation
 - only mathematical operation
 - only logical operations
- 4 Rubber is obtained from which tree ?
- pine
 - coconut
 - Hevea Braziliensis (Correct Answer)
 - cotton
- 5 Calculate the number of molecule per c.c. of gas , tacking the mean free path as 1.83×10^{-5} cm and the molecular diameter equal to 2.3×10^{-8} cm.
- 1.6×10^{19}
 - 2.3×10^{19} (Correct Answer)
 - 6.2×10^{19}
 - 10.8×10^{19}
- 6 _____ states that the force required to deform elastic objects should be directly proportional to the distance of deformation, regardless of how large that distance becomes.
- Poisson's law
 - Bernoulli's law
 - Hooke's law (Correct Answer)
 - Strain's law
- 7 The force distributed across the volume of a body like gravitational or magnetic force is called
- body force (Correct Answer)
 - adjacent force
 - frictional force



ObjectionTracker

- frictional force
 viscous
- 8 By using resistance strain gauge , you can measure
- strain (Correct Answer)
 stress
 force
 pressure
- 9 Modulus of elasticity is the described as ratio of
- strain/stress
 stress/strain (Correct Answer)
 1/strain
 none of the above
- 10 The international system of unit is abbreviated as
- SI (Correct Answer)
 Length
 Mass
 Time
- 11 The meter is the length equal to how many wavelength?
- 1000000
 1650763.73 (Correct Answer)
 1233456.78
 8889765.33
- 12 The number of cycle per second is known as ____ of the quantity.
- frequency (Correct Answer)
 wavelength
 momentum
 speed
- 13 Ratio of maximum value to rms value of the same quantity is known as ____.
- Constant
 Peak factor (Correct Answer)
 Variable
 Negativly varies
- 14 The relationship between different type of currents and voltage in an electrical circuit , is derived by ____.
- Gustav Robert Kirchhoff (Correct Answer)
 ohm
 Newton
 Dalton
- 15 Gabriel Cramer developed equations that are linear in form,in 1750. What was the name of that law for systems .____
- Ohm's law
 Cramer's law (Correct Answer)
 Newton's law
 Fedrick's law
- 16 An electrically conductive surface, usually connected to electrical ground. Is known as ____
- plain
 ground plain (Correct Answer)
 electric plain
 magnetic plain



- 17 A plane electromagnetic wave in free space has an average pointing vector 1 watt/m^2 . Find the average energy density.
- $3.33 \times 10^{-7} \text{ J/m}^3$ (Correct Answer)
 - $2.89 \times 10^{-7} \text{ J/m}^3$
 - $33.2 \times 10^{-7} \text{ J/m}^3$
 - $8.36 \times 10^{-7} \text{ J/m}^3$
- 18 In which model the crystal potential is assumed very weak as compared to electron kinetic energy
- waveb model
 - Nearly free e- model (Correct Answer)
 - free proton model
 - wave vector
- 19 The electric field at a point due to point charge is 20 N/C and the electric potential at that point is 10 J/C . Calculate the distance of the point from the charge .
- 0.9 m
 - 0.2 m
 - 0.5 m (Correct Answer)
 - 0.1 m
- 20 The variation of diatomic molecules and motions of atoms in a crystal lattices can be treated to a first apporxiation as the particles in ____
- Harmonic oscillator (Correct Answer)
 - oscillator
 - operator
 - circuit
- 21 ____ immediately follows a light beam entering the medium with basically opposite directed phase.
- Negative refraction (Correct Answer)
 - positive refraction
 - refraction
 - relaxction
- 22 Quantity of momentum is = mass x ____
- time
 - mass
 - velocity (Correct Answer)
 - distance
- 23 The algorithm that use in finding roots of a polynomial 'p' with real or complex coffecient is known as ____
- Newton method (Correct Answer)
 - Einstein method
 - Binomial method
 - Berzelius
- 24 The base of Einstein's theory is newton's theory of ____.
- gravitation (Correct Answer)
 - force
 - momentum
 - equilibrium
- 25 In Newton's lunar motion theory ,when was moon's motion developed?



- 1/00
 1701
 1687 (Correct Answer)
 1703
- 26 T is microwave radition. Which relation correct with time ?
 $1s = 99,99,99999 T$
 $1s = 91,92,631,700 T$ (Correct Answer)
 $1s = 91,92,631,800 T$
 $1s = 91,92,631,900 T$
- 27 Which ancient explosion leads as investigation of speed of light ?
 Explosion of gas
 Explosion of Hydrogen
 Explosion of Supernova (Correct Answer)
 Explotion of volcano
- 28 The argument ($\omega t +$) of the cosine function is called the _____ of the motion.
 Chase
 Case
 phase (Correct Answer)
 Pace
- 29 A vibratory motion may occur when a system is _____ from its equilibrium position and is subjected to a restoring force.
 Disturbed (Correct Answer)
 Removed
 Replaced
 Changed
- 30 In the quantum mechanics, a particle state is expressed by a wave function which satisfies the _____ equation.
 Steven
 Schrödinger (Correct Answer)
 Stephen
 Scoringler
- 31 The time period of a vibrating or oscillatory system is the time required to complete _____ full cycle of vibration or oscillation.
 Half
 Two
 Three
 One (Correct Answer)
- 32 How many types of relative motion are there ?
 one
 four (Correct Answer)
 infinte
 zero
- 33 Relative theory is innovation of
 einstein (Correct Answer)
 nobel
 newton
 Maxwell's transform
- 34 In Equation of special relativity , $E =$ _____

- $E = mc^2$ (Correct Answer)
- $E = m^2c$
- condition is not defined yet
- $E = m^2/c$
- 35 Who adopted principle of velocity and universal constant of vaccum to derive new formula in relativity
- Einstein (Correct Answer)
- rawles
- hobbes
- Locke
- 36 You observe anything from your viewpoint can be said ____ .
- measurement
- Relativity (Correct Answer)
- gravitation
- mass
- 37 Who saw the light travel at constant speed
- Einstein (Correct Answer)
- newton
- rawls
- hobbs
- 38 Statistical mechanism provides the _____ theory of the macroscopic properties of a thermodynamic system
- molecular (Correct Answer)
- random
- pictorial
- all of the above
- 39 A collection of systems characterised by the same values of N, V and T is known as
- collective system
- ensemble
- canonical ensemble (Correct Answer)
- concave's ensemble
- 40 By Hamiltonian a case of a free quantum particle on a circle of finite radius R can be described as
- $H = (p^2)/2m$ (Correct Answer)
- $H = p^2$
- $H = (p^2)/m$
- $H = (p^2)/3m$
- 41 The testing or manipulation of a physical system to yield a numerical result is called ____
- universel theory of law
- quantum measurement theory (Correct Answer)
- velocity conceptual theory
- universal law
- 42 Mechanical energv is

42. Mechanical energy is _____
- sum of kinetic energy
 - sum of kinetic energy and potential energy (Correct Answer)
 - sum of potential energy
 - sum of force applied
43. The density of states in an ensemble of many identical states with different initial conditions is constant along every trajectory in phase space, which theorem states this
- Liouville's theorem (Correct Answer)
 - H theorem
 - X-Y theory
 - X-Y-Z theory
44. Who developed the first law of thermodynamics?
- Lord Kelvin
 - Robert Mayer (Correct Answer)
 - Boltzmann
 - E. Mach
45. Kinetic theory of matter is based on how many postulates?
- one
 - two
 - five (Correct Answer)
 - zero
46. Calculate the potential at the centre of a square ABCD of each side $\sqrt{2}$ m due to charges 2, -2, -3 and 6 μC at four corners of it.
- 2.7×10^4 V (Correct Answer)
 - 2.7×10^8 V
 - 28×10^4 V
 - 90×10^4 V
47. Then the quantities whose value doubled are called
- extensive (Correct Answer)
 - intensive
 - Extrapolative
 - none of the above
48. Carnot cycle is a _____ cycle.
- reversible (Correct Answer)
 - irreversible
 - always looping
 - one time runner
49. If a material of mass m absorbs heat Q , its temperature rises through t then heat capacity will be ?
- Q/t (Correct Answer)
 - $Q \cdot t$
 - $Q+T$
 - $Q \cdot t/t$
50. _____ very continuously and analog systems represent the analog information using electrical signals that vary smoothly and continuously over a range.
- Analog quantities (Correct Answer)
 - quantities
 - equipment
 - function

ObjectionTracker

- 51 The.....is again a semiconductor junction that is light sensitive.
- solar cell (Correct Answer)
 - function
 - energy
 - powered
- 52 Theis the Singal are always between set discret levels.
- fictional
 - variation (Correct Answer)
 - digital
 - equipment
- 53 A motor takes electric energy and coverts it into rotational.....?
- Torque (Correct Answer)
 - function
 - power
 - system
- 54 The source of nearly all bioelectric signals are transient changes in the transmembrane potential observed in all.....?
- cells
 - living cells (Correct Answer)
 - function
 - energy
- 55 Most.....in the vertebrate CNS are too small to record their transmembrane potential with glass micropipette electrodes directly.
- Neurons (Correct Answer)
 - electron
 - power
 - function
- 56 A.....is a combination of device designed to manipulate that are represented in digital form.
- natural system
 - digital systems (Correct Answer)
 - analog system
 - simple
- 57 The second drawback to.....is that processing these digital signals takes time.
- digital systems (Correct Answer)
 - analog system
 - equipment
 - energy
- 58and system have the advantage of being relatively much easier to design and having accuracy.
- digital systems
 - digital techniques (Correct Answer)
 - digital technology
 - fictional
- 59 There are basic ways of representing the numerical values of the various physical quantities with which we constantly deal in our daily lives.
- two (Correct Answer)
 - one
 - four
 - three

- 60 Oneunit that performs branch call and comparisons operation.
- Branch (Correct Answer)
 - energy
 - speed
 - function
- 61 Theof a given number in another number system .
- decimal equivalent (Correct Answer)
 - decimal system
 - digital systems
 - things
- 62at a point is defined as the force that acts on a unit positive charges placed at the point.
- natural field
 - magnetic field
 - electric field (Correct Answer)
 - none of these
- 63 which science deals with electric and magnetic field?
- electric
 - electromagnetism (Correct Answer)
 - magnetism
 - none of these
- 64 What is the SI units of electric charges?
- Ohm
 - coulomb (Correct Answer)
 - Tesla
 - Ampere
- 65 What is called a single charges?
- monopole (Correct Answer)
 - dipole
 - Both
 - None
- 66 A 4 μF capacitor is charged to 400 V. If its plates are joined through a resistance, then heat produced in the resistance is
- 0.32 J (Correct Answer)
 - 0.9 J
 - 0.1 J
 - 0.01 J
- 67 A metal wire of specific resistance $64 \times 10^{-8} \Omega\text{m}$ and length 1.98 m has a resistance of 7 Ω . Find its radius.
- $2.4 \times 10^{-4} \text{ m}$ (Correct Answer)
 - $469 \times 10^{-49} \text{ m}$
 - $55 \times 10^{-21} \text{ m}$
 - $9 \times 10^{-4} \text{ m}$
- 68 The..... experiment lid have such an accuracy and could prove the indaquency of galilean transformation.
- Michelson - morlay (Correct Answer)
 - Finctain

ObjectionTracker

- Einstein
 Newton
 real
- 69 In which year a young physics of twenty six named Albert Einstein showed how measurements of time and space are affected by motion is being observed?
- 1905 (Correct Answer)
 1903
 1906
 1904
- 70 Most..... observation described the behaviour of certain object in space as a function of time.
- Physical (Correct Answer)
 chemical
 elements
 powered
- 71 The laws of physics are the same in all inertial frames of.....?
- energy
 reference (Correct Answer)
 powered
 speed
- 72 For transformation it is easy to show that the velocity and acceleration in two frames.
- elements
 galilean (Correct Answer)
 powered
 emery
- 73 In which year Einstein proposed a radically different but in retrospect a simple approach to the problem posed by the michelson marley experiment?
- 1930
 1902
 1905 (Correct Answer)
 1960
- 74 What is called a variable quantity whose value at any point in a region of space depends upon the position of the point?
- Point function (Correct Answer)
 scalar function
 zero function
 vector function
- 75 Magnetic meridian is a
- Verical plane
 point
 horizontal plane
 line along N and S pole (Correct Answer)
- 76 A.....is a quantity having both magnitude and direction such as force ,velocity ,acceleration and displacement etc.
- Scalar
 vector (Correct Answer)
 Both
 None of this
- 77 In which century the opening decades witnessed a series of experience that introduced the world to the wonders of electromagnetism?



- sixteenth century
 - first century
 - seventeenth century
 - nineteenth century (Correct Answer)
- 78 How many types of product of vector?
- four
 - three
 - two (Correct Answer)
 - five
- 79 When a bar is placed near a strong magnetic field and it is repelled, then the material of bar is
- paramagnetic
 - diamagnetic (Correct Answer)
 - ferromagnetic
 - anti-ferromagnetic
- 80 have magnitude but don't have a direction and obey the rules of ordinary arithmetic .
- natural quantity
 - physical quantity
 - scalar quantity (Correct Answer)
 - vector quantity
- 81 Which of the following is diamagnetic?
- Aluminium
 - Nickel
 - Bismuth (Correct Answer)
 - Cobalt
- 82 How many other major system of units besides the si units ?
- one
 - two (Correct Answer)
 - five
 - four
- 83 The.....of the particle is defined as the magnitude of its velocity.
- vector
 - speed (Correct Answer)
 - number
 - scalar
- 84 Which of the following is unitless quantity?
- Stress
 - Strain (Correct Answer)
 - Pressure
 - None of this
- 85 What is called the stability in the absence of friction?
- equilibrium (Correct Answer)
 - speed
 - vector
 - function
- 86 A magnet can be completely demagnetized by
- a reverse field of appropriate strength (Correct Answer)
 - breaking the magnet into small pieces
 -

- heating it slightly
 dropping it into ice cold water
- 87 One of the most elementary problem in quantum mechanics is the study of the energy levels of a particle in single.....?
- energy
 powered
 Quantum (Correct Answer)
 equipment
- 88 If the current is doubled ,the deflection is also doubled in
- a tangent galvanometer
 a moving coil galvanometer (Correct Answer)
 both (a) and (b)
 none of the above
- 89 Two point charges A and B of values + 15 μC and + 9 μC are kept 18 cm apart in air. Calculate the work done when B is moved by 3 cm towards A.
- 1.35 J (Correct Answer)
 3 J
 4 J
 9 J
- 90 oscillation of light waves have also been observed in dielectric superlattics
- Bloch (Correct Answer)
 energy
 functional
 power
- 91 How many naturally occuring gases are there who are known as noble gases?
- 4
 6 (Correct Answer)
 2
 3
- 92 If there is any Central organizing principal for.....that it is the second law of thermodynamics.
- physics
 thermal physics (Correct Answer)
 wave
 focus
- 93 Domain formation is the necessary feature of
- ferromagnetism (Correct Answer)
 diamagnetism
 paramagnetism
 all of these
- 94 Which physics often speaks of three ways of heating conduction ,convection and radiation?
- Mechanical
 Thermal (Correct Answer)
 Electrical
 Optical
- 95 One says that the soda has come to equilibrium with the ice water.
- Thermal (Correct Answer)
 waves

- focus
 speed
- 96 An isolated system such as a box of gas will eventually reach.....?
- equilibrium (Correct Answer)
 equipment
 external
 entropy
- 97 We can see from our discussion that the law of increases of entropy really only describe how a system will..... behave.
- probably (Correct Answer)
 Focus
 energy
 speed
- 98optics deal with light in situations where it is possible to ignore the wave charector of the phenomenon.
- geometrical (Correct Answer)
 electrically
 powered
 none of these
- 99 How many equation is the wave dimensions has?
- Three (Correct Answer)
 two
 four
 one
- 100 Themaxima and minima occur at fixed spatial points and at any spatial location.
- amphetamine
 amplitude (Correct Answer)
 powered
 energy
- 101 Nuclear magnetic resonance depends on property called.....
- hydrogen
 Nuclear spin (Correct Answer)
 calcium
 carbon
- 102 and esters are the most commonly used derivatives suzuki miyaura reaction.
- Boromic acid and boromate (Correct Answer)
 carbon and Hydrogen
 vitamin and mineral
 none of these
- 103 Aliphatic compounds are and compounds.
- hydraulic and pneumatic
 open chain and acylic (Correct Answer)
 Carbon and hydrogen
 none of these
- 104 Which is one of the strongest organic acid?
- acetic acid (Correct Answer)
 hydrochloric acid



ObjectionTracker

- carboxylic acid
 none of these
- 105 Which is often used by the media when discussing petroleum and other fossil fuels?
- hydrogen
 carbon
 hydrocarbon (Correct Answer)
 organic
- 106 The..... of the atoms had electrons moving in specific orbits.
- real model
 Bohr model (Correct Answer)
 quick model
 clear model
- 107 cyclopentane would have c-c-c angle of 180°
- hydrogen
 Planar (Correct Answer)
 calcium
 Chlorine
- 108 Molecules stick together using combination of forces that chemists have categorised as follows:
- ion pairs
 diople- diople
 hydrogen bonding
 all of these (Correct Answer)
- 109 The..... derivatives of the paraffin hydrocarbon from a homologous series and resemble one another closely in their chemical reaction.
- hydraulic
 mono- halogen (Correct Answer)
 hydrogen
 hydraulic
- 110 The word..... is used to describe the system containing the electrons.
- chromophore (Correct Answer)
 chromo
 clear
 hydro
- 111 Which means that the class of compounds has only carbon and hydrogen?
- hydrocarbons (Correct Answer)
 carbon
 hydrogen
 cloron
- 112 How many years ago organic chemistry began to emerge as a science?
- 300 years ago
 200 years ago (Correct Answer)
 500 years ago
 100 years ago
- 113 What is the shape of an atom?
- Spherical (Correct Answer)
 oval
 horizontal



- 114 Who started as the chemistry of life ?
- carbohydrates
 - organic chemistry (Correct Answer)
 - calcium
 - hydraulic
- 115 How many elements in the period table?
- 50
 - 200
 - 118 (Correct Answer)
 - 60
- 116 Metal atom posses very _____ ionization energies.
- low (Correct Answer)
 - high
 - medium
 - none of these
- 117 Organic compounds can be classified even based upon the function groups. Which of the following is not a functional group?
- Isocyano
 - Carbonyl
 - Isocyanide (Correct Answer)
 - Carboxyl
- 118are less susceptible to electrophilic attack than double bonds.
- Triple bonds
 - clear bonds
 - double bonds
 - single bonds (Correct Answer)
- 119 BeCl_2 has a bond angle of _____ degree.
- 90
 - 180 (Correct Answer)
 - 120
 - 190
- 120 Over the past..... years organic chemistry has become a very broad and complex subject.
- 80
 - 70 (Correct Answer)
 - 40
 - 50
- 121 Which of the following does not come under the organic addition reaction?
- Halogenation
 - Hydrohalogenation
 - Hydration
 - Dehydration (Correct Answer)
- 122 Stable conformation which correspond to the energy minima is called.....
- conformers (Correct Answer)
 - hydrogen
 - structure
 - carbon



- 123 What are the characteristics features of the structure of an alkene is the carbon?
- hydrogen
 - carbon double bond (Correct Answer)
 - single bond
 - real bond
- 124 When an electrophile initiates the process reaction is termed as?
- additional reaction
 - hydrogen reaction
 - electrophilic addition reaction (Correct Answer)
 - none of these
- 125 A / An.....adds to a double bond to give a saturated carbocation .
- hydraulic
 - electrophile (Correct Answer)
 - clorophile
 - compounds
- 126 From which the bonding of many compounds can be adequately described by....?
- double lewis structure
 - triple lewis structure
 - lewis structure (Correct Answer)
 - single lewis structure
- 127 The.....and.....spectra of the organic compounds are associated with transition between electrons energy levels.
- structure and power
 - ultraviolet and visible (Correct Answer)
 - clear and visible
 - ultraviolet and power
- 128can be part of different bonding arrangements in the group of bonded atoms.
- carbon (Correct Answer)
 - hydrogen
 - calcium
 - hydraulic
- 129 Which can be measure the attraction which bonded atom has for the bonding electrons?
- hydraulic
 - electronegativity (Correct Answer)
 - positivity
 - carbon
- 130 Which effect operates through space or solvent molecules?
- clear effect
 - total effect
 - field effect (Correct Answer)
 - none of these
- 131 The name of compounds are based on the linguistic rules called.....
- hydraulic
 - nomenclature (Correct Answer)
 - ultraviolet
 - structure



ObjectionTracker

- 132 Which century the idea that carbon atoms can be bound in cyclic structure appeared during the second half?
- sixteenth century
 - nineteenth century (Correct Answer)
 - thirteenth century
 - fourteenth century
- 133 The transformation of Normal cells into cancerous appears to be.....
- reversible
 - relevant
 - irrelevant
 - irreversible (Correct Answer)
- 134 What does VSEPR stands for?
- Violent-shell-electron-pair-repulsion
 - Valence-shell-electron-pair-repulsion (Correct Answer)
 - Vector-shell-electron-pair-repulsion
 - Velocity-shell-electron-pair-repulsion
- 135 What are neutral, subatomic particles possessing a magnetic moment that interact with matter in a different manner than do x-rays?
- Neutrons (Correct Answer)
 - Electron
 - Proton
 - Newtron
- 136 _____ rays have some very interesting properties.
- Cathode (Correct Answer)
 - Gathode
 - Kathode
 - Fathode
- 137 When did Brønsted and Lowry defined an acid as a species with a tendency to lose a hydrogen ion and base as a species with a tendency to gain a hydrogen ion?
- 1927
 - 1923 (Correct Answer)
 - 1925
 - 1921
- 138 What is obtained by direct reaction of the element with oxygen?
- oxides (Correct Answer)
 - sulphides
 - ozonide
 - halide
- 139 When was the second experiment in atomic physics that increased our understanding of atomic structure was conducted by Robert A. Millikan?
- 1938
 - 1928
 - 1918
 - 1909 (Correct Answer)
- 140 What oxygen molecules are ubiquitous, being implicated in biological oxidations, photoconversions of air pollutants, and degradation of synthetic polymers and may well be generated in living cells as side products of enzyme reactions?
- Triplet

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- Double
 Singlet (Correct Answer)
 Singular
- 141 What has been widely applied for more than three decades now in clinics to visualize soft tissues in excellent resolution and without depth limits?
- CRI
 PRI
 NRI
 MRI (Correct Answer)
- 142 What are peroxides that contain O^{2-} ions are known as?
- Ca
 All of the above (Correct Answer)
 Sr
 Ba
- 143 Following Rutherford's experiments in _____, Niels Bohr proposed in 1913 a dynamic model of the hydrogen atom that was based on certain assumptions.
- 1911 (Correct Answer)
 1912
 1913
 1909
- 144 _____ are the fundamental building blocks that make up all matter.
- Electron
 Proton
 Molecules
 Atoms (Correct Answer)
- 145 What occurs in Nature mainly as sodium chloride in seawater and in various inland salt lakes, and as solid deposits originating presumably from the prehistoric evaporation of salt lakes?
- Iodine
 Bromine
 Fluorine
 Chlorine (Correct Answer)
- 146 What are the two instruments that have made major progress on this front in recent years?
- VADI and LILALDI
 LADI and VIVALDI (Correct Answer)
 VADI and LIVALDI
 LADI and LADALVI
- 147 Who defined a base as an electron-pair donor and an acid as an electron-pair acceptor?
- Livingstone
 Lewis (Correct Answer)
 Lee
 Lewinsky
- 148 The _____ concept is an extension of the Lewis concept, including all reactions of Lewis acids and bases and waiving off the restriction of donation or acceptance of the lone pair.
- Usanovich (Correct Answer)
 Usain
 Usanovik
 Urakkam
- 149 What does HSAB stands for?

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- Hard and Small Acids and Bases
 Hard and Soft Acids and Beta
 Hard and Soft Acids and Bases (Correct Answer)
 Hard and Soft Atoms and Bases
- 150 What play vital metabolic roles as well as being critical in genetic information transfer?
 enzymes or coenzymes (Correct Answer)
 Hoenzymes
 Oenzymes
 Toenzymes
- 151 How many major approaches to quantitative measures of acid-base reactions are there?
 Five
 Four
 Two (Correct Answer)
 Three
- 152 The role of _____ in transfer of genetic information is believed to be structural, deriving from the specific conformations proteins adapt upon complexation by the metal.
 Titanium Dioxide
 Zinc (Correct Answer)
 Trouw Nutrition
 Copper
- 153 Which of the mentioned are constituents of producer gas?
 CO, N₂, H₂ (Correct Answer)
 CO, H₂
 H₂, CH₄, CO
 LPG
- 154 There are at present _____ known chemical elements.
 113
 121
 114 (Correct Answer)
 129
- 155 When did carbonic anhydrase was shown to be a zinc enzyme?
 1939 (Correct Answer)
 1945
 1944
 1949
- 156 John Dalton, an English chemist, first stated the law of multiple proportions in _____.
 1808
 1813
 1803 (Correct Answer)
 1817
- 157 The _____ concept describes acid-base behavior in terms of the oxide ion.
 Dux-Flood
 Rux-Flood
 Lux-Flood (Correct Answer)
 Bux-Flood

- 158 When did Sidgwick and Powell proposed these most primitive coordination profiles of two to six electron pair domains which are actually fundamental to the VSEPR model and they set the stage for the prediction of the molecular geometries?
- 1940 (Correct Answer)
 - 1945
 - 1947
 - 1948
- 159 From the early days of physics, a controversy had existed regarding the nature of ____.
- Sound
 - Speed
 - Light (Correct Answer)
 - All of the above
- 160 Identify the correct geometry of CO_2 molecule
- bent
 - linear (Correct Answer)
 - trigonal
 - none of these
- 161 What is the commonly used electron counting scheme when applying the VSEPR theory is generally called?
- Blade Method
 - Wood Method
 - AXE Method (Correct Answer)
 - Hammer Method
- 162 What is the bond energy of $\text{C}=\text{O}$ in kcal/mol?
- 103
 - 98
 - 146
 - 177 (Correct Answer)
- 163 Who was the first to formulate the three-dimensional carbon?
- Jacobus Henricus Van't Hoff (Correct Answer)
 - Jonathan Henricus Van't Hoff
 - Jenifer Henricus Van't Hoff
 - Jason Henricus Van't Hoff
- 164 Substitution of electronegative atoms or groups, such as fluorine or chlorine, in place of hydrogen on ammonia or phosphine results in ____ bases.
- Higher
 - Weaker (Correct Answer)
 - Smaller
 - Bigger
- 165 What drugs may be recognised as acting through a pharmacodynamic mechanism modulating cellular responses?
- Inorganic
 - Organic (Correct Answer)
 - Natural
 - Hazardous
- 166 What process means the replacement of a previously coordinated H_2O molecule with one from the solution?
- Ligand-change



- Ligand-exchange (Correct Answer)
- H₂O Change
- H₂O Exchange
- 167 The atomic number, ____, is the number of protons in the nucleus.
- F
- Z (Correct Answer)
- X
- H
- 168 Whose method is very useful for finding what is known as a conditional maximum (or minimum), that is, for finding a maximum (or minimum) in a function subject to the constraint that some other relationship also holds?
- Leonardo's Method
- Lorraine's Method
- Lagrange's Method (Correct Answer)
- Lori's Method
- 169 Modern chemical thermodynamics has _____ interpenetrating structures.
- Six
- Four
- Three
- Two (Correct Answer)
- 170 After the failure of the Bohr atomic model to comply with the Heisenberg's uncertainty principle and dual character proposed by Louis de Broglie in _____, an Austrian physicist Erwin Schrodinger developed his legendary equation by making the use of wave-particle duality and classical wave equation.
- 1927 (Correct Answer)
- 1924
- 1921
- 1932
- 171 G.N. Lewis in 1901 introduced the concept of _____ to explain actual behaviour of real gases in chemical equilibrium at high pressures.
- Lugacity
- Pugacity
- Mugacity
- Fugacity (Correct Answer)
- 172 The first quantitative study of the pressure-volume relationship of this process was made in _____ by the Irish chemist Thomas Andrews.
- 1869 (Correct Answer)
- 1861
- 1863
- 1865
- 173 The _____ postulate of quantum mechanics states that when the wave-function of a particular quantum mechanical state is multiplied by the operator of an observable quantity, we get a real value multiplied by the wave function itself.
- Fourth
- First
- Second
- Third (Correct Answer)
- 174 _____ is the transfer of energy between two bodies that are at different temperatures.



- Burn
 Collab
 Heat (Correct Answer)
 Boil
- 175 In ionic reactions, due to electrostatic interactions between the reacting ions, the velocity constants of such reactions are greatly influenced by the charges of reacting ions and also ionic strength of solution. These effects of electrolyte in the ionic reactions are generally known as _____ effects.
- Salt (Correct Answer)
 Ionic
 Electrolyte
 Velocity
- 176 An _____ process is one in which the temperature is held constant.
- Isobaric
 Isochoric
 Isothermal (Correct Answer)
 All of these
- 177 H₂ molecule is formed by the overlap of _____
- s-s orbital (Correct Answer)
 s-p orbital
 p-p orbital
 p-d orbital
- 178 When did Guldberg and Waage proposed the law of mass action which recognised that the position of equilibrium in a reaction could be defined in terms of the concentrations of the reactants and products?
- 1864 (Correct Answer)
 1863
 1865
 1869
- 179 The energy stored within a substance or a system is called its internal energy and is denoted by ____.
- H
 E (Correct Answer)
 O
 M
- 180 A _____ can measure only the total pressure of a gaseous mixture.
- Manometer (Correct Answer)
 Nanometer
 Lactometer
 Thermometer
- 181 The _____ der Waals equation of state attempts to account for the finite volume of individual molecules in a non-ideal gas and the attractive forces between them.
- Van (Correct Answer)
 Han
 Lan
 Kan
- 182 Phase rule was given by J.W. Gibbs in _____ and is popularly known as Gibbs phase rule.
- 1870
 1873
 1874 (Correct Answer)
 1879



- 183 Steady states can be achieved in phenomenon, where coupled process occur. Such phenomenon is called _____ phenomenon.
- Kross
 - Gross
 - Cross (Correct Answer)
 - Fross
- 184 How many laws of thermodynamics are there that define the fundamental physical quantities like temperature, energy, and entropy that characterize thermodynamic systems at thermal equilibrium?
- Four (Correct Answer)
 - Six
 - Five
 - Three
- 185 In the 19th century, who showed that electricity and magnetism were two aspects of the same electromagnetic force?
- James Madison
 - James Clerk Maxwell (Correct Answer)
 - Jacob Cameron Matthew
 - Jonathan McCarthy
- 186 Who introduced the term macromolecular to characterize substances with molecular weight greater than 10000?
- Santos
 - Stephen
 - Staudinger (Correct Answer)
 - Saifulla
- 187 What is defined as a very high molecular weight compound, composed of a large number of one or more small molecular units (as such or in slightly modified form) which occur repeatedly and joined together by covalent bonds?
- Atom
 - Polymers (Correct Answer)
 - Cell
 - Molecule
- 188 Who introduced the Sedimentation Method?
- Shelbyville
 - Svedberg (Correct Answer)
 - Simon
 - Sinclair
- 189 _____ is the tendency of a substance to spread uniformly through space available to it.
- Effusion
 - Transpiration
 - Diffusion (Correct Answer)
 - Fission
- 190 When did Robert Boyle found that the volume (V) of a given amount of gas at constant temperature is inversely proportional to its pressure (P)?
- 1662 (Correct Answer)
 - 1665
 - 1659
 - 1657
- 191 The term was introduced by R.J.E. Clausius.

- Energy
 Mass
 Entropy (Correct Answer)
 None of these
- 192 When did made a suggestion concerning the value of S, which has become third law of thermodynamics?
 1917
 1915
 1912 (Correct Answer)
 1918
- 193 In 1926, a German physicist _____ formulated a rule which is generally called as the Born law.
 Lucas Born
 Max Born (Correct Answer)
 Will Born
 Mike Born
- 194 The Heisenberg's Uncertainty Principle was first introduced in _____, by a German physicist Werner Heisenberg.
 1929
 1925
 1923
 1927 (Correct Answer)
- 195 Single overlap region is observed for _____ overlap.
 p-p
 s-s (Correct Answer)
 d-d
 p-d
- 196 Temperature has a profound influence on the reaction velocity. The effect of temperature on the reaction rates can be expressed in _____ ways.
 Six
 Four
 Eight
 Two (Correct Answer)
- 197 Which law of thermodynamics states that energy can be converted from one form to another but cannot be created or destroyed?
 Second
 First (Correct Answer)
 Third
 Fourth
- 198 How many symbols are used as superscripts to identify standard states?
 Three (Correct Answer)
 Five
 Eight
 Ten
- 199 The _____ gas plays an important role in physical chemistry.
 Imperfect
 Complete
 Perfect (Correct Answer)
 Incomplete
- 200 Detergents were first introduced in United States and Great Britain in _____.



- 1923
- 1919
- 1917
- 1921 (Correct Answer)