ODISHA POLICE
COMBINED POLICE SERVICE EXAMINATION 2018

Candidate User ID : SIP02045109

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

○ 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)
○ Varible
○ 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 /m². Find the
      average energy density.

      ○ 3.33 X 10⁻⁷ J/m³   (Correct Answer)

      ○ 2.89 X 10⁻⁷ J/m³

      ○ 33.2 X 10⁻⁷ J/m³

      ○ 8.36 X 10⁻⁷ J/m³

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 varaition 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
      ○ equillibrium

25   In Newton's lunar motion theory ,when was moon's motion developed?

○ 1700
○ 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 (wt+) 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
○ Scroringler

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)

○ $E = m^2 c$

○ 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 energy 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 theorm state 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 √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 temprature rises through t then heat cacapity will be ?

○ Q/t (Correct Answer)
○ Q*t
○ Q+T
○ Q*t/t

50   ....very continuosly and analog system represent the analog information using electrical signals that vary smoothly and continuously over a range.

○ Analog quantities (Correct Answer)
○ quantaties
○ equipment
○ function

51   The.........is again a semiconductor junction that is light sensitive.

   ○ solar cell (Correct Answer)
   ○ function
   ○ energy
   ○ powered

52   The ....is 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

58   ....and 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   One ....unit that performs branch call and comparisons operation.

○ Branch (Correct Answer)
○ energy
○ speed
○ function

61   The ....of a given number in another number system .

○ decimal equivalent (Correct Answer)
○ decimal system
○ digital systems
○ things

62   ....at 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)
○ diplole
○ 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 64×10^{-8} Ωm and length 1.98 m has a resistance of 7 Ω. Find its radius.

○ 2.4×10^{-4} m   (Correct Answer)

○ 469×10^{-49} m

○ 55×10^{-21} m

○ 9×10^{-4} m

68   The.......... experiment lid have such an accuracy and could prove the indaquncy of galilean transformation.

○ Michelson - morlay (Correct Answer)
○ Einstein

○ Einstein
○ Newton
○ real

69   In which year a young physicts 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 arthematic .

○ 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 occuaring 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

98   ....optics 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   The ....maxima 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

○ 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 containg 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

○ circle

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

118   ....are 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 became a very broud 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

128   ....can 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

132   Which century the idea that carbon atoms can be bound in cyclic structure appeard 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 a 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 oxida tions, photoconversions of air pollutants, and degradation of synthetic polymers and may well be generated in living cells as side products of enzyme reactions?

○ Triplet

○ 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?

○ 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, N_2, H_2 (Correct Answer)

○ CO, H_2

○ H_2, CH_4, 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 C=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)

○ H_2O Change

○ H_2O 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)

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