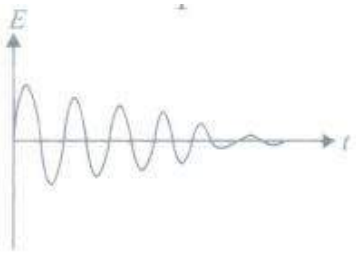
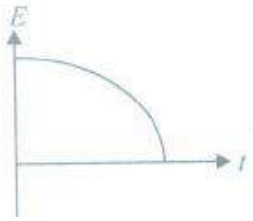
Ravi Maths Tuition Centre

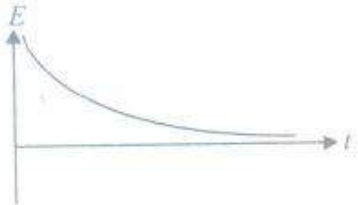
Time : 180 Mins **T15 1** **Marks : 686**

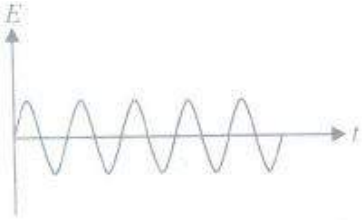
1. (A) An ice cube is floating in water in a vessel at 0°c. When ice cube melts, level of water in the vessel remain same.
   (R) Volume of melted ice is same as volume of water displaced by ice.
   a)
   If both assertion and reason are true and reason is the correct explanation of assertion.
   b)
   If both assertion and reason are true but reason is not the correct explanation of assertion.
   c) If assertion is true but reason is false.
   d) If both assertion and reason are false.
   e) If assertion is false but reason is true.
2. Hydrogen atom from excited state comes to the ground state by emitting a photon of wavelength λ . If R is the Rydberg constant, then the principal quantum number n of the excited state is
   a) $\sqrt{\frac{\lambda R}{\lambda R-1}}$ b) $\sqrt{\frac{\lambda}{\lambda R-1}}$ c) $\sqrt{\frac{\lambda R^2}{\lambda R-1}}$ d) $\sqrt{\frac{\lambda R}{\lambda-1}}$
3. A condenser of capacity C is charged to a potential difference of V_1. The plates of the condenser are then connected to an ideal inductor of inductance L. The current through the inductor when the potential difference across the condenser reduces to V_2 is
   a) $\left(\frac{C(V_1^2-V_2^2)}{L}\right)^{1/2}$ b) $\left(\frac{C(V_1-V_2)^2}{L}\right)^{1/2}$ c) $\frac{C(V_1^2-V_2^2)}{L}$ d) $\frac{C(V_1-V_2)}{L}$
4. In single slit diffraction pattern, how does the width of central maximum change when light of smaller wavelength is used?
   a) decreases b) increases c) remains unaffected d) cannot be predicted
5. If the current sensitivity of a galvanometer is doubled, then its voltage sensitivity will be
   a) doubled b) halved c) unchanged d) four times

6. A pendulum clock gains 5 s a day if the temperature is 15 ^{o}C and loses l0 s a day if the temperature is 30 ^{o}C. The relation between coefficient of linear expansion (α) of the metal of the pendulum shaft and time period (T) of the pendulum is $\alpha = \frac{x}{T}$ where x has the value _____
   a) 1 b) 2 c) 3 d) 4
7. A wire has a resistance of 2.5 Ω at 28°C and a resistance of 2.9 Ω at 100°C. The temperature coefficient of resistivity of material of the wire is
   a) 1.06 $\times 10^{-3}$ °C^{-1} b) 3.5 $\times$ 10^{-2} °C^{-1} c) 2.22 $\times$ 10^{-3} °C^{-1}
   d) 3.95 $\times$ 10^{-2} °C^{-1}
8. A star emits wavelength 289.8 nm of maximum intensity. Then, radiant intensity of state is $(\sigma = 5.67 \times 10^{-8} W/m^2/k^4,$ Wein's constant, b=2898X10^{-6} mK)
   a) 5.67X10^{16} W/m^2 b) 5.67X10^{14} W/m^2 c) 5.67X10^{10} W/m^2
   d) 5.67X10^{8} W/m^2
9. A radio isotope X with a half life 1.4 x 10^9 years decays to Y which is stable. A sample of the rock from a cave was found to contain X and Y in the ratio 1:7. The age of the rock is::
   a) 4.20 x 10^9 years b) 8.40 x 10^9 years c) 1.96 x 10^9 years
   d) 3.92 x 10^9 years
10. Three different objects of mass m_l, m_2, m_3 are allowed to fall from rest and from the same point O along three different frictionless paths. The speeds of the three objects on reaching the ground will be in the ratio of :
    a) $m_l : m : m_3$ b) $m_l : 2m_2 : m_3$ c) 1 : 1 : 1 d) $\frac{1}{m_1} : \frac{1}{m_2} : \frac{1}{m_3}$
11. Which of the following energy-time graphs represents damped harmonic oscillator?

a) 

b) 

c) 

d) 

12. Which of the following operations make no sense in case of scalars and vectors?
    a) Multiplying any vector by a scalar
    b) Adding a component of vector to the same vector

c) Multiplying any two scalars

d) Adding a scalar to a vector of the same dimensions

13. In a plane progressive harmonic wave particle speed is always less than the wave speed if:

a) amplitude of wave b) amplitude of wave c) amplitude of wave

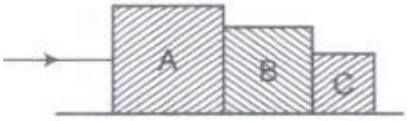
d) amplitude of wave $> \lambda/\pi$

14. For a telescope, larger the diameter of the objective lens

a) greater is the resolving power b) smaller is the resolving power

c) greater is the magnifying power d) smaller is the magnifying power

15. Three blocks A, B and C, of masses 4 kg, 2 kg and 1 kg respectively, are in contact on a frictionless surface, as shown. If a force of 14 N is applied on the 4 kg block, then the contact force between A and B is:



a) 18 N b) 2 N c) 6 N d) 8 N

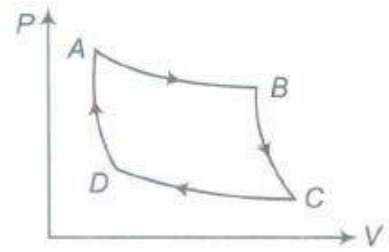
16. 10^{-3} gram is called

a) kilogram b) milligram c) decigram d) microgram

17. Two similar coils of radius R, are lying concentrically with their planes at right angles to each other. The currents flowing in them are I and 2 I respectively. The resultant magnetic field at the centre will be :

a) $\frac{\sqrt{5}\mu_0 I}{2R}$ b) $\frac{3\mu_0 I}{2R}$ c) $\frac{\mu_0 I}{2R}$ d) $\frac{\mu_0 I}{R}$

18. The P-V graph of an ideal gas cycle is shown here as below. The adiabatic process is described by:



a) AB and BC b) AB and CD c) BC and DA d) BC and CD

19. The upper face of a (side 4cm) is displaced 2 mm parallel to itself when 100 N forces are applied at the and lower faces. The lower face is fixed. The strain produced in the cube is

a) 5 b) 0.5 c) 0.05 d) 0.005

20. A current of 21, passing through a conductor produces 80 J of heat in 10s. The resistance of the conductor in ohm is _____.

a) 0.5 b) 2 c) 4 d) 20

21. If the angle between the pass axis of the polarizer and the analyzer is 45°, the ratio of the intensities of original light and the transmitted light after passing through the analyzer is
    a) $\frac{1}{2}$ b) $\frac{1}{3}$ c) 1 d) $\frac{1}{4}$
22. Out of the following which one is not a possible energy for a photon to be emitted by hydrogen atom according to Bohr's atomic model?
    a) 0.65 eV b) 1.9 eV c) 11.1 eV d) 13.6 eV
23. In a compound microscope, the intermediate image is
    a) virtual, erect and magnified b) real, erect and magnified
    c) real, inverted and magnified d) virtual, erect and reduced
24. A 50 kg girl wearing high heel shoes balances on a single heel. The heel is circular with the diameter 1.0 cm, What is the pressure exerted on the horizontal floor?
    a) 3×10^6 Pa b) 2×10^4 Pa c) 6.24×10^6 Pa d) 9×10^3 Pa
25. A boy weighing 50 kg finished long jump at a distance of 8 m. Considering that he moved along a parabolic path and his angle of jump was 45°, his initial KE will be:
    a) 960 J b) 1560 J c) 2460 J d) 1960 J
26. A metal coin is at bottom of a beaker filled with a liquid of refractive index = 4/3 to height of 6 cm. To an observer looking from above the surface of liquid, coin will appear at a depth
    a) 1.5 cm b) 6.75 cm c) 4.5 cm d) 7.5 cm
27. When sound propagates through a medium, say air, the particles of the medium in a particular region undergo:
    a) only compression throughout the time
    b) only rarefaction throughout the time
    c) successive compression or rarefaction
    d) sometimes compression, sometimes rarefaction
28. If the width of slit is decreased in a single slit diffraction, then the width of central maxima will
    a) increase b) decrease c) remain unchanged
    d) not depend on the width of slot
29. In semiconductors, at room temperature:
    a) the conduction band is completely empty
    b) the valence band is partially empty and conduction band is completely filled

c) the valence band is partially empty and the conduction band is partially filled
d) the valence band is completely filled

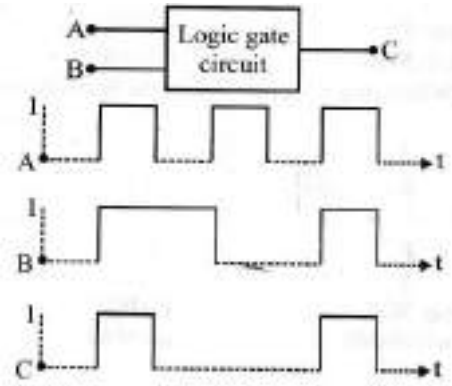
30. Which of the following statements is incorrect regarding mass?
a) It is a basic property of matter. b) The SI unit of mass is kg.
c) The mass of an atom is expressed in u.
d) It depends upon the temperature, pressure or location of the object in space.

31. Assertion: The threshold frequency of photoelectric effect supports the particle nature of light.
Reason : If frequency of incident light is less than the threshold frequency, electrons are not emitted from metal surface.
a)
If both assertion and reason are true and reason is the correct explanation of assertion
b)
If both assertion and reason are true but reason is not the correct explanation of assertion.
c) If assertion is true but reason is false.
d) If both assertion and reason are false.

32. **Assertion:** Average kinetic energy per molecule of any ideal monoatomic gas is $\frac{3}{2}k_BT$
Reason : Average kinetic energy depends only on temperature and is independent of the nature of the gas.
a)
If both assertion and reason are true and reason is the correct explanation of assertion.
b)
If both assertion and reason are true but reason is not the correct explanation of assertion.
c) If assertion is true but reason is false.
d) If both assertion and reason are false.

33. The relation between the time of flight of projectile T_f and the time to reach the maximum height t_m is A hiker stands on the edge of a cliff 490 m above the ground and throws a stone horizontally with a speed of 15 ms^{-1}. The time taken by the stone to reach the ground is
a) 5 s b) 10 s c) 12 s d) 15 s

34. The following figure shows a logic gate circuit with two inputs A and B and the output C. The voltage waveforms of A, B and C are as shown below

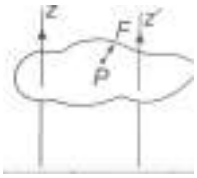


The logic circuit gate is:

a) NAND gate b) NOR gate c) OR gate d) AND gate

35. Figure shows a lamina in x, y plane. Two axes z and z' pass perpendicular to its plane. A force F acts in the plane of lamina at point P as shown. Which of the following statements is correct?

(The point P is closer to z' axis than the z- axis)



a) Torque τ caused by F about z axis is along $\hat{k}$.

b) Torque τ caused by F about z' axis is along -$\hat{k}$.

c)

Torque caused by F about z axis is greater in magnitude than that about z' axis.

d) Total torque is given by $\tau = \tau + \tau'$

36. Assertion: When two coils are wound on each other, the mutual induction between the coils is maximum.

Reason: Mutual induction is independent of the orientation of the coils.

a)

If both assertion and reason are true and reason is the correct explanation of assertion.

b)

If both assertion and reason are true but reason is not the correct explanation of assertion.

c) If assertion is true but reason is false.

d) If both assertion and reason are false.

37. An insect trapped in a circular groove of radius 12 cm moves along the groove steadily and completes 7 revolutions in 100 s. The linear speed of the insect is
a) 4.3 cm s^{-1} b) 5.3 cm s^{-1} c) 6.3 cm^{-1} d) 7.3 cm^{-1}

38. A star which is emitting radiation at a wavelength of 5000 A^o is approaching the earth with a velocity of 1.50 x 10^6 m/s. The change in wavelength of the radiation as received on the earth is _____ .
a) 0.25 A^o b) 2.5 A^o c) 25 A^o d) 250 A^o

39. Solar constant may be defined as the amount of solar energy received per em 2 per minute. The dimensions of solar constant is:
a) $[ML^2T^{-3}]$ b) $[ML^0T^{-1}]$ c) $[ML^0T^{-2}]$ d) $[M^1L^0T^{-3}]$

40. In the question number 3, the net power consumed over a full cycle is
a) 586 W b) 242 W c) 48.4 W d) 484 W

41. The earth's field departs from its dipole shape substantially at large distance (greater than about 3000 km). The responsible factor for this distortion is
a) motion of ions in earth's ionosphere b) motion of ions in earth's atmosphere
c) motion of ions in earth's lithosphere d) motion of ions in the space.

42. A cylindrical bar magnet is kept along the axis of a circular coil. If the magnet is rotated about its axis, then:
a) A current will be induced in a coil b) No current will be induced in a coil
c) Only an e.m.f. will be induced in the coil
d) An e.m.f. and a current both will be induced in the coil

43. A bullet is fired vertically upwards with velocity v from the surface of a spherical planet. When it reaches its maximum height, its acceleration due to the planet's gravity is 1/4th of its value at the surface of the planet. If the escape velocity from the planet is $v_{esc} = V\sqrt{N}$, then the value of Nis (ignore energy loss due to atmosphere)
a) 2 b) 3 c) 4 d) 5

44. Assertion : Pressure cannot be subtracted from pressure gradient.
Reason : Pressure and pressure gradient have different dimensions
a)
If both assertion and reason are true and reason is the correct explanation of assertion.
b)
If both assertion and reason are true but reason is not the correct explanation of assertion
c) If assertion is true but reason is false.
d) If both assertion and reason are false

45. A gas is filled in a container at pressure P_o' If the mass of molecules is halved and their rms speed is doubled, then the resultant pressure would be

a) $2P_o$ b) $4P_o$ c) $\frac{P_0}{4}$ d) $\frac{P_0}{2}$

46. The resistance of the four p, e, R and S in a Wheatstone,s bridge are 10 ohm, 30 ohm, 30 ohm and 90 ohm, respectively. The e.m.f. and internal resistance of the cell are 7 volt and 5 ohm respectively. If the galvanometer resistance is 50 ohm, the current drawn from the cell will be _____.

a) 0.2 A b) 0.1 A c) 2.0 A d) 1.0 A

47. An air bubble of radius 10^{-2} m is rising up at a steady rate of 2 x 10^{-3} mls through a liquid of density 1.5 x 10^3 kg/m^3, the coefficient of viscosity neglecting the density of air, will be: (Takeg= 10 m/s^2)

a) 23.2 units b) 83.5 units c) 334 units d) 167 units

48. In the process PV = constant, pressure (P) versus density (p) , graph of an ideal gas is:

a) a straight line parallel to P-axis b) a straight line parallel to p-axis

c) a straight line passing through origin d) a parabola

49. A stationary source is emitting sound at a fixed frequency fo' which is reflected by two cars approaching the source. The difference between the frequencies of sound reflected from the cars is 1.2 % of fo' What is the difference in the speeds of the cars (in km per hour) to the nearest integer? The cars are moving at constant speeds much smaller than the speed of sound which is 330 ms^{-1}.

a) 2 b) 3 c) 5 d) 7

50. A small town with a demand of 800 kW of electric power at 220 V is situated 15 km away from an electric plant generating power at 440 V The resistance of the two wire line carrying power is 0.5 Ω per km. The town gets power from the line through a 4000-220 V step down transformer at a substation in the town. The line power loss in the form of heat is :

a) 400 kW b) 600 kW c) 300 kW d) 800 W

51. Which one of the following is not the function of placenta?

a) Facilitates removal of carbon dioxide and waste material from embryo

b) Secretes oxytocin during parturition

c) Facilitates supply of oxygen and nutrients to embryo d) Secretes estrogen

52. In India, human population is heavily weighed towards the younger age groups as a result of _____

a) short life span of many individuals and low birth rate

b) long life span of many individuals and low birth rate

c) short life span of many individuals and high birth rate

d) long life span of many individuals and high birth rate

53. In a fully turgid cell

a) $\Psi_W = \Psi_S + \Psi_P$ b) $\Psi_W = zero$ c) $\Psi_W - \Psi_S - \Psi_P$ d) $\Psi_W = \Psi_S = \Psi_P$

54. In a fertilised embryo sac, the haploid, diploid and triploid structures are:

a) synergid, zygote and primary endosperm nucleus

b) synergid, antipodal and polar nuclei

c) antipodal, synergid and primary endosperm nucleus

d) synergid, polar nuclei and zygote

55. Which structures perform the function of mitochondria in bacteria?

a) Mesosomes b) Nucleoid c) Ribosomes d) Cell wall

56. Diseases are broadly grouped into infectious and non-infectious diseases. In the list given below, identify the infectious diseases.

(i) Cancer

(ii) Influenza

(iii) Allergy

(iv) Small pox

a) (i) and (ii) b) (ii) and (iii) c) (iii) and (iv) d) (ii) and (iv)

57. **Assertion:** At the tissue level, 70 percent of CO_2 formed from catabolism is trapped as bicarbonate in the RBCs.

Reason: At tissue level, carbonic anhydrase in RBCs facilitates the formation of CO_2 and H_2O from bicarbonate.

a)

If both assertion and reason are true and reason is the correct explanation of assertion.

b)

If both assertion and reason are true but reason is not the correct explanation of assertion.

c) If assertion is true but reason is false.

d) If both assertion and reason are false

58. Which of the following represents the edible swollen portion of Allium cepa?

a) Aerial stem b) Underground stem c) Internodes d) Leaf bases

59. Sieve tubes are suited for translocation of food because they posse

_____ .

a) Bordered pits b) No ends walls

c) Broader lumen and perforated cross walls d) No protoplasm

60. Select the correct match of algal class and its characteristic flagellation.
a) Chlorophyceae-2-8 equal, apical b) Phaeophyceae-2, unequal, lateral
c) Rhodophyceae-Absent d) All of these

61. Expressed Sequence Tags (ESTs) refers to_____
a) Polypeptide expression b) Dive pulymirphism c) Novel DNA sequences
d) Genes expressed as RNA

62. Which is correct pair for edible part?
a) Tomato - Thalamus b) Maize - Cotyledons c) Guava - mesocarp
d) Data palm - Mesocarp

63. The canal system is a characteristic feature of _____ .
a) echinoderms b) helminthes c) coelenterates d) sponges

64. Embryo is not formed in thallophyta due to:-
a) Zygotic meiosis b) Zygotic mitosis c) Sporangial meiosis
d) Gametic meiosis

65. Centromere is required for:
a) Movement of chromosomes towards poles b) Cytoplasmic cleavage
c) Crossing over d) Transcription

66. Many attempts to improve livestock in the tropics have been made, mainly by 'upgrading' through crossbreeding them with temperate breeds. The major problems faced during the failed cattle breeding are
a)
the breeding programmes have been too complicated in terms of logistics, technology and requirements of resources without considering the infrastructure available.

b)
indiscriminate crossbreeding of indigenous breeds with exotic breeds without enough consideration of environmental conditions for production.

c)
lack of analysis of the different socio-economic and cultural roles that livestock play in each situation, usually leading to wrong breeding objectives and neglect of the potentials of various indigenous breeds of livestock.

d) All of these.

67. Which of the following sexually transmitted diseases is not completely curable?
a) Genital warts b) Genital herpes c) Chlamy diasis d) Gonorrhoea

68. Consider the statements given below regarding contraception and answer as directed there after

(i) Medical Termination of Pregnancy (MTP) during first trimester is generally safe.

(ii) Generally chances of conception are nil until mother breast-feeds the infant upto two years.

(iii) Intrauterine devices like copper-T are effective contraceptives.

(iv) Contraception pills may be taken upto one week after coitus to prevent conception.

Which two of the above statements are correct?

a) (ii) and (iii) b) (iii) and (iv) c) (i) and (iii) d) (i) and (ii)

69. Michaelis Menten Constant (K_m) is equal to

a) the rate of reaction b) the rate of enzymatic activity

c)

substrate concentration at which the reaction attains half of its maximum velocity

d) substrate concentration at which the rate of reaction is maximum.

70. Major utility of breaking up of food into small bits during chewing is

a) to reduce suface area of the food eaten up

b) to increase surface area of the food eaten up c) to make the food soluble

d) to enjoy taste of food.

71. **Assertion:** The exoskeleton of arthropods is made up of complex polysaccharide called chitin.

Reason: Plant cell walls are made of cellulose.

a)

If both assertion and reason are true and reason is the correct explanation of assertion.

b)

If both assertion and reason are true but reason is not the correct explanation of assertion

c) If assertion is true but reason is false

d) If both assertion and reason are false

72. The function of intracellular membrane is not to

a) establish a number of compartments within the cell

b) provide for the neat spatial organisation of enzymes and pigments

c) keep the cell rigidity so that it does not collapse

d) provide a system of channel for the distribution of nutrients within the cell

73. **Assertion:** Sickle-cell anaemia is an autosome-linked recessive disorder that can be transmitted if both parents are heterozygous for the gene.
Reason: In sickle-cell anaemia, haemoglobin molecule undergoes polymerisation under low oxygen tension causing the change in shape of RBC.
a)
If both assertion and reason are true and reason is the correct explanation of assertion.
b)
If both assertion and reason are true but reason is not the correct explanation of assertion.
c) If assertion is true but reason is false.
d) If both assertion and reason are false

74. Stem modified into leaf like structure and leaves are changed into spines in
a) Phyllode b) Tuber c) Phylloclade d) All the above

75. Assertion: Bacillus anthracis exemplifies how biotechnology can be used for destructive processes.
Reason: The spores of anthrax bacterium were spread via letters in the form of powder.
a)
If both assertion and reason are true and reason is the correct explanation of assertion
b)
If both assertion and reason are true but reason is not the correct explanation of assertion
c) If assertion is true but reason is false
d) If both assertion and reason are false

76. Which of the following diseases is caused by a protozoan?
a) Influenza b) Babesiosis c) Blastomycosis d) Syphilis

77. An urn shaped population age pyramid represents
a) growing population b) static population c) declining population
d) extinct population

78. Select the correct statement_____ .
a) Spliceosomes take part in translation
b) Punnett square was developed by a British scientist
c) Fran'tin Stahl coined the term 'linkage'
d) Transduction was discovered by S. Altman.

79. Fertilisation in humans is practically feasible only if _____

a)

the speilns are transported into vagina just after the release of ovum in fallopian tube

b)

the ovum and sperms are transported simultaneously to ampullary isthmic junction of the fallopian tube.

c)

the ovum and spenns are transported simultaneously to ampullary - isthmic junction of the cervix

d)

the spenns are transported into cervix within 48 hrs of release of ovum in uterus.

80. Which one occupies more than one trophic level in a pond ecosystem?

a) Zooplankton b) Phytoplankton c) Fish d) Frog

81. Bond between phosphate and sugar in a nucleotide is:

a) H-bond b) Covalent bond c) Phosphodiester bond d) Sulphide bond

82. Which of the following hormones is not a secretion product of human placenta?

a) Human chorionic gonadotropin b) Prolactin c) Estrogen d) Progesterone

83. An explant is

a) dead plant b) part of the plant c) part of the plant used in tissue culture

d) part of the plant that expresses a specific gene

84. Which of the following N base are pyrimidines?

a) T & C b) T & A c) A & C d) G & T

85. Which one is the incorrect match?

a)  - Consanguineous mating b)  - Sex unspecified

c)  - Male d)  - Affected individuals

86. Ovulation occurs under the influence of _____ .

a) LH b) FSH c) oestrogen d) progesterone

87. Read the following statements and select the correct option.

Statement 1: The SA node acts as pacemaker.

Statement 2: The SA node is located in the wall of the right atrium near the interatrial septum.

a) Both statements 1 and 2 are correct

b) Statement 1 is correct but statement 2 is incorrect

c) Statement 1 is incorrect but statement 2 is correct

d) Both statements 1 and 2 are incorrect

88. Match the terms given in column I with their physiological processes given in column II and choose the correct answer.

Column I	**Column II**
A. Proximal convoluted tubule	(i) Formation of concentrated urine
B. Distal convoluted tubule	(ii) Filtration of blood
C. Henle's loop	(iii) Reabsorption of 70-80% of electrolytes
D. Counter current mechanism	(iv) Ionic balance
E. Renal corpuscle	(v) Maintenance of concentration gradient in medulla

a) A-(iii), B-(v), C-(iv), D-(ii), E-(i) b) A-(iii), B-(iv), C-(i), D-(v), E-(ii)

c) A-(i), B-(iii), C-(ii), D-(v), E-(iv) d) A-(iii), B-(i), C-(iv), D-(v), E-(ii)

89. Seed plants are all

a) heterosporous b) dioecious c) monoecious d) homosporous.

90. Which complex contains cytochromes a and a_3 and two copper centres?

a) NADH dehydrogenase complex b) FADH reductase

c) Cytochrome bc_1 complex d) Cytochrome c oxidase complex

91. Aristotle's lantern occurs in class

a) Echinoidea b) Asteroldea c) Holothuroidea d) Ophiuroidea

92. Following observations are made for a plant grown under different conditions.

I. Chloride and magnesium in soil + light $\rightarrow$ green plant

II. Chloride and magnesium in soil + dark $\rightarrow$ etiolated plant

III. Magnesium + light $\rightarrow$ green plant

IV. Intermittent light flashes + chloride $\rightarrow$ etiolated plant

From the above observations, it is concluded that the factors necessary for the green colour in plants are

a) chloride and light b) chloride, magnesium and light

c) magnesium and light d) flash of light with chloride.

93. Given below are the steps of protein synthesis. Arrange them in correct sequence and select the correct option.

(i) Codon-anticodon reaction between mRNA and aminoacyl tRNA complex.

(ii) Attachment of mRNA and smaller sub-unit of ribosome.

(iii) Charging or aminoacylation of tRNA.

(iv) Attachment of larger sub-unit of ribosome to the mRNA-$tRNA_{Met}$ complex.
(v) Linking of adjacent amino acids.
(vi) Formation of polypeptide chain
a) (ii) ⟶ (i) ⟶ (iii) ⟶ (v) ⟶ (iv) ⟶ (vi)
b) (v) ⟶ (ii) ⟶ (i) ⟶ (iii) ⟶ (iv) ⟶ (vi) c) (iii) ⟶ (ii) ⟶ (iv) ⟶ (i) ⟶ (v) ⟶ (vi)
d) (iii) ⟶ (ii) ⟶ (i) ⟶ (iv) ⟶ (v) ⟶ (vi)

94. Painful skeletal deformities called itai-itai is caused due to
a) Cd b) Hg c) CO d) NO_2

95. Which structure of man is similar to spiracle of cockroach?
a) Nostril b) Bronchiole c) Lung d) Alveolus

96. Which of the following organisms possesses characteristics of both a plant and an animal?
a) Bacteria b) Mycoplasma c) Euglena d) Paramecium

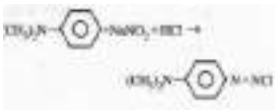
97. In angiosperms, microsporogenesis and megasporogenesis _____ .
a) Fonn gametes without further divisions b) Involve meiosis
c) Occur in ovule d) Occur in anther

98. Which one of the following fish is being illegally introduced for aquaculture purposes and is posing a threat to the indigenous catfishes of Indian rivers?
a) Clarias gariepinus b) Nile perch c) Climbing perch d) Protopterus

99. Ultraviolet radiations from sunlight cause a reaction which produces _____.
a) O_3 b) SO_2 c) CO d) CH_4

100. Spraying of pesticide is an example of
a) Point source water pollution b) Diffuse water pollution c) Both (1) & (2)
d) Pyrolysis

101. Element with atomic number 15 and mass number 31 is present in
a) group 5 and period 4 b) group 5 and period 3 c) group 15 and period 3
d) group 15 and period 4

102. Some reactions of amines are given. Which one is not correct?
a) $(CH_3)_2NH + NaNO_2 + HCl \rightarrow (CH_3)_2\ N - N = O$ b) 
c) $CH_3CH_2NH_2 + HNO_2 \rightarrow CH_3CH_2OH + N_2$
d) $CH_3NH_2 + C_6H_5SO_2Cl \rightarrow CH_3NHSO_2C_6H_5$

103. In a covalent bond formation:
a) transfer of electrons takes place
b) Sharing of electrons between two atoms takes place

c) electrons are shared by one atom only

d) electrons are donated by one atom and shared by both atoms

104. Reactivity of borazole is more than that of benzene because:

a) borazole is a polar compound b) borazole is a non polar compound

c) borazole is electron deficient compound d) of localised electrons in it

105. On complete hydrogenation, natural rubber produces

a) ethylene-propylene copolymer b) vulcanised rubber c) polypropylene

d) polybutylene.

106. Froth floatation process of concentration is based on the

a) preferential wetting properties with the frothing agent and water

b) difference in the specific gravities of gangue and ore particles

c) difference in solubility of gangue and ore particles in frothing agent and water

d)

difference in reactivity of gangue and ore particles with water and frothing agent

107. Which one is a colligative property ?

a) Boiling point b) Vapour pressure c) Osmotic pressure d) Freezing point

108. During hearing of a court case, the judge suspected that some changes in the documents had been carried out. He asked the forensic department to check the ink used at two different places. According to you which technique can give the best results?

a) Column chromatography b) Solvent extraction c) Distillation

d) Thin layer chromatography

109. Silver halides generally show

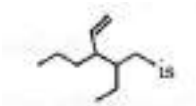
a) Schottky defect b) Frenkel defect c) both Frenkel and Schottky defects

d) cation excess defect

110. Which of the following oxidation states are the most characteristics for lead and tin respectivity?

a) +4,+2 b) +2,+4 c) +4,+4 d) +2,+2

111. The correct IUPAC name of the compound



a) 4-Ethyl-3-propyl hex-l-ene b) 3-Ethyl-4-ethenyl heptane

c) 3-Ethyl-4-propyl hex-1-ene d) 3*(1-ethylpropyl) hex-l-ene

112. From the given reactions,

$S_{(s)} + \frac{3}{2} O_{2(g)} \longrightarrow SO_{3(g)} + 2x$ kcal

$SO_{2(s)} + \frac{1}{2} O_{2(g)} \longrightarrow SO_{3(g)} + y$ kcal The heat of formation of SO_2 is:

a) (x + y) b) (x-y) c) (2x + y) d) (2x - y)

113. Which one of the following arrangements represents the correct order of electron gain enthalpy (with negative sign) of given atomic species?
a) F < Cl < O < S b) S < O < Cl < F c) O < S < F < Cl d) Cl < F < S < O

114. The compounds $[CO(SO_4)(NH_3)_5]Br$ and $[CO(SO_4)(NH_3)_5]Cl$ represent
a) linkage isomerism b) ionisation isomerism c) coordination isomerism
d) no isomerism.

115. During dialysis
a) only solvent molecules can diffuse
b) solvent molecules, ions and colloidal parficles can diftuse
c) all kinds of particles can diffuse through the semi permeable membrane
d) solvent molecules and ions can diffuse

116. In all oxides, peroxides and superoxides, the oxidation state of alkali metals is:
a) +1 and -1 b) +1 and +2 c) +1 only d) +1, -1 and +2

117. Which of the following isomeric heptanes can yield seven different monochlorinated products upon free radical chlorination?
a) 2,2- Dimethylpentane b) 2- Methylhexane c) 3-Methylhexane
d) 2,4-Dimethylpentane

118. Which of the following statements is correct?
a) Sodium carbonate decomposes on heating
b) Sodium bicarbonate is more soluble in water than potassium bicarbonate
c) Sodium when heated with excess of O_2, gives peroxide.
d) Lithium halides are highly ionic in nature

119. Pyrolusite is
a) a sulphide ore of Mn b) an oxide ore of Mn c) a carbide ore of P
d) a chloride ore of Zn

120. Which of the following is a network solid?
a) $SO_{2(Solid)}$ b) I_2 c) Diamond d) $H_2O_{(Ice)}$

121. Few pollutants and their effects are listed below. Mark the incorrect match.
a) Phosphate fertilizers in water - Eutrophication
b) Hydrogen released in air - Global warming
c) Sewagedisposed in water - Increase in BOD level
d) Carbon dioxide in air - Acid rain

122. Elements of group 14 used in semiconductors are:
a) C, Si, Ge b) Si, Ge, Sn c) Si, Ge d) B, Si, Ge

123. Ingraphite, electrons are

a) localised on each C-atom b) localised on every third C-atom
c) spread out between the structure d) Both (b) and (c)

124. Maximum number of electrons in a subshell of an atom is determined by the following:
a) $2l + 1$ b) $4l - 2$ c) $2n^2$ d) $4l + 2$

125. Which of the following elements will have highest ionisation energy?
a) $1s^2\ 2s^2\ 2p^6\ 3s^1$ b) $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^3$ c) $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^4$
d) $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^1$

126. Which of the following is not true about high density polythene?
a) Tough b) Hard c) Inert d) Highly branched

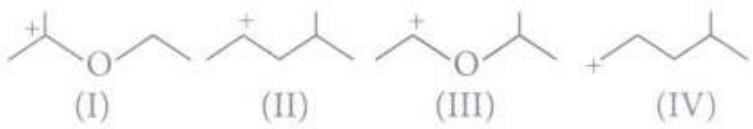
127. The root mean square speeds at STP for the gases H_2, N_2, O_2 and HBr are in the order:
a) $H_2 < N_2 < O_2 < HBr$ b) $HBr < O_2 < N_2 < H_2$ c) $H_2 < N_2 = O_2 < HBr$
d) $HBr < O_2 < H_2 < N_2$

128. A one litre flask is full of brown bromine vapours. The intensity of brown colour of vapours will not decrease appreciably on adding to the flask some.
a) Pieces of marble b) Animal charcoal powder c) Carbon tetrachloride
d) Carbon disulphide

129. In a buffer solution containing equal concentration of B- and HB, Kb for B- is 10-1°. The pH of buffer solution is:
a) 10 b) 7 c) 6 d) 4

130. Which of the following has the highest dipole moment?
a) SbH_3 b) AsH_3 c) NH_3 d) PH_3

131. The correct stability order for the following species is



a) (II) > (IV) > (I) > (III) b) (I) > (II) > (III) > (IV) c) (II) > (I) > (IV) > (III)
d) (I) > (III) > (II) > (IV)

132. Within the list shown below, the correct pair of structures of alanine in pH ranges 2-4 and 9-11 is
I. $H_3N^+CH(CH_3)CO_2H$
II. $H_2NCH(CH_3)CO^-_2$
III. $H_3N^+CH(CH_3)CO^-_2$
IV $H_2NCH(CH_3)CO_2H$
a) I, II b) I, III c) II, III d) III, IV

133. Maximum -I effect is exerted by the group
a) $-C_6H_5$ b) $-OCH_3$ c) -Cl d) $-NO_2$

134. Reduction of 2-butyne with sodium in liquid ammonia gives predominantly:
a) cis-2-butene b) trans-2-butene c) no reaction d) n-butane

135. Chlorination of alkanes is a photochemical process. It is initiated by the process of:
a) heterolysis b) homolysis c) pyrolysis d) hydrolysis.

136. Heat of combustion ΔH^o for C(s),H_2(g) and CH_4(g) are -94, -68 and -213 kcal/mol respectively. Then, ΔH^o for C(s)+ $2H_2$(g) $\longrightarrow$ CH_4 is :
a) -17 kcal/mol b) -111 kcal/mol c) -170 kcal/mol d) -85 kcal/mol

137. Which of the following gases is not a greenhouse gas?
a) CO b) O_3 c) CH_4 d) H_2O vapour

138. Select the true statement about benzene amongst the following:
a) Because of unsaturation benzene easily undergoes addition
b) There are two types of C - C bonds in benzene molecule
c) There is cyclic delocalization of pi-bonds in benzene
d) Monosubstitution of benzene gives three isomeric products

139. Which of the following configurations represents the most electronegative element?
a) $1s^2\ 2s^2\ 2p^6\ 3s^1$ b) $1s^2\ 2s^2\ 2p^5$ c) $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^5$ d) $1s^2\ 2s^2\ 2p^4$

140. When one mole of each of the following complexes is treated with excess of $AgNO_3$, which will give maximum amount of AgCl?
a) $[Co(NH_3)_6]Cl_3$ b) $[Co(NH_3)_5Cl]Cl_2$ c) $[Co(NH_3)_4Cl_2]Cl$ d) $[Co(NH_3)_3Cl_3]$

141. Slaked lime reacts with chlorine to give:
a) $CaCl_2$ b) CaO c) $Ca(OCl)_2$ d) $CaCO_3$

142. The compound (A) on heating gives a colourless gas and a residue that is dissolved in water to obtain (B). Excess of CO_2 is bubbled through aqueous solution of (B), (C) is formed which is recovered in the solid form. Solid (C) on gentle heating gives back (A). The compound is:
a) $CaCO_3$ b) Na_2CO_3 c) K_2CO_3 d) $CaSO_4 \cdot 2H_2O$

143. Which one is not equal to zero for an ideal solution?
a) ΔH_{mix} b) ΔS_{mix} c) ΔV_{mix} d) $\Delta P = P_{observed} - P_{Raoult's}$

144. Identify the product of the following reaction. $ClCH_2CH_2CH_2Br$ + KCN$\longrightarrow$ Product
a) $ClCH_2CH_2CH_2CN$ b) $CNCH_2CH_2Br$ c) $CNCH_2CH_2CH_2CN$
d) $CI\underset{\overset{|}{CN}}{C}HCH_2CH_2CH_2Br$

145. The relative reactivities of acyl compounds towards nucleophilic substitution are in the order of _____.

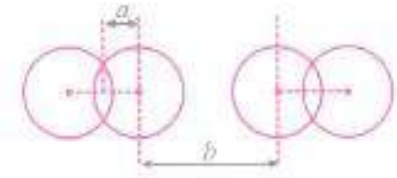
a) Acyl chloride > Acid anhydride > Ester > Amide

b) Ester > Acyl chloride > Amide > Acid anhydride

c) Acid anhybride > Amide > Ester > Acyl chloride

d) Acyl chloride > Ester > Acid anhydride > Amide

146. What are the two radii shown as 'a' and 'b' in the figure known as



a) a = Atomic radius, b = Molecular radius

b) a = Covalent radius, b = van der Waals' radius

c) a = Ionic radius, b = Covalent radius

d) a = Covalent radius, b = Atomic radius

147. Quartz is a crystalline variety of

a) silica b) silicon c) silicon carbide d) sodium silicate

148. In the following reactions sequence

$$(A) + N_2 \xrightarrow{\Delta} (B) \xrightarrow{+H_2O} (C) + (D)$$

white ppt. (C) is formed and gas (D) is evolved. White ppt. (C) dissolves in NaOH solution, while gas (D) gives white fumes in HCl. Thus, (A) is

a) B b) Al c) Ga d) C

149. What weight of glycerol should be added to 600 g of water in order to lower its freezing point by 10 °C? (K_f= 1.860 C m^{-1})

a) 496 g b) 297 g c) 310 g d) 426 g

150. Which of the following is used as protective shields in nuclear industries?

a) ^{27}Al b) ^{10}B c) $^{16}0$ d) ^{l4}C

151. One word answer is given for the following definitions. Mark the one which is incorrect.

a) The process in which temperature remains constant: Isobaric

b) The process in which volume remains constant: Isochoric

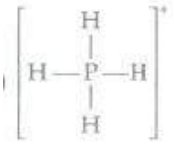
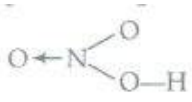
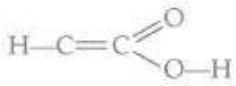
c)

The relation between △H and △U when all the reactants and products are solid: △H = △U

d) The relation between △G, △H and S△ : △G = △H - T△S

152. Which of the following compounds with molecular formula, C_5H_{10} yields acetone on ozonolysis?
a) 2-methyl-2-butene b) 3-methyl-l-butene c) Cyclopentane
d) 2-methyl-l-butene

153. Boron carbide is used
a) in nuclear reactor to absorb neutrons b) as an abrasive
c) as both (a) and (b) d) as none of the above

154. Which of the following formula does not correctly represent the bonding capacities of the atoms involved?
a)  b)  c)  d) 

155. What would be the equivalent conductivity of a cell in which 0.5 N salt solution offers a resistance of 40 ohm whose electrodes are 2 em apart and 5 cm^2 in area?
a) 10 ohm^{-1} cm^{-2} eq^{-1} b) 20 ohm^{-1} cm^{-2} eq^{-1} c) 30 ohm^{-1} cm^{-2} eq^{-1}
d) 25 ohm^{-1} cm^{-2} eq^{-1}

156. Which of the following represents the given sequence of hybridisation of carbon atoms from left to right sp^2,sp^2, sp, sp?
a) $H_2C = CH - C = CH$ b) $HC{\equiv}C{-}CH{=}CH_2$ c) $H_3C - CH = CH - CH_3$
d) $H_2C{=}CH{-}CH{=}CH_2$

157. Due to the presence of ambidentate ligands coordination compounds show isomerism. Palladium complexes of the type $[Pd(C_6H_5)_2(SCN)_2]$ and $[Pd(C_6H_5)_2(NCS)_2]$ are
a) linkage isomers b) coordination isomers c) ionisation isomers
d) geometrical isomers.

158. Compressibility factor of a gas is given by the equation $Z = \frac{PV}{nRT}$. on this basis, mark the correct statement.
a) When Z > 1, real gases get compressed easily
b) When Z = 1 real gases get compressed easily
c) When Z > 1, real gases are difficult to compress
d) When Z = 1, real gases are difficult to compress.

159. An electron trapped in an anion site in a crystal is called
a) F-centre b) Frenkel defect c) Schottky defect d) interstitial defect

160. Silly putty:

a) is a silicone polymer

b) has a composition intermediate between silicone oils and silicone rubbers

c) Both (a) and (b) d) None of the above

161. Solution of 0.1 N NH_4OH and 0.1 N NH_4Cl has pH 9.25. Then find out pK_b, of NH_4OH.

a) 9.25 b) 4.75 c) 3.75 d) 8.25

162. The oxide of nitrogen which acts as a catalyst in lead chamber process is

a) NO b) NO_2 c) NP_4 d) N_2

163. The equilibrium constants for following reactions are given

$N_2 + 3H_2 \rightleftharpoons 2NH_3, K_I$

$N_2 + O_2 \rightleftharpoons 2NO, K_2$

$H_2 + \frac{1}{2} O_2 \rightleftharpoons H_2O, K_3$

The equilibrium constant (K) of the reaction, $2NH_3 + \frac{5}{2} O_2 \rightleftharpoons 2NO + 3H_2O$ will be:

a) $\frac{K_1(K_3)^2}{K_2}$ b) $\frac{K_2(K_3)^3}{K_1}$ c) $K_1K_2K_3$ d) $\frac{K_2K_2}{K_3}$

164. Assertion Anisole undergoes electrophilic substitution at ortho and para-positions.

Reason: Anisole is less reactive than phenol towards electrophilic substitution reactions.

a)

If both assertion and reason are true and reason is the correct explanation of assertion.

b)

If both assertion and reason are true but reason is not the correct explanation of assertion.

c) If assertion is true but reason is false.

d) If both assertion and reason are false.

165. The total entropy change ($\triangle$ S_{total}) for the system and surrounding of a spontaneous process is given by

a) $\triangle S_{total} = \triangle S_{system} \triangle S_{surr} > 0$ b) $\triangle S_{total} = \triangle S_{system} \triangle S_{surr} < 0$

c) $\triangle S_{system} = \triangle S_{total} \triangle S_{surr} > 0$ d) $\triangle S_{surr} = \triangle S_{total} \triangle S_{system} > 0$

166. Which of the following is the most accurate measurement?

a) 9 m b) 9.0 m c) 9.00 m d) 9.000 m

167. Describe the orbital with following quantum numbers:

(i) n=3, l=2

(ii) n=4,l=3

a) (i) 3p, (ii) 4f b) (i) 3d, (ii) 4d c) (i) 3f, (ii) 4f d) (i) 3d, (ii) 4f

168. Acetic acid can be halogenated in presence of phosphorus and chlorine. Formic acid cannot be halogenated with same way because of

a) presence of α-H atom in formic acid b) presence of α H atom in acetic acid

c) absence of α-H atom in CH_3COOH

d) higher acidic strength of acetic acid than formic acid.

169. When an electron makes a transition from (n+1) state to n^{th} state, the frequency of emitted radiations is related to 'n' according to (n>>1):

a) v= $\frac{2CRZ^2}{n^3}$ b) v= $\frac{CRZ^2}{n^4}$ c) v= $\frac{CRZ^2}{n^2}$

d) v= $\frac{2CRZ^2}{n^2}$

170. Match the column I with column II and mark the appropriate choice.

	Column I		**Column II**
(A)	$CH_3(CH_2)_3OH \xrightarrow[H_2SO_4,\Delta]{NaBr}$	(i)	$CH_3CH(Br)(CH_2)_2CH_3$
(B)	$(CH_3)_3COH \xrightarrow[room\ temp]{Conc.HCl}$	(ii)	$CH_3CH_2CH_2Cl$
(C)	$CH_3CH(OH)(CH_2)_2CH_3 \xrightarrow{PBr_3}$	(iii)	$(CH_3)CCl$
(D)	$CH_3CH_2CH_2OH \xrightarrow{SOCl_2}$	(iv)	$CH_3(CH_z)_3Br$

a) (A)→ (iv), (B)→ (iii), (C)→ (i), (D) → (ii)

b) (A) → (iv), (B) → (iii), (C)→ (ii), (D) → (i)

c) (A) → (iii), (B) → (iv), (C) → (i), (D) → (ii)

d) (A) → (iii), (B) → (iv), (C) → (ii), (D) → (i)

171. Amphoteric hydroxides react with both alkalies and acids. Which of the following Group 2 metal hydroxides is soluble in sodium hydroxide?

a) $Be(OH)_2$ b) $Mg(OH)_2$ c) $Ca(OH)_2$ d) $Ba(OH)_2$

172. Consider the reaction: $2Cu(NO_3)_{2(s)} \rightarrow 2CuO_{(s)} + 4NO_{2(g)} + O_{2(g)}$, which of the following gives the value of K_c of this equilibrium?

a) $K_c = \frac{[CuO_{(s)}]^2[NO_{2(g)}]^4}{[Cu(NO_3)_{2(s)}]^2}$ b) $K_c = \frac{[NO_{2(g)}]^4[O_{2(g)}]}{[Cu(NO_3)_{2s}]^2}$ c) $K_C=[NO_2]^4[O_2]$

d) $K_c = \frac{[CuO_{(s)}]^2}{[Cu(NO_3)_{2(s)}]^2}$

173. Reaction, $BaO_2(s) \rightleftharpoons BaO\ (s) + O_2\ (g), \Delta H$ = +ve. In equilibrium condition, pressure of O_2 depends on:

a) Increased mass of BaO_2 b) Increased mass of BaO

c) Increased temperature on equilibrium

d) Increased mass of BaO_2 and BaO both

174. An aqueous solution of sodium carbonate absorbs NO and NO_2 to give:
a) $CO_2 + NaNO_3$ b) $CO_2 + NaNO_2$ c) $NaNO_2 + CO$ d) $NaNO_3 + CO$

175. Which of the following molecules contains covalent and coordinate bonds?
a) CCl_4 b) H_2SO_4 c) NaCl d) $Mg(OH)_2$

176. The formula for permutit or zeolite which is used as softner in ion-exchange method is
a) $NaAlSiO_4$ b) $NaAlO_2$ c) $Ca_3(PO_4)_2$ d) Na_2SO_4

177. The temperature dependence of rate constant (k) of a chemical reaction is written in terms of Arrhenius equation, $k = Ae^{-Ea^*/RT}$. Activation energy (E*) of the reaction can be calculated by plotting :
a) log k vs $\frac{1}{T}$ b) log k vs $\frac{1}{log\,T}$ c) k vs T d) k vs $\frac{1}{log\,T}$

178. Assertion: Geometrical isomerism is also called cis-trans isomerism.
Reason: Tetrahedral complexes show geometrical isomerism.
a)
If both assertion and reason are true and reason is the correct explanation of assertion
b)
If both assertion and reason are true but reason is not the correct explanation of assertion
c) If assertion is true but reason is false.
d) If both assertion and reason are false.

179. $SiCl_4$ is hydrolysed but CCl_4 is not hydrolysed because:
a)
Si has vacant d-orbitals and can accommodate lone-pair of electrons form oxygen of water
b)
Si has relatively size and can increase its coordination number from four to five
c) Both (a) and (b) d) None of the above

180. Which of the following statements about the interstitial compounds is incorrect?
a) They are chemically reactive b) They are much harder then pure metal
c) They have higher melting points than the pure metal.
d) They retain metallic conductivity.

181. Ethers have lower boiling points than their corresponding isomeric alcohols because of

a) hydrogen bonding in alcohols that is absent in ethers due to low polarity

b) hydrogen bonding in ethers due to high polarity

c) insolubility of ethers in water due to less polarity

d) inertness of ethers as compared to alcohols

82. H_2 gas is mixed with air at 25°C under a pressure of 1 atmosphere and exploded in a closed vessel. The heat of the reaction, $H_{2(g)} + \frac{1}{2} O_{2(g)} \longrightarrow H_2O(v)$ at constant volume, $\triangle$ U298 K = -240.60 kJ mol^{-1} and C_v values for H_2O vapour and N_2 in the temperature range 298 K and 3200 K are 39.06 $JK^{-1}mol^{-1}$ and 26.40 $JK^{-1}mol^{-1}$ respectively. The explosion temperature under adiabatic conditions is (Given: $nN_2 = 2$)

a) 2900 K b) 2900°C c) 2917 K d) 3000°C

83. Screening effect is not observed in:

a) He^+ b) Li^{2+} c) Be^{3+} d) In all the above cases

84. A reaction attains equilibrium state under standard conditions, then what is incorrect for this?

a) Equilibrium constant K = 0 b) Equilibrium constant K = 1

c) $\triangle G^o = 0$ and $\triangle H^o = T\triangle S^o$ d) $\triangle G = 0$ and $\triangle H = T\triangle S$

85. The change in velocity when electron jumps from the first orbit to the second orbit is

a) Half its original velocity b) Twice its original velocity

c) One fourth its original velocity d) Equal to its original velocity

86. What is the maximum number of emission lines obtained when the excited electron of a H atom in n = 5 drops to the ground state?

a) 12 b) 15 c) 21 d) 10

87. If the bond energies of H-H, Br-Br and H-Br are 433,192 and 364 kJ mol^{-1} respectively, then ΔH^0 for the reaction $H_{2(g)} + Br_{2(g)} \longrightarrow 2HBr_{(g)}$ is:

a) -261 kJ b) +103 kJ c) +261 kJ d) -103 kJ

88. Pick out the wrong statement(s).

(i) Vapour pressure of a liquid is the measure of the strength of intermolecular attractive forces.

(ii) Surface tension of a liquid acts perpendicular to the surface of the liquid.

(iii) Vapour pressure of all liquids is same at their freezing points

(iv) Liquids with stronger intermolecular attractive forces are more viscous than those with weaker intermolecular force.

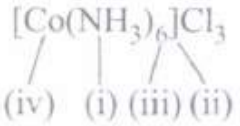
a) (ii), (iii) and (iv) b) (ii) and (iii) c) (i), (ii) and (iii) d) (iii) only

89. The straight chain polymer is formed by

a) hydrolsis of CH_3SiCl_3 followed by condensation polyrnerisation
b) hydrolysis of $(CH_3)_4Si$ by addition polymerisation
c) hydrolysis of $(CH_3)_2SiCl_2$ followed by condensation polymerisation
d) hydrolysis of $(CH_3)_3SiCl$ followed by condensation polymerisation

90. Which of the following statements is not true?
a) HF is a stronger acid than HCl
b) Among halide ions, iodide is the most powerful reducing agent
c) Fluorine is the only halogen that does not show a variable oxidation state
d) HOCl is a stronger acid than HOBr

91. Mark the correct labelling of different terms used in coordination compounds:



a) (i) Central atom, (ii) Ionisation sphere, (iii) Coordination number, (iv) Ligands
b) (i) Ligands, (ii) Coordination number, (iii) Valency, (iv) Ionisation sphere
c) (i) Ionisation sphere, (ii) Ligands, (iii) Coordination number, (iv) Central atom
d) (i) Ligands, (ii) Ionisation sphere, (iii) Coordination number, (iv) Central atom

92. Which of the following is isoelectroic?
a) CO_2, NO_2 b) NO_3^-, CO_3^{2-} c) CN, CO d) SO_2, CO_2

93. In the following question, a statement of assertion is followed by a statement of reason. Mark the correct choice as :
Assertion: Zn, Cd and Hg are not regarded as transition elements.
Reason : The electronic configurations of Zn, Cd and Hg are represented by the general formula $(n - 1)d^{10}ns^2$
a)
If both assertion and reason are true and reason is the correct explanation of assertion.
b)
If both assertion and reason are true but reason is not the correct explanation of assertion
c) If assertion is true but reason is false
d) If both assertion and reason are false.

94. The energy absorbed by the electron is
a) 8.5 eV b) 3.4 eV c) 68 eV d) 3.78 eV

95. Which one of the following pairs represents stereoisomerism?
a) Structural isomerism and Geometrical isomerism
b) Optical isomerism and Geometrical isomerism

c) Chain isomerismand Rotational isomerism

d) Linkage isomerism and Geometrical isomerism

196. Which one of the following statements about H_3BO_3 is not correct?

a) It is strong tribasic acid

b) It is prepared by acidifying an aqueous solution of borax

c)

It has a layer structure in which planar BO_3. units are joined by hydrogen bonds

d)

It does not act as proton donor as it acts as a Lewis acid by accepting hydroxyl ions.

197. Which is the weakest among the following types of bond?

a) Ionic bond b) Metallic bond c) Covalent bond d) Hydrogen bond

198. At high altitudes, water boils at a lower temperature because

a) the atmospheric pressure is high at high altitudes

b) the viscosity of water is reduced at high altitudes

c) the atmospheric pressure is low at high altitudes

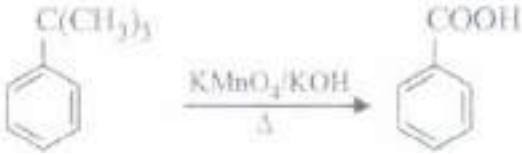
d) the surface tension of water is reduced at high altitudes

199. Which of the following reactions does not occur?

a) 

b) 

c) 

d) 

200. Which is the correct arrangement of the compounds based on their bond strength?

a) HF> HCl > HBr > HI b) HI > HBr > HCl > HF c) HCl> HF > HBr > HI

d) HF > HBr > HCl > HI