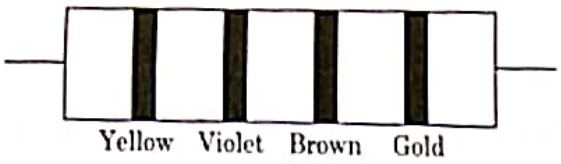
1. The color code of a resistance is given below :



The values of resistance and tolerance, respectively, are :

(1) 470 Ω, 5%

(2) 470 kΩ, 5%

(3) 47 kΩ, 10%

(4) 4.7 kΩ, 5%

2. Find the torque about the origin when a force of $3\hat{j}$ N acts on a particle whose position vector is $2\hat{k}$ m.

(1) $6\hat{k}$ N m

(2) $6\hat{i}$ N m

(3) $6\hat{j}$ N m

(4) $-6\hat{i}$ N m

3. A cylinder contains hydrogen gas at pressure of 249 kPa and temperature 27°C.

Its density is : ($R = 8.3$ J mol^{-1} K^{-1})

(1) 0.02 kg/m^3

(2) 0.5 kg/m^3

(3) 0.2 kg/m^3

(4) 0.1 kg/m^3

4. Two cylinders A and B of equal capacity are connected to each other via a stop cock. A contains an ideal gas at standard temperature and pressure. B is completely evacuated. The entire system is thermally insulated. The stop cock is suddenly opened. The process is :

(1) isobaric

(2) isothermal

(3) adiabatic

(4) isochoric

5. Two particles of mass 5 kg and 10 kg respectively are attached to the two ends of a rigid rod of length 1 m with negligible mass.

The centre of mass of the system from the 5 kg particle is nearly at a distance of :

(1) 80 cm

(2) 33 cm

(3) 50 cm

(4) 67 cm

6. A ray is incident at an angle of incidence i on one surface of a small angle prism (with angle of prism A) and emerges normally from the opposite surface. If the refractive index of the material of the prism is μ, then the angle of incidence is nearly equal to :

(1) $\frac{\mu A}{2}$

(2) $\frac{A}{2\mu}$

(3) $\frac{2A}{\mu}$

(4) μA

7. A body weighs 72 N on the surface of the earth. What is the gravitational force on it, at a height equal to half the radius of the earth ?

(1) 24 N

(2) 48 N

(3) 32 N

(4) 30 N

8. An iron rod of susceptibility 599 is subjected to a magnetising field of 1200 A m^{-1}. The permeability of the material of the rod is :

($\mu_0 = 4\pi \times 10^{-7}$ T m A^{-1})

(1) $2.4\pi \times 10^{-7}$ T m A^{-1}

(2) $2.4\pi \times 10^{-4}$ T m A^{-1}

(3) 8.0×10^{-5} T m A^{-1}

(4) $2.4\pi \times 10^{-5}$ T m A^{-1}

9. For transistor action, which of the following statements is **correct** ?

(1) The base region must be very thin and lightly doped.

(2) Base, emitter and collector regions should have same doping concentrations.

(3) Base, emitter and collector regions should have same size.

(4) Both emitter junction as well as the collector junction are forward biased.

10. Light with an average flux of 20 W/cm^2 falls on a non-reflecting surface at normal incidence having surface area 20 cm^2. The energy received by the surface during time span of 1 minute is :

(1) 48×10^3 J

(2) 10×10^3 J

(3) 12×10^3 J

(4) 24×10^3 J

11. A short electric dipole has a dipole moment of 16×10^{-9} C m. The electric potential due to the dipole at a point at a distance of 0.6 m from the centre of the dipole, situated on a line making an angle of 60° with the dipole axis is :

$\left(\frac{1}{4\pi\epsilon_0} = 9 \times 10^9 \text{ N m}^2/\text{C}^2\right)$

(1) zero

(2) 50 V

(3) 200 V

(4) 400 V

12. A ball is thrown vertically downward with a velocity of 20 m/s from the top of a tower. It hits the ground after some time with a velocity of 80 m/s. The height of the tower is : ($g = 10$ m/s^2)

(1) 300 m

(2) 360 m

(3) 340 m

(4) 320 m

13. A resistance wire connected in the left gap of a metre bridge balances a 10 Ω resistance in the right gap at a point which divides the bridge wire in the ratio 3 : 2. If the length of the resistance wire is 1.5 m, then the length of 1 Ω of the resistance wire is :

(1) 1.5×10^{-2} m

(2) 1.0×10^{-2} m

(3) 1.0×10^{-1} m

(4) 1.5×10^{-1} m

14. When a uranium isotope $^{235}_{92}U$ is bombarded with a neutron, it generates $^{89}_{36}Kr$, three neutrons and :

(1) $^{103}_{36}Kr$

(2) $^{144}_{56}Ba$

(3) $^{91}_{40}Zr$

(4) $^{101}_{36}Kr$

15. A long solenoid of 50 cm length having 100 turns carries a current of 2.5 A. The magnetic field at the centre of the solenoid is :

($\mu_0 = 4\pi \times 10^{-7}$ T m A^{-1})

(1) 3.14×10^{-5} T

(2) 6.28×10^{-4} T

(3) 3.14×10^{-4} T

(4) 6.28×10^{-5} T

16. The average thermal energy for a mono-atomic gas is : (k_B is Boltzmann constant and T, absolute temperature)

(1) $\frac{7}{2} k_B T$

(2) $\frac{1}{2} k_B T$

(3) $\frac{3}{2} k_B T$

(4) $\frac{5}{2} k_B T$

17. A capillary tube of radius r is immersed in water and water rises in it to a height h. The mass of the water in the capillary is 5 g. Another capillary tube of radius 2r is immersed in water. The mass of water that will rise in this tube is :

(1) 20.0 g

(2) 2.5 g

(3) 5.0 g

(4) 10.0 g

18. The ratio of contributions made by the electric field and magnetic field components to the intensity of an electromagnetic wave is : (c = speed of electromagnetic waves)

(1) $1 : c^2$

(2) $c : 1$

(3) $1 : 1$

(4) $1 : c$

19. Assume that light of wavelength 600 nm is coming from a star. The limit of resolution of telescope whose objective has a diameter of 2 m is :

(1) 6.00×10^{-7} rad

(2) 3.66×10^{-7} rad

(3) 1.83×10^{-7} rad

(4) 7.32×10^{-7} rad

20. A wire of length L, area of cross section A is hanging from a fixed support. The length of the wire changes to L_1 when mass M is suspended from its free end. The expression for Young's modulus is :

(1) $\frac{MgL}{A(L_1 - L)}$

(2) $\frac{MgL_1}{AL}$

(3) $\frac{Mg(L_1 - L)}{AL}$

(4) $\frac{MgL}{AL_1}$

21. The energy required to break one bond in DNA is 10^{-20} J. This value in eV is nearly :

(1) 0.006

(2) 6

(3) 0.6

(4) 0.06

22. In a certain region of space with volume 0.2 m^3, the electric potential is found to be 5 V throughout. The magnitude of electric field in this region is :

(1) 5 N/C

(2) zero

(3) 0.5 N/C

(4) 1 N/C

23. The mean free path for a gas, with molecular diameter d and number density n can be expressed as :

(1) $\frac{1}{\sqrt{2}\, n^2 \pi^2 d^2}$

(2) $\frac{1}{\sqrt{2}\, n \pi d}$

(3) $\frac{1}{\sqrt{2}\, n \pi d^2}$

(4) $\frac{1}{\sqrt{2}\, n^2 \pi d^2}$

24. An electron is accelerated from rest through a potential difference of V volt. If the de Broglie wavelength of the electron is 1.227×10^{-2} nm, the potential difference is :

(1) 10^4 V

(2) 10 V

(3) 10^2 V

(4) 10^3 V

25. In a guitar, two strings A and B made of same material are slightly out of tune and produce beats of frequency 6 Hz. When tension in B is slightly decreased, the beat frequency increases to 7 Hz. If the frequency of A is 530 Hz, the original frequency of B will be :

(1) 537 Hz

(2) 523 Hz

(3) 524 Hz

(4) 536 Hz

26. A 40 μF capacitor is connected to a 200 V, 50 Hz ac supply. The rms value of the current in the circuit is, nearly :

(1) 25.1 A

(2) 1.7 A

(3) 2.05 A

(4) 2.5 A

27. The increase in the width of the depletion region in a p-n junction diode is due to :

(1) increase in forward current

(2) forward bias only

(3) reverse bias only

(4) both forward bias and reverse bias

28. The Brewsters angle i_b for an interface should be :
(1) $i_b = 90°$
(2) $0° < i_b < 30°$
(3) $30° < i_b < 45°$
(4) $45° < i_b < 90°$

29. The phase difference between displacement and acceleration of a particle in a simple harmonic motion is :
(1) zero
(2) π rad
(3) $\frac{3\pi}{2}$ rad
(4) $\frac{\pi}{2}$ rad

30. A spherical conductor of radius 10 cm has a charge of 3.2×10^{-7} C distributed uniformly. What is the magnitude of electric field at a point 15 cm from the centre of the sphere ?
$\left(\frac{1}{4\pi\epsilon_0} = 9 \times 10^9 \text{ N m}^2/\text{C}^2\right)$
(1) 1.28×10^7 N/C
(2) 1.28×10^4 N/C
(3) 1.28×10^5 N/C
(4) 1.28×10^6 N/C

31. The capacitance of a parallel plate capacitor with air as medium is 6 μF. With the introduction of a dielectric medium, the capacitance becomes 30 μF. The permittivity of the medium is :
($\epsilon_0 = 8.85 \times 10^{-12}$ C^2 N^{-1} m^{-2})
(1) 5.00 C^2 N^{-1} m^{-2}
(2) 0.44×10^{-13} C^2 N^{-1} m^{-2}
(3) 1.77×10^{-12} C^2 N^{-1} m^{-2}
(4) 0.44×10^{-10} C^2 N^{-1} m^{-2}

32. Taking into account of the significant figures, what is the value of 9.99 m $-$ 0.0099 m ?
(1) 9.9 m
(2) 9.9801 m
(3) 9.98 m
(4) 9.980 m

33. A series LCR circuit is connected to an ac voltage source. When L is removed from the circuit, the phase difference between current and voltage is $\frac{\pi}{3}$. If instead C is removed from the circuit, the phase difference is again $\frac{\pi}{3}$ between current and voltage. The power factor of the circuit is :
(1) -1.0
(2) zero
(3) 0.5
(4) 1.0

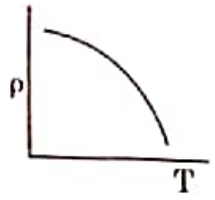
34. Dimensions of stress are :
(1) [ML^{-1}T^{-2}]
(2) [MLT^{-2}]
(3) [ML^{2}T^{-2}]
(4) [ML^{0}T^{-2}]

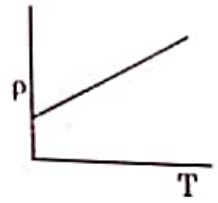
35. Light of frequency 1.5 times the threshold frequency is incident on a photosensitive material. What will be the photoelectric current if the frequency is halved and intensity is doubled ?
(1) zero
(2) doubled
(3) four times
(4) one-fourth

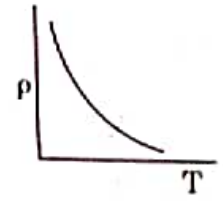
36. The solids which have the negative temperature coefficient of resistance are :
(1) insulators and semiconductors
(2) metals
(3) insulators only
(4) semiconductors only

37. A charged particle having drift velocity of 7.5×10^{-4} m s^{-1} in an electric field of 3×10^{-10} Vm^{-1}, has a mobility in m^2 V^{-1} s^{-1} of :
(1) 2.25×10^{-15}
(2) 2.25×10^{15}
(3) 2.5×10^6
(4) 2.5×10^{-6}

38. Which of the following graph represents the variation of resistivity (ρ) with temperature (T) for copper ?

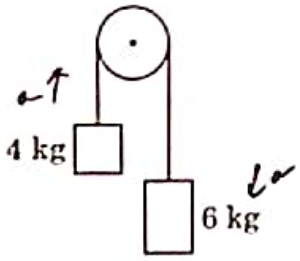
(1) 

(2) 

(3) 

(4) 

39. Two bodies of mass 4 kg and 6 kg are tied to the ends of a massless string. The string passes over a pulley which is frictionless (see figure). The acceleration of the system in terms of acceleration due to gravity (g) is :



(1) g/10
(2) g
(3) g/2
(4) g/5

40. A screw gauge has least count of 0.01 mm and there are 50 divisions in its circular scale.

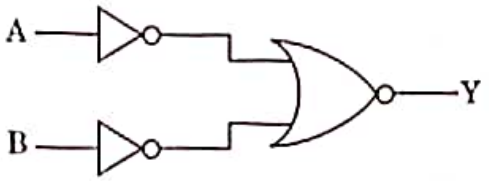
The pitch of the screw gauge is :

(1) 1.0 mm
(2) 0.01 mm
(3) 0.25 mm
(4) 0.5 mm

41. In Young's double slit experiment, if the separ between coherent sources is halved and distance of the screen from the coherent sour doubled, then the fringe width becomes :

(1) one-fourth
(2) double
(3) half
(4) four times

42. For the logic circuit shown, the truth table i



(1)

A	B	Y
0	0	1
0	1	0
1	0	0
1	1	0

(2)

A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

(3)

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	1

(4)

A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

43. The energy equivalent of 0.5 g of a substanc

(1) 0.5×10^{13} J
(2) 4.5×10^{16} J
(3) 4.5×10^{13} J
(4) 1.5×10^{13} J

44. For which one of the following, Bohr model i valid ?

(1) Singly ionised neon atom (Ne^+)
(2) Hydrogen atom
(3) Singly ionised helium atom (He^+)
(4) Deuteron atom

45. The quantities of heat required to raise the temperature of two solid copper spheres of radii r_1 and r_2 ($r_1 = 1.5\ r_2$) through 1 K are in the ratio :

(1) $\frac{5}{3}$

(2) $\frac{27}{8}$

(3) $\frac{9}{4}$

(4) $\frac{3}{2}$

46. The transverse section of a plant shows following anatomical features :

(a) Large number of scattered vascular bundles surrounded by bundle sheath.

(b) Large conspicuous parenchymatous ground tissue.

(c) Vascular bundles conjoint and closed.

(d) Phloem parenchyma absent.

Identify the category of plant and its part :

(1) Dicotyledonous root

(2) Monocotyledonous stem

(3) Monocotyledonous root

(4) Dicotyledonous stem

47. Which of the following would help in prevention of diuresis ?

(1) Decrease in secretion of renin by JG cells

(2) More water reabsorption due to undersecretion of ADH

(3) Reabsorption of Na^+ and water from renal tubules due to aldosterone

(4) Atrial natriuretic factor causes vasoconstriction

48. Which of the following statements is not correct ?

(1) Genetically engineered insulin is produced in *E-Coli*.

(2) In man insulin is synthesised as a proinsulin.

(3) The proinsulin has an extra peptide called C-peptide.

(4) The functional insulin has A and B chains linked together by hydrogen bonds.

49. Embryological support for evolution was disapproved by :

(1) Oparin

(2) Karl Ernst von Baer

(3) Alfred Wallace

(4) Charles Darwin

50. Goblet cells of alimentary canal are modified from :

(1) Compound epithelial cells

(2) Squamous epithelial cells

(3) Columnar epithelial cells

(4) Chondrocytes

51. The QRS complex in a standard ECG represents :

(1) Repolarisation of ventricles

(2) Repolarisation of auricles

(3) Depolarisation of auricles

(4) Depolarisation of ventricles

52. In light reaction, plastoquinone facilitates the transfer of electrons from :

(1) PS-I to ATP synthase

(2) PS-II to $Cytb_6f$ complex

(3) $Cytb_6f$ complex to PS-I

(4) PS-I to $NADP^+$

53. The product(s) of reaction catalyzed by nitrogenase in root nodules of leguminous plants is/are :

(1) Ammonia and hydrogen

(2) Ammonia alone

(3) Nitrate alone

(4) Ammonia and oxygen

54. Match the following with respect to meiosis :

(a)	Zygotene	(i)	Terminalization
(b)	Pachytene	(ii)	Chiasmata
(c)	Diplotene	(iii)	Crossing over
(d)	Diakinesis	(iv)	Synapsis

Select the correct option from the following :

	(a)	(b)	(c)	(d)
(1)	(ii)	(iv)	(iii)	(i)
(2)	(iii)	(iv)	(i)	(ii)
(3)	(iv)	(iii)	(ii)	(i)
(4)	(i)	(ii)	(iv)	(iii)

55. Match the following columns and select the **correct** option.

	Column - I		Column - II
(a)	6 - 15 pairs of gill slits	(i)	*Trygon*
(b)	Heterocercal caudal fin	(ii)	Cyclostomes
(c)	Air Bladder	(iii)	Chondrichthyes
(d)	Poison sting	(iv)	Osteichthyes

	(a)	(b)	(c)	(d)
(1)	(i)	(iv)	(iii)	(ii)
(2)	(ii)	(iii)	(iv)	(i)
(3)	(iii)	(iv)	(i)	(ii)
(4)	(iv)	(ii)	(iii)	(i)

56. Which is the important site of formation of glycoproteins and glycolipids in eukaryotic cells ?

(1) Polysomes
(2) Endoplasmic reticulum
(3) Peroxisomes
(4) Golgi bodies

57. Match the organism with its use in biotechnology.

(a)	*Bacillus thuringiensis*	(i)	Cloning vector
(b)	*Thermus aquaticus*	(ii)	Construction of first rDNA molecule
(c)	*Agrobacterium tumefaciens*	(iii)	DNA polymerase
(d)	*Salmonella typhimurium*	(iv)	Cry proteins

Select the **correct** option from the following :

	(a)	(b)	(c)	(d)
(1)	(iii)	(iv)	(i)	(ii)
(2)	(ii)	(iv)	(iii)	(i)
(3)	(iv)	(iii)	(i)	(ii)
(4)	(iii)	(ii)	(iv)	(i)

58. Experimental verification of the chromosomal theory of inheritance was done by :

(1) Morgan
(2) Mendel
(3) Sutton
(4) Boveri

59. Match the following :

(a)	Inhibitor of catalytic activity	(i)	Ricin
(b)	Possess peptide bonds	(ii)	Malon
(c)	Cell wall material in fungi	(iii)	Chitin
(d)	Secondary metabolite	(iv)	Collag

Choose the **correct** option from the following

	(a)	(b)	(c)	(d)
(1)	(ii)	(iii)	(i)	(iv)
(2)	(ii)	(iv)	(iii)	(i)
(3)	(iii)	(i)	(iv)	(ii)
(4)	(iii)	(iv)	(i)	(ii)

60. Bilaterally symmetrical and acoelomate anim are exemplified by :

(1) Annelida
(2) Ctenophora
(3) Platyhelminthes
(4) Aschelminthes

61. Floridean starch has structure similar to :

(1) Laminarin and cellulose
(2) Starch and cellulose
(3) Amylopectin and glycogen
(4) Mannitol and algin

62. Identify the **correct** statement with regard G_1 phase (Gap 1) of interphase.

(1) Nuclear Division takes place.
(2) DNA synthesis or replication takes pla
(3) Reorganisation of all cell components ta place.
(4) Cell is metabolically active, grows but d not replicate its DNA.

63. If the head of cockroach is removed, it may liv few days because :

(1) the head holds a 1/3rd of a nervous sys while the rest is situated along the do part of its body.
(2) the supra-oesophageal ganglia of cockroach are situated in ventral pa abdomen.
(3) the cockroach does not have nervous sys
(4) the head holds a small proportion of a ner system while the rest is situated along ventral part of its body.

64. The enzyme enterokinase helps in conversion of :
(1) pepsinogen into pepsin
(2) protein into polypeptides
(3) trypsinogen into trypsin
(4) caseinogen into casein

65. Match the following columns and select the **correct** option.

	Column - I		Column - II
(a)	Organ of Corti	(i)	Connects middle ear and pharynx
(b)	Cochlea	(ii)	Coiled part of the labyrinth
(c)	Eustachian tube	(iii)	Attached to the oval window
(d)	Stapes	(iv)	Located on the basilar membrane

	(a)	(b)	(c)	(d)
(1)	(i)	(ii)	(iv)	(iii)
(2)	(ii)	(iii)	(i)	(iv)
(3)	(iii)	(i)	(iv)	(ii)
(4)	(iv)	(ii)	(i)	(iii)

66. Identify the **wrong** statement with reference to transport of oxygen.
(1) Low pCO_2 in alveoli favours the formation of oxyhaemoglobin.
(2) Binding of oxygen with haemoglobin is mainly related to partial pressure of O_2.
(3) Partial pressure of CO_2 can interfere with O_2 binding with haemoglobin.
(4) Higher H^+ conc. in alveoli favours the formation of oxyhaemoglobin.

67. In water hyacinth and water lily, pollination takes place by :
(1) insects and water
(2) insects or wind
(3) water currents only
(4) wind and water

68. Bt cotton variety that was developed by the introduction of toxin gene of *Bacillus thuringiensis* (Bt) is resistant to :
(1) Insect predators
(2) Insect pests
(3) Fungal diseases
(4) Plant nematodes

69. Select the **correct** statement.
(1) Insulin is associated with hyperglycemia.
(2) Glucocorticoids stimulate gluconeogenesis.
(3) Glucagon is associated with hypoglycemia.
(4) Insulin acts on pancreatic cells and adipocytes.

70. Identify the basic amino acid from the following.
(1) Valine
(2) Tyrosine
(3) Glutamic Acid
(4) Lysine

71. Flippers of Penguins and Dolphins are examples of :
(1) Natural selection
(2) Adaptive radiation
(3) Convergent evolution
(4) Industrial melanism

72. From his experiments, S.L. Miller produced amino acids by mixing the following in a closed flask :
(1) CH_3, H_2, NH_3 and water vapor at 600°C
(2) CH_4, H_2, NH_3 and water vapor at 800°C
(3) CH_3, H_2, NH_4 and water vapor at 800°C
(4) CH_4, H_2, NH_3 and water vapor at 600°C

73. The specific palindromic sequence which is recognized by EcoRI is :
(1) 5' - GGATCC - 3'
3' - CCTAGG - 5'
(2) 5' - GAATTC - 3'
3' - CTTAAG - 5'
(3) 5' - GGAACC - 3'
3' - CCTTGG - 5'
(4) 5' - CTTAAG - 3'
3' - GAATTC - 5'

74. Secondary metabolites such as nicotine, strychnine and caffeine are produced by plants for their :
(1) Effect on reproduction
(2) Nutritive value
(3) Growth response
(4) Defence action

75. Presence of which of the following conditions in urine are indicative of Diabetes Mellitus ?

(1) Renal calculi and Hyperglycaemia
(2) Uremia and Ketonuria
(3) Uremia and Renal Calculi
(4) Ketonuria and Glycosuria

76. Which of the following statements are **true** for the phylum-Chordata ?

(a) In Urochordata notochord extends from head to tail and it is present throughout their life.
(b) In Vertebrata notochord is present during the embryonic period only.
(c) Central nervous system is dorsal and hollow.
(d) Chordata is divided into 3 subphyla : Hemichordata, Tunicata and Cephalochordata.

(1) (b) and (c)
(2) (d) and (c)
(3) (c) and (a)
(4) (a) and (b)

77. Cuboidal epithelium with brush border of microvilli is found in :

(1) eustachian tube
(2) lining of intestine
(3) ducts of salivary glands
(4) proximal convoluted tubule of nephron

78. Match the following columns and select the **correct** option.

	Column - I		Column - II
(a)	*Clostridium butylicum*	(i)	Cyclosporin-A
(b)	*Trichoderma polysporum*	(ii)	Butyric Acid
(c)	*Monascus purpureus*	(iii)	Citric Acid
(d)	*Aspergillus niger*	(iv)	Blood cholesterol lowering agent

	(a)	(b)	(c)	(d)
(1)	(iv)	(iii)	(ii)	(i)
(2)	(iii)	(iv)	(ii)	(i)
(3)	(ii)	(i)	(iv)	(iii)
(4)	(i)	(ii)	(iv)	(iii)

79. Which of the following is **correct** about vi

(1) They have free DNA without protei
(2) They have RNA with protein coat.
(3) They have free RNA without protei
(4) They have DNA with protein coat.

80. The body of the ovule is fused within the at :

(1) Chalaza
(2) Hilum
(3) Micropyle
(4) Nucellus

81. The oxygenation activity of RuBisCo enzy photorespiration leads to the formation of :

(1) 1 molecule of 4-C compound and 1 mo of 2-C compound
(2) 2 molecules of 3-C compound
(3) 1 molecule of 3-C compound
(4) 1 molecule of 6-C compound

82. Match the following columns and selec **correct** option.

	Column - I		Column - I
(a)	Eosinophils	(i)	Immune res
(b)	Basophils	(ii)	Phagocytos
(c)	Neutrophils	(iii)	Release histaminas destructive enzymes
(d)	Lymphocytes	(iv)	Release gra containing histamine

	(a)	(b)	(c)	(d)
(1)	(ii)	(i)	(iii)	(iv)
(2)	(iii)	(iv)	(ii)	(i)
(3)	(iv)	(i)	(ii)	(iii)
(4)	(i)	(ii)	(iv)	(iii)

83. Which of the following hormone levels will release of ovum (ovulation) from the gr follicle ?

(1) Low concentration of FSH
(2) High concentration of Estrogen
(3) High concentration of Progesterone
(4) Low concentration of LH

84. Select the **correct** events that occur during inspiration.

(a) Contraction of diaphragm
(b) Contraction of external inter-costal muscles
(c) Pulmonary volume decreases
(d) Intra pulmonary pressure increases

(1) only (d)
(2) (a) and (b)
(3) (c) and (d)
(4) (a), (b) and (d)

85. In which of the following techniques, the embryos are transferred to assist those females who cannot conceive ?

(1) GIFT and ICSI
(2) ZIFT and IUT
(3) GIFT and ZIFT
(4) ICSI and ZIFT

86. The infectious stage of *Plasmodium* that enters the human body is :

(1) Male gametocytes
(2) Trophozoites
(3) Sporozoites
(4) Female gametocytes

87. Match the following columns and select the **correct** option.

	Column - I		**Column - II**
(a)	Placenta	(i)	Androgens
(b)	Zona pellucida	(ii)	Human Chorionic Gonadotropin (hCG)
(c)	Bulbo-urethral glands	(iii)	Layer of the ovum
(d)	Leydig cells	(iv)	Lubrication of the Penis

	(a)	**(b)**	**(c)**	**(d)**
(1)	(ii)	(iii)	(iv)	(i)
(2)	(iv)	(iii)	(i)	(ii)
(3)	(i)	(iv)	(ii)	(iii)
(4)	(iii)	(ii)	(iv)	(i)

88. Select the **correct** match.

(1) Thalassemia - X linked
(2) Haemophilia - Y linked
(3) Phenylketonuria - Autosomal dominant trait
(4) Sickle cell anaemia - Autosomal recessive trait, chromosome-11

89. Which of the following statements is **correct** ?

(1) Adenine does not pair with thymine.
(2) Adenine pairs with thymine through two H-bonds.
(3) Adenine pairs with thymine through one H-bond.
(4) Adenine pairs with thymine through three H-bonds.

90. Which one of the following is the most abundant protein in the animals ?

(1) Insulin
(2) Haemoglobin
(3) Collagen
(4) Lectin

91. Which of the following pairs is of unicellular algae ?

(1) *Chlorella* and *Spirulina*
(2) *Laminaria* and *Sargassum*
(3) *Gelidium* and *Gracilaria*
(4) *Anabaena* and *Volvox*

92. The plant parts which consist of two generations - one within the other :

(a) Pollen grains inside the anther
(b) Germinated pollen grain with two male gametes
(c) Seed inside the fruit
(d) Embryo sac inside the ovule

(1) (a) and (d)
(2) (a) only
(3) (a), (b) and (c)
(4) (c) and (d)

93. Identify the **incorrect** statement.

(1) Due to deposition of tannins, resins, oils etc., heart wood is dark in colour.
(2) Heart wood does not conduct water but gives mechanical support.
(3) Sapwood is involved in conduction of water and minerals from root to leaf.
(4) Sapwood is the innermost secondary xylem and is lighter in colour.

94. By which method was a new breed 'Hisardale' of sheep formed by using Bikaneri ewes and Marino rams ?

(1) Inbreeding

(2) Out crossing

(3) Mutational breeding

(4) Cross breeding

95. Some dividing cells exit the cell cycle and enter vegetative inactive stage. This is called quiescent stage (G_0). This process occurs at the end of :

(1) G_2 phase

(2) M phase

(3) G_1 phase

(4) S phase

96. Identify the **correct** statement with reference to human digestive system.

(1) Vermiform appendix arises from duodenum.

(2) Ileum opens into small intestine.

(3) Serosa is the innermost layer of the alimentary canal.

(4) Ileum is a highly coiled part.

97. Which of the following refer to **correct** example(s) of organisms which have evolved due to changes in environment brought about by anthropogenic action ?

(a) Darwin's Finches of Galapagos islands.

(b) Herbicide resistant weeds.

(c) Drug resistant eukaryotes.

(d) Man-created breeds of domesticated animals like dogs.

(1) only (d)

(2) only (a)

(3) (a) and (c)

(4) (b), (c) and (d)

98. Match the following columns and select the **correct** option.

	Column - I		Column - II
(a)	Pituitary gland	(i)	Grave's disease
(b)	Thyroid gland	(ii)	Diabetes mellitus
(c)	Adrenal gland	(iii)	Diabetes insipidus
(d)	Pancreas	(iv)	Addison's disease

	(a)	(b)	(c)	(d)
(1)	(ii)	(i)	(iv)	(iii)
(2)	(iv)	(iii)	(i)	(ii)
(3)	(iii)	(ii)	(i)	(iv)
(4)	(iii)	(i)	(iv)	(ii)

99. Select the option including all sexually transmitted diseases.

(1) Cancer, AIDS, Syphilis

(2) Gonorrhoea, Syphilis, Genital herpes

(3) Gonorrhoea, Malaria, Genital herpes

(4) AIDS, Malaria, Filaria

100. The number of substrate level phosphorylations in one turn of citric acid cycle is :

(1) Three

(2) Zero

(3) One

(4) Two

101. Montreal protocol was signed in 1987 for contro of :

(1) Disposal of e-wastes

(2) Transport of Genetically modified organism from one country to another

(3) Emission of ozone depleting substances

(4) Release of Green House gases

102. Match the following concerning essential elements and their functions in plants :

(a)	Iron	(i)	Photolysis of water
(b)	Zinc	(ii)	Pollen germination
(c)	Boron	(iii)	Required for chlorophyll biosynthesis
(d)	Manganese	(iv)	IAA biosynthesis

Select the **correct** option :

	(a)	(b)	(c)	(d)
(1)	(iv)	(i)	(ii)	(iii)
(2)	(ii)	(i)	(iv)	(iii)
(3)	(iv)	(iii)	(ii)	(i)
(4)	(iii)	(iv)	(ii)	(i)

103. Match the following columns and select the **correct** option.

	Column - I		Column - II
(a)	Gregarious, polyphagous pest	(i)	*Asterias*
(b)	Adult with radial symmetry and larva with bilateral symmetry	(ii)	Scorpion
(c)	Book lungs	(iii)	*Ctenoplana*
(d)	Bioluminescence	(iv)	*Locusta*

	(a)	(b)	(c)	(d)
(1)	(ii)	(i)	(iii)	(iv)
(2)	(i)	(iii)	(ii)	(iv)
(3)	(iv)	(i)	(ii)	(iii)
(4)	(iii)	(ii)	(i)	(iv)

104. According to Robert May, the global species diversity is about :

(1) 7 million
(2) 1.5 million
(3) 20 million
(4) 50 million

105. Ray florets have :

(1) Half inferior ovary
(2) Inferior ovary
(3) Superior ovary
(4) Hypogynous ovary

106. If the distance between two consecutive base pairs is 0 34 nm and the total number of base pairs of a DNA double helix in a typical mammalian cell is 6.6×10^9 bp, then the length of the DNA is approximately :

(1) 2.7 meters
(2) 2.0 meters
(3) 2.5 meters
(4) 2.2 meters

107. Match the following columns and select the **correct** option.

	Column - I		Column - II
(a)	Bt cotton	(i)	Gene therapy
(b)	Adenosine deaminase deficiency	(ii)	Cellular defence
(c)	RNAi	(iii)	Detection of HIV infection
(d)	PCR	(iv)	*Bacillus thuringiensis*

	(a)	(b)	(c)	(d)
(1)	(i)	(ii)	(iii)	(iv)
(2)	(iv)	(i)	(ii)	(iii)
(3)	(iii)	(ii)	(i)	(iv)
(4)	(ii)	(iii)	(iv)	(i)

108. Match the trophic levels with their **correct** species examples in grassland ecosystem.

(a)	Fourth trophic level	(i)	Crow
(b)	Second trophic level	(ii)	Vulture
(c)	First trophic level	(iii)	Rabbit
(d)	Third trophic level	(iv)	Grass

Select the **correct** option :

	(a)	(b)	(c)	(d)
(1)	(i)	(ii)	(iii)	(iv)
(2)	(ii)	(iii)	(iv)	(i)
(3)	(iii)	(ii)	(i)	(iv)
(4)	(iv)	(iii)	(ii)	(i)

H3

109. Match the following diseases with the causative organism and select the **correct** option.

	Column - I		Column - II
(a)	Typhoid	(i)	*Wuchereria*
(b)	Pneumonia	(ii)	*Plasmodium*
(c)	Filariasis	(iii)	*Salmonella*
(d)	Malaria	(iv)	*Haemophilus*

	(a)	(b)	(c)	(d)
(1)	(iv)	(i)	(ii)	(iii)
(2)	(i)	(iii)	(ii)	(iv)
(3)	(iii)	(iv)	(i)	(ii)
(4)	(ii)	(i)	(iii)	(iv)

110. The roots that originate from the base of the stem are :
(1) Lateral roots
(2) Fibrous roots
(3) Primary roots
(4) Prop roots

111. Meiotic division of the secondary oocyte is completed :
(1) At the time of fusion of a sperm with an ovum
(2) Prior to ovulation
(3) At the time of copulation
(4) After zygote formation

112. Identify the **wrong** statement with regard to Restriction Enzymes.
(1) Sticky ends can be joined by using DNA ligases.
(2) Each restriction enzyme functions by inspecting the length of a DNA sequence.
(3) They cut the strand of DNA at palindromic sites.
(4) They are useful in genetic engineering.

113. In relation to Gross primary productivity and Net primary productivity of an ecosystem, which one of the following statements is **correct** ?
(1) There is no relationship between Gross primary productivity and Net primary productivity.
(2) Gross primary productivity is always less than net primary productivity.
(3) Gross primary productivity is always more than net primary productivity
(4) Gross primary productivity and Net primary productivity are one and same.

114. The process of growth is maximum during :
(1) Dormancy
(2) Log phase
(3) Lag phase
(4) Senescence

115. The sequence that controls the copy number of th linked DNA in the vector, is termed :
(1) Recognition site
(2) Selectable marker
(3) Ori site
(4) Palindromic sequence

116. Name the enzyme that facilitates opening of DN helix during transcription.
(1) RNA polymerase
(2) DNA ligase
(3) DNA helicase
(4) DNA polymerase

117. Snow-blindness in Antarctic region is due to :
(1) Damage to retina caused by infra-red ray
(2) Freezing of fluids in the eye by lo temperature
(3) Inflammation of cornea due to high dose UV-B radiation
(4) High reflection of light from snow

118. Strobili or cones are found in :
(1) *Equisetum*
(2) *Salvinia*
(3) *Pteris*
(4) *Marchantia*

119. Match the following columns and select t **correct** option.

	Column - I		Column - II
(a)	Floating Ribs	(i)	Located betwe second and seventh ribs
(b)	Acromion	(ii)	Head of the Humerus
(c)	Scapula	(iii)	Clavicle
(d)	Glenoid cavity	(iv)	Do not connect with the sterne

	(a)	(b)	(c)	(d)
(1)	(iv)	(iii)	(i)	(ii)
(2)	(ii)	(iv)	(i)	(iii)
(3)	(i)	(iii)	(ii)	(iv)
(4)	(iii)	(ii)	(iv)	(i)

120. Which of the following is put into Anaerobic sludge digester for further sewage treatment ?

(1) Activated sludge

(2) Primary sludge

(3) Floating debris

(4) Effluents of primary treatment

121. Identify the **wrong** statement with reference to the gene 'I' that controls ABO blood groups.

(1) Allele 'i' does not produce any sugar.

(2) The gene (I) has three alleles

(3) A person will have only two of the three alleles.

(4) When I^A and I^B are present together, they express same type of sugar.

122. The ovary is half inferior in :

(1) Plum

(2) Brinjal

(3) Mustard

(4) Sunflower

123. The first phase of translation is :

(1) Recognition of an anti-codon

(2) Binding of mRNA to ribosome

(3) Recognition of DNA molecule

(4) Aminoacylation of tRNA

124. In gel electrophoresis, separated DNA fragments can be visualized with the help of :

(1) Ethidium bromide in infrared radiation

(2) Acetocarmine in bright blue light

(3) Ethidium bromide in UV radiation

(4) Acetocarmine in UV radiation

125. Dissolution of the synaptonemal complex occurs during :

(1) Leptotene

(2) Pachytene

(3) Zygotene

(4) Diplotene

126. Identify the substances having glycosidic bond and peptide bond, respectively in their structure :

(1) Inulin, insulin

(2) Chitin, cholesterol

(3) Glycerol, trypsin

(4) Cellulose, lecithin

127. Name the plant growth regulator which upon spraying on sugarcane crop, increases the length of stem, thus increasing the yield of sugarcane crop.

(1) Abscisic acid

(2) Cytokinin

(3) Gibberellin

(4) Ethylene

128. Which of the following statements about inclusion bodies is **incorrect** ?

(1) These represent reserve material in cytoplasm.

(2) They are not bound by any membrane.

(3) These are involved in ingestion of food particles.

(4) They lie free in the cytoplasm.

129. Which of the following regions of the globe exhibits highest species diversity ?

(1) Amazon forests

(2) Western Ghats of India

(3) Madagascar

(4) Himalayas

130. How many true breeding pea plant varieties did Mendel select as pairs, which were similar except in one character with contrasting traits ?

(1) 8

(2) 4

(3) 2

(4) 14

H3

131. Identify the wrong statement with reference to immunity.

(1) Foetus receives some antibodies from mother, it is an example for passive immunity.

(2) When exposed to antigen (living or dead) antibodies are produced in the host's body. It is called "Active immunity".

(3) When ready-made antibodies are directly given, it is called "Passive immunity".

(4) Active immunity is quick and gives full response.

132. Which of the following is not an attribute of a population?

(1) Species interaction

(2) Sex ratio

(3) Natality

(4) Mortality

133. Choose the correct pair from the following :

(1) Exonucleases - Make cuts at specific positions within DNA

(2) Ligases - Join the two DNA molecules

(3) Polymerases - Break the DNA into fragments

(4) Nucleases - Separate the two strands of DNA

134. The process responsible for facilitating loss of water in liquid form from the tip of grass blades at night and in early morning is :

(1) Plasmolysis

(2) Transpiration

(3) Root pressure

(4) Imbibition

135. Which of the following is not an inhibitory substance governing seed dormancy?

(1) Para-ascorbic acid

(2) Gibberellic acid

(3) Abscisic acid

(4) Phenolic acid

136. Match the following and identify the correct option.

(a)	$CO(g) + H_2(g)$	(i)	$Mg(HCO_3)_2 + Ca(HCO_3)_2$
(b)	Temporary hardness of water	(ii)	An electron deficient hydride
(c)	B_2H_6	(iii)	Synthesis gas
(d)	H_2O_2	(iv)	Non-planar structure

	(a)	(b)	(c)	(d)
(1)	(i)	(iii)	(ii)	(iv)
(2)	(iii)	(i)	(ii)	(iv)
(3)	(iii)	(ii)	(i)	(iv)
(4)	(iii)	(iv)	(ii)	(i)

137. A tertiary butyl carbocation is more stable than a secondary butyl carbocation because of which of the following?

(1) Hyperconjugation

(2) $-I$ effect of $-CH_3$ groups

(3) $+R$ effect of $-CH_3$ groups

(4) $-R$ effect of $-CH_3$ groups

138. What is the change in oxidation number of carbon in the following reaction?

$$CH_4(g) + 4Cl_2(g) \rightarrow CCl_4(l) + 4HCl(g)$$

(1) 0 to -4

(2) $+4$ to $+4$

(3) 0 to $+4$

(4) -4 to $+4$

139. Sucrose on hydrolysis gives :

(1) α-D-Fructose + β-D-Fructose

(2) β-D-Glucose + α-D-Fructose

(3) α-D-Glucose + β-D-Glucose

(4) α-D-Glucose + β-D-Fructose

140. The calculated spin only magnetic moment of Cr^{2+} ion is :

(1) 2.84 BM

(2) 3.87 BM

(3) 4.90 BM

(4) 5.92 BM

141. Identify a molecule which does **not** exist.

(1) O_2

(2) He_2

(3) Li_2

(4) C_2

142. Which of the following oxoacid of sulphur has $-O-O-$ linkage ?

(1) $H_2S_2O_7$, pyrosulphuric acid

(2) H_2SO_3, sulphurous acid

(3) H_2SO_4, sulphuric acid

(4) $H_2S_2O_8$, peroxodisulphuric acid

143. Which of the following is the **correct** order of increasing field strength of ligands to form coordination compounds ?

(1) $CN^- < C_2O_4^{2-} < SCN^- < F^-$

(2) $SCN^- < F^- < C_2O_4^{2-} < CN^-$

(3) $SCN^- < F^- < CN^- < C_2O_4^{2-}$

(4) $F^- < SCN^- < C_2O_4^{2-} < CN^-$

144. The number of Faradays(F) required to produce 20 g of calcium from molten $CaCl_2$ (Atomic mass of Ca = 40 g mol^{-1}) is :

(1) 4

(2) 1

(3) 2

(4) 3

145. Reaction between acetone and methylmagnesium chloride followed by hydrolysis will give :

(1) Isobutyl alcohol

(2) Isopropyl alcohol

(3) Sec. butyl alcohol

(4) Tert. butyl alcohol

146. Which of the following is a cationic detergent ?

(1) Sodium dodecylbenzene sulphonate

(2) Sodium lauryl sulphate

(3) Sodium stearate

(4) Cetyltrimethyl ammonium bromide

147. Identify the **incorrect** statement.

(1) The oxidation states of chromium in CrO_4^{2-} and $Cr_2O_7^{2-}$ are not the same.

(2) Cr^{2+} (d^4) is a stronger reducing agent than Fe^{2+} (d^6) in water.

(3) The transition metals and their compounds are known for their catalytic activity due to their ability to adopt multiple oxidation states and to form complexes.

(4) Interstitial compounds are those that are formed when small atoms like H, C or N are trapped inside the crystal lattices of metals.

148. Which of the following alkane cannot be made in good yield by Wurtz reaction ?

(1) n-Butane

(2) n-Hexane

(3) 2,3-Dimethylbutane

(4) n-Heptane

149. Urea reacts with water to form A which will decompose to form B. B when passed through Cu^{2+} (aq), deep blue colour solution C is formed. What is the formula of C from the following ?

(1) $CuCO_3 \cdot Cu(OH)_2$

(2) $CuSO_4$

(3) $[Cu(NH_3)_4]^{2+}$

(4) $Cu(OH)_2$

150. The freezing point depression constant (K_f) of benzene is 5.12 K kg mol^{-1}. The freezing point depression for the solution of molality 0.078 m containing a non-electrolyte solute in benzene is (rounded off upto two decimal places) :

(1) 0.60 K

(2) 0.20 K

(3) 0.80 K

(4) 0.40 K

151. The number of protons, neutrons and electrons in $^{175}_{71}Lu$, respectively, are :

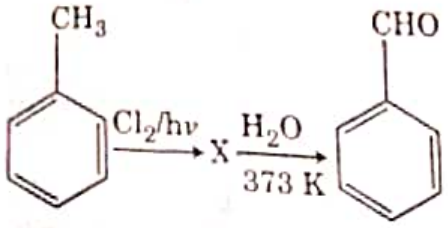
(1) 175, 104 and 71

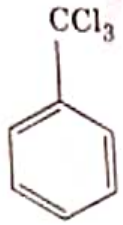
(2) 71, 104 and 71

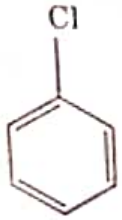
(3) 104, 71 and 71

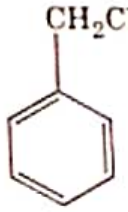
(4) 71, 71 and 104

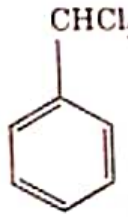
152. *Identify* compound X in the following sequence of reactions :



(1) 

(2) 

(3) 

(4) 

153. **Identify the correct statement from the following :**

(1) Pig iron can be moulded into a variety of shapes.

(2) Wrought iron is impure iron with 4% carbon.

(3) Blister copper has blistered appearance due to evolution of CO_2.

(4) Vapour phase refining is carried out for Nickel by Van Arkel method.

154. Which of the following set of molecules will have zero dipole moment ?

(1) Boron trifluoride, beryllium difluoride, carbon dioxide, 1,4-dichlorobenzene

(2) Ammonia, beryllium difluoride, water, 1,4-dichlorobenzene

(3) Boron trifluoride, hydrogen fluoride, carbon dioxide, 1,3-dichlorobenzene

(4) Nitrogen trifluoride, beryllium difluoride, water, 1,3-dichlorobenzene

155. Paper chromatography is an example of :

(1) Column chromatography

(2) Adsorption chromatography

(3) Partition chromatography

(4) Thin layer chromatography

156. Identify the **incorrect** match.

	Name		IUPAC Official Name
(a)	Unnilunium	(i)	Mendelevium
(b)	Unniltrium	(ii)	Lawrencium
(c)	Unnilhexium	(iii)	Seaborgium
(d)	Ununnnium	(iv)	Darmstadtium

(1) (d), (iv)

(2) (a), (i)

(3) (b), (ii)

(4) (c), (iii)

157. Find out the solubility of $Ni(OH)_2$ in 0.1 M NaOH. Given that the ionic product of $Ni(OH)_2$ is 2×10^{-15}.

(1) 1×10^{8} M

(2) 2×10^{-13} M

(3) 2×10^{-8} M

(4) 1×10^{-13} M

158. Which of the following is a natural polymer ?

(1) poly (Butadiene-acrylonitrile)

(2) *cis*-1,4-polyisoprene

(3) poly (Butadiene-styrene)

(4) polybutadiene

159. Reaction between benzaldehyde and acetophenone in presence of dilute NaOH is known as :

(1) Cross Aldol condensation

(2) Aldol condensation

(3) Cannizzaro's reaction

(4) Cross Cannizzaro's reaction

160. The mixture which shows positive deviation from Raoult's law is :

(1) Chloroethane + Bromoethane

(2) Ethanol + Acetone

(3) Benzene + Toluene

(4) Acetone + Chloroform

161. The rate constant for a first order reaction is $4.606 \times 10^{-3}\ s^{-1}$. The time required to reduce 2.0 g of the reactant to 0.2 g is :

(1) 1000 s

(2) 100 s

(3) 200 s

(4) 500 s

162. HCl was passed through a solution of $CaCl_2$, $MgCl_2$ and NaCl. Which of the following compound(s) crystallise(s) ?

(1) NaCl, $MgCl_2$ and $CaCl_2$

(2) Both $MgCl_2$ and $CaCl_2$

(3) Only NaCl

(4) Only $MgCl_2$

163. The correct option for free expansion of an ideal gas under adiabatic condition is :

(1) $q > 0, \Delta T > 0$ and $w > 0$

(2) $q = 0, \Delta T = 0$ and $w = 0$

(3) $q = 0, \Delta T < 0$ and $w > 0$

(4) $q < 0, \Delta T = 0$ and $w = 0$

164. Identify the correct statements from the following :

(a) $CO_2(g)$ is used as refrigerant for ice-cream and frozen food

(b) The structure of C_{60} contains twelve six carbon rings and twenty five carbon rings

(c) ZSM-5, a type of zeolite, is used to convert alcohols into gasoline.

(d) CO is colorless and odourless gas.

(1) (c) and (d) only

(2) (a), (b) and (c) only

(3) (a) and (c) only

(4) (b) and (c) only

165. Hydrolysis of sucrose is given by the following reaction.

$$\text{Sucrose} + H_2O \rightleftharpoons \text{Glucose} + \text{Fructose}$$

If the equilibrium constant (K_c) is 2×10^{13} at 300 K, the value of $\Delta_r G^\circ$ at the same temperature will be :

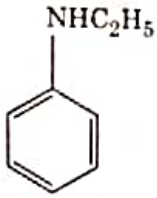
(1) $-8.314\ J\ mol^{-1}K^{-1} \times 300\ K \times \ln(4 \times 10^{13})$

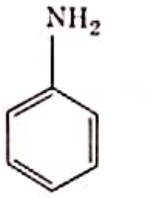
(2) $-8.314\ J\ mol^{-1}K^{-1} \times 300\ K \times \ln(2 \times 10^{13})$

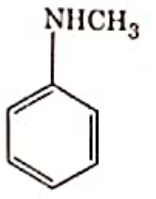
(3) $8.314\ J\ mol^{-1}K^{-1} \times 300\ K \times \ln(2 \times 10^{13})$

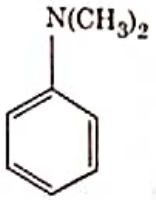
(4) $8.314\ J\ mol^{-1}K^{-1} \times 300\ K \times \ln(3 \times 10^{13})$

166. Which of the following amine will give the carbylamine test ?

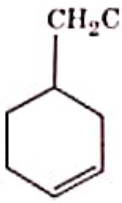
(1) 

(2) 

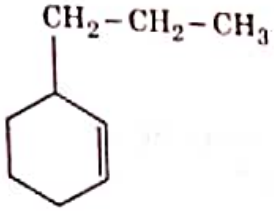
(3) 

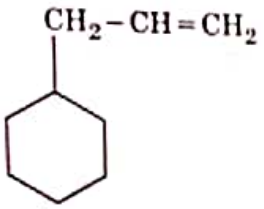
(4) 

167. An alkene on ozonolysis gives methanal as one of the product. Its structure is :

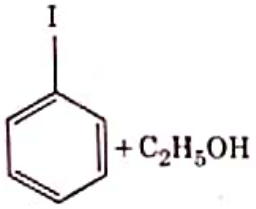
(1) 

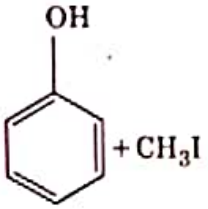
(2) 

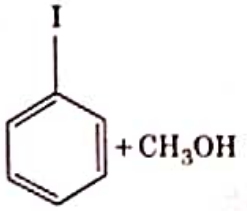
(3) 

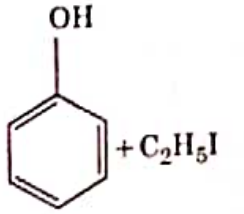
(4) 

168. Anisole on cleavage with HI gives :

(1) 

(2) 

(3) 

(4) 

169. Elimination reaction of 2-Bromo-pentane to form pent-2-ene is :

(a) β-Elimination reaction

(b) Follows Zaitsev rule

(c) Dehydrohalogenation reaction

(d) Dehydration reaction

(1) (a), (b), (d)

(2) (a), (b), (c)

(3) (a), (c), (d)

(4) (b), (c), (d)

170. An increase in the concentration of the reactants of a reaction leads to change in :

(1) collision frequency

(2) activation energy

(3) heat of reaction

(4) threshold energy

171. Which of the following is a basic amino acid ?

(1) Lysine

(2) Serine

(3) Alanine

(4) Tyrosine

172. The following metal ion activates many enzymes, participates in the oxidation of glucose to produce ATP and with Na, is responsible for the transmission of nerve signals.

(1) Potassium

(2) Iron

(3) Copper

(4) Calcium

173. For the reaction, $2Cl(g) \rightarrow Cl_2(g)$, the correct option is :

(1) $\Delta_r H < 0$ and $\Delta_r S < 0$

(2) $\Delta_r H > 0$ and $\Delta_r S > 0$

(3) $\Delta_r H > 0$ and $\Delta_r S < 0$

(4) $\Delta_r H < 0$ and $\Delta_r S > 0$

174. Match the following :

	Oxide		Nature
(a)	CO	(i)	Basic
(b)	BaO	(ii)	Neutral
(c)	Al_2O_3	(iii)	Acidic
(d)	Cl_2O_7	(iv)	Amphoteric

Which of the following is **correct** option ?

	(a)	(b)	(c)	(d)
(1)	(iv)	(iii)	(ii)	(i)
(2)	(i)	(ii)	(iii)	(iv)
(3)	(ii)	(i)	(iv)	(iii)
(4)	(iii)	(iv)	(i)	(ii)

175. Measuring Zeta potential is useful in determining which property of colloidal solution ?

(1) Size of the colloidal particles

(2) Viscosity

(3) Solubility

(4) Stability of the colloidal particles

176. A mixture of N_2 and Ar gases in a cylinder contains 7 g of N_2 and 8 g of Ar. If the total pressure of the mixture of the gases in the cylinder is 27 bar, the partial pressure of N_2 is :

[Use atomic masses (in g mol^{-1}) : N = 14, Ar = 40]

(1) 18 bar

(2) 9 bar

(3) 12 bar

(4) 15 bar

177. Which of the following is **not** correct about carbon monoxide ?

(1) It is produced due to incomplete combustion.

(2) It forms carboxyhaemoglobin.

(3) It reduces oxygen carrying ability of blood.

(4) The carboxyhaemoglobin (haemoglobin bound to CO) is less stable than oxyhaemoglobin.

178. An element has a body centered cubic (bcc) structure with a cell edge of 288 pm. The atomic radius is :

(1) $\frac{4}{\sqrt{2}} \times 288$ pm

(2) $\frac{\sqrt{3}}{4} \times 288$ pm

(3) $\frac{\sqrt{2}}{4} \times 288$ pm

(4) $\frac{4}{\sqrt{3}} \times 288$ pm

179. Which one of the followings has maximum number of atoms ?

(1) 1 g of Li(s) [Atomic mass of Li = 7]

(2) 1 g of Ag(s) [Atomic mass of Ag = 108]

(3) 1 g of Mg(s) [Atomic mass of Mg = 24]

(4) 1 g of O_2(g) [Atomic mass of O = 16]

180. On electrolysis of dil.sulphuric acid using Platinum (Pt) electrode, the product obtained at anode will be :

(1) SO_2 gas

(2) Hydrogen gas

(3) Oxygen gas

(4) H_2S gas