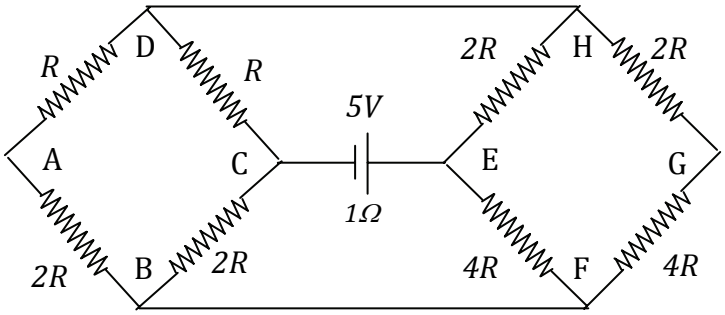
1. Which of the following statements is not true ?
(A) The resistance of intrinsic semiconductors decreases with increase of temperature.
(B) Doping pure Si with trivalent impurities give p-type semiconductors.
(C) The majority carriers in n-type semiconductors are holes.
(D) A p-n junction can act as a semiconductor diode.

2. Two resistive networks are connected through a battery of emf 5V and internal resistance 1 Ω, as shown below. The value of R for which the power delivered to the network by the battery will be maximum, is



(A) 1 Ω
(B) 0.5 Ω
(C) 1.2 Ω
(D) 2.4 Ω

3. A charged particle is released from rest in a region of constant and uniform electric and magnetic fields. The two fields are parallel to each other. The path of the particle's motion will be a
(A) straight line
(B) circle
(C) helix
(D) cycloid

4. A particle of charge e and mass m is executing a circular motion with a uniform angular speed ω. If the radius of the circular path be r, the angular momentum be L and magnetic moment due to circular loop be μ, then
(A) the current flowing in the circular path is proportional to the area of the loop
(B) L is proportional to the areal velocity
(C) the ratio of μ/L is in inversely proportional to the specific charge of the particle
(D) μ is proportional to m

Space for Rough Work

5. A moving coil galvanometer has a resistance of 100 Ω and shows full-scale deflection at a current of 100 μA. The galvanometer has to be used as an ammeter in the range of 0–100 mA so that 100 mA is the full-scale deflection current. A resistance R has to be connected in parallel. Then

(A) the value of R needed should be 1.0 Ω
(B) when this ammeter measures 100 mA, the current flowing in galvanometer is 40 μA
(C) for higher current measurement, value of R should be larger than the present value of R
(D) this new ammeter cannot measure −100 mA

6. An object is moving away from a vertical concave mirror of focal length 25 m. When the distance of the object is 100 m, the velocity of the object is 5 m/s and it accelerates at 2 m/s^2. The distance of the object from the image after 5 sec is

(A) 300 m
(B) 120 m
(C) 150 m
(D) 90 m

7. An electrostatic field $\vec{E} = \hat{i} + 2\hat{j} + 3\hat{k}$ passes through the surface $\vec{A} = 30\hat{j}$. The electric flux coming through the surface is

(A) 30 unit
(B) 90 unit
(C) 60 unit
(D) 120 unit

8. A given quantity of an ideal gas is at pressure P and absolute temperature T. The isothermal bulk modulus of the gas is

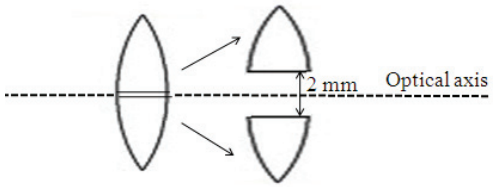
(A) 2P/3
(B) P
(C) 3P/2
(D) 2P

9. The current amplification factor of a transistor α is 0.9. The transistor is biased in a common-base configuration. In this connection, when the base current changes by 4 mA, the change in collector current is

(A) 4.44 mA
(B) 40 mA
(C) 36 mA
(D) 24 mA

Space for Rough Work

10. A bi-convex lens of focal length 10 cm is cut along the horizontal diameter and the two halves are kept 2 mm apart symmetrically about the optical axis as shown in the figure. A monochromatic point source of light is now placed at a distance 10 cm on the optical axis. Then which of the following statements is/are correct ?



(A) The rays emerging from each lens-half will be converging to a point on the optical axis at a distance of 5 cm from the lens-halves.

(B) The rays emerging from each lens-half will be parallel making an angle of 10^{-2} radian with the optical axis.

(C) Rays from each lens-half will be diverging as if the source is on the optic axis at a distance of 10/3 cm behind the lens-halves.

(D) The rays emerging from the upper lens-half will appear to come from a point 10/3 cm behind the lens-halves and 3 mm below the optical axis.

11. An infinitely long straight conductor has a circular loop of radius R meter. If a current I ampere flows through the conductor, then the magnetic induction at the centre of the circular loop is

(A) $\frac{\mu_0}{4\pi}\frac{2I}{R(\pi+1)}$ Tesla

(B) $\frac{\mu_0}{4\pi}\frac{2I}{R}$ Tesla

(C) $\frac{\mu_0}{4\pi}\frac{2I}{R(\pi-1)}$ Tesla

(D) Zero

12. Energy liberated per fission is about 200 MeV of $_{92}U^{235}$ nuclei. A fission reactor of power 1 MW consumes a mass *x* of $_{92}U^{235}$ per day. Here *x* is equal to

(A) 1 gm

(B) 10 gm

(C) 1 kg

(D) 10 kg

Space for Rough Work

13. A free electron has a wave function $\psi(x, t) = \sin(kx - \omega t)$. Given that $h = 6.626 \times 10^{-34}$ J-s, when $k = 50\ nm^{-1}$, the momentum of the electron in kg-m/s is

(A) 5.26×10^{-22}

(B) 2.62×10^{-32}

(C) 1.26×10^{-12}

(D) 6.62×10^{-24}

14. A non-conducting solid sphere of radius R is uniformly charged. At a distance r from the centre of the sphere the electric field (magnitude) due to sphere

(A) $E \propto 1/r^2$ for $r < R$ (inside sphere)

(B) $E \propto 1/r^2$ for $0 < r < \infty$ (everywhere except centre)

(C) $E \propto 1/r^2$ for $R < r < \infty$ (outside sphere)

(D) $E = 0$ at $r = R$ (at the surface)

15. The ground state wave function associated with a particle in a potential box of width L (i.e., $x = 0$ to $x = L$) is given by

(A) $\sqrt{(2/L)} \sin[(x/L)]$

(B) $\sqrt{(2/L)} \cos[(x/2L)]$

(C) $\sqrt{(2/L)} \sin[2(x/L)]$

(D) $\sqrt{(2/L)} \cos[2(x/L)]$

16. A circular loop of copper wire has a radius r and mass m. The loop is at rest on flat table in the horizontal plane xy. The earth's magnetic field at this point is $\hat{i}\, B_x + \hat{k} B_z$. When a current I flows through the loop, the loop starts tilting. The minimum value of current is

(A) $\dfrac{mg}{\pi r B_x}$

(B) $\dfrac{mg}{\pi r \sqrt{B_x^2 + B_z^2}}$

(C) $\dfrac{mg}{\pi r \sqrt{B_x B_z}}$

(D) $\dfrac{mg}{\pi r B_z}$

Space for Rough Work

17. A hydrogen atom is in its n^{th} excited state. The magnetic moment due to the electron of this excited hydrogen atom is

(A) $\frac{ne\hbar}{2m}$

(B) $\frac{me\hbar}{2n}$

(C) $\frac{neh}{2\pi m}$

(D) $\frac{meh}{2\pi n}$

18. 5.0 kg of steam at 200° C is kept in a frictionless piston-cylinder based container at a pressure of 400 kPa. Heat is transferred to steam at constant pressure in a quasi-static process till the temperature reaches 250° C. Assume the specific volumes of steam at 200° C and 250° C as 0.53434 m^3/kg and 0.59520 m^3/kg respectively. The work done by the steam is then

(A) 121.7 kJ
(B) –55.3 kJ
(C) 30.4 kJ
(D) –53.5 kJ

19. A plane diffraction grating has 100 lines per mm. The grating is illuminated by sodium light of wavelength 5890Å. The number of orders that will be visible is

(A) 6
(B) 12
(C) 10
(D) 16

20. The electric fields of two electromagnetic waves in a certain region are $E_1 = E_0 e^{ik\left(\frac{\sqrt{3}}{2}x + \frac{1}{2}y\right)}$ and $E_2 = E_0 e^{ik\left(\frac{1}{2}x + \frac{\sqrt{3}}{2}y\right)}$ respectively. The angle between these electromagnetic fields is

(A) 60°
(B) 30°
(C) 45°
(D) 120°

Space for Rough Work

21. A charged particle is thrown in a uniform magnetic field of flux density 1.5 Wb/m^2 with a speed of 2×10^7 m/sec making an angle of 30° with the direction of field. The particle experiences a force equal to

(A) 1.2×10^{12} N

(B) 2.4×10^{12} N

(C) 12×10^{12} N

(D) 24×10^{12} N

22. The differential equation describing the oscillation of a particle is given by $2\frac{d^2x}{dt^2} + 8\frac{dx}{dt} + 12x = 0$. The oscillation of the particle is

(A) underdamped

(B) critically damped

(C) overdamped

(D) free SHM

23. The electric field of an electromagnetic wave is given by $= E_o\cos(kz - ct)\hat{x} + E_o \sin(kz - ct)\hat{y}$. The wave is

(A) elliptically polarized

(B) left circularly polarized

(C) linearly polarized

(D) right circularly polarized

24. A thermal neutron has a speed v at temperature T=300K and kinetic energy given by $\frac{m_n v^2}{2} = \frac{3kT}{2}$. Take mass of neutron as $m_n = 1.67 \times 10^{-27}$ kg and $k = 1.38 \times 10^{-23}$ $m^2kgs^{-2}K^{-1}$. The de-Broglie wavelength associated with this neutron is

(A) 32 pm

(B) 23.3 pm

(C) 14 pm

(D) 1.22 pm

25. In a Young's double-slit experiment using a monochromatic light of wavelength 488 nm, the separation between the slits is 0.320 mm and interference fringes are formed on the screen. How many interference fringes will be observed in the angular range of $-30° < \theta < +30°$? Here θ is measured from the direction of the central fringe.

(A) 321

(B) 231

(C) 655

(D) 565

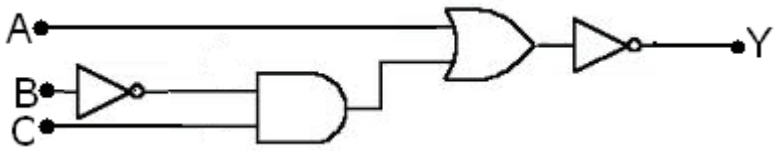
Space for Rough Work

26. The radii of two soap bubbles are r and 2r respectively. The excess pressures inside the bubbles are in the ratio
(A) 2 : 1
(B) 1 : 4
(C) 4 : 1
(D) 1 : 2

27. The dimension of a quantity is given by $ML^2T^{-2}I^{-2}$, where M is mass, L is length, T is time, and I is electric current. Which of the following quantities has this dimension ?
(A) Capacitor
(B) Inductance
(C) Magnetic Flux
(D) Electric Flux

28. In a hydrogen atom, radius of the first Bohr orbit of electron is 5.3×10^{-11} m. The de Broglie wavelength associated with this electron is then
(A) 3.3×10^{-11} m
(B) 33×10^{-11} m
(C) 6.62×10^{-13} m
(D) 66.2×10^{-13} m

29. The output of the logic gate is



(A) $\overline{A} + \overline{B \cdot C}$
(B) $\overline{A + B \cdot C}$
(C) $A + \overline{B} \cdot C$
(D) $\overline{A + \overline{B} \cdot C}$

30. What is the minimum thickness of a soap bubble needed for constructive interference in reflected light, if the light incident on the film is 750 nm ? Assume that the refractive index of the film is n = 4/3.
(A) 140.6 nm
(B) 281.2 nm
(C) 70.3 nm
(D) 210.9 nm

Space for Rough Work

31. For an ideal gas the Joule-Thomson coefficient will be

(A) > 0

(B) 0

(C) < 0

(D) cannot be predicted.

32. Entropy is a measure of

(A) randomness

(B) orderliness

(C) reactivity

(D) feasibility

33. The efficiency of a Carnot engine would be unity when

(A) the sink temperature is 0 °C

(B) the source temperature is 1000 °C

(C) the sink temperature is 0 K

(D) the source temperature is 100000 K

34. Free energy change, $\Delta G=0$ when

(A) catalyst is added

(B) the system is under equilibrium

(C) reactants are completely consumed

(D) reactants are initially mixed thoroughly.

35. Given the following notation for an electrochemical cell :

$Pt(s) \mid H_2(g) \mid H^+(aq) \parallel Ag^+(aq) \mid Ag(s)$

Which of the following represents the overall balanced (net) cell reaction ?

(A) $H_2(g)+Ag^+(aq) \rightarrow 2H^+(aq)+Ag(s)$

(B) $H_2(g)+Ag(s) \rightarrow H^+(aq) +Ag^+(aq)$

(C) $Ag(s) +H^+(aq) \rightarrow Ag^+(aq) +H_2(g)$

(D) None of these

Space for Rough Work

36. The structure of heteropolyacid ammonium phosphomolybdate contains

(A) one tetrahedral and twelve octahedral units

(B) twelve tetrahedral and one octahedral units

(C) four tetrahedral and seven octahedral units

(D) seven tetrahedral and six octahedral units

37. The atoms in BF_4^- ion supply

(A) 32 valence electrons

(B) 31 valence electrons

(C) 41 valence electrons

(D) 36 valence electrons

38. The ground state configuration of CO is

(A) $1\sigma^2 1\pi^2 2\pi^4 2\sigma^2$

(B) $1\sigma^2 2\sigma^2 3\sigma^4 1\pi^2$

(C) $1\sigma^2 2\sigma^2 1\pi^4 3\sigma^2$

(D) $1\sigma^2 2\sigma^2 1\pi^2 3\sigma^4$

39. The reaction of BCl_3 with excess NaCl in acidic aqueous solution gives

(A) BCl_4^- and Na^+

(B) $BOCl_2$ and HCl

(C) H_3BO_3 and NaOCl

(D) H_3BO_3 and HCl

40. Amongst the following VO, V_2O_3, VO_2, V_2O_5, Cr_2O_3 and CrO_3 the pair of amphoteric oxides is

(A) VO, Cr_2O_3

(B) V_2O_3, Cr_2O_3

(C) VO_2, Cr_2O_3

(D) V_2O_5, CrO_3

Space for Rough Work

41. The ground state electronic configuration of the Ti^{3+} is

(A) $[Ar]3d^2$

(B) $[Ar]3d^1$

(C) $[Ne]3d^9$

(D) $[Ar]4s^23d^1$

42. Reaction of fluorapetite with conc. H_2SO_4 gives

(A) P_4, $CaSiO_3$ and HF

(B) H_3PO_4, $CaSO_4$ and CaF_2

(C) H_3PO_4, $CaSO_4$ and HF

(D) $H_4P_2O_7$, $CaSO_4$ and HF

43. The average N-O bond length and O-N-O angle in NO_2^- are, respectively

(A) 1.15 Å, 180º

(B) 1.24 Å, 120º

(C) 1.12 Å, 115º

(D) 1.24 Å, 115º

44. Conc. HNO_3 is yellow in colour due to the presence of

(A) NO_2

(B) NO

(C) N_2O

(D) N_2O_5

45. At 250 ºC molten NH_4NO_3 gives

(A) NO and H_2O

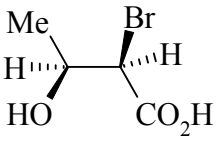
(B) N_2O and H_2O

(C) N_2O and H_2O_2

(D) NO_2 and H_2O

Space for Rough Work

46. Predict the absolute configuration for the following compound



(A) 2S, 3R

(B) 2S, 3S

(C) 2R, 3R

(D) 2R, 3S

47. The following compound cannot be resolved mainly due to the fact that

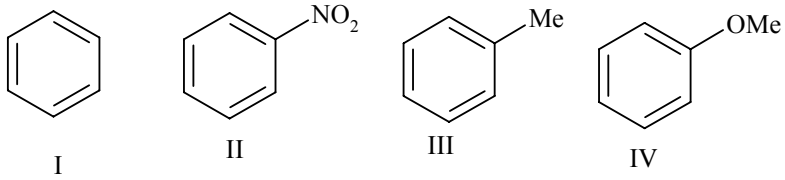
(A) The compound is not chiral

(B) Rapid interconversion between the enantiomers take place

(C) The compound is liquid in nature

(D) None of the above

48. Predict the correct order of affinity towards electrophilic substitution reaction of the following substrates :



(A) IV > III > I >II

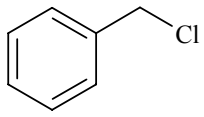
(B) III > IV > I >II

(C) IV > I >III >II

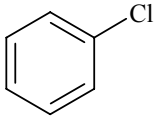
(D) I > II > III >IV

Space for Rough Work

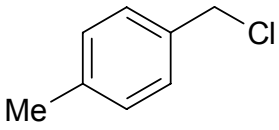
49. Predict the correct order of affinity towards nucleophilic substitution (S_N1) reaction of the following substrates :



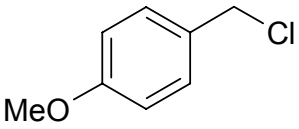
I



II



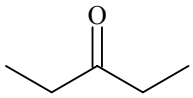
III

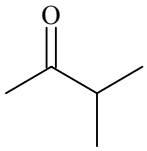


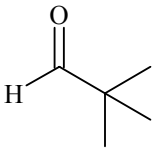
IV

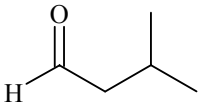
(A) II > I > IV > III
(B) III >IV > II > I
(C) IV > III > I > II
(D) I > III >IV >II

50. An aliphatic carbonyl compound (Mw = 86) gives a pair of oximes (with NH_2OH) which could be reduced to an amine that is resolvable, what is the correct structure of the parent carbonyl compound ?

(A) 

(B) 

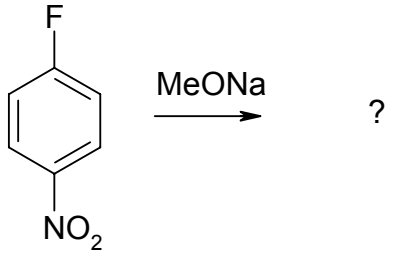
(C) 

(D) 

51. Reimer-Tiemann reaction of phenol involves the formation of which of the following intermediate ?
(A) Dichlorocarbene
(B) Trichlorocarbene
(C) Trichloromethane
(D) Nitrene

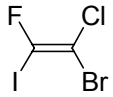
Space for Rough Work

52. The following reaction will yield which of the following product ?



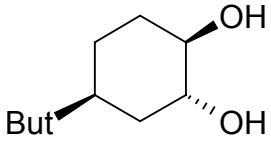
(A) o-Nitroanisole
(B) m-Nitroanisole
(C) p-Nitroanisole
(D) None of the above

53. What would be the double bond geometry in the following compound ?



(A) Z
(B) E
(C) E, Z
(D) None of the above

54. The following diol cannot be cleaved by periodic acid mainly due to



(A) Both the OH groups are in equatorial position
(B) Both the OH groups are in axial position
(C) One of the OH group is in equatorial position and another is in axial position
(D) None of the above

55. The number of gauche-butane interaction present in *cis*-1,2-dimethyl cyclohexane is
(A) 2
(B) 3
(C) 4
(D) None of the above

Space for Rough Work

56. What happens when a catalyst is added to a system at equilibrium ?

(A) The heat of reaction decreases.

(B) The reaction follows an alternative pathway of lower activation energy.

(C) The potential energy of the reactants decreases.

(D) The potential energy of the products decreases.

57. Which of the following is false ?

(A) Phase diagram provides information on the transformation rates.

(B) Phase diagram indicates the relative amounts of different phases that can be found under given equilibrium conditions.

(C) Phase diagram indicates the temperature at which different phases start to melt.

(D) Solid solubility limits are depicted by the phase diagram.

58. In a condensed system having a single-component, if the degree of freedom is zero, maximum number of co-existing phases will be

(A) 0

(B) 1

(C) 2

(D) 3

59. Which of the following has maximum entropy of vapourisation ?

(A) water (*l*)

(B) toluene (*l*)

(C) diethyl ether (*l*)

(D) acetone (*l*)

60. The internal energy of one mole of an ideal gas is

(A) 4RT

(B) (5/2)RT

(C) (7/2)RT

(D) (3/2)RT

Space for Rough Work

61. The type of pollination performed by butterflies is known as

(A) Cantharophily

(B) Psychophily

(C) Phalaenophily

(D) Myrmecophily

62. Which of the following is the most popular approach for delivering gene therapy ?

(A) Bacterial vectors

(B) Naked DNA

(C) Liposomes

(D) Viral vectors

63. Among the extant gymnosperms, the longest archegonial neck is found in

(A) Cycas

(B) Pinus

(C) Ephedra

(D) Ginkgo

64. What can liposome do that other methods for delivering genes cannot ?

(A) Liposomes have no other function than delivering DNA.

(B) Liposomes can deliver proteins to cells, such as tumour-necrosis factor.

(C) Liposomes can degrade extracellular DNA.

(D) Liposomes can only deliver DNA to specific cells.

65. Palea is a part of following inflorescence :

(A) Spadix

(B) Spike

(C) Spikelet

(D) Capitulum

Space for Rough Work

66. Which of the following combinations is not correct ?

Column 'A' (Diagnostic feature)	Column 'B' (Family)
(a) Pollinia	(i) Poaceae
(b) gynobasic style	(ii) Lamiaceae
(c) obliquely placed ovary	(iii) Solanaceae
(d) cruciform corolla	(iv) Brassicaceae

(A) (a) – (i)

(B) (b) – (ii)

(C) (c) – (iii)

(D) (d) – (iv)

67. Morphologically distinct form within a species produced by natural selection is known as

(A) Ecotype

(B) Ecocline

(C) Ecad

(D) Ecotone

68. Anneau initial is associated with

(A) Root apical meristem of angiosperms

(B) Shoot apical meristem of angiosperms

(C) Shoot apical meristems of gymnosperms

(D) Shoot apical meristem of pteridophytes

69. For successful completion of which of the following type of genetic recombinations found in bacteria 'competence factor' is required ?

(A) Conjugation

(B) Transduction

(C) Transformation

(D) Binary fission

Space for Rough Work

70. A normal chromosome has the following gene sequence :

A B C D E F G H . Determine the chromosomal aberration /mutation illustrated by the following chromosomes :

(a) A B C F E D G H and (b) A D E F B C G H

(A) Paracentric inversion and tandem duplication respectively.

(B) Duplication and reciprocal translocation respectively.

(C) Reciprocal translocation and paracentric inversion respectively.

(D) Pericentric inversion and non-reciprocal translocation respectively.

71. Glycosylase is a repair enzyme of DNA damage. In which of the following types of DNA repair is it involved ?

(A) Nucleotide excision repair

(B) Base excision repair

(C) UV-induced pyrimidine dimers

(D) Methyl-directed mismatch repair

72. During translation, peptide bond formation is catalyzed by

(A) EF-G

(B) Aminoacyl-tRNA synthetase

(C) Peptidyl tranferase

(D) Transformylase

73. Telomerase is a type of

(A) Reverse transcriptase enzyme

(B) Ligase enzyme

(C) DNA polymerase enzyme

(D) RNA dependent RNA polymerase enzyme

Space for Rough Work

74. Which of the following is an example of "repetitive DNA" as well as "Transposon" in Eukaryotes ?

(A) Tn 3.

(B) Ac-Ds.

(C) P elements.

(D) LINES.

75. Suppose chromosome number of endosperm cells in *Arabidopsis thaliana* is 15. What will be the chromosome number in a cell of this plant which has undergone nullisomic mutation ?

(A) 8

(B) 13

(C) 12

(D) 17

76. Which of the following statements regarding extra-chromosomal eukaryotic genomes is incorrect ?

(A) The DNA molecules residing in mitochondria and chloroplasts are devoid of histones.

(B) These genomes are circular and comparable to viral genome regarding size.

(C) Chloroplast genome encodes both subunits of rubisco.

(D) Most polypeptides encoded by mitochondrial or chloroplast genomes are components of multimeric proteins that also contain subunits encoded by the nuclear genome.

Space for Rough Work

77. Which of the following is correct matching of an organelles and its respective function ?

P(Organelles)	Q(Function)
(a) Peroxisome	(i) Generate fat from carbohydrates in fat storing seeds.
(b) Smooth endoplasmic reticulum	(ii) Synthesis of cholesterol and lipids.
(c) Golgi complex	(iii) Initiation of glycosylation of protein.
(d) Mitochondria	(iv) Reduction of fat molecules.

(A) (a) – (i)

(B) (b) – (ii)

(C) (c) – (iii)

(D) (d) – (iv)

78. Which statement about enzyme inhibition is not true ?

(A) A competitive inhibitor binds the active site of the enzyme.

(B) An allosteric inhibitor binds a site on the active form of the enzyme.

(C) Noncompetitive inhibition cannot be completely overcome by the addition of more substrate.

(D) Competitive inhibition can be completely overcome by the addition of more substrate.

79. Most plant cells display a cyanide-resistant respiration. The enzyme responsible for this cyanide resistant respiration is

(A) Rotenone-insensitive dehydrogenase

(B) UC P-1

(C) SHAM

(D) Ubiquinol oxidase or alternative oxidase.

Space for Rough Work

80. In plants fatty acids are synthesized exclusively in the

(A) Cytosol

(B) Mitochondria

(C) Plastids

(D) ER

81. Plant roots actively absorb nitrate from the soil and assimilate most of this nitrate initially into nitrite in the cytosol involving transfer of 2 electrons. The Molybdenum dependent enzyme that catalyzes this reaction is

(A) Nitrogenase

(B) GOGAT

(C) Nitrite reductase

(D) Nitrate reductase

82. Choose the correct sequence of taxonomic ranks of land plants in descending order :

(A) Tribe – Section – Genus – Species – Variety

(B) Tribe – Genus – Section – Species – Variety

(C) Variety – Section – Tribe – Genus – Species

(D) Variety – Tribe – Section – Genus - Species

83. The complete oxidation of sucrose molecule by aerobic respiration yields about

(A) 38 molecules of ATP.

(B) 52 molecules of ATP.

(C) 60 molecules of ATP.

(D) 48 molecules of ATP.

Space for Rough Work

84. Match column "A" and column "B" and identify the incorrect match :

'A'-Name of the receptor	**'B'-Absorbance and specific role**
P_r	(1) 660 nm, seed germination, flowering
P_{fr}	(2) 735 nm, seed germination, flowering
Cryptochrome	(3) 475 nm, P_r to P_{fr} conversion, shade avoidance
Phototropin	(4) 320-400 nm, phototropic responses, or differential growth in a light gradient.

(A) $P_r \longrightarrow$ (1)

(B) $P_{fr} \longrightarrow$ (2)

(C) cryptochrome $\longrightarrow$ (3)

(D) phototropins $\longrightarrow$ (4)

85. Which of the following is an important physiological function of the plant hormone ABA ?

(A) Prohibiting precocious germination and promoting dormancy in seeds

(B) Inducing stomatal opening and desiccation

(C) Initiation of primary root and homophylly

(D) Functions as an anti-senescent hormone

86. In which of the following sequences photorespiratory processes in plants begins and ends up in the oraganelles ?

(A) Chloroplast $\longrightarrow$ Mitochondrion $\longrightarrow$ Peroxisome

(B) Chloroplast $\longrightarrow$ Peroxisome $\longrightarrow$ Mitochondrion

(C) Mitochondrion $\longrightarrow$ Peroxisome $\longrightarrow$ Chloroplast

(D) Mitochondrion $\longrightarrow$ Chloroplast $\longrightarrow$ Peroxisome

Space for Rough Work

87. Which of the following vector holds the largest pieces of DNA ?

(A) Plasmids

(B) Bacteriophage

(C) YACs

(D) PACs

88. Which of the following statements about gene libraries is correct ?

(A) Genes in a library can be compared to genes from other organisms by hybridization with a probe.

(B) Every gene in the library must be sequenced first in order to compare genes in the library to genes from other organisms.

(C) A gene library is only necessary to maintain known genes.

(D) Gene libraries can only be created for eukaryotic organisms.

89. A duplicate specimen of the holotype collected at the same time by the same person from the same population is known as

(A) Lectotype

(B) Paratype

(C) Isotype

(D) Neotype

90. What is DNA coated onto when transforming plant cells with a particle gun ?

(A) Silver

(B) Aluminium

(C) Helium

(D) Gold

Space for Rough Work

91. Fangs of snakes are modified

(A) Canines

(B) Maxillary teeth

(C) Incisors

(D) None of the above

92. What is correct for test tube babies ?

(A) Fertilization is external and foetus formation is internal

(B) Fertilization is internal and foetus formation is external

(C) Fertilization and foetus formation are external

(D) Fertilization and foetus formation are internal

93. In which of the following do four pulmonary veins open by a common aperture in the left auricle ?

(A) Frogs

(B) Lizards

(C) Pigeons

(D) All of these

94. Which one of the following statements is NOT correct ?

(A) A malignant tumor is cancer.

(B) Cyst and polyps are malignant tumors.

(C) Benign tumor is not cancer.

(D) Cancer is a genetic disease but it is rarely inherited.

95. Among Echinoderms, light producing cells are found only in

(A) Asteroids

(B) Holothuroids

(C) Echinoids

(D) Ophiuroids

Space for Rough Work

96. Coelom is formed by the

(A) Ectoderm

(B) Endoderm

(C) Mesoderm

(D) Both ectoderm and mesoderm

97. Red coral is

(A) *Alcyonium*

(B) *Tubipora*

(C) *Meandrina*

(D) *Corallium*

98. Infective stage of a liver fluke is the

(A) Miracidium

(B) Cercaria

(C) Metacercaria

(D) Redia

99. In the life cycle of plasmodium, all stages are haploid except

(A) Oocyst

(B) Schizont

(C) Merozoite

(D) Sporozoite

Space for Rough Work

100. The correct sequence of developmental stages of *Ascaris* in human is

(A) Outside – stomach – liver spleen – lung – intestine – outside

(B) Outside – trachea – lung – liver – intestine – outside

(C) Outside – trachea– lung – heart – liver– intestine – outside

(D) Outside – intestine – liver – heart – lung – intestine – outside

101. *Taeniasolium* passes to the secondary host at the stage of

(A) Cysticerus

(B) Hexacanth

(C) Bladder worm

(D) Mracidium

102. During the course of origin of life

(A) RNA was first evolved and from RNA, DNA was evolved by reverse transcription.

(B) DNA was first evolved.

(C) DNA was first evolved and from DNA, RNA was evolved possibly by transcription.

(D) Both DNA and RNA evolved at the same time.

103. Which one of the following enzymes destroys H_2O_2 ?

(A) D–aminooxidase

(B) Urate oxidase

(C) Catalase

(D) α–hydroxylic acid oxidase

104. The process in which cells play an active role in their own death is known as

(A) Apolysis

(B) Autolysis

(C) Necrosis

(D) Apoptosis

Space for Rough Work

105. For birds, what replaces the action of teeth in grinding up food ?

(A) Heard bony ridges in the beak

(B) Pebble in the gizzard

(C) An extremely mascular esophagus

(D) The normal bird diet does not require grinding for digestion.

106. A man has increased BMR, heartbeat, blood pressure and bulged eyes. These symptoms are of

(A) Gull's disease

(B) Addision's disease

(C) Cushing's syndrome

(D) Grave's disease

107. Mitochondria are absent in human

(A) Liver cells

(B) Brain cells

(C) Erythrocytes

(D) Osteoblasts

108. Which one of the following is not in eukaryotes ?

(A) Lysosome

(B) Ribosome

(C) Peroxisome

(D) Mesosome

Space for Rough Work

109. Which one of the following is responsible for speciation ?

(A) Natural selection

(B) Mutation

(C) Reproductive isolation

(D) Random mating

110. The connecting link between Echinoderms and chordates is

(A) Oikopleura

(B) Archaeopteryx

(C) Balanoglossus

(D) Antedon

111. Anadromous fish migrates from

(A) Estuary to river

(B) Sea to river

(C) River to sea

(D) Sea to river

112. Islets of Langerhans secrete

(A) Insulin, secretion and renin

(B) Insulin, glucagon and renin

(C) Insulin and glucagon

(D) Insulin, glucagon and epinephrine

Space for Rough Work

113. Which one of the following is NOT correct for birds ?

(A) Presence of diaphragm

(B) Presence of Sinus venous

(C) Homiothermy

(D) Presence of four–chambered heart

114. In which one of the following groups notochord is only present during embryonic development ?

(A) Cephalochordata

(B) Hemichordata

(C) Agnatha

(D) Gnathostomata

115. When chromosome condensation and microtubules formation begins in the meiosis ?

(A) G1 phase

(B) S phase

(C) G2 phase

(D) Prophase

116. Foramen of Panizza is found in the heart of

(A) Phrynosoma

(B) Crocodile

(C) Sphenodon

(D) Birds

Space for Rough Work

117. The heart of teleosts is similar to that of cartilaginous fishes, except

(A) A bulbusarteriosus is present.

(B) A conusarteriosus is present.

(C) A spiral valve is present in conusarteriosus.

(D) Ventral aorta is short.

118. The protein present in the arms of microtubules is

(A) Nexin

(B) Dynein

(C) Desmin

(D) Vimentin

119. Maturation of sperms occurs in

(A) Seminiferous tubules

(B) Vas deferens

(C) Seminal vesicles

(D) Epididymis

120. Male *Ascaris* can be distinguished from female by the presence of

(A) Oral suckers

(B) Lips

(C) Curved Posterior end with a pair of pineal setae

(D) Blunt posterior end

Space for Rough Work

Space For Rough Work