PHYSICS

1. A particle in S.H.M. is described by the displacement function $x(t) = a\cos(\omega t + \theta)$. If the initial $(t = 0)$ position of the particle is 1 cm and its initial velocity is $\pi\, cm/s$. The angular frequency of the particle is $\pi\, rad/s$, then it's amplitude is

(A) 1 cm   (B) $\sqrt{2}$ cm

(C) 2 cm   (D) 2.5 cm

2. Which one of the following is a simple harmonic motion

(A) Wave moving through a string fixed at both ends

(B) Earth spinning about its own axis

(C) Ball bouncing between two rigid vertical walls

(D) Particle moving in a circle with uniform speed

3. Two particles are executing S.H.M. The equation of their motion are $y_1 = 10\sin\left(\omega t + \dfrac{\pi T}{4}\right)$, $y_2 = 25\sin\left(\omega t + \dfrac{\sqrt{3}\pi T}{4}\right)$.

What is the ratio of their amplitude

(A) 1 : 1   (B) 2 : 5

(C) 1 : 2   (D) None of these

4. A body of mass 5 gm is executing S.H.M. about a point with amplitude 10 cm. Its maximum velocity is 100 cm/sec. Its velocity will be 50 cm/sec at a distance

(A) 5   (B) $5\sqrt{2}$

(C) $5\sqrt{3}$ (D) $10\sqrt{2}$

5. A particle is executing S.H.M. If its amplitude is 2 m and periodic time 2 seconds, then the maximum velocity of the particle will be

(A) $\pi\, m/s$ (B) $\sqrt{2}\pi\, m/s$

(C) $2\pi\, m/s$ (D) $4\pi\, m/s$

6. A S.H.M. has amplitude '*a*' and time period *T*. The maximum velocity will be

(A) $\dfrac{4a}{T}$ (B) $\dfrac{2a}{T}$

(C) $2\pi\sqrt{\dfrac{a}{T}}$ (D) $\dfrac{2\pi a}{T}$

7. A body is executing S.H.M. When its displacement from the mean position is 4 cm and 5 cm, the corresponding velocity of the body is 10 cm/sec and 8 cm/sec. Then the time period of the body is

(A) $2\pi\, sec$ (B) $\pi/2\, sec$

(C) $\pi\, sec$ (D) $3\pi/2\, sec$

8. The angular velocities of three bodies in simple harmonic motion are $\omega_1, \omega_2, \omega_3$ with their respective amplitudes as A_1, A_2, A_3. If all the three bodies have same mass and velocity, then

(A) $A_1\omega_1 = A_2\omega_2 = A_3\omega_3$

(B) $A_1\omega_1^2 = A_2\omega_2^2 = A_3\omega_3^2$

(C) $A_1^2\omega_1 = A_2^2\omega_2 = A_3^2\omega_3$

(D) $A_1^2\omega_1^2 = A_2^2\omega_2^2 = A^2$

9. The displacement equation of a particle is $x = 3\sin 2t + 4\cos 2t$. The amplitude and maximum velocity will be respectively

(A) 5, 10   (B) 3, 2

(C) 4, 2   (D) 3, 4

10. Which of the following is a necessary and sufficient condition for S.H.M.

(A) Constant period

(B) Constant acceleration

(C) Proportionality between acceleration and displacement from equilibrium position

(D) Proportionality between restoring force and displacement from equilibrium position

11. The amplitude of a particle executing S.H.M. with frequency of 60 Hz is 0.01 m. The maximum value of the acceleration of the particle is

(A) $144\,\pi^2 m/sec^2$ (B) $144\, m/sec^2$

(C) $\dfrac{144}{\pi^2}\, m/sec^2$ (D) $288\,\pi^2 m/sec^2$

12. The total energy of a particle executing S.H.M. is proportional to

(A) Displacement from equilibrium position

(B) Frequency of oscillation

(C) Velocity in equilibrium position

(D) Square of amplitude of motion

13. A particle is vibrating in a simple harmonic motion with an amplitude of 4 cm. At what displacement from the equilibrium position, is its energy half potential and half kinetic

(A) 1 cm   (B) $\sqrt{2}$ cm

(C) 3 cm   (D) $2\sqrt{2}$ cm

14. The potential energy of a particle with displacement *X* is *U(X)*. The motion is simple harmonic, when (*K* is a positive constant)

(A) $U = -\dfrac{KX^2}{2}$ (B) $U = KX^2$

(C) $U = K$ (D) $U = KX$

15. When the potential energy of a particle executing simple harmonic motion is one-fourth of its maximum value during the oscillation, the displacement of the particle from the equilibrium position in terms of its amplitude a is

(A) $a/4$ (B) $a/3$

(C) $a/2$ (D) $2a/3$

16. A particle executes simple harmonic motion with a frequency f. The frequency with which its kinetic energy oscillates is

(A) $f/2$ (B) f (C) $2f$ (D) $4f$

17. If a simple harmonic oscillator has got a displacement of $0.02\ m$ and acceleration equal to $2.0ms^{-2}$ at any time, the angular frequency of the oscillator is equal to

(A) $10\ rad\ s^{-1}$ (B) $0.1\ rad\ s^{-1}$

(C) $100\ rad\ s^{-1}$ (D) $1\ rad\ s^{-1}$

18. A simple pendulum is made of a body which is a hollow sphere containing mercury suspended by means of a wire. If a little mercury is drained off, the period of pendulum will
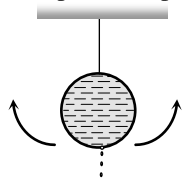
(A) Remains unchanged   (B) Increase

(C) Decrease   (D) Become erratic

19. The time period of a simple pendulum is $2\ sec$. If its length is increased 4 times, then its period becomes

(A) $16\ sec$ (B) $12\ sec$

(C) $8\ sec$ (D) $4\ sec$

20. A simple pendulum consisting of a ball of mass m tied to a thread of length l is made to swing on a circular arc of angle θ in a vertical plane. At the end of this arc, another ball of mass m is placed at rest. The momentum transferred to this ball at rest by the swinging ball is

(A) Zero   (B) $m\,\theta\sqrt{\dfrac{g}{l}}$

(C) $\dfrac{m\,\theta}{l}\sqrt{\dfrac{l}{g}}$ (D) $\dfrac{m}{l}\,2\pi\sqrt{\dfrac{l}{g}}$

**21.** The effective spring constant of two spring system as shown in figure will be
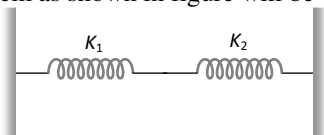
(A) $K_1 + K_2$ (B) $K_1K_2\,/\,K_1 + K_2$

(C) $K_1 - K_2$ (D) $K_1K_2\,/\,K_1 - K_2$

22. A mass m attached to a spring oscillates every 2 sec. If the mass is increased by $2\ kg$, then time-period increases by $1\ sec$. The initial mass is

(A) $1.6\ kg$ (B) $3.9\ kg$

(C) $9.6\ kg$ (D) $12.6\ kg$

23. A particle of mass m oscillates with simple harmonic motion between points x_1 and x_2, the equilibrium position being O. Its potential energy is plotted. It will be as given below in the graph

(A)

(B)

(C)

(D)
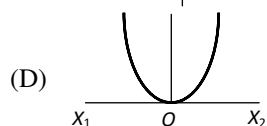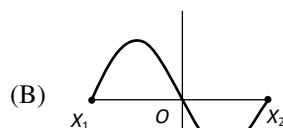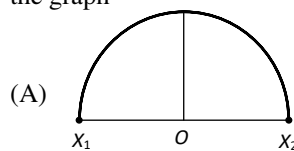
24. **Assertion :** The spring constant of a spring is k. When it is divided into n equal parts, then spring constant of one piece is k/n.

Reason : The spring constant is independent of material used for the spring.

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

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

(C) If assertion is true but reason is false.

(D) If assertion is false but reason is true.

25. If the density of oxygen is 16 times that of hydrogen, what will be the ratio of their corresponding velocities of sound waves

(A) $1:4$ (B) $4:1$

(C) $16:1$ (D) $1:16$

26. The temperature at which the speed of sound in air becomes double of its value at $27^{o}C$ is

(A) $54^{o}C$ (B) $327^{o}C$

(C) $927^{o}C$ (D) $-123^{o}C$

27. v_1 and v_2 are the velocities of sound at the same temperature in two monoatomic gases of densities ρ_1 and ρ_2 respectively. If $\rho_1 / \rho_2 = \dfrac{1}{4}$ then the ratio of velocities v_1 and v_2 will be

(A) 1 : 2   (B) 4 : 1

(C) 2 : 1   (D) 1 : 4

28. Two sound waves having a phase difference of 60° have path difference of

(A) 2λ (B) $\lambda/2$ (C) $\lambda/6$ (D) $\lambda/3$

29. Sound travels in rocks in the form of

(A) Longitudinal elastic waves only

(B) Transverse elastic waves only

(C) Both longitudinal and transverse elastic waves

(D) Non-elastic waves

30. A wave of frequency 500 Hz has velocity 360 m/sec. The distance between two nearest points 60° out of phase, is

(A) 0.6 cm (B) 12 cm

(C) 60 cm (D) 120 cm

31. The displacement of a particle is given by $y = 5 \times 10^{-4} \sin(100\,t - 50\,x)$, where x is in meter and t in sec, find out the velocity of the wave

(A) 5000 m/sec (B) 2 m/sec

(C) 0.5 m/sec (D) 300 m/sec

32. Wave equations of two particles are given by $y_1 = a \sin(\omega t - kx)$, $y_2 = a \sin(kx + \omega t)$, then

(A) They are moving in opposite direction

(B) Phase between them is 90°

(C) Phase between them is 180°

(D) Phase between them is 0°

33. If the phase difference between the two wave is 2π during superposition, then the resultant amplitude is

(A) Maximum

(B) Minimum

(C) Maximum or minimum

(D) None of the above

34. Beats are the result of

(A) Diffraction

(B) Destructive interference

(C) Constructive and destructive interference

(D) Superposition of two waves of nearly equal frequency

35. When two sound waves are superimposed, beats are produced when they have

(A) Different amplitudes and phases

(B) Different velocities
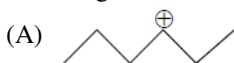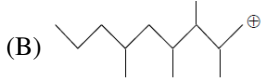
(C) Different phases

(D) Different frequencies
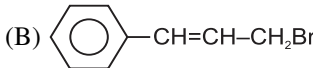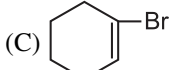
(SECTION-B)

36. Beats are produced with the help of two sound waves of amplitudes 3 and 5 *units*. The ratio of maximum to minimum intensity in the beats is

(A) 2 : 1   (B) 5 : 3

(C) 4 : 1   (D) 16 : 1

37. Two vibrating tuning forks produce progressive waves given by $Y_1 = 4 \sin 500\,\pi t$ and $Y_2 = 2 \sin 506\,\pi t$. Number of beats produced per minute is

(A) 360   (B) 180   (C) 3   (D) 60

38. In stationary wave

(A) Strain is maximum at nodes

(B) Strain is maximum at antinodes

(C) Strain is minimum at nodes

(D) Amplitude is zero at all the points

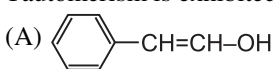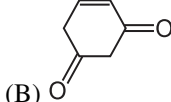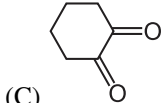**39.** Energy is not carried by which of the following waves

(A) Stationary

(B) Progressive

(C) Transverse

(D) Electromagnetic

40. **Assertion :** The speed of sound in solids is maximum though their density is large.

Reason : The coefficient of elasticity of solid is large.

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

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

(C) If assertion is true but reason is false.

(D) If the assertion and reason both are false.

41. Match the following with respect to waves :

Column – I

(a) Frequency

(b) Wavelength

(c) Wave number

(d) Speed

Column – II

(p) Linear distance Travelled by a wave per unit time.

(q) Number of waves passing through a point per unit time.

(r) Linear distance between starting and end point of one complete wave.

(s) Number of waves contained in a unit length.

	a	b	c	d
(A)	q	p	s	r
(B)	s	r	q	p
(C)	q	r	s	p
(D)	s	p	q	r

42. The number of waves contained in unit length of the medium is called
(A) Elastic wave
(B) Wave number
(C) Wave pulse
(D) Electromagnetic wave

43. A uniform rod of length 2.0 m is suspended through an end and is set into oscillation with small amplitude under gravity. The time period of oscillation is approximately
(A) 1.60 sec (B) 1.80 sec
(C) 2.0 sec (D) 2.40 sec

44. At what temperature velocity of sound is double than that of at $0°C$
(A) 819 K (B) $819°C$
(C) $600°C$ (D) 600 K

45. A hollow sphere is filled with water through a small hole in it. It is then hung by a long thread and made to oscillate. As the water slowly flows out of the hole at the bottom, the period of oscillation will
(A) Continuously decrease
(B) Continuously increase
(C) First decrease and then increase to original value
(D) First increase and then decrease to original value

46. Which one of the following does not represent a travelling wave
(A) $y = \sin(x - v\,t)$
(B) $y = y_m \sin k(x + v\,t)$
(C) $y = y_m \log(x - v\,t)$
(D) $y = f(x^2 - v\,t^2)$

47. The function $\sin^2(\omega t)$ represents
(A) A simple harmonic motion with a period $2\pi / \omega$
(B) A simple harmonic motion with a period π / ω
(C) A periodic but not simple harmonic motion with a period $2\pi / \omega$
(D) A periodic but not simple harmonic, motion with a period π / ω

48. If two waves having amplitudes $2A$ and A and same frequency and velocity, propagate in the same direction in the same phase, the resulting amplitude will be
(A) $3A$ (B) $\sqrt{5}A$ (C) $\sqrt{2}A$ (D) A

49. A tuning fork sounded together with a tuning fork of frequency 256 emits two beats. On loading the tuning fork of frequency 256, the number of beats heard are 1 per second. The frequency of tuning fork is
(A) 257   (B) 258
(C) 256   (D) 254

50. The metallic bob of a simple pendulum has the relative density ρ. The time period of this pendulum is T. If the metallic bob is immersed in water, then the new time period is given by
(A) $T\dfrac{\rho - 1}{\rho}$ (B) $T\dfrac{\rho}{\rho - 1}$
(C) $T\sqrt{\dfrac{\rho - 1}{\rho}}$ (D) $T\sqrt{\dfrac{\rho}{\rho - 1}}$
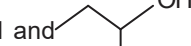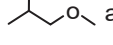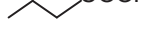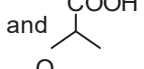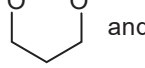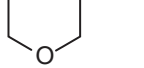
(SECTION-A)

51. Which of the following contains three pair of electrons?
(A) Carbanion   (B) Carbocation
(C) Carbon free radical   (D) None

52. What is true for 1,2– pentadiene?
(A) It is functional isomer of Pentyne
(B) It is position isomer of Pentyne
(C) It is chain isomer of 3–Methyl –1–butyne
(D) It is metamer of cyclopentene

53. Alicyclic compound is
(A) Aromatic compound
(B) Aliphatic compound
(C) Hetero cyclic compound
(D) Aliphatic cyclic compound

54. Arrange in decreasing order of pK_b -
(a) $F–CH_2CH_2COOH$
(b) $Cl – CH – CH_2 – COOH$
            |
            Cl
(c) $F–CH_2–COOH$
(d) $Br–CH_2–CH_2–COOH$
Correct answer is -
(A) (b) > (d) > (a) > (c)
(B) (a) > (c) > (d) > (b)
(C) (c) > (b) > (a) > (d)
(D) (d) > (b) > (a) > (c)

55. Which of the following shows the correct order of decreasing basicity in aqueous medium?
(A) $(CH_3)_3N > (CH_3)_2NH > CH_3NH_2 > NH_3$
(B) $(CH_3)_2NH > (CH_3)_3N > CH_3NH_2 > NH_3$
(C) $(CH_3)_2NH > CH_3NH_2 > (CH_3)_3N > NH_3$
(D) $(CH_3)_2NH > CH_3NH_2 > NH_3 > (CH_3)_3N$

56. Which resonating structure of vinyl chloride is least stable?

(A) $CH_2—CH—\overset{..}{\underset{..}{Cl}}:$

(B) $\overset{\ominus}{CH_2} – CH = \overset{\oplus}{Cl}$

(C) $\overset{\ominus}{CH_2} – \overset{\oplus}{CH} – Cl$

(D) All have equal stability

57. Select the most stable carbocation among the following -

(A)

(B)

(C)

(D)

58. Increasing order of acidity in para methyl (I), chloro (II), amino (III), and nitro (IV) benzoic acids is -
(A) III < II < I < IV   (B) I < II < IV < III
(C) III < I < II < IV   (D) II < I < III < IV

59. The correct order of increasing basicity is -
(A) pyrrole < pyridine < Me_3N < Et_3N
(B) pyridine < pyrrole < Et_3N < Me_3N
(C) pyrrole < Et_3N < Me_3N < pyridine
(D) Me_3N < Et_3N < pyridine < pyrrole

60. Which of the following most readily reacts with $AgNO_3$ to give precipitate?

(A)

(B)

(C)

(D)

61. Tautomerism is exhibited by -

(A)

(B)

(C)

(D) All the above

62. Kolbe's reaction is convenient for the preparation of -
(A) Methane
(B) Alkanes containing even number of carbon atoms
(C) Alkanes containing even as well as odd number of carbon atoms
(D) Alkanes containing odd number of carbon atoms

63. The alkyl halide which on Wurtz reaction gives an alkane with four primary, two secondary and two tertiary carbon atoms is.-
(A) t-Butyl chloride
(B) Isopropyl chloride
(C) Neopentyl chloride
(D) Isobutyl chloride

64. Which of the following compounds liberate methane when treated with excess of methyl magnesium iodide in dry ether?
(a) $CH_3–CH_2–CH_2OH$
(b) $CH_3–CH_2–C\equiv CH$
(c) $CH_3–CH_2–CO_2H$
(d) $CH_3–CH_2–CHO$

(A) a, b   (B) b, c
(C) a, b, c   (D) All the above

65. In the chlorination of $(CH_3)_2CH–CH_2–CH_3$ the substitution at -
(A) 1° carbon would be fastest
(B) 2° carbon would be fastest
(C) 3° carbon would be fastest
(D) 1°, 2°, 3° carbon atoms all will occur at the same rate

66. Ethyl chloride on heating with alcoholic potash gives
(A) C_2H_4 (B) C_2H_2
(C) C_2H_6 (D) CH_4

67. The unknown compounds A, B and C in the reaction sequence

$A \xrightarrow[C_2H_5OH]{KOH} B + KBr + H_2O \xleftarrow[\substack{C_2H_5OH \\ \Delta}]{KOH} C$

are given by the set -
(A) Isopropyl chloride, propyne , propyl chloride.
(B) Isopropyl bromide, propene, methyl bromide.
(C) Isopropyl chloride, propene, propyl chloride.
(D) n-Propyl bromide, propene,2-Bromopropane.

68. Lindlar's catalyst consists of -
(A) Metallic nickel + nickel boride
(B) Metallic platinum
(C) Metallic palladium deposited on calcium carbonate containing lead acetate and quinoline
(D) Sodium borohydride in ethanol.

69. Which of the following is the structure of propylene chlorohydrin?

(A) $\underset{\quad \;\; Cl \;\; OH}{CH_3–CH–CH_2}$

(B) $\underset{Cl \qquad\quad OH}{CH_2–CH_2–CH_2}$

(C) $\underset{\qquad\; OH}{CH_3–CH–CH_3}$

(D) $\underset{\qquad\; OH \; Cl}{CH_3–CH–CH_2}$

70. Isobutylene on hydroboration followed by reaction with H_2O_2 /OH^-
(A) Primary alcohol
(B) Secondary alcohol
(C) Tertiary alcohol
(D) Dihydric alcohol

71. HCl does not form Anti-Markovnikov's product with propene, because -
(A) HCl is a polar covalent molecule
(B) Dipole-Dipole attraction exists between HCl molecules
(C) Formation of $Cl^{\bullet}$ is energetically unfavourable
(D) Chlorine has the highest electron affinity

72. Propyne is formed by heating 1,2-Dibromopropane with -
(A) C_2H_5ONa
(B) Alc. KOH and sodamide
(C) Aqueous alkali
(D) Sodalime

73. For preparing $R–C\equiv CH$, from Grignard's reagent we take -
(A) $CH\equiv CH$, CH_3MgBr & RI
(B) $CH_3–C\equiv CH + RMgBr + CH_3I$
(C) $CH\equiv CH$, $CH_3MgBr + R'I$
(D) None of these

74. Which of the following reactions will yield 2,2-Dibromopropane?
(A) $CH_2=CHBr + HBr$
(B) $CH_3C\equiv CCH_3 + 2HBr$
(C) $CH_3C\equiv CH + 2HBr$
(D) $CH_3CH = CHBr + HBr$

75. Which of the following pairs of compounds are chain isomers?
(A) n-Propyl alcohol and isopropyl alcohol
(B) Isobutyl alcohol and t-Butyl alcohol
(C) s-Butyl alcohol and t-Butyl alcohol
(D) n-Butyl alcohol and s-Butyl alcohol

76. Which of the following pairs of compounds are not position isomers?

77. Methyl propyl thioether and isopropyl methyl thioether are –
(A) Metamers
(B) Position isomers
(C) Chain isomers
(D) Chain and position both

78. Geometrical isomerism is due to -

(A) The restricted rotation about a double bond

(B) The presence of keto group

(C) The presence of CH(OH) group

(D) The presence of an asymmetric carbon

79. The number of cis-trans isomer possible for the following compound
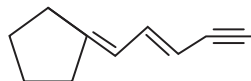
(A) 2   (B) 4

(C) 6   (D) 8

80. The correct stereochemical name of –
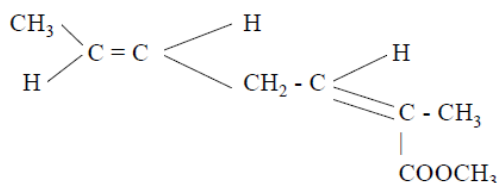
(A) Methyl 2–methylhepta (2E, 5E) dienoate

(B) Methyl 2–methylhepta (2Z, 5Z) dienoate

(C) Methyl 2–methylhepta (2E, 5Z) dienoate

(D) Methyl 2–methylhepta (2Z, 5E) dienoate

81. Which of the following contain asymmetric carbon atom?

(A) CH_3 - CH_3 - CH_2 - Br

(B) $CH_3-CH-CH-CH_3$
$\quad\quad\quad |\quad\quad |$
$\quad\quad\quad Br\quad CH_3$

(C) $CH_3-CH_2-CH-CH_3$
$\quad\quad\quad\quad\quad |$
$\quad\quad\quad\quad\quad Br$

(D) Both B & C

82. The priority of groups OH, COOH, CHO, OCH_3 attached to a chiral carbon is in order -

(A) OH > COOH > CHO > OCH_3

(B) OCH_3 > OH > CHO > COOH

(C) OCH_3 > OH > COOH > CHO

(D) OCH_3 > COOH > CHO > OH

83. A Fischer projection of (2R, 3S)-2,3-Butanediol is : -
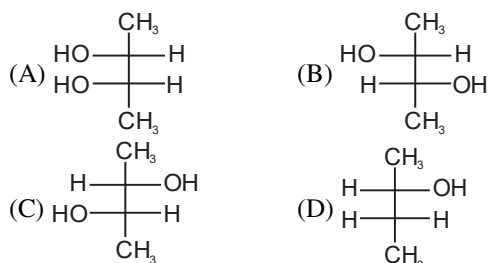
84. Correct configuraton of the following is -
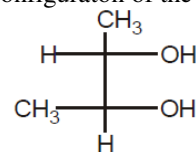
(A) 2S, 3S   (B) 2R, 3S

(C) 2S, 3R   (D) None

85. Meso form of tartaric acid is –

(A) Dextrorotatory

(B) Laevorotatory

(C) Neither Laevo nor dextro rotatory due to internal compensation

(D) A mixture of equal quantities of dextro and laevo rotatory forms

---

(SECTION-B)

86. How many optically active forms are possible for a compound of following formula?
$CH_2OHCHOHCHOHCHOHCH_2OH$

(A) 2   (B) 3   (C) 4   (D) 8

87. What are the type of isomers in following pairs?
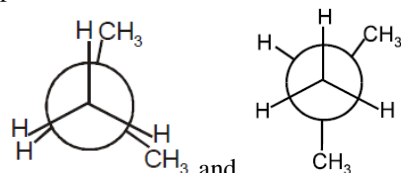
(A) Conformers   (B) Position

(C) Optical   (D) Geometrical

88. Unsaturated compounds have –

(A) Carbon - carbon double bond

(B) Carbon - carbon triple bond

(C) Carbon - carbon double or triple bond

(D) Carbon - oxygen double bond

89. Find the number of 1°, 2° & 3° hydrogen atoms in the following compounds :
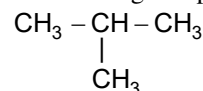
$CH_3-CH-CH_3$
$\quad\quad\quad |$
$\quad\quad\quad CH_3$

(A) $1°H \rightarrow 9, 3°H \rightarrow 1$

(B) $1°H \rightarrow 6, 2°H \rightarrow 2$

(C) $1°H \rightarrow 6, 2°H \rightarrow 4$

(D) $1°H \rightarrow 9, 2°H \rightarrow 1$

90. Which of the following is a triad of a homologous series?

(A) CH_3NH_2, $(CH_3)_2NH$, $(CH_3)_3$ N

(B) C_2H_5OH, $(CH_3)_2CHOH$, $(CH_3)_3COH$

(C) $CH_2 = CH_2$, $CH_3 – CH = CH_2$, $C_2H_5 – CH = CH_2$

(D) Both (B) and (C)

91. The correct IUPAC name of
$$CH_3 - CH_2 - \underset{\underset{CH_2}{\|}}{C} - COOH$$ is:

(A) 2-Methyl butanoic acid
(B) 2-Ethylprop-2-enoic acid
(C) 2-Carboxybutene
(D) None of the above

92.
$$CH_3 - \underset{\underset{CH_2CH_3}{|}}{\overset{\overset{F}{|}}{C}} - CH_2 - \underset{\underset{CH_2CH_3}{|}}{\overset{\overset{Cl}{|}}{C}} - CH_3$$
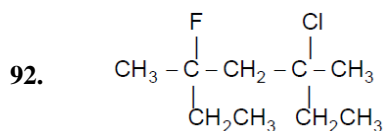
The IUPAC name of this compound is :
(A) 2-Fluoro-4-chloro-2,4-diethyl pentane
(B) 3-Fluoro-5-chloro-3-methyl-5-ethyl hexane
(C) 3-Chloro-5-fluoro-3,5-dimethyl heptane
(D) 3,5-Dimethyl-5-fluoro-3-chloro heptane
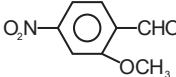
93. The IUPAC name of compound
$$\underset{\underset{CH_2-COOH}{|}}{\overset{\overset{\overset{O}{\|}}{CH_2-C-OH}}{C}} \overset{OH}{\underset{COOH}{<}}$$
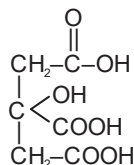
(A) 1,2,3-Tricarboxypropan-2-ol
(B) 2-Hydroxy propane-1,2,3- tricarboxylic acid
(C) 3-Hydroxy-3-carboxypentane-1,5-dioic acid
(D) None

94.
$$CH_3 - O - \underset{\underset{O}{\|}}{C} - CH_2 - COOH$$
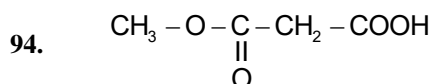
The correct IUPAC systematic name of the above compound is :
(A) 2-Acetoxy ethanoic acid
(B) 2-Methoxy carbonyl ethanoic acid
(C) 3-Methoxy formyl ethanoic acid
(D) 2-Methoxy formyl acetic acid

95. The IUPAC name of $O_2N-\langle\bigcirc\rangle\overset{-CHO}{\underset{OCH_3}{}}$ is :

(A) 2-Methoxy-4-nitro benzenecarbaldehyde
(B) 4-Nitro anisaldehyde
(C) 3-Methoxy-4-formyl nitrobenzene
(D) 2-Formyl-4-nitro anisole

96. The suffix of the principal group, the prefixes for the other groups and the name of the parent in the structure are :
$$HO - CH_2 - \underset{\underset{CH_3}{|}}{CH} - CH = \underset{\underset{Cl}{|}}{C} - CH_2 - \underset{\underset{O}{\|}}{C} - \underset{\underset{O}{\|}}{C} - OH$$
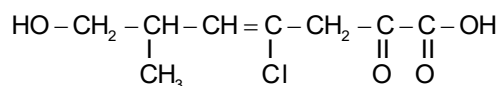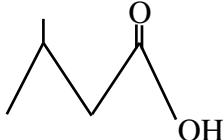
(A) -oic acid, chloro, hydroxy, oxo, methyl, hept-4-ene
(B) -oic acid, chloro, hydroxy, methyl, oxo, hept-4-ene
(C) -one, carboxy, chloro. methyl, hydroxy, hept-4-ene
(D) -one, carboxy, chloro, methyl, hydroxy, hept-4-ene

97. The I.U.P.A.C. name of $(C_2H_5)_2$ $CH.CH_2$ OH is
(A) 2-Ethyl butan-1-ol
(B) 2-Methyl pentan-1-ol
(C) 2-Ethyl pentan-1-ol
(D) 3-Ethyl butan-1-ol

98. Structural formula of isopropyl methanoate is :
(A) $$CH_3 - \underset{\underset{O}{\|}}{C} - O - \underset{\underset{CH_3}{|}}{CH} - CH_3$$
(B) $$H - \underset{\underset{O}{\|}}{C} - O - CH_2 - \underset{\underset{CH_3}{|}}{CH} - CH_3$$
(C) $$CH_3 - \underset{\underset{O}{\|}}{C} - O - CH_2 - \underset{\underset{CH_3}{|}}{CH_2}$$
(D) $$H - \underset{\underset{O}{\|}}{C} - O - \underset{\underset{CH_3}{|}}{CH} - CH_3$$

99. **Assertion :** [structure] is 3-methyl butanoic acid.

Reason : In poly functional group, the substituent should be given lower number than the principal functional group.
(A) If both (A) and (R) are true, and (R) is the correct explanation of (A).
(B) If both (A) and (R) are true but (R) is not the correct explanation of (A).
(C) If (A) is true but (R) is false.
(D) If (A) is false but (R) is true.

100. **Assertion :** Molecule containing single chiral carbon shows optical activity

Reason : Molecule containing chiral center are asymmetric therefore shows optical activity
(A) If both (A) and (R) are true, and (R) is the correct explanation of (A).
(B) If both (A) and (R) are true but (R) is not the correct explanation of (A).
(C) If (A) is true but (R) is false.
(D) If (A) is false but (R) is true.

BOTANY (SECTION-A)

101. Respiration is
(A) Anabolic and exergonic
(B) Catabolic and exergonic
(C) Anabolic and endergonic
(D) Catabolic and endergonic

102. Floating respiration refers when respiratory substrates is/are
A. Fat   B. Carbohydrate
C. Protein
(A) Only (A)   (B) Only (B)
(C) (A) and (B)   (D) (A), (B) and (C)

103. The term glycolysis has originated from Greek word
(A) Glucose + lysis   (B) Glycos + lysis
(C) Gyco + lysis   (D) Glucose + lysis

104. Which of the following cellular metabolic process can occur in the presence or absence of oxygen?
(A) Glycolysis
(B) Krebs cycle
(C) TCA cycle
(D) Electron transport

105. All are true about glycolysis, except
(A) It is a ten-step process.
(B) Glucose and fructose are phosphorylated to give rise to glucose-6-phosphate by the activity of hexokinase.
(C) Reduces two molecules of NAD for energy glucose molecule processes.
(D) It produces one pyruvic acid molecule from each glucose molecule.

106. Which of the following enzyme is used to convert sucrose into the glucose and fructose that readily enter the glycolytic pathway?
(A) Invertase   (B) Enolase
(C) Aldolase   (D) PFK

107. The path of glucose breakdown into pyruvic acid was traced out by
(A) Embden, Meyerhof and Parnas
(B) Hans Krebs
(C) Calvin
(D) Hatch and slack

108. Fermentation takes place under anaerobic condition in
(A) All prokaryotes
(B) Unicellular eukaryotes only
(C) Many prokaryotes and unicellular eukaryotes
(D) Few prokaryotes and all eukaryotes

109. Select incorrect statement for process of fermentation by lactic acid bacteria:
(A) Only less than 7% of the energy in glucose is released.
(B) The process is hazardous to bacteria due to its end product.
(C) Redox equivalents formed in glycolysis is not used.
(D) Only two molecules of ATP are not gained per molecule of glucose.

110. During vigorous exercise, when oxygen is inadequate for cellular respiration, reduction of pyruvic acid is catalyzed by?
(A) Pyruvate dehydrogenase
(B) Lactate decarboxylase
(C) Lactate dehydrogenase
(D) Pyruvate decarboxylase

111. Which is not true for fermentation?
(A) Partial breakdown of glucose
(B) Net gain of only 2 ATP
(C) Occurs in the cytoplasm of the cell
(D) NADH is oxidized vigorously to NAD

112. Decarboxylation is not a feature of
(A) Aerobic respiration
(B) Lactic acid fermentation
(C) Alcoholic fermentation
(D) Butyric acid fermentation

113. In anaerobic respiration, acetaldehyde is reduced to alcohol by utilizing NADH, obtained from
(A) Glycolysis   (B) TCA cycle
(C) Terminal oxidation   (D) Link reaction

114. (I) Fermentation was first discovered by A.
(II) Net gain of ATP molecule for each molecule of glucose in fermentation is B.

	A	B
(A)	Buchner	2
(B)	Gay-Lussac	8
(C)	Gay-Lussac	2
(D)	Pasteur	8

115. Which of the following is associated complex IV in mitochondrial ETS?
(A) cyt bc_1 complex
(B) cyt a, a_3 and two copper centers
(C) cyt a, cyt c, UQ
(D) FMN-QU

116. The gateway reaction of aerobic respiration
(i) Is also called link reaction
(ii) Is catalyzed by pyruvate dehydrogenase complex
(iii) Involves carboxylation and dehydrogenation
(iv) Produces acetyl-CoA and reducing power
Correct statements is/are
(A) Only (i)
(B) Only (i) and (ii)
(C) (i), (ii) and (iv)
(D) (i), (ii), (iii) and (iv)

117. Terminal electron acceptor of electron transport is
(A) CO_2 (B) O_2
(C) Pyruvic acid   (D) Glucose

118. In mitochondria, proton accumulate in the
(A) Outer membrane
(B) Inner membrane
(C) Intermembrane space
(D) Matrix

119. The crucial event in aerobic respiration which starts after transport of pyruvate from the cytoplasm into the mitochondria includes
(A) Stepwise removal of all the H-atom from pyruvate
(B) Releasing three molecules of CO, per molecule of pyruvate
(C) Simultaneous synthesis of ATP when electrons are removed as part of hydrogen atoms to molecule oxygen
(D) All of these

120. Which of the following are involved in the first step of the TCA cycle?
(I) Pyruvic acid   (II) Acetyl-CoA
(III) Malic acid   (IV) OAA
(V) Water
(A) (I), (IV) and (V)
(B) (II) and (IV) only
(C) (II), (IV) and (V)
(D). (II) (III) and (V)

121. In TCA cycle, GTP is formed during conversion of
(A) α-Ketoglutaric acid into succinyl-CoA
(B) Succinyl-CoA into succinic acid
(C) Succinic acid into OAA
(D) Citrate into isocitrate

122. Link reaction in aerobic respiration is catalyzed by a large enzyme complex pyruvate dehydrogenase which involves
(A) Dehydrogenation, decarboxylation, transacetylation
(B) Oxidative decarboxylation only
(C) Isomerization, decarboxylation and dehydrogenation
(D) Oxidation, carboxylation, acetylation

123. Steps in aerobic phase of respiration are all except
(A) Oxidation of glucose into pyruvate
(B) ETC in mitochondria
(C) Conversion of pyruvate into Acetyl-CoA
(D) Tricarboxylic acid cycle

124. Respiratory balanced sheet prepared for oxidation of one molecule of glucose is based on certain assumptions. Read the following statements and state true (T) or false (F).
(A) Sequential orderly functioning pathway including glycolysis, TCA cycle and ETS.
(B) Only glucose is being respired, no other alternative substrate is entering in the pathway.
(C) Oxidation of extra-mitochondrial NADH occurs through oxidative phosphorylation.
(D) The intermediates of TCA cycle are used in different anabolic pathways.

125. The protein enters respiratory pathway as
(A) Pyruvate
(B) Acetyl-CoA
(C) a-Ketoglutaric acid
(D) Dihydroxyacetone phosphate

126. Growth at the cellular level is principally a consequence in the amount of
(A) Protoplasm   (B) Cell call
(C) Apoplast   (D) All except (A)

127. Plant growth is
(A) Intrinsic   (B) Localized
(C) Open-ended   (D) All of the above

128. Read the following statement with respect measurement of growth.
(a) Growth can be measured by an increase in length and diameter only.
(b) With the help of length, growth of pollen tube is measured.
(c) Cells in a watermelon may increase by up to 3,50,000 times.
(d) A single maize apical meristem can give rise to more than 17,500 new cells per hour,
(e) An increase in surface area denotes the growth of dorsiventral leaf.
How many of above given statements are correct?
(A) Four   (B) Three
(C) Five   (D) Two

129. Primary growth occurs in plants due to
(A) Apical meristem
(B) Intercalary meristem
(C) Lateral meristem
(D) Both (A) and (B)

130. The leaves of the juvenile plants are different in shape from those in mature plants and are observed in
(A) Cotton
(B) Coriander
(C) Larkspur
(D) All of the above

131. In arithmetic growth,
A. Only one daughter cell continues to divide, while the other differentiates and matures.
B. Initially, the growth is slow and them increases rapidly.
C. A linear curve is obtained.
Identify the correct set of statement(s).
(A) Only (A)
(B) Only (A) and (C)
(C) Only (A) and (B)
(D) All (A), (B), and (C)

132. Choose the correct option for auxin.
(A) It is synthesized generally at root and shoot apices.
(B) It is largely a growth inhibitor.
(C) Its existence was reported by Miller.
(D) It cannot be used as herbicide.

133. Choose the odd one out with respect to the function of gibberellins.
(A) Promote flowering in long-day plants under short-day conditions
(B) Substitution of cold treatment
(C) Internodal elongation just before flowering in rosette plants
(D) Apical hook formation in dicot seedling

134. Plant hormone that can be used to increase length grape stalk and improvement in the shape of fruit is of
(A) Cytokinin
(B) Auxin
(C) Gibberellin
(D) ABA

135. Which of the following is chemically identical to ABA?
(A) Abscission II
(B) Dormin
(C) Inhibitor B
(D) All of the above

(SECTION-B)

136. The hormone that was first isolated from human urine was
(A) Auxin
(B) Gibberellin
(C) Cytokinin
(D) Abscisic acid

137. Natural cytokinins are synthesized in
(A) Root apices
(B) Developing shoot buds
(C) Young fruits
(D) All of the above

138. Gaseous PGR is
(A) Acetylene
(B) Ethylene
(C) Methane
(D) Benzaldehyde

139. The PGR that is antagonistic to a hormone that delays senescence is
(A) Cytokinin
(B) ABA
(C) Auxin
(D) Gibberellins

140. Read the following statements A, B, C, and D with respect to the physiological effects of gibberellins, and select the correct option having two correct statements.
A. Gibberellin is used to speed up the malting process in brewing industry.
B. Spraying sugarcane crop with gibberellins increases the yield as much as 20 tons per area.
C. Gibberellins help overcome the apical dominance.
D. It promotes rapid internode/petiole elongation in deep water rice plants
(A) (A) and (C)
(B) (B) and (D)
(C) (A) and (B)
(D) (A) and (D)

141. Cytokinins help produce all except
(A) New leaves
(B) Chloroplast in leaves
(C) Rooting in stem cutting
(D) Lateral shoot growth and adventitious shoot formation

142. Read the following statements.
(a) Cytokinin is primarily concerned with cell division.
(b) Auxin is synergistic to cytokinin.
(c) Ethylene breaks seed and bud dormancy.
(d) Abscisic acid stimulates the stomatal closure.
How many of the above given statements are correct?
(A) Two
(B) One
(C) Four
(D) Three

143. Find the correct application of auxin.
(A) Acts as anti-transpirant and induces closure of stomata
(B) Promotes flowering in long day plants
(C) Increases sugarcane yield up to 20 tones per acre
(D) Gives bushy appearance in tea plantation

144. How many of the following statements are correct regarding the plant hormone ethylene?
(a) Can cause internode and petiole elongation in deep water rice plants
(b) Is involved in ripening of climacteric fruit
(c) Induces flowering in mango
(d) Is derived from t-RNA (e) Seed dormancy in peanut
(A) Two
(B) Three
(C) Four
(D) Five

145. Identify the PGR on the basis of given physiological roles.
A. They delay senescence, thus due to their application, the fruits can be left on the tree so as to extend to the marked period.
B. They help produce new leaves, chloroplasts in leaves, lateral shoot growth. and adventitious shoot formation.
C. They help prevent fruit and leaf drop at early stages but promotes the abscission of older mature leaves and fruits.
(A) A−Auxin; B−Cytokinin; C−Abscisic acid
(B) A−Cytokinin; B−Auxin; C−Gibberellin
(C) A−Gibberellin; B−Cytokinin; C−Auxin
(D) A−Gibberellin; B−Auxin; C−Cytokinin

146. The stimulus for vernalization and photoperiodism is perceived, respectively, by
(A) Leaves and shoot apex
(B) Shoot apex and embryo of seed
(C) Embryo of seed and leaves
(D) Shoot apex and floral bud

147. Read the following statements with respect to short-day plants, and state them as true (T) or false (F).
A. Most of winter flowering plants belong to this category.
B. They are long-night plants, as they need uninterrupted dark period.
C. They do not initiate flowering when photoperiod exceeds the critical photoperiod.
D. They initiate flowering when dark period is less than the critical dark period and light period is more.
(A) A−T; B−T; C−F; D−T
(B) A−T; B−T; C−T; D−F
(C) A−F; B−F; C−T; D−T
(D) A−F: B−T; C−F: D−F

148. Photo-induced flowering was hypothesized to be because of
(A) Vernalin   (B) Florigen
(C) Ethylene   (D) Cytokinin

149. Which of the following fails to flower when day length exceeds the critical length?
(A) Henbane and wheat
(B) Rice
(C) Radish and soyabean
(D) Xanthium and spinach

150. Vernalization stimulates flowering in
(A) *Zaminkand*   (B) Turmeric
(C) Carrot   (D) Ginger

ZOOLOGY (SECTION-A)

151. Given below is diagrammatic representation of an actin filament (thin filament) with labelled parts A, B and C. Which of the following are correct matches w.r.t. labelled parts and its description?
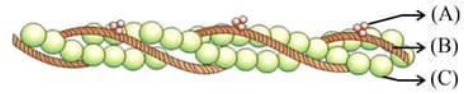
(A) A−A subunit of it masks the active binding sites for myosin on the actin filaments.
(B) B−Polymer of meromyosins.
(C) C−Polymer of monomeric F-actins.
(D) All of these.

152. Read the following statements and choose the correct option:
(i) During muscle contraction, chemical energy is converted into mechanical energy.
(ii) Both actin and myosin are present in A-band.
(iii) Only myosin is present in H-zone.
(iv) Muscular tissue is endodermal in origin.
(A) All statements are correct
(B) All statements are incorrect
(C) Statements (i), (ii) and (iii) are correct
(D) Statements (ii), (iii) and (iv) are correct

153. Read the following statements and choose the correct option:

Statement I: During contraction of skeletal muscles, calcium binds with troponin so that myosin head binding sites on actin are exposed.
Statement II: The process of muscle contraction continues till sodium ions are pumped back to sarcoplasmic reticulum, resulting in masking of actin filaments which results in the return of Z-lines back to their original position.
(A) Both statements are correct
(B) Both statements are incorrect
(C) Only statement I is correct
(D) Only statement II is correct

154. Smooth muscles are
(A) Involuntary, uninucleate and fusiform.
(B) Involuntary, multinucleate and striated
(C) Voluntary, uninucleate and striated
(D) Voluntary, branched and uninucleate

155. Consider the following statements:
(i) Sarcomere is the length of muscle between two Z-lines.
(ii) All or none principle is also called Bowditch law.
(iii) Tropomyosin is the monomer unit of myosin.
(iv) Myosin head has binding sites for troponin and ATP.
Which of the above statements are false?
(A) (i) and (ii)   (B) (ii) and (iii)
(C) (iii) and (iv)   (D) (i) and (ii)

156. During contraction of skeletal muscle, which of the following does not occur?
(A) The length of isotropic band shortens.
(B) The length of anisotropic band shortens.
(C) The distance between two successive Z-lines decreases.
(D) The length of Henson-zone shortens.

157. Which of the following is incorrect w.r.t. skeletal muscle?
(A) Syncytial
(B) Voluntary
(C) Unbranched
(D) Do not get fatigued

158. The calcium-binding protein in sarcoplasmic reticulum is
(A) Tropomyosin
(B) Calmodulin
(C) Calsequestrin
(D) Phosphocreatine

159. Find the mismatch:
(A) Amoeboid movement−Leucocytes
(B) Spermatozoa−Cilia
(C) Hydra−Tentacles
(D) Euglena−Flagella

160. The difference between the red and white muscle fibres in skeletal muscle can be based on all except
(A) Diameter of muscle fibre
(B) Amount of myoglobin
(C) Presence of sarcomere
(D) Amount of sarcoplasmic reticulum

161. Total number of bones in appendicular skeleton are
(A) 80   (B) 126
(C) 206   (D) 309

162. Mark the mismatch:
(A) Upper jaw−Maxilla
(B) Lower jaw−Mandible
(C) Atlas−Olecranon process
(D) Scapula−Acromion process

163. Mark the odd one w.r.t. the functions of vertebral colum
(A) Attachment to large muscles of back
(B) Protection of spinal cord
(C) Attachment to ribs
(D) Attachment to sternum

164. Which of the following is correct w.r.t. axial skeleton?
(A) Axial skeleton has bones distributed along the main axis of the body.
(B) The skull, vertebral column, sternum and ribs constitute axial skeleton.
(C) It comprises 80 bones.
(D) All of the above are correct.

165. A cup-shaped bone called ____A____ covers the knee ____B____.
Fill in the blanks with correct option describing A and B, respectively.
(A) Patella, dorsally
(B) Patella, ventrally
(C) Talus, ventrally
(D) Calcaneum, ventrally

166. Which of the following statement is incorrect w.r.t. human skeletal system?
(A) Bone and cartilage are specialized connective tissues.
(B) In humans, the skeletal system is made up of 206 bones and few cartilages.
(C) It is grouped into two principal divisions, i.e., the axial and the appendicular skeleton.
(D) Cartilage has very hard matrix due to calcium salts and the bone has slightly pliable matrix due to chondroitin salts.

167. Obturator foramen is present between
(A) Ilium and ischium
(B) Ilium and pubis
(C) Pubis and ischium
(D) Ilium and sacrum

168. Patella is an example of sesamoid bone formed by ossification in tendon of muscle
(A) Rectus abdominis
(B) Quadriceps femoris
(C) Pectoralis major
(D) Gluteus maximus

169. Mark the incorrect option:
(A) Floating ribs-2 pairs
(B) Paired bones in cranium-2 pairs
(C) Vertebrochondral ribs-3 pairs
(D) Pelvic girdle-2 pairs

170. In which of the following animals, nerve cell is present, but brain is absent?
(A) Sponge   (B) *Hydra*
(C) Cockroach   (D) Frog

171. Which of the following is an incorrect statement?
(A) In Hydra, neural organization is composed of a network of neurons.
(B) In insects, brain is present along with number of ganglia and neural tissues.
(C) Unipolar neuron has a cell body with only one axon and is found in embryonic stage.
(D) Axon transmits impulse towards the cell body.

172. Which of the following statement is correct w.r.t. the nodes of Ranvier?
(A) Myelin sheath is discontinuous.
(B) Neurilemma is discontinuous.
(C) Both neurilemma and myelin sheath are discontinuous.
(D) Covered with myelin sheath.

173. During the transmission of nerve impulse through a nerve fibre, the potential on the inner side of the plasma membrane has which type of electric charge?
(A) First positive, then negative and again back to positive.
(B) First negative, then positive and again back to negative.
(C) First negative, then positive and continue to be positive.
(D) First positive, then negative and continue to be negative.

174. Read the following statements and choose the correct option:
Statement I: Action potential generation in neuron follows all or none principle.
Statement II: Higher than threshold stimulus causes larger amount of voltage change within in neuron.
(A) Both statements are correct.
(B) Both statements are incorrect.
(C) Only statement I is correct.
(D) Only statement II is correct.

175. Myelin is secreted in CNS by
(A) Astrocytes exod
(B) Schwann cells
(C) Purkinje cells
(D) Oligodendrocytes

176. Cerebrospinal fluid is found between
(A) Duramater and arachnoid mater
(B) Arachnoid mater and piamater
(C) Piamater and brain
(D) Duramater and cranium

177. The largest part of brain is
(A) Cerebellum   (B) Hypothalamus
(C) Cerebrum   (D) Midbrain

178. Injury localized to the hypothalamus would most likely disrupt
(A) Coordination during locomotion
(B) Regulation of body temperature
(C) Motor functions
(D) Creative thoughts and decision making

179. Which part of brain has the ability centre for transforming short-term memory to long-term memory?
(A) Amygdala   (B) Hippocampus
(C) Septum   (D) Hypothalamus

180. Corpora quadrigemina comprises
(A) Lobes of cerebellum
(B) Inner parts of cerebrum
(C) Two superior colliculi and two inferior colliculi
(D) Part of thalamus

181. The fluid present is ventricles of brain and subarachnoid space is
(A) Blood
(B) Lymph
(C) Serum
(D) Cerebrospinal fluid

182. Identify the wrong statement:
(A) Arbor vitae is the tree of life present in cerebellum.
(B) The cavity present in spinal cord is central canal.
(C) Neurosecretory cells of hypothalamus secrete neurohormones.
(D) Mammals have 31 pairs of cranial nerves.

183. Alzheimer's disease is caused by
(A) Deficiency of dopamine
(B) Excessive dopamine secretion
(C) Injury to occipital lobe
(D) Deficiency of acetylcholine

184. Find the incorrect match w.r.t. structure of the human ear and its function/feature.
(A) Vestibular apparatus—Maintenance of body balance and posture
(B) Eustachian tube—Equalizes pressure on both sides of the ear drum
(C) Pinna—Collects the vibrations in the air which produce sound
(D) Tympanic membrane—Composed of connective tissue covered with skin inside and mucus membrane outside

185. The diameter of the pupil is regulated by the muscle fibres of
(A) Iris   (B) Choroid
(C) Ciliary body   (D) Sclera

(SECTION-B)

186. Bowman's glands are found in
(A) Olfactory mucosa
(B) Auditory meatus
(C) Cornea
(D) Eyelids

187. A gymnast is able to balance his body upside down even in darkness due to the presence of
(A) Cochlea
(B) Vestibular apparatus
(C) Basilar membrane
(D) Pons varolii

188. Fall in levels of oestrogen and progesterone in blood stimulate the production of
(A) ACTH   (B) Prolactin
(C) TSH   (D) FSH

189. Herring bodies are found in
(A) Thyroid gland
(B) Adenohypophysis
(C) Neurohypophysis
(D) Pancreas

190. Find the correct match w.r.t. hormone and its function:
(A) FSH—Causes ovulation from mature Graafian follicle
(B) Prolactin—Causes milk ejection by contracting mammary gland ducts
(C) MSH—Acts melanocytes and regulates on pigmentation of skin
(D) TSH—Promotes secretion of insulin from pancreas

191. The release or inhibiting hormones regulate and coordinate + the activity of
(A) Hypothalamus
(B) Posterior lobe of pituitary
(C) Anterior lobe of pituitary
(D) Neurohypophysis

192. The posterior lobe of pituitary
(A) Produces vasopressin
(B) Secretes trophic hormones
(C) Is under control of releasing hormones of hypothalamus
(D) Releases neurohormones

193. Identify the correct statement:
(A) Oxytocin and vasopressin are synthesized in neurohypophysis.
(B) Oxytocin and vasopressin are synthesized in hypothalamus and are transported to neurohypophysis through portal veins.
(C) Oxytocin and vasopressin are synthesized in hypothalamus and transported to neurohypophysis axonally.
(D) Oxytocin and vasopressin are secreted by hypothalamus.

194. Muscular tetany is caused due to deficiency of
(A) Glucagon
(B) Cortisol
(C) Adrenaline
(D) Parathyroid gland

195. The tumors of parathyroid gland cause
(A) Tetany
(B) Myxedema
(C) Osteitis fibrosa cystica
(D) Addison's disease

196. Which of the following will result in secretion of parathormone?
(A) Fall in blood calcium
(B) Rise in blood calcium
(C) Increase in thyroid hormone
(D) Decrease in thyroid hormone

197. Which of the following adrenal hormone regulates the metabolism of carbohydrates, proteins, and lipids?
(A) Androstenedione   (B) Cortisol
(C) Noradrenaline   (D) Aldosterone

198. Which of the following gland secretes catecholamines?
(A) Thyroid gland   (B) Adrenal cortex
(C) Adrenal medulla   (D) Pineal gland

199. Zona glomerulosa of adrenal cortex is responsible for secreting
(A) Glucocorticoids   (B) Catecholamines
(C) Mineralocorticoids (D) Sex corticoids

200. All of the following are functions of insulin, except
(A) It promotes formation of lipids in adipose tissues
(B) It promotes formation of proteins in muscles
(C) It decreases uptake and utilization of glucose
(D) It promotes glycogen formation in live