MHT CET 2025 PCB Apr 9 Shift 2 Question Paper

Conducted by the State Common Entrance Test Cell, Maharashtra

Time Allowed: 180 Minutes **Total Questions: 200** **Maximum Marks: 200**

General Instructions

(i) This **PCB** paper is from **MHT CET 2025**, conducted by the **State Common Entrance Test Cell, Maharashtra**.

(ii) Answer all **200 multiple choice questions**: **50 Physics**, **50 Chemistry** and **100 Biology**.

(iii) Each question offers **four choices**, with **one correct answer**.

(iv) Allow **90 minutes for Physics and Chemistry together**, followed by **90 minutes for Biology**. The first group closes before the second opens.

(v) Every correct answer earns **1 mark**.

(vi) There is **no negative marking**. Unanswered questions score zero.

1. A physical quantity $P = \frac{A^3\sqrt{B}}{C^{-4}D^{3/2}}$. Out of the quantities A, B, C and D , the quantity which brings maximum percentage error in P is

(A) A (B) B
(C) C (D) D

2. Two coils having self-inductances $L_1 = 75mH$ and $L_2 = 48mH$ are coupled with each other. If the mutual inductance of the coils is 37.2 mH , then coefficient of coupling will be

(A) 0.58 (B) 0.60
(C) 0.62 (D) 0.64

3. When a big drop of water is formed from n small drops of water, the energy loss is 4 E , where E is the energy of the bigger drop. If R and r is the radius of the bigger and the smaller drop respectively then number of smaller drops n is

(A) $\frac{5R^2}{r^2}$ (B) $\frac{2R^2}{r}$
(C) $\frac{5R}{r}$ (D) $\frac{5R^2}{r}$

4. Monochromatic light of wavelength $4800\,\text{Å}$ falls on slit of width ' a '. For what value of ' a ', the first maximum falls at $30°$. $(\sin 30° = 0.5)$

(A) $14200\,\text{Å}$ (B) $14400\,\text{Å}$
(C) $14600\,\text{Å}$ (D) $15000\,\text{Å}$

5. A bucket filled with water is revolved in a vertical circle of radius 10 m and water just not fall down. The time period of revolution will be (acceleration due to gravity $= 10\ m/s^2$)

(A) πs (B) 2π s
(C) 10π s (D) 20π s

6. A charge of $8\mu C$ exists at the centre of the square $ABCD$. The work done in moving a $4\mu C$ point charge from corner A to corner B is (Along side AB)

(A) 4 J (B) 8 J
(C) 2 J (D) zero J

7. A stone is projected at an angle $60°$ to the horizontal. The ratio of kinetic energy of the stone at point of projection to its kinetic energy at highest point of flight will be $(\cos 60° = 0.5)$

(A) 1 : 4 (B) 4 : 1
(C) 2 : 1 (D) $\sqrt{3}$: 2

8. The loudness and pitch of sound note respectively depend upon

(A) intensity and velocity only. (B) velocity and frequency only.
(C) frequency and number of harmonics. (D) intensity and frequency.

9. A Carnot engine has an efficiency of $\frac{1}{6}$. When the temperature of sink is reduced by 62 K , its efficiency is doubled. The temperature of the source is

(A) 37°C (B) 62°C
(C) 99°C (D) 124°C

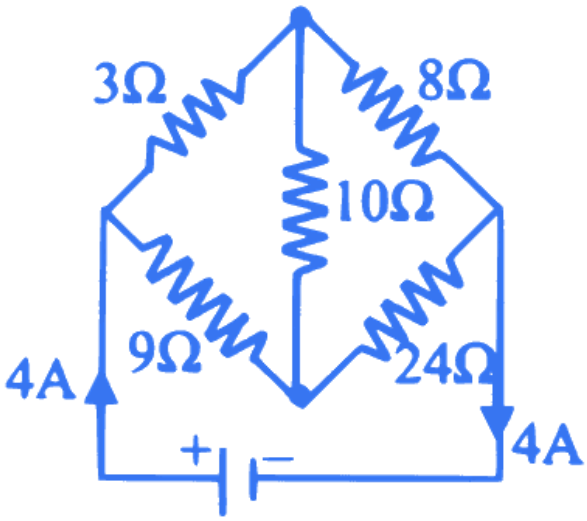
10. A cell is balanced against 240 cm and 100 cm of potentiometer wire, respectively, when in open circuit and when short-circuited through a resistance of 5Ω. The internal resistance of the cell is

(A) 1.4Ω (B) 2.4Ω
(C) 7Ω (D) 9Ω

11. Two bodies with kinetic energies in the ratio 3 : 1 are moving with equal linear momentum. The ratio of their masses is

(A) 1 : 1 (B) 1 : 2
(C) 1 : 3 (D) 1 : 4

12. In a circuit shown, if 10Ω resistor is replaced by 20Ω, then the current drawn from the battery is



(A) 10 A
(B) 4 A
(C) 2 A
(D) 8 A

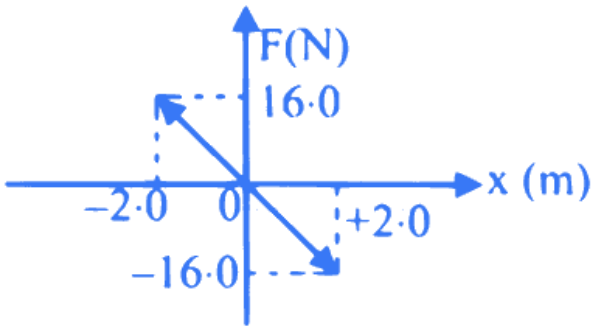
13. A uniform metal wire has length ' L ', mass ' M ' and area of cross-section ' A '. It is under tension ' T ' and ' V ' is the speed of transverse wave along the wire. The density of the wire is

(A) TV^2 A
(B) $\frac{T}{V^2 A}$
(C) $\frac{A}{TV^2}$
(D) $\frac{V^2}{AT}$

14. The main difference in the working of a step-up transformer and CE amplifier is

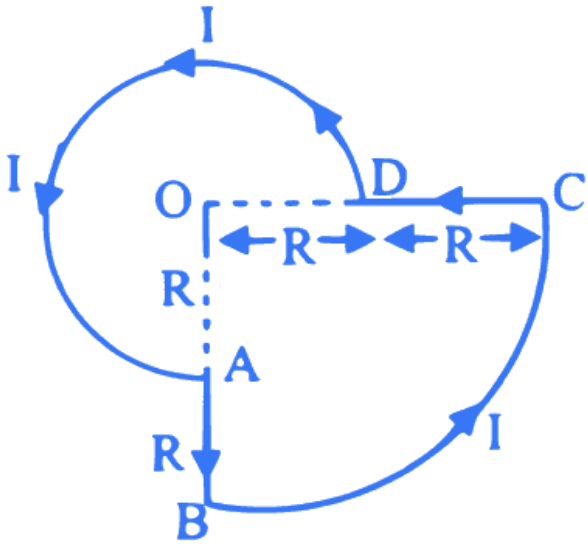
(A) the transformer decreases the power whereas the amplifier keeps the power constant.
(B) the transformer increases the power whereas the amplifier decreases the power.
(C) the amplifier increases the power but the transformer can not increase the power.
(D) the amplifier decreases the power but the transformer keeps the power constant.

15. A particle of mass 0.02 kg executes S.H.M. about $x = 0$ under the influence of a force as shown in figure. The period of S.H.M. is



(A) $\frac{\pi}{5}$ s
(B) $\frac{\pi}{10}$ s
(C) πs
(D) $\frac{\pi}{20}$ s

16. The current I is flowing through a loop $ABCDA$ as shown in the figure. The magnitude of the magnetic field at the centre ' O ' is x times $\left(\frac{\mu_0 I}{R}\right)$ (OD = R, DC = R, ∠AOD = 90°) The value of ' x ' is (μ_0 = permeability of free space)



(A) $\frac{5}{16}$
(B) $\frac{5}{12}$
(C) $\frac{7}{16}$
(D) $\frac{7}{12}$

17. At what angle should the two forces $2\vec{P}$ and $\sqrt{2}\vec{P}$ act so that the resultant force is $\sqrt{10}\vec{P}$?

(A) $\cos^{-1}(\frac{1}{\sqrt{2}})$
(B) $\cos^{-1}(\frac{1}{2})$
(C) $\cos^{-1}(\frac{\sqrt{3}}{2})$
(D) $\cos^{-1}(\frac{1}{\sqrt{3}})$

18. If the r.m.s. velocity of gas is V at temperature T , then

(A) $VT^2 = \text{constant}$ (B) $V^2\,T = \text{constant}$

(C) $V^2/T = \text{constant}$ (D) $VT = \text{constant}$

19. Light propagates 2 cm distance in glass of refractive index 1.5 in certain time. In the same time same light propogates a distance of 2.25 cm in a medium. The refractive index of the medium is

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

(C) $\frac{8}{3}$ (D) $\frac{3}{4}$

20. In photoelectric effect experiment, the stopping potential for a given metal is V_0 (in volt) when radiation of wavelength λ_0 is used. If radiation of wavelength $5\lambda_0$ is used with the same metal, then the stopping potential is (in volt) (h = Planck's constant, c = velocity of light, e = electronic charge)

(A) $V_0 - \frac{4hc}{5e\lambda_0}$ (B) $V_0 + \frac{4hc}{5e\lambda_0}$

(C) $V_0 + \frac{2hc}{3e\lambda_0}$ (D) $V_0 - \frac{2hc}{3e\lambda_0}$

21. A transverse wave is moving along a string. The linear density of a vibrating string is $2 \times 10^{-3}\,\text{kg/m}$. The wave equation is $y = 0.02\sin(2x + 10t)m$. The tension in the string is

(A) 2×10^{-2} N (B) 5×10^{-2} N

(C) 2×10^{-3} N (D) 5×10^{-3} N

22. Out of the following properties describing diamagnetism, identify the property which is "WRONG"

(A) Diamagnetic materials possess no net magnetic dipole moment.

(B) Diamagnetic materials are repelled by a magnet.

(C) When placed in external magnetic field diamagnetic materials move from stronger to weaker part of magnetic field.

(D) The magnetic susceptibility of diamagnetic materials is positive.

23. In Young's double slit experiment, waves from slits ' S_1 ' and ' S_2 ' have a path difference of $\frac{\lambda}{4}$ and $\frac{\lambda}{6}$ respectively at points x and y on the screen. The ratio of intensities at points y to that at x is $\left(\cos 45^\circ = \frac{1}{\sqrt{2}}, \cos 30^\circ = \sqrt{3}/2,\right)$

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

(C) 3 : 4 (D) 2 : 3

24. The angular separation between the minute hand and the hour hand of clock 40 minutes passed after 12p.m. is

(A) 120° (B) 110°

(C) 90° (D) 220°

25. For a p-type semiconductor, the relation between the number density ' n_h ' and ' n_e ' is

(A) $n_e = n_h$ (B) $n_h \gg n_e$

(C) $n_h \ll n_e$ (D) $n_h = n_e = 0$

26. If 80 J of work is required in moving an electric charge of ' 2 C ' from a point where potential is " -8 V ' to another point where potential is ' V ' volt, the value of ' V ' is

(A) 8 V (B) 16 V

(C) 32 V (D) 40 V

27. A rod of circular cross-sectional area A and length L is wound uniformly with n turns of an insulated wire. If current flowing through the windings is I, the total magnetic flux produced inside windings is ϕ. The relative permeability of the rod is (N = number of turns per unit length) (μ_0 = permeability of vacuum)

(A) $\frac{\varrho L}{\mu_0 NIA}$ (B) $\frac{\varrho}{\mu_0\,INAL}$

(C) $\frac{\mu_0 IAN}{\varrho L}$ (D) $\frac{\mu_0 NA}{\varrho LI}$

28. In resistance thermometer, the resistance at 0°C and 100°C are 6.74Ω and 7.74Ω respectively. The temperature corresponding to 6.53Ω resistance is

(A) $+53^\circ$C (B) $+21^\circ$C

(C) -53°C (D) -21°C

29. Two bodies A and B have their moments of inertia I and 3I respectively about their axis of rotation. their kinetic energies of rotation are also equal. The ratio of angular momenta of body A to that of body B is

(A) 1 : 3 (B) 3 : 1

(C) $1 : \sqrt{3}$ (D) $\sqrt{3} : 1$

30. Glass has refractive index ' n ' with respect to air and ' θ ' is the critical angle for a ray of light going from glass to air. If a ray of light is incident from air on the glass with angle of incidence ' θ ', corresponding angle of refraction is

(A) $\sin^{-1}(\frac{1}{n})$ (B) $\sin^{-1}(\mathrm{n})$

(C) $\sin^{-1}(\frac{1}{n^2})$ (D) $\sin^{-1}(\frac{1}{\sqrt{n}})$

31. An elastic conducting material is stretched into a circular loop. It is placed with its plane perpendicular to uniform magnetic field $\mathrm{B} = 0.6$ T. When loop is released, the radius starts shrinking at constant rate 3 cm/s. The induced e.m.f. in the loop at an instant when the radius of the loop is 10 cm will be (in mV)

(A) 2.6π (B) 3.6π

(C) 3.2π (D) 1.8π

32. Two solid spheres of same material but of mass ' M ' and ' 8 M ' fall simultaneously through a viscous liquid. Their terminal velocities are respectively ' V ' and ' nV '. The value ' n ' is

(A) 2 (B) 4

(C) 8 (D) 16

33. Magnetic field at the centre of a circular loop of area ' A ' is ' B '. The magnetic moment of the loop is ' xB '. The value of ' x ' is ($\mu_0 =$ permeability of vacuum or free space)

(A) $\frac{\sqrt{A^3}}{\mu_0\pi}$ (B) $\frac{2\sqrt{A}}{\mu_0\pi}$

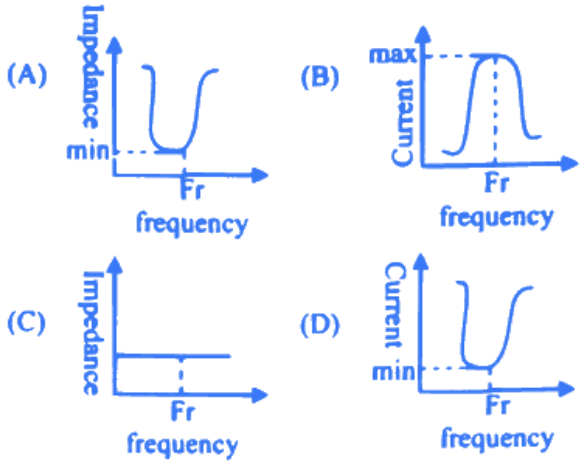
(C) $\frac{2}{\mu_0}\sqrt{\frac{\mathrm{A}^3}{\pi}}$ (D) $\frac{2}{\mu_0}\sqrt{\frac{\mathrm{A}}{\pi}}$

34. An ideal gas in a container of volume 500 cc is at a pressure of 2×10^5 N/m^2. The average kinetic energy of each molecule is 6×10^{-21} J. The number of gas molecules in the container is

(A) 5×10^{25} (B) 5×10^{23}

(C) 25×10^{23} (D) 2.5×10^{22}

35. Out of the following graphs, the correct graphical relation for LC parallel resonant circuit at resonance is



(A) D (B) C

(C) B (D) A

36. A small steel ball of mass ' M ', radius ' R ' and density ' ρ ' falls with terminal velocity through a tube filled with glycerine of density ' σ '. The viscous force acting on the steel ball is (g = acceleration due to gravity)

(A) $\mathrm{Mg}\frac{\rho}{\sigma}$ (B) $\mathrm{Mg}(\mathrm{Q} - \sigma)$

(C) $\mathrm{Mg}\rho\sigma$ (D) $Mg(1 - \frac{\sigma}{\rho})$

37. If the electric flux entering and leaving an enclosed surface area are ' ϕ_1 ' and ' ϕ_2 ' respectively, the electric charge inside the surface will be ($\varepsilon_0 =$ permittivity of free space)

(A) $\epsilon_0(\varrho_1 - \varrho_2)$ (B) $\epsilon_0(\varrho_2 - \varrho_1)$

(C) $\frac{(\varrho_1+\varrho_2)}{2}$ (D) $\frac{(\varrho_1-\varrho_2)}{2}$

38. In thermodynamic process, for free expansion, out of the following select the 'WRONG' statement.

(A) Free expansion are adiabatic expansions and there is no exchange of heat between a system and its environment.

(B) There is no work done on the system or by the system.

(C) It is an instantaneous change, and the system is not in thermodynamic equilibrium

(D) A free expansion can be plotted on a p-v diagram.

39. The frequency of oscillation of LCR series circuit is ' F '. The value of capacitance is tripled, then new frequency becomes ' xF '. The value of ' x ' is

(A) $\sqrt{3}$ (B) $\frac{1}{\sqrt{3}}$

(C) $\frac{1}{6}$ (D) $\frac{1}{\sqrt{6}}$

40. The heat required to increase the temperature from 373 K to 573 K at constant volume for ideal monoatomic gas of 2 moles is ($R =$ universal gas constant)

(A) 900 R (B) 300R

(C) 1200 R (D) 600 R

41. Two (A and B) pendulums begin to swing simultaneously. The first pendulum (A) makes five oscillations when the other (B) makes three oscillations. The ratio of the lengths of pendulum A to that of B is

(A) 3 : 5 (B) 9 : 25

(C) 5 : 3 (D) 2 : 3

42. Two identical photocathodes receive light of frequencies ' $f1$ ' and ' f_2 '. The velocity of the photoelectrons of mass ' m ' emitted are respectively ' v_1 ' and ' v_2 '. Then the correct relation is (h = Planck's constant)

(A) $v_1 - v_2 = [\frac{2h}{m}(f_1 - f_2)]^{\frac{1}{2}}$

(B) $v_1 + v_2 = [\frac{2h}{m}(f_1 + f_2)]^{\frac{1}{2}}$

(C) $v_1^2 - v_2^2 = \frac{2h}{m}(f_1 - f_2)$

(D) $v_1^2 + v_2^2 = \frac{2h}{m}(f_1 + f_2)$

43. The capacitive reactance of a capacitor connected to 50 V d.c. is

(A) zero. (B) 10Ω.

(C) 50Ω. (D) infinity.

44. A particle performs S.H.M. with amplitude 'A'. The speed of the particle is $\left(\frac{1}{3}\right)^{\text{rd}}$ of the maximum speed when its displacement from the mean position is

(A) $\frac{\text{A}}{3}$ (B) $\frac{\sqrt{2}\,\text{A}}{3}$

(C) $\frac{2\sqrt{2}\,\text{A}}{3}$ (D) $\frac{2\,\text{A}}{3}$

45. In the Bohr model of hydrogen atom, out of the following quantities, the principal quantum number is proportional to (R, V and E represent radius of the orbit, speed of electron and total energy of the electron respectively)

(A) $\frac{\text{V}}{\text{R}}$ (B) VR

(C) $\frac{E}{V}$ (D) $\frac{E}{R}$

46. An open organ pipe and a closed organ pipe have the frequency of their second overtone identical. The ratio of length of closed pipe to that of open pipe is (Neglect end correction)

(A) 2 : 3 (B) 5 : 6

(C) 3 : 4 (D) 6 : 7

47. An object is released from a distance ' r ' from the centre of the earth. The velocity of the object at the time of striking the earth will be ($R =$ radius of earth, $r > R, g =$ acceleration due to gravity)

(A) $[2\text{gR}(\text{r} - \text{R})/\text{r}]^{\frac{1}{2}}$ (B) $[gR(r - R)/r^2]^{\frac{1}{2}}$

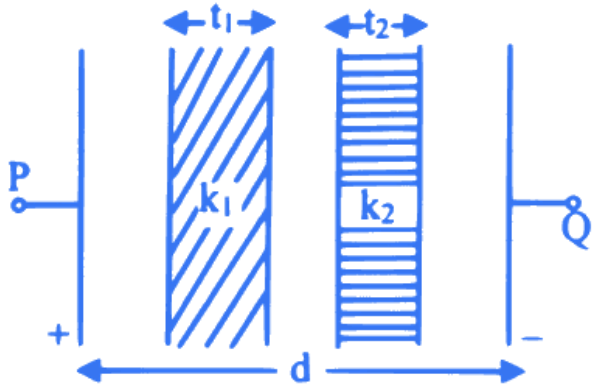
(C) $[2\text{gR}(\text{r} - \text{R})/\text{r}^2]^{\frac{1}{2}}$ (D) $[gR^2(r - R)/r^2]^{\frac{1}{2}}$

48. According to Bohr's first postulate the kinetic energy $\frac{1}{2}mv^2$ of the electron in C.G.S. system is (m = mass of electron, v is its velocity, r is the radius of the stationary orbit around the nucleus with charge Ze)

(A) $\frac{\text{Ze}}{\text{r}^2}$ (B) $\frac{\text{Ze}^2}{\text{r}}$

(C) $\frac{\text{Ze}^2}{2\text{r}}$ (D) $\frac{\text{Ze}^2}{2\text{r}^2}$

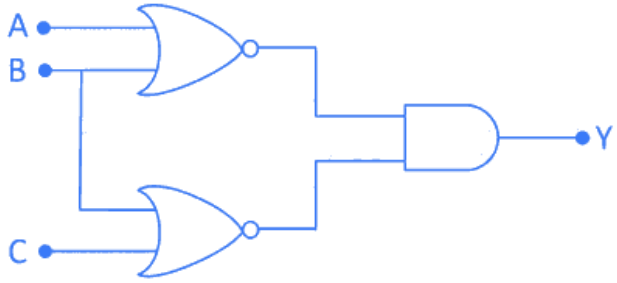
49. An air capacitor of plate area ' A ' and separation between the plates is ' d ' has a capacity ' C '. Two dielectric slabs are inserted between its plates in two different manners as shown in figure. The capacitance of a capacitor is



(A) $\frac{\epsilon_0 A}{d - \frac{t_1}{k_1} + \frac{t_2}{k_2}}$ (B) $\frac{\epsilon_0 A}{d + t_1 + t_2 + \frac{t_1}{k_1} + \frac{t_2}{k_2}}$

(C) $\frac{\epsilon_0 A}{d - t_1 - t_2 + \frac{t_1}{k_1} + \frac{t_2}{k_2}}$ (D) $\frac{\epsilon_0 A}{d + t_1 + t_2 - \frac{t_1}{k_1} - \frac{t_2}{k_2}}$

50. The output Y of a given logic circuit is (For inputs A, B and C)



(A) $Y = \bar{A} \cdot (B \bar{+} C)$

(B) $Y = (A \cdot B^{-}) + (B \cdot C^{-})$

(C) $Y = (A \bar{+} B) \cdot (B \bar{+} C)$

(D) $Y = (A + B) \cdot C$

51. Identify thermoplastic polymer from following.

(A) Urea formaldehyde resin
(B) Polystyrene
(C) Nylon 6,6
(D) Vulcunized rubber

52. Which from following compounds is called Gammexane?

(A) Chlorobenzene
(B) DDT
(C) Benzene hexachloride
(D) Benzoyl chloride

53. Which of the following cations is involved in formation of chlorophyll molecule in plants?

(A) Na^{+}
(B) Sr^{2+}
(C) Mg^{2+}
(D) Ca^{2+}

54. What is the value of pK_a if $0.1M CH_3COONa$ and $0.01M CH_3COOH$ are mixed to form buffer solution having pH 4.50 ?

(A) 5.5
(B) 5.5
(C) 6.5
(D) 2.5

55. What type of hybridisation is found in H_2Se ?

(A) sp
(B) sp^2
(C) sp^3
(D) d^2sp^3

56. Which from following compounds is used as analgesics?

(A) BHT
(B) Methyl Salicylate
(C) Gallic acid
(D) Curcumin

57. Calculate the osmotic pressure of 0.01 M aqueous solution of non electrolyte at 300 K .

$$\left[R = 0.0821\ atmdm^3\ K^{-1}\ mol^{-1}\right]$$

(A) 0.121 atm
(B) 0.246 atm
(C) 0.356 atm
(D) 0.412 atm

58. What is the percent void volume in hcp lattice?

(A) 68.00%
(B) 47.6%
(C) 26.00%
(D) 32.00%

59. Identify the product ' X ' in following reaction.

Ethanoyl chloride $\xrightarrow{H_2O} X$

(A) Ethanol
(B) Ethanoic acid
(C) Ethanal
(D) Ethyl ethanoate

60. Identify the major product obtained in the reaction of chlorobenzene with chlorine in presence of anhydrous $FeCl_3$.

(A) 1,2-Dichlorobenzene
(B) 1,3-Dichlorobenzene
(C) 1,4-Dichlorobenzene
(D) 1,3,5-Trichlorobenzene

61. Which from following reagents is NOT involved in Sandmeyer reaction?

(A) $CuCl/HCl$
(B) $CuBr/HBr$
(C) $CuCN/KCN$
(D) Cu (Powder) $/HCl$

62. Identify positively charged sol from following.

(A) Starch
(B) Gum
(C) Methylene Blue
(D) Gelatin

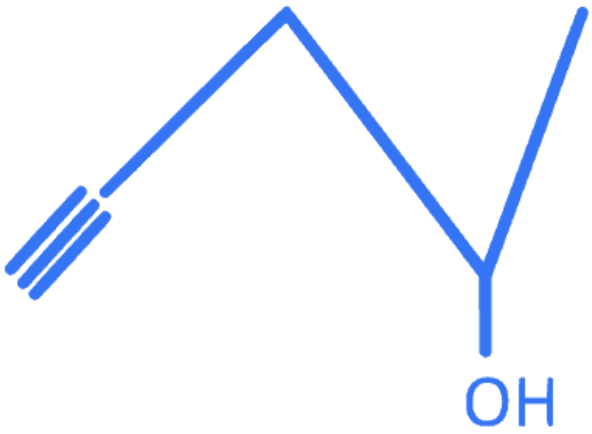
63. The solubility of sparingly soluble, salt AX_2 is $1.5 \times 10^{-3}\ moldm^{-3}$. What is its solubility product?

(A) 1.65×10^{-7}
(B) 1.35×10^{-8}
(C) 2.25×10^{-8}
(D) 1.15×10^{-7}

64. Which of the following species acts as an oxidising agent during working of hydrogenoxygen fuel cell?

(A) H_2
(B) H^{+}
(C) O_2
(D) NaOH

65. What is the total number of moles of ' C ' atoms and ' H ' atoms respectively present in n mole molecule represented by following structure?



(A) $5n$ and $8n$
(B) $4n$ and $7n$
(C) $4n$ and $6n$
(D) 5 n and 7 n

66. Which from following reactions performs highest + ve work at 25°C ?

(A) $CH_{4(g)} + Cl_{2(g)} \longrightarrow CH_3Cl_{(g)} + HCl_{(g)}$
(B) $3H_{2(g)} + N_{2(g)} \longrightarrow 2NH_{3(g)}$
(C) $C_2H_{2(g)} + \frac{5}{2}O_{2(g)} \longrightarrow 2CO_{2(g)} + H_2O_{(l)}$
(D) $2C_2H_{6(g)} + 7O_{2(g)} \longrightarrow 4CO_{2(g)} + 6H_2O_{(l)}$

67. Calculate the number of unit cells present in 0.6 g metal if the product of density and unit cell volume is 3.6×10^{-22} g.

(A) 1.666×10^{21}
(B) 3.333×10^{21}
(C) 2.499×10^{21}
(D) 4.833×10^{21}

68. Identify the product formed in the following reaction.

$$CH_3 - CH = CH - CH_2 - CHO \xrightarrow[\text{ii) } H_3O^+]{\text{i) } LiAlH_4} \text{Product}$$

(A) $CH_3 - (CH_2)_3 - CH_2 - OH$
(B) $CH_3 - CH_2 - CH = CH - CH_2 - OH$
(C) $CH_3 - CH = CH - CH_2 - CH_2 - OH$
(D) $CH_3 - CH = CH - CH_2 - OH$

69. Identify product ' X ' obtained in the following reaction.

$$CH_3CH_2Br + CH_3COOAg \xrightarrow{\Delta} X + AgBr$$

(A) $CH_3CH_2COOCH_3$
(B) $CH_3COOCH_2CH_3$
(C) CH_3COOCH_3
(D) $CH_3CH_2COOCH_2CH_3$

70. Identify the element so that the last electron enters in ($n-2$)f sub shell.

(A) Au
(B) Hg
(C) W
(D) No

71. Identify the monomers used to prepare polycarbonate.

(A) Butadiene and acrylonitrile
(B) Urea and formaldehyde
(C) Bisphenol and phosgene
(D) Vinyl chloride and ethylene glycol

72. Find the rate of disappearance of B for the reaction $2A + B \longrightarrow 2C + D$, from following.

(A) half the rate as A disappears.
(B) same rate as A disappears
(C) twice the rate of A disappears
(D) twice the rate of C is formed

73. What is the amount of 'Al' deposited at cathode during electrolysis of aqueous $AlCl_3$ by passing 1 faraday electricity?

(A) 0.25 mol
(B) 0.333 mol
(C) 0.5 mol
(D) 3 mol

74. Identify the compound having highest value of bond angle from following.

(A) H_2O
(B) OF_2
(C) H_2S
(D) $BeCl_2$

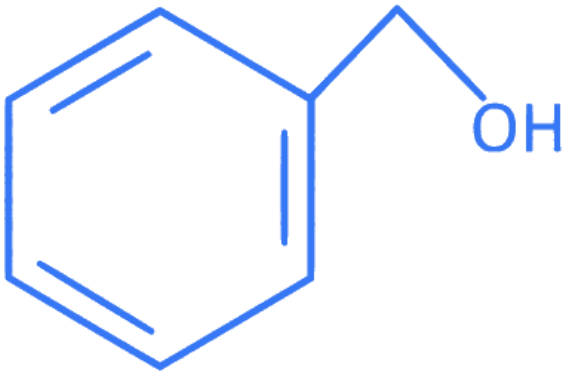
75. Calculate standard Gibbs energy for a certain reaction if ΔH° and ΔS° respectively are 219 kJ mol^{-1} and $-20 JK^{-1}$.

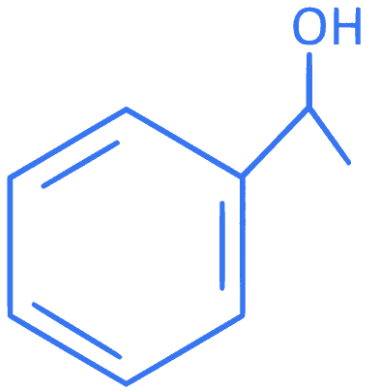
(A) 224.96 kJ mol^{-1}
(B) 112.48 kJ mol^{-1}
(C) 312.10 kJ mol^{-1}
(D) 426.24 kJ mol^{-1}

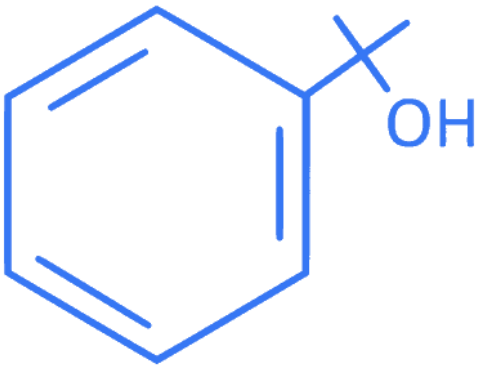
76. Find the total number of tetrahedral voids formed in 0.5 mole of a compound forming hcp structure.

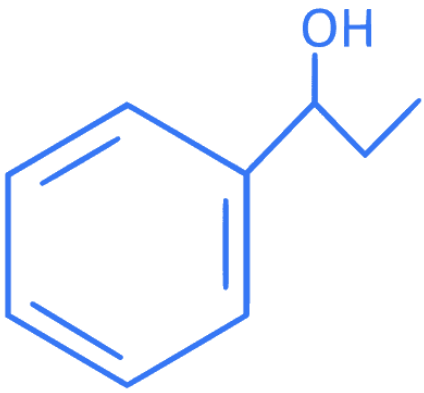
(A) 1.204×10^{23}
(B) 1.823×10^{23}
(C) 6.022×10^{23}
(D) 3.011×10^{23}

77. Which of the following is tertiary benzylic alcohol?

(A) 

(B) 

(C) 

(D) 

78. Which among the following is NOT benzylic halide?

(A) Chlorophenylmethane

(B) 1-Chloro-1-phenylethane

(C) 2-Chloro-2-phenylpropane

(D) 1-Chloro-2-phenylbutane

79. What is the number of unpaired electrons in C_0 in +2 state?

(A) 1 (B) 3

(C) 4 (D) 5

80. Which from following is essential amino acid?

(A) Valine (B) Proline

(C) Tyrosine (D) Alanine

81. For the reaction

$$N_{2(g)} + 3H_{2(g)} \longrightarrow 2NH_{3(g)}$$

$N_{2(g)}$ disappears at the rate of 2×10^{-4} moldm^{-3} s^{-1}. Find the rate of NH_3 formation.

(A) 4×10^{-4} moldm^{-3} s^{-1}

(B) 1.5×10^{-4} moldm^{-3} s^{-1}

(C) 2.0×10^{-4} moldm^{-3} s^{-1}

(D) 2.5×10^{-4} moldm^{-3} s^{-1}

82. Which from following quantity of different gases contains maximum number of molecules?

(A) 7 g N_2 (B) 2 gH_2

(C) 8 gO_2 (D) 20 gNO_2

83. If for the cell reaction,

$$A_{(s)} + B^{+}_{(aq)} \longrightarrow A^{+}_{(aq)} + B_{(s)}$$

if $E^{\circ}_{cell} = 0.0592$ V. What is equilibrium constant of reaction at 298 K ?

(A) 1 (B) 10

(C) 100 (D) 1000

84. Which from following conditions defines the critical temperature of a gas is the temperature

(A) above which gas cannot be liquified by increasing pressure.

(B) above which gas can no longer remain in the gaseous state.

(C) at which volume of given mass of a gas becomes zero.

(D) at which volume of given mass of a gas becomes double.

85. Calculate the change in internal energy of the system if 15 kJ of work done on the surrounding and system releases 10 kJ of heat in a particular reaction.

(A) 15 kJ (B) 10 kJ
(C) -25 kJ (D) -15 kJ

86. Which from following units of concentrations of solutions is temperature independent?

(A) Molarity (B) Mole fraction
(C) Percent by volume (D) Mass by volume

87. Which of the following is a pair of dihydric phenols?

(A) Resorcinol and pyrogallol (B) Quinol and phloroglucinol
(C) Phloroglucinol and pyrogallol (D) Catechol and quinol

88. Identify the products of following reaction.

$$C_6H_5COOC_2H_5 \xrightarrow[\text{dil } H_2SO_4]{\Delta} \text{Products}$$

(A) $C_6H_5OH + C_2H_5OH$
(B) $C_6H_5OH + C_2H_5COOH$
(C) $C_6H_5COOH + C_2H_5OH$
(D) $C_6H_5COOH + C_2H_5COOH$

89. Identify the correct decreasing order of stability of complexes formed by divalent metal ions with same ligand.

(A) $Co^{2+} > Fe^{2+} > Ni^{2+}$
(B) $Fe^{2+} > Co^{2+} > Ni^{2+}$
(C) $Ni^{2+} > Co^{2+} > Fe^{2+}$
(D) $Ni^{2+} > Fe^{2+} > Co^{2+}$

90. Which from following tests for glucose confirms presence of carbonyl group?

(A) Action of NH_2OH to form oxime (B) Heating with HI forming *n*-hexane
(C) Formation of pentaacetate derivative when reacted with acetic anhydride (D) Glucose and gluconic acid both form saccharic acid when treated with dilute HNO_3

91. Half life of a first order reaction is 3 hours. Calculate the value of $\frac{[A]_0}{[A]_t}$ after 8 hours.

(A) 2.17 (B) 4.34
(C) 6.34 (D) 8.12

92. What is the average oxidation number of carbon in carbon suboxide C_3O_2 ?

(A) 0 (B) $+\frac{1}{3}$
(C) $+\frac{4}{3}$ (D) $+2$

93. Solubility of $Mg(OH)_2$ is ' S ' mol/dm^3 its solubility product is equal to

(A) S^2 (B) $27\ S^4$
(C) $4\ S^3$ (D) $4\ S^2$

94. What is change in oxidation number of ' Mn ' during the decolourisation of acidified potassium permanganate by moist sulfur dioxide?

(A) increases by 2 (B) increase by 5
(C) decrease by 2 (D) decreases by 5

95. Calculate the energy associated with second orbit of He^+.

(A) -2.18×10^{-18} J (B) -4.36×10^{-18} J
(C) -6.54×10^{-18} J (D) -8.72×10^{-18} J

96. Calculate cryoscopic constant of solvent if 2 g solute having molar mass 80 g mol^{-1} dissolved in 75 g solvent decreases its freezing point by 0.4 K .

(A) 1.2 K kg mol^{-1} (B) 1.6 K kg mol^{-1}
(C) 2.1 K kg mol^{-1} (D) 2.5 K kg mol^{-1}

97. Identify the order of reactivity of halogens towards alkanes.

(A) $I_2 > Br_2 > Cl_2 > F_2$
(B) $Br_2 > Cl_2 > F_2 > I_2$
(C) $F_2 > Cl_2 > Br_2 > I_2$
(D) $Cl_2 > F_2 > I_2 > Br_2$

98. Identify product ' B ' in the following reaction.

$$\text{Cumene} \xrightarrow[\Delta]{KMnO_4, KOH} A \xrightarrow{H_3O^+} B$$

(A) Phenol (B) Benzaldehyde
(C) Benzophenone (D) Benzoic acid

99. What is the total number of donor atoms present in Bis(ethylenediamine)dithiocyanatoplatinum (IV)?

(A) 3 (B) 6
(C) 2 (D) 4

100. Which among the following compounds has highest boiling point?

(A) $n-\mathrm{C_4H_9NH_2}$ (B) $(\mathrm{C_2H_5})_2\mathrm{NH}$

(C) $\mathrm{C_2H_5\ N(CH_3)_2}$ (D) $(\mathrm{CH_3})_3-\mathrm{C}-\mathrm{NH_2}$

101. Cuticular transpiration contributes to _____ % of total transpiration in plants.

(A) 90 – 93 (B) 70 – 90

(C) 8 – 10 (D) 0.1 – 1

102. The Krebs-Henseleit cycle of urea formation is a sequence of biochemical reactions that takes place in_____

(A) brain (B) liver

(C) urinary bladder (D) kidney

103. Which of the following plant shows 'Lever mechanism' of pollination?

(A) Adansonia (B) Butea

(C) Bougainvillea (D) Salvia

104. Which one of the following is a correct statement?

(A) There is complete breakdown of glucose in fermentation.

(B) Pyruvic acid is formed in the mitochondrial matrix during respiration.

(C) Enzyme enolase catalyses the conversion of 2-phosphoglycerate to phosphoenolpyruvate.

(D) Fructose - 6 - phosphate is converted to fructose 1,6 diphosphate by enzyme isomerase.

105. Given below are two statements about absorption of water in plants.
Statement I - Water passes into the interface of cell wall and plasma membrane by diffusion.
Statement II -Water at the interface of cell wall and plasma membrane enters into the cytoplasm of the cell by osmosis.
In the light of above statements, select the correct option given below:

(A) Both statement I and statement II are correct. (B) Both statement I and statement II are incorrect.

(C) Statement I is correct but statement II is incorrect. (D) Statement I is incorrect but statement II is correct.

106. Select INCORRECT statement about the Hering-Breuer reflex.

(A) It controls rhythm of respiration. (B) It controls depth of respiration.

(C) It prevents the lungs from inflating to the point of bursting. (D) It keeps the glottis open during breathing.

107. Which of the following technique is used for invitro amplification of gene?

(A) Electrophoresis (B) PCR

(C) PAGE (D) SDS-PAGE

108. Match the properties of nerve fibres in Column I with their explanation in Column II

Column I		**Column II**	
i.	Irritability	a.	Halting of nerve impulse transmission due to exhaustion of neurotransmitter.
ii.	Synaptic fatigue	b.	Ability to perceive stimulus and enter into a state of activity.
iii.	Conductivity	c.	Many subliminal stimuli are given in quick succession.
iv.	Summation effect	d.	Ability to transmit the excitation.

Choose the correct option:

(A) i – d, ii -b , iii -a , iv -c (B) i - a, ii - d, iii - b, iv - c

(C) i - b, ii - a, iii - d, iv - c (D) i - c, ii - b, iii - a, iv - d

109. Select the correct sequential level with decreasing complexity of ecological organisation.

(A) Biome, population, community, organism (B) Biome, community, population, organism

(C) Community, population, organism, Biome (D) Organism, community, population, Biome

110. Match the Column I with Column II regarding cardiac cycle.

Column I		Column II	
i.	Atrial diastole (AD)	a.	0.5 sec
ii.	Atrial systole (AS)	b.	0.7 sec
iii.	Ventricular systole (VS)	c.	0.1 sec
iv.	Ventricular diastole (VD)	d.	0.3 sec

Choose the correct option:

(A) i-b, ii-c, iii-d, iv-a

(B) i – c, ii – d, iii – a, iv – b.

(C) i - c, ii - d, iii - b, iv -a.

(D) i-b, ii -c, iii -a, iv - d

111. By using methylene blue, which of the following leucocytes can be stained and identified?

(A) Acidophils (B) Neutrophils

(C) Cyanophils (D) Monocytes

112. When there is blockage in the fallopian tube, zygote is transferred to fallopian tube for further development. This is _____ type of ART.

(A) ZIFT (B) GIFT

(C) ICSI (D) IUI

113. What is the probability of producing a colourblind son if a colourblind male marries a normal visioned female?

(A) zero (B) $\frac{1}{4}^{\text{th}}$

(C) $\frac{1}{2}$ (D) 1

114. Match the types of glands in Column I with their location in Column II

Column I		Column II	
i.	Parotid gland	a.	Below the lower jaw
ii.	Submandibular gland	b.	In front of the ear
iii.	Sublingual gland	c.	Submucosa of small intestine
iv.	Brunner's gland	d.	Below the tongue

Choose the correct option

(A) i-a, ii -c, iii - d, iv - b (B) i - b, ii - a, iii - d, iv - c

(C) i-c, ii-d, iii-b, iv-a (D) i - d, ii - b, iii - a, iv - c

115. Which among the following represents the process of reductive deamination?

(A) α - Ketoglutaric acid $+NH_4 + NADPH_2 \rightarrow$ Glutamic acid $+H_2O + NADP$

(B) Glutamic acid + Oxaloacetic acid $\rightarrow \alpha$ - Ketoglutaric acid + Aspartic acid

(C) Glutamic acid $+NH_4+$ ATP $\rightarrow \alpha-$ Glutamine + ADP

(D) Aspartic acid $+NH_4+$ ATP $\rightarrow$ Aspargine + ADP

116. Which one of the following is NOT a technique used for direct transfer of foreign DNA into the protoplast of host cell without using vector?

(A) Electroporation (B) Gel electrophoresis

(C) ultrasonication (D) Lipofection

117. Which one of the following is a salt- retaining hormone?

(A) Aldosterone (B) Thymosin

(C) Adrenaline (D) Atrial natriuretic hormone

118. Match the items given in Column I with their number found in India given in Column II

Column I		Column II	
i.	National Parks	a.	14
ii.	Biosphere reserves	b.	90
iii.	Varieties of mango	c.	448
iv.	Wildlife Sanctuaries	d.	1000

Choose the correct option

(A) i - b, ii - a, iii - d, iv - c (B) i - c, ii - b, iii - d, iv -a

(C) i-a, ii-c, iii-b, iv-d (D) i - d, ii - a, iii - c, iv - b

119. Legal framework for MTP act 2017 aims for following EXCEPT_____

(A) reduction of illegal abortion (B) maternal mortality reduction

(C) Amniocentesis for sex determination (D) unwanted pregnancy

120. For facilitated diffusion in plant_____ is essential.

(A) expenditure of energy (B) concentration gradient

(C) atmospheric pressure (D) root pressure

121. Select the correct pair regarding origin of life

(A) Haldane - Abiogenesis
(B) Oparin - hot dilute soup
(C) Sydney Fox - Microsphere
(D) August Weismann - Coacervates

122. Given below are two statements.
Statement I -The right lung is larger and divided into two lobes.
Statement II -The left lung is smaller and divided into three lobes.
In the light of above statements, select the correct option given below:

(A) Both statement I and statement II are correct.
(B) Both statement I and statement II are incorrect.
(C) Statement I is correct but statement II is incorrect.
(D) Statement I is incorrect but statement II is correct.

123. People who don't drink enough water and consume high protein diet, may suffer from _____ kidney stones.

(A) calcium
(B) uric acid
(C) struvite
(D) cystine

124. Which one of the following is the activator for enzyme enolase in glycolysis?

(A) Mn^{++}
(B) Mg^{++}
(C) Ca^{++}
(D) Zn^{++}

125. Match parts of human ear in Column I with their structure / characteristic in Column II.

Column I		**Column II**	
i.	Organ of Corti	a.	Dynamic balance is maintained
ii.	Semi-circular Canal	b.	Sensory epithelium over basilar membrane of cochlea
iii.	Tympanic membrane	c.	Connects middle ear to the pharynx
iv.	Eustachian tube	d.	Transmits sound waves to middle ear

Choose the correct option:

(A) i - b, ii - a, iii - d, iv - c
(B) i - c, ii - d, iii - a, iv - b
(C) i-d, ii -c, iii -a, iv - b
(D) i - a, ii - d, iii - c, iv - b

126. Following components of the ecosystem are all linked to function as an 'ecosystem unit' EXCEPT _____

(A) productivity
(B) decomposition
(C) stratification
(D) energy flow

127. Elimination of defective gene and insertion of healthy gene in a genome is achieved by _____

(A) traditional biotechnology
(B) microbiology
(C) rDNA technology
(D) Cytogenetics

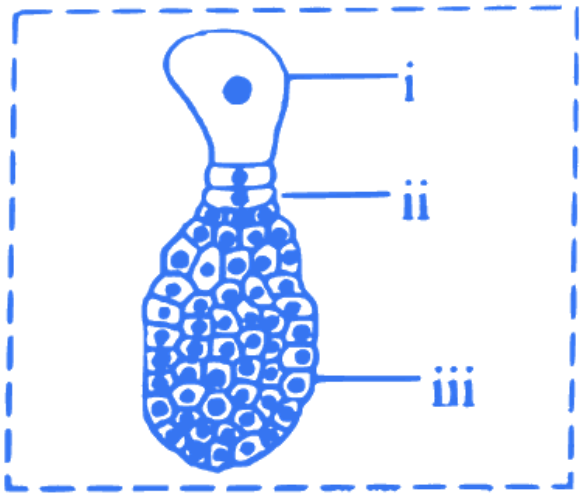
128. In which one of the following, treatment includes use of protective mask and gear to minimize inflammation?

(A) Sinusitis
(B) Laryngitis
(C) Silicosis
(D) Emphysema

129. The very first step of initiation of translation is

(A) binding of tRNA to AUG codons on mRNA.
(B) binding of mRNA to larger subunit of ribosome.
(C) binding of mRNA to smaller subunit of ribosome.
(D) binding of two ribosomal subunits.

130. In the given diagram of developing monocot embryo, identify the labels 'i', 'ii' and 'iii'.



(A) i - Radicle, ii - Suspensor, iii - Cotyledon
(B) i - Cotyledon, ii - Suspensor, iii - Radicle
(C) i - Suspensor, ii - Cotyledon, iii - Radicle
(D) i - Suspensor, ii - Radicle, iii - Cotyledon

131. Types of Carbohydrates are given in Column I while their examples are given in Column II.

Column I		Column II	
i.	Monosaccharide	a.	Malt Sugar
ii.	Heteropolysaccharide	b.	Glycogen
iii.	Disaccharide	c.	Hyaluronic acid
iv.	Homopolysaccharide	d.	Glyceraldehyde

Choose the correct option:

(A) i-b, ii-a, iii-c, iv-d
(B) i - d, ii - b, iii - a, iv - c
(C) i-d, ii -c, iii - a, iv - b
(D) i -d , ii -a , iii -b, iv - c

132. Select the INCORRECT statement regarding physiology of digestion.

(A) Chylomicrons are fat droplets coated with protein
(B) Emulsification is the function of liver
(C) Succus entericus is the name given to intestinal juice
(D) The absorption of glycerol, fatty acid and monosaccharides takes place by capillaries in villi

133. Given below are two statements.
Statement I - In Meselson and Stahl's experiment the samples were separated by using CsCl equilibrium gradients.
Statement II - ^{15}N is a heavy isotope and can be separated based on density gradient.
In the light of above statements, select the correct option given below:

(A) Both statement I and statement II are correct.
(B) Both statement I and statement II are incorrect.
(C) Statement I is correct but statement II is incorrect.
(D) Statement I is incorrect but statement II is correct.

134. Given below are two statements with reference to measurement of blood pressure.
Statement I - The appearance of Korotkoff sounds for the first time due to release of external pressure indicates diastolic pressure. Statement II - The disappearance of Korotkoff sounds for the first time due to release of external pressure indicates systolic pressure.
In the light of above statements, select the correct option given below:

(A) Both statement I and statement II are correct.
(B) Both statement I and statement II are incorrect.
(C) Statement I is correct but statement II is incorrect.
(D) Statement I is incorrect but statement II is correct.

135. In tissue culture technique, to maintain aseptic conditions the nutrient medium is autoclaved at constant pressure of _____ lb/sq inch for continuous _____ minutes.

(A) 10,15
(B) 15,15
(C) 15,20
(D) 20,20

136. Which one of the following does not show suspend type of adaptation?

(A) Dormancy of seeds.
(B) Hibernation of polar bear
(C) Aestivation in some snails
(D) Movement of birds to a more hospitable location during stress

137. Select the INCORRECT statement regarding spinal cord from the following.

(A) Ascending spinal tracts conduct sensory impulses to the brain.
(B) Dorsal root ganglion has unipolar sensory neurons.
(C) Descending spinal tracts carry motor impulses from the brain to spinal cord.
(D) Watering of mouth on sight of food is a spinal reflex.

138. Which one of the ecosystem service is necessary for crop production and fruit formation?

(A) Photosynthesis
(B) Pest Control
(C) Therapeutics
(D) Pollination

139. Tremor of fingers, increased irritability, tachycardia, weight loss, etc are the symptoms of _____ .

(A) Grave's disease
(B) Cretinism
(C) Myxoedema
(D) Cushing's disease

140. An additional apoplastic route that allows direct access to xylem in plants is along the secondary roots because they _____

(A) have no casparian strips
(B) have plasmodesmata
(C) develop from the pericycle
(D) are non-living cells

141. Match the pair.

Column I (Hormone)		**Column II (Function)**	
i.	Erythropoietin	a.	absorption of dietary calcium
ii.	Calcitriol	b.	water retention during severe dehydration
iii.	Renin	c.	production of RBC
iv.	Antidiuretic hormone	d.	increases blood pressure

Choose the correct option:

(A) i – c, ii – a, iii – b, iv – d.
(B) i - c, ii - b, iii - d, iv -a.
(C) i – c, ii – a, iii – d, iv – b.
(D) i - c, ii - d, iii - a, iv - b.

142. How many meiotic and mitotic divisions respectively are required to form male gametophyte from pollen mother cell?

(A) One and two
(B) Two and one
(C) One and one
(D) Two and two

143. Number of pyrimidine bases found in nucleic acids is / are

(A) 1
(B) 2
(C) 3
(D) infinite

144. Renal medulla contains _____ .
i. Malpighian bodies and convoluted tubules
ii. blood vessels and glomerulus
iii. Loop of Henle
iv. Collecting ducts

(A) i and iii
(B) i and ii
(C) iii and iv
(D) ii and iii

145. Connecting link between ape and man is _____ in the course of human evolution.

(A) Homo habilis
(B) Homo erectus
(C) Australopithecus
(D) Dryopithecus

146. Eremothecium ashbyi is used to obtain _____ .

(A) Vitamin B_{12}
(B) Erythromycin
(C) Vitamin B_2
(D) Chloromycetin

147. Match the restriction enzyme in Column I with their recognition sequences in Column II.

Column I		Column II
i.	*AluI*	5'–A–G↓C–T–3' / 3'–T–C↑G–A–5'
ii.	*BamHI*	5'–G–T–C↓G–A–C–3' / 3'–C–A–G↑C–T–G–5'
iii.	*EcoRI*	5'–G↓A–A–T–T–C–3' / 3'–C–T–T–A–A↑G–5'
iv.	*HindII*	5'–G↓G–A–T–C–C–3' / 3'–C–C–T–A–G↑G–5'

Choose the correct option:

(A) i-a, ii -d, iii -c, iv - b.
(B) i - d, ii - b, iii - a, iv -c.
(C) i-a, ii -c, iii -b, iv -d.
(D) i-d, ii -a, iii -b, iv -c.

148. Match the types of plants in Column I with the time of the year when they flower given in Column II.

Column I		**Column II**	
i.	Short day plants	a.	throughout the year
ii.	Long day plants	b.	in winter
iii.	Day neutral Plants	c.	in summer

Choose the correct option:

(A) i – a, ii – b, iii – c
(B) i-a, ii-c, iii-b
(C) i – b, ii – c, iii – a
(D) i – c, ii – b, iii – a

149. Which of the following cells are present in maximum (highest) number in the Islet of Langerhans?

(A) F-cells (pp cells)
(B) Delta cells (δ cells)
(C) Beta cells (β cells)
(D) Alpha cells (α cells)

150. Number of deaths with no competition and abundance of resources such as food and water is _____.

(A) Realized natality
(B) Absolute mortality
(C) Realized mortality
(D) Absolute natality

151. The palate separates _____ .

(A) nasopharynx from oropharynx
(B) nasopharynx from laryngopharynx
(C) laryngopharynx from oropharynx
(D) nasopharynx from internal nares.

152. Exons on hnRNA codes for

(A) lipid
(B) sugar
(C) protein
(D) phospholipid

153. Select INCORRECT statement regarding cells of Sertoli.

(A) These cells are few in number and occur along with germinal cells.
(B) They are also termed as nurse cells.
(C) They are multinucleate and haploid.
(D) They provide surface for attachment of spermatids.

154. Given below are two statements.
Statement I - Osmoconformers are animals, that are iso-osmotic to the surroundings.
Statement II - Marine organisms mostly are osmoconformers because their body fluids and external environment are iso-osmotic in nature. In the light of above statements, select the correct option given below:

(A) Both statement I and statement II are correct.
(B) Both statement I and statement II are incorrect.
(C) Statement I is correct but statement II is incorrect.
(D) Statement I is incorrect but statement II is correct.

155. During aerobic respiration, out of 38 ATP molecules produced from one glucose, how many ATP molecules are formed through ETS?

(A) 10
(B) 22
(C) 24
(D) 34

156. Match the parts of anatropous ovule given in Column I with their ploidy given in Column II.

Column I		**Column II**	
i.	Antipodals	a.	2n
ii.	Nucellus.	b.	3n
iii.	PEN	c.	n

Choose the correct option given below

(A) i – a, ii – c, iii – b.
(B) i – c, ii – b, iii – b.
(C) i – c, ii – a, iii – b.
(D) i – b, ii – a, iii – c.

157. Given below are two statements about sap in xylem.
Statement I - Under normal conditions the sap in the xylem cell shows negative hydrostatic pressure.
Statement II - It also shows very low osmotic pressure.
In the light of above statements, Select the correct option given below:

(A) Both statement I and statement II are correct.
(B) Both statement I and statement II are incorrect.
(C) Statement I is correct but statement II is incorrect.
(D) Statement I is incorrect but statement II is correct.

158. Match the Column I with Column II regarding adrenal gland.

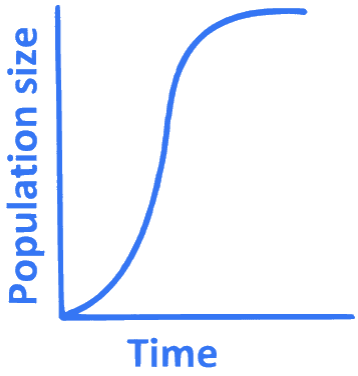
Column I		**Column II**	
i.	Zona glomerulosa	a.	Nor- epinephrine
ii.	Zona fasciculata	b.	Aldosterone
iii.	Zona Reticularis	c.	Cortisol
iv.	Adrenal medulla	d.	Androgens and Estradiols

Choose the correct option:

(A) i - b, ii - c, iii - d, iv -a.
(B) i - b, ii - c, iii - a, iv - d.
(C) i -d , ii -b , iii -a, iv - c .
(D) i -d, ii -c, iii -c, iv -a .

159. Which of the following depicts Logistic growth curve of population?

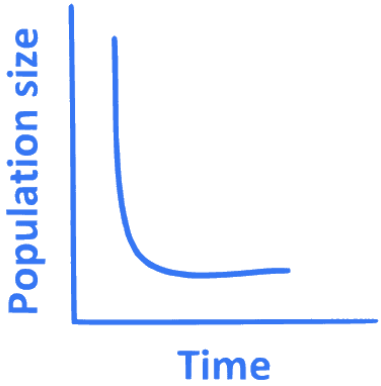
(A)



(B)



(C)



(D)



160. The transfer of rDNA into a bacterial cell for the purpose of its cloning, is assisted by _____ ions.

(A) Mg^{++} (B) Ca^{++}
(C) Cl^{-} (D) K^{+}

161. Detritus food chain begins with _____ .

(A) dead organic matter (B) living plants
(C) soil bacteria (D) living animals

162. The purpose of biological treatment of sewage is to _____ .

(A) reduce its BOD (B) increase its BOD
(C) reduce sedimentation (D) increase sedimentation

163. According to Darwinism, _____ leads to evolution.

(A) descent with modification (B) inheritance of acquired characters
(C) variations produced in germplasm (D) sudden and inheritable changes

164. Given below are two statements.
Statement I - All monosaccharides are reducing sugars.
Statement II - Polysaccharides are too big to escape from the cell.
In the light of above statements, select the correct option given below:

(A) Both statement I and statement II are correct. (B) Both statement I and statement II are incorrect.
(C) Statement I is correct but statement II is incorrect. (D) Statement I is incorrect but statement II is correct.

165. Fluid filled antrum is present between secondary oocyte and _____

(A) membrane granulosa (B) theca interna
(C) corona radiata (D) cumulus oophorus

166. Which one of the following occurs during glycolysis?

(A) Oxidative carboxylation (B) Oxidative phosphorylation
(C) Decarboxylation (D) Substrate level phosphorylation

167. Red (RR) flowered plant of Mirabilis is crossed with white (rr) flowered plant. All the offsprings in F_1 generation are pink (Rr). This is an indication that the ' R ' gene is _____

(A) co-dominant
(B) recessive
(C) incompletely dominant
(D) linked

168. While describing the dynamics of growth in plants, Relative Growth Rate (RGR) is determined by the following formula.

(A) $RGR = \frac{dn}{dt}$
(B) $RGR = \frac{dt}{dn}$
(C) $RGR = \frac{n}{AGR}$
(D) $RGR = \frac{AGR}{n}$

169. Following are modern techniques used to protect endangered species EXCEPT _____

(A) tissue culture
(B) cryopreservation of gametes
(C) seed banks
(D) in vitro fertilization of eggs

170. Reason for introducing vaccine into the body is _____.

(A) to stimulate the formation of antibody.
(B) to suppress allergic reactions.
(C) to differentiate different T lymphocytes.
(D) to immobilise engulfed phagocytes.

171. How many electrodes are generally positioned on chest during recording of ECG?

(A) 4
(B) 5
(C) 6
(D) 8

172. Which secondary metabolites are added to wines to improve astringency?

(A) Alkaloids
(B) Terpenes
(C) Phenolics
(D) Tannins

173. Given below are two statements.
Statement I - Microspore is covered by two layered covering called sporoderm.
Statement II - Sporopollenin is not present in the region of germ pores in microspore.
In the light of above statements, Select the correct option given below:

(A) Both statement I and statement II are correct.
(B) Both statement I and statement II are incorrect.
(C) Statement I is correct but statement II is incorrect.
(D) Statement I is incorrect but statement II is correct.

174. The enzyme enterokinase helps in conversion of _____.

(A) Protein into polypeptides
(B) Trypsinogen into trypsin
(C) Casein into coagulated milk protein
(D) Pepsinogen into pepsin

175. In an operon, when repressor protein attaches to the operator then _____ .

(A) the operator is switched on.
(B) the structural genes are expressed.
(C) the chemical inducer is synthesized.
(D) the structural genes are not expressed.

176. Example of geographical isolation is _____

(A) Darwin's finches
(B) Mule
(C) Australian Marsupials
(D) Cichlid fishes

177. Match Column I containing names of enzymes with Column II containing their microbial source.

Column I		**Column II**	
i.	Invertase	a.	Sclerotinialibertine
ii.	Pectinase	b.	Trichoderma koningii
iii.	Lipase	c.	Saccharomyces cerevisiae
iv.	Cellulase	d.	Candida lipolytica

Choose the correct option:

(A) i - c, ii - b, iii - d, iv -a.
(B) i-a, ii-d, iii-c, iv-b.
(C) i-a, ii-c, iii-d, iv-b.
(D) i-c, ii -a, iii -d, iv -b.

178. The terminal stage of xerarch succession is represented by _____ .

(A) mosses
(B) trees
(C) shrubs
(D) lichens

179. If Rh antigens are introduced into the body of Rh^{-ve} person for second time, then it leads to _____

(A) Amoebiasis
(B) Ascariasis
(C) filariasis
(D) erythroblastosis

180. Smallest branch of mixed spinal nerve is

(A) Ramus dorsalis
(B) Ramus ventralis
(C) Ramus communicans
(D) filum terminale

181. When roots are deprived of _____ they show a sudden drop in active absorption.

(A) Manganese
(B) Oxygen
(C) Carbon dioxide
(D) Iron

182. Which one of the following is an important symptom of haemophilia?

(A) Continuous bleeding even with minor injury
(B) Clotting
(C) Anaemia
(D) Change in size and shape of RBCs.

183. Role of Angiotensin converting enzyme is _____.

(A) secretion of Renin
(B) release of Angiotensinogen
(C) forming active Angiotensin II
(D) constricting blood vessels and increase in BP

184. Given below are two statements.
Statement I - There are different modes of asexual reproduction in plants.
Statement II - Sexual reproduction in plants, involves two major events.
In the light of above statements, select the correct option given below:

(A) Both statement I and statement II are correct.
(B) Both statement I and statement II are incorrect.
(C) Statement I is correct but statement II is incorrect.
(D) Statement I is incorrect but statement II is correct.

185. Given below are two statements.
Statement I - F 1 part of oxysome catalyse the synthesis of ATP from ADP
Statement II - Protons are channeled from outer chamber of mitochondria into inner chamber by F_0 part of oxysome.
In the light of above statements, select the correct option given below:

(A) Both statement I and statement II are correct.
(B) Both statement I and statement II are incorrect.
(C) Statement I is correct but statement II is incorrect.
(D) Statement I is incorrect but statement II is correct.

186. Action of salivary amylase stops when food gets mixed with gastric juice due to _____

(A) Bacteria
(B) Change in pH
(C) Lysozymes
(D) hormones

187. Identify the correct sequence of steps in Hershey and Chase's experiment.

(A) Infection → Centrifugation → Blending → Detection of radioactivity.
(B) Centrifugation → Infection → Blending → Detection of radioactivity
(C) Infection → Blending → Centrifugation → Detection of radioactivity
(D) Blending → Infection → Centrifugation → Detection of radioactivity

188. Which one of the following is a non-symbiotic biofertilizer?

(A) VAM
(B) Azotobacter
(C) Rhizobium
(D) Anabaena with Azolla

189. Non-disjunction of X - chromosome during meiosis leads to _____

(A) Klinefelter's syndrome
(B) Down's syndrome
(C) sickle cell anaemia
(D) Huntington's disease

190. Which one of the following is NOT an example of unconditioned reflex?

(A) Hiccuping and sneezing
(B) Yawning and coughing
(C) Cycling and dancing
(D) Sneezing and swimming

191. Transmission of malaria is through _____

(A) faeco-oral route
(B) vector
(C) transplacental
(D) air borne

192. Noise can cause the following EXCEPT _____.

(A) sleeplessness
(B) decreased heartbeat
(C) altered breathing pattern
(D) psychological stress

193. Select the INCORRECT statement regarding the prostate gland.

(A) It is the largest accessory gland of male reproductive system.
(B) It is multilobed and endocrine in function.
(C) Its secretion directly enters the urethra.
(D) The ejaculatory duct passes through the gland to open into urethra.

194. Which one of the following is NOT a sex linked disorder?

(A) Hypertrichosis
(B) Bleeder's disease
(C) Huntington's disease
(D) Colourblindness

195. A large population is showing random mating and not undergoing any evolutionary change. If frequency of allele A is 0.6 , then find out the percentage of homozygous recessive and heterozygous organisms respectively?

(A) $36\%, 24\%$
(B) $48\%, 16\%$
(C) $16\%, 36\%$
(D) $16\%, 48\%$

196. Glisson's capsule is _____

(A) outermost lining of gastrointestinal tract
(B) connective tissue covering of hepatic lobe
(C) proximal end of nephron
(D) lining of lumen of alimentary canal

197. Which among the following disease is called as modern pandemic?

(A) Typhoid
(B) Diabetes mellitus
(C) Cancer
(D) AIDS

198. Given below are two statements.
Statement I - In testis, vasa efferentia connect the rete testis with head of epididymis.
Statement II - The vas deferens arises from the corpus or body of epididymis.
In the light of above statements, select the correct option given below:

(A) Both statement I and statement II are correct.
(B) Both statement I and statement II are incorrect.
(C) Statement I is correct but statement II is incorrect.
(D) Statement I is incorrect but statement II is correct.

199. Which one of the following phytohormones causes epinasty?

(A) Auxins
(B) Gibberellins
(C) Ethylene
(D) Abscissic acid

200. 'Algal bloom' mainly includes _____ .

(A) red algae
(B) green algae
(C) brown algae
(D) blue-green algae

- End of Question Paper -