Jupiter Academy

Subjects : Physics , Chemistry , Biology | **Full mock test 03**

Total Marks : 720

Physics

1. A cooling curve is plotted between the temperature of a hot body and time. Which of the following is not true for the cooling curve?

A) Cooling is faster from a calorimeter having a larger surface area than a smaller one.
B) Cooling is faster from a calorimeter painted black from outside than that from a polished surfaced calorimeter.
C) Cooling is faster from a copper calorimeter than from a steel calorimeter.
D) The rate of cooling remains same throughout the experiment. Hence the graph is a straight line.

2. A T.V. tower has a height of $100\ \mathrm{m}$. How much population is covered by T.V. broadcast, if the average population density around the tower is $1000\ \mathrm{km}^{-2}$

A) 2×10^6 **B)** 4×10^6 **C)** 3×10^8 **D)** 9×10^4

3. If $A = 1$ and $B = 0$, then in terms of Boolean algebra, $A + \overline{B} =$

A) B **B)** $\overline{B} \cdot B$ **C)** A **D)** $\overline{A}$

4. At some instant the ratio of the amount of two radioactive elements is $2 : 1$. If their half-lives respectively are 12 hours and 16 hours, then after two days, the ratio of the amount of two substances is

A) $1 : 1$ **B)** $1 : 2$ **C)** $3 : 1$ **D)** $4 : 1$

5. An electron in a hydrogen atom is in an orbit from which there can be a maximum of six transitions. Another electron in a different hydrogen atom is in an orbit from which there can be a maximum of three transitions. The ratio of the velocities of the electrons in these two orbits is

A) $\frac{1}{2}$ **B)** $\frac{2}{3}$ **C)** $\frac{5}{4}$ **D)** $\frac{3}{4}$

6. The correctness of velocity of an electron moving with velocity $50\ \mathrm{m\ s^{-1}}$ is 0.005%. The accuracy with which its position can be measured will be

A) $4634 \times 10^{-3}\ \mathrm{m}$ **B)** $4634 \times 10^{-5}\ \mathrm{m}$
C) $4634 \times 10^{-6}\ \mathrm{m}$ **D)** $4634 \times 10^{-8}\ \mathrm{m}$

7. In a Young's double slit experiment, I_0 is the maximum intensity and β is the fringe width. Intensity at point P which is distance x from central maxima is

A) $\mathrm{I}_0 \cos \frac{\pi \mathrm{x}}{\beta}$ **B)** $4\mathrm{I}_0 \cos^2 \frac{\pi \mathrm{x}}{\beta}$
C) $\mathrm{I}_0 \cos^2 \frac{\pi \mathrm{x}}{\beta}$ **D)** $\frac{I_0}{4} \cos^2 \frac{\pi x}{\beta}$

8. A ray of light is incident normally on one of the faces of a prism of apex angle $30°$ and refractive index $\sqrt{2}$. The angle of deviation of the ray is

A) $30°$ **B)** $45°$
C) $15°$ **D)** none of these

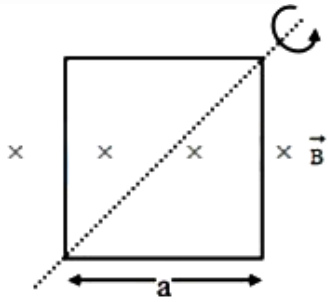
9. The magnetic field in a travelling electromagnetic wave has a peak value of $20\ \mathrm{nT}$. The peak value of electric field strength is

A) $3\ \mathrm{V\ m^{-1}}$ **B)** $6\ \mathrm{V\ m^{-1}}$
C) $9\ \mathrm{V\ m^{-1}}$ **D)** $12\ \mathrm{V\ m^{-1}}$

10. An $L.C.R$ circuit contains $R = 50\ \Omega$, $L = 1\ \mathrm{mH}$ and $C = 0.1\ \mu\mathrm{F}$. The impedance of the circuit will be minimum for a frequency of

A) $\frac{10^5}{2\pi}\ \mathrm{Hz}$
B) $\frac{10^6}{2\pi}\ \mathrm{Hz}$
C) $2\pi \times 10^5\ \mathrm{Hz}$
D) $2\pi \times 10^6\ \mathrm{Hz}$

11. A square loop of side a is rotating about its diagonal with angular velocity ω in a perpendicular magnetic field $\vec{B}$. It has 10 turns. The emf induced is



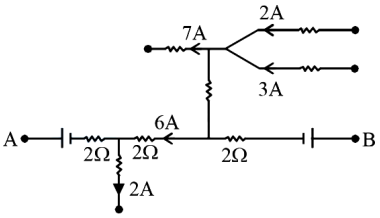
A) $Ba^2 \sin \omega t$ **B)** $Ba^2 \cos \omega t$
C) $5\sqrt{2}Ba^2$ **D)** $10Ba^2\omega \sin \omega t$

12. A compass needle free to turn in a horizontal plane is placed at the centre of a circular coil of 30 turns and radius $12\ \mathrm{cm}$. The coil is in a vertical plane making an angle of $45°$ with the magnetic meridian. The needle points west to east when the current in the coil is $0.35\ \mathrm{A}$. The horizontal component of the earth's magnetic field (in T) at that location is

A) 3.9×10^{-5} B) 3.9×10^{-6}
C) 5×10^{-5} D) 2.6×10^{-5}

13. Which of the following is represented by the area enclosed by a hysteresis loop (B - H curve)?

A) Retentivity
B) Susceptibility
C) Permeability
D) Heat energy lost per unit volume in the sample

14. 

In the above circuit diagram emf of two batteries are equal, then the potential difference $V_A - V_B$ between terminals A and B will be

A) -36 V B) $+36$ V
C) $+24$ V D) -24 V

15. The potential at a point x (measured in μm) due to some charges situated on the x-axis is given by $V(x) = \frac{20}{(x^2-4)}$ volt. The electric field E at $x = 4$ μm is given by

A) $\frac{5}{3}\frac{V}{\mu m}$ and in positive x -direction
B) $\frac{10}{9}\frac{V}{\mu m}$ and in negative x -direction
C) $\frac{10}{9}\frac{V}{\mu m}$ and in positive x -direction
D) $\frac{5}{3}\frac{V}{\mu m}$ and in negative x -direction

16. A police car moving at $30\ m\ s^{-1}$, chases a motorcyclist. The policeman sounds his horn at 180 Hz, while both of them move towards a stationary siren of frequency 160 Hz. Calculate the speed of the motorcyclist, if it is given that he does not observes any beats (take, the speed of sound $= 330\ m\ s^{-1}$).

A) $25\ m\ s^{-1}$ B) $30\ m\ s^{-1}$
C) $35.02\ m\ s^{-1}$ D) $40\ m\ s^{-1}$

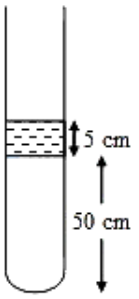
17. For Simple Harmonic Oscillator, the potential energy is equal to kinetic energy

A) twice during each cycle
B) four times during each cycle
C) when $x = 0$
D) when $x = a$

18. An ideal diatomic gas occupies a volume V_1 at a pressure P_1 . The gas undergoes a process in which the pressure is proportional to the volume. At the end of process the root mean square speed of the gas molecules has doubled from its initial value then the heat supplied to the gas in the given process is

A) $7P_1V_1$ B) $8P_1V_1$ C) $9P_1V_1$ D) $10P_1V_1$

19. A vertical tube of length 100 cm contains a mercury pallet of length 5 cm as shown in the figure. The length of the tube above mercury pallet if the tube is inverted is nearly: (atmospheric pressure = 75 cm Hgof Hg)

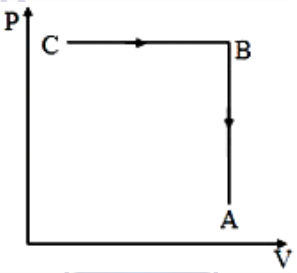


A) 56 cm B) 57 cm C) 60 cm D) 50 cm

20. The pressure and density of a diatomic gas change from (p, ρ) to (p' ,ρ ') during an adiabatic change. If $\frac{\rho'}{\rho} = 32$, value of $\frac{p'}{p}$ is

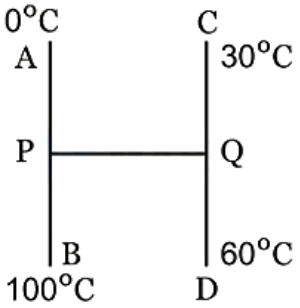
A) 32 B) 1/32 C) 128 D) 1/128

21. Ideal gas is taken through a process as shown in figure



A) in process AB , work done by system is positive
B) in process AB , heat is rejected out of the system
C) in process AB , internal energy increases
D) all of the above

22. Three identical rods AB,CD and PQ are joined as shown P and Q are mid points of AB and CD respectively. Ends A, B, C and D are maintained at $0°C$,$100°C$, $30°C$ and $60°C$ respectively. The direction of heat flow in PQ is



A) From P to Q
B) From Q to P
C) Heat does not flow in PQ
D) Data not sufficient

23. An iron bar $10\ \text{cm}$ in length is kept at $20\ ^\circ\text{C}$. If the coefficient of linear expansion of iron is $\alpha = 11 \times 10^{-6}\ ^\circ\text{C}^{-1}$, then at $19\ ^\circ\text{C}$ it will be

A) $11 \times 10^{-6}\ \text{cm}$ longer **B)** $11 \times 10^{-6}\ \text{cm}$ shorter
C) $11 \times 10^{-5}\ \text{cm}$ shorter **D)** $11 \times 10^{-5}\ \text{cm}$ longer

24. Two raindrops reach the earth with their terminal velocities in the ratio $4 : 9$. The ratio of their radii is

A) $4 : 9$ **B)** $2 : 3$ **C)** $3 : 2$ **D)** $9 : 4$

25. When one end of the capillary is dipped in water, the height of the water column is h. The upward force of $105\ \text{dyne}$ due to surface tension is balanced by the force due to the weight of the water column. The inner circumference of the capillary is
(Surface tension of water $= 7 \times 10^{-2}\ \text{N m}^{-1}$)

A) $1.5\ \text{cm}$ **B)** $2\ \text{cm}$ **C)** $2.5\ \text{cm}$ **D)** $3\ \text{cm}$

26. A rubber cord of density d, Young's modulus Y and length L is suspended vertically. If the cord extends by a length $0.5L$ under its own weight, then L is

A) $\frac{Y}{2dg}$ **B)** $\frac{Y}{dg}$ **C)** $\frac{2Y}{dg}$ **D)** $\frac{dg}{2Y}$

27. The pressure of a medium is changed from $1.01 \times 10^5\ \text{Pa}$ to $1.165 \times 10^5\ \text{Pa}$ and change in volume is 10% keeping temperature constant.The bulk modulus of the medium is

A) $204.8 \times 10^5\ \text{Pa}$ **B)** $102.4 \times 10^5\ \text{Pa}$
C) $51.2 \times 10^5\ \text{Pa}$ **D)** $1.55 \times 10^5\text{Pa}$

28. If the value of g acceleration due to gravity at the earth surface is $10\ \text{m s}^{-2}$. Its value in m s^{-2} at the centre of the earth, which is assumed to be a sphere of radius R metre and uniform mass density is

A) 5 **B)** Zero **C)** 10 **D)** 1

29. The time period of a satellite of earth is $5\ \text{h}$. If the separation between the earth and the satellite is increased to 4 times the previous value, the new time period will become

A) $40\ \text{h}$ **B)** $20\ \text{h}$
C) $10\ \text{h}$ **D)** $80\ \text{h}$

30. Four similar point masses (m each) are symmetrically placed on the circumference of a disc of mass M and radius R. Moment of inertia of the system about an axis passing through centre O and perpendicular to the plane of the disc will be

A) $MR^2 + 4mR^2$ **B)** $MR^2 + \frac{8}{5}mR^2$
C) $mR^2 + 4MR^2$ **D)** $\frac{MR^2}{2} + 4mR^2$

31. A thin uniform rod of length l and mass m is swinging freely, about a horizontal axis passing through its end. Its maximum angular speed is ω. The maximum height, to which its centre of mass rises, is

A) $\frac{1}{3}\frac{l^2\omega^2}{\text{g}}$ **B)** $\frac{1}{6}\frac{l\omega}{\text{g}}$
C) $\frac{1}{2}\frac{l^2\omega^2}{\text{g}}$ **D)** $\frac{1}{6}\frac{l^2\omega^2}{\text{g}}$

32. A $70\ \text{kg}$ man standing on ice throws a $3\ \text{kg}$ body horizontally at $8\ \text{m s}^{-1}$. The friction coefficient between the ice and his feet is 0.02. The distance, through which the man slip is

A) $0.3\ \text{m}$ **B)** $2\ \text{m}$ **C)** $1\ \text{m}$ **D)** ∞

33. The distance of the centre of mass of a hemispherical shell of radius R from its centre is

A) $\frac{\text{R}}{2}$ **B)** $\frac{\text{R}}{3}$ **C)** $\frac{2\text{R}}{2}$ **D)** $\frac{2\text{R}}{3}$

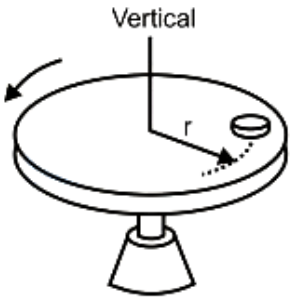
34. An object of mass $10\ \text{kg}$ falls from rest through a vertical distance of $10\ \text{m}$ and acquires a velocity of $10\ \text{m s}^{-1}$. The work done by the push of air on the object is $(g = 10\ \text{m s}^{-2})$

A) $500\ \text{J}$ **B)** $-500\ \text{J}$ **C)** $250\ \text{J}$ **D)** $-250\ \text{J}$

35. A $1.0\ \text{kg}$ ball drops vertically into a floor from a height of $25\ \text{cm}$. It rebounds to a height of $4\ \text{cm}$. The coefficient of restitution for the collision is

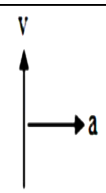
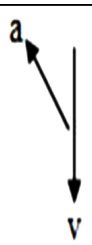
A) 0.16 **B)** 0.32 **C)** 0.40 **D)** 0.56

36. A small coin of mass $40\ \text{g}$ is placed on the horizontal surface of a rotating disc. The disc starts from rest and is given a constant angular acceleration $\alpha = 2\ \text{rad s}^{-2}$. The coefficient of static friction between the coin and the disc is $\mu_\text{s} = 3/4$ and the coefficient of kinetic friction is $\mu_\text{k} = 0.5$. The coin is placed at a distance $r = 1\ \text{m}$ from the centre of the disc. The magnitude of the resultant force on the coin exerted by the disc just before it starts slipping on the disc is :



A) $0.2\ \text{N}$ **B)** $0.3\ \text{N}$
C) $0.4\ \text{N}$ **D)** $0.5\ \text{N}$

37. Shown here are the velocity and acceleration vectors for an object in several different types of motion. In which case is the object slowing down and turning to the right

A)  B)  C)  D)

38. A car of mass $1000\ \text{kg}$ moves on a circular path with a constant speed of $16\ \text{m s}^{-1}$. It is turned by $90\ ^\circ$after travelling $628\ \text{m}$ on the road. The centripetal force acting on the car is

A) $160\ \text{N}$ **B)** $320\ \text{N}$ **C)** $640\ \text{N}$ **D)** $1280\ \text{N}$

39. A room (cubical) is made of mirrors. An insect is moving along the diagonal on the floor such that the component of velocity of direct image of insect on two adjacent wall mirrors along those mirrors is $10\ \text{cm s}^{-1}$. The velocity of image of the insect in the ceiling mirror is

A) $10\ \text{cm s}^{-1}$ **B)** $20\ \text{cm s}^{-1}$
C) $\frac{10}{\sqrt{2}}\ \text{cm s}^{-1}$ **D)** $10\sqrt{2}\ \text{cm s}^{-1}$

40. Speeds of two identical cars are u and $4u$, respectively, at a specific instant. If the same retardation is applied to both the cars, the ratio of the respective distances in which the two cars are stopped, from that instant, is

A) $1:1$ **B)** $1:4$
C) $1:8$ **D)** $1:16$

41. If the first one-third of a journey is travelled at $20\ \text{km h}^{-1}$, next one-third at $40\ \text{km h}^{-1}$ and the last one-third at $60\ \text{km h}^{-1}$, then the average speed for the whole journey will be

A) $32.7\ \text{km h}^{-1}$ **B)** $35\ \text{km h}^{-1}$
C) $40\ \text{km h}^{-1}$ **D)** $45\ \text{km h}^{-1}$

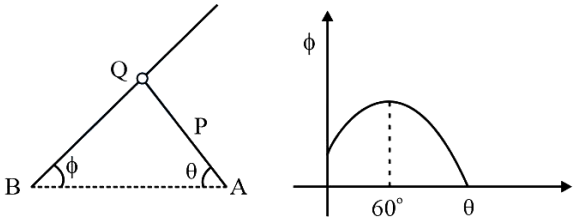
42. The dimensional formula of magnetic permeability is

A) $[\text{M}^0\text{L}^{-1}\text{T}]$ **B)** $[\text{M}^0\text{L}^2\text{T}^{-1}]$
C) $[\text{M}^0\text{L}^2\text{T}^{-1}\text{A}^2]$ **D)** $[\text{MLT}^{-2}\text{A}^{-2}]$

43. Dimensional formula of the physical quantity, resistance is

A) $[\text{ML}^2\text{T}^{-3}\text{A}^{-2}]$ **B)** $[\text{ML}^{-1}\text{T}^3\text{A}^{-1}]$
C) $[\text{ML}^2\text{T}^{-2}\text{K}^{-1}]$ **D)** $[\text{ML}^{-2}\text{T}^{-3}\text{A}^2]$

44. A rod P of length $1\ \text{m}$, is hinged at one end A and there is a ring attached to the other end. Another long rod Q is hinged at B and it passes through the ring. The rod P is rotated about an axis which is perpendicular to the plane in which both rods are present and the variations between the angles θ and ϕ are plotted as shown.The distance between the hinges A and B is



A) $3\ \text{m}$ **B)** $1\ \text{m}$ **C)** $2\ \text{m}$ **D)** $2\sqrt{2}\ \text{m}$

45. The magnitude of x and y components of $\vec{A}$ are 7 and 6 respectively. Also, the magnitudes of x and y components of $\vec{A}+\vec{B}$ are 11 and 9 respectively. Calculate the magnitude of vector $\vec{B}$.

A) 10 **B)** 5 **C)** 6 **D)** 3

Chemistry

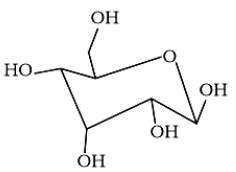
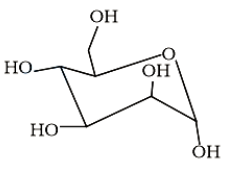
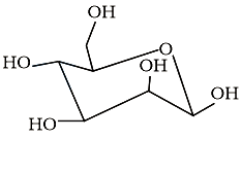
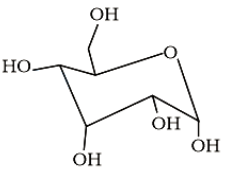
46. Metal chloride A is soluble in hot water but insoluble in cold water. Select correct statement about A. Thus

A) A can give yellow ppt. with K_2CrO_4
B) A can give white ppt with K_2SO_4
C) A can give yellow ppt with KI
D) All of the above are correct statements.

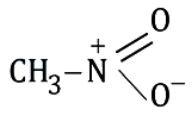
47. Which of the given polymres is a natural polymer

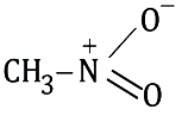
A) Polyester
B) Glyptal
C) Starch
D) $\text{Nylon}-2-\text{Nylon}-6$

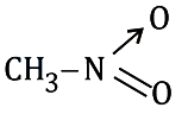
48. D-mannose is epimeric with D-glucose at C_2 . Which of the following structure represents β -D-mannopyranose?

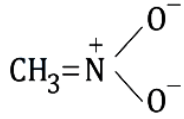
A) 
B) 
C) 
D) 

49. Which of the following is not a structure of nitromethane molecule?

A) 

B) 

C) 

D) 

50. Arrange these compounds in decreasing order of reactivity for the nucleophilic addition reactions

(1) Acid chloride
(2) Aldehyde
(3) Ketone
(4) Anhydride

Select the correct answer from the codes given below

A) $1 > 2 > 3 > 4$ **B)** $4 > 3 > 2 > 1$
C) $3 > 2 > 1 > 4$ **D)** $1 > 4 > 2 > 3$

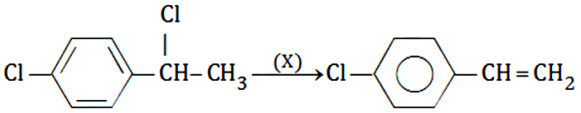
51. Which reagent is used to differenciate between aldehyde and ketone?

A) Fehling's solution **B)** Tollen's reagent
C) Schiff's reagent **D)** All of these

52. The compound formed when Ethyl bromide is heated with dry Silver oxide is

A) dimethylether **B)** diethylether
C) methylalcohol **D)** ethylalcohol

53. In the given reaction sequence



X will not be

A) alc. KOH/ Δ **B)** $C_2H_5\bar{O}/\Delta$
C) alc. NaOH/ Δ **D)** $NaNH_2/\Delta$

54. For which of the following d^n configuration octahedral complex, cannot exist in both high spin and low spin forms

(I) d^3
(II) d^5
(III) d^6
(IV) d^8

A) I, II and III **B)** II, III and IV
C) I and IV **D)** None of these

55. $KMnO_4$ can be prepared from K_2MnO_4 as per the reaction,

$$3MnO_4^{2-} + 2H_2O \rightleftharpoons 2MnO_4^- + MnO_2 + 4OH^-$$

The reaction can go to completion by removing OH^- ions by adding

A) CO_2 **B)** SO_2 **C)** HCl **D)** KOH

56. The one which is tetrabasic is :

A) Ortho phosphorus acid
B) Ortho phosphoric acid
C) Meta phosphoric acid
D) Pyro phosphoric acid

57. Which of the following is an example of heterogeneous catalysis reaction?

A) $2SO_2\,(g) + O_2\,(g) \xrightarrow{NO(g)} 2SO_3\,(g)$
B) Hydrolysis of aqueous sucrose solution in the presence of aqueous mineral acid
C) $CH_3COOCH_3\,(l) + H_2O\,(l) \xrightarrow{HCl(l)} CH_2COOH\,(l) + CH_2O$
D) $CO\,(g) + 2H_2\,(g) \xrightarrow{Cu,\,ZnO-Cr_2O_3(s)} CH_3OH\,(l)$

58. The rate constant of the reaction $2H_2O_2\ (aq) \longrightarrow 2H_2O\ (\ell) + O_2\ (g)$ is $3 \times 10^{-3} min^{-1}$

At what concentration of H_2O_2 , the rate of the reaction will be $2 \times 10^{-4}\ Ms^{-1}$?

A) $6.67 \times 10^{-3}\ M$ **B)** 2 M
C) 4 M **D)** 0.08 M

59. When equal number of coulomb of electricity is passed through aqueous solution of AX and BX_2 and if number of moles of A and B deposited respectively are Y and Z then -

A) $Y = Z$ **B)** $Y < Z$
C) $Z = 2Y$ **D)** $Y = 2Z$

60. Which one of the following statements regarding Henry's law is not correct?

A) The value of K_H changes with function of the nature of the gas.
B) Higher the value of K_H at a given pressure, higher is the solubility of the gas in the liquids
C) The partial pressure of the gas in vapour phase is proportional to the mole fraction of of the gas in the solution.
D) Different gases have different K_H (Henry's law constant) value at a same temperature.

61. The void space in a primitive unit cell is:

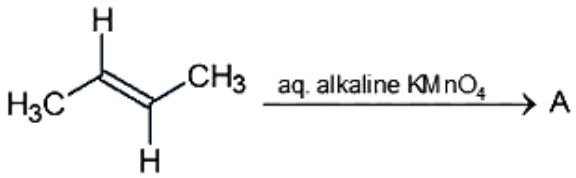
A) 48% void space
B) 24% void space
C) 96% void space
D) 50% void space

62. Which of the following is responsible for the depletion of the ozone layer in the upper strata of the atmosphere?

A) Chlorine **B)** Ferrocenes
C) Fullerenes **D)** Freons

63. 1, 2-dibromopropane, when heated with Zn dust in ethanol, gives

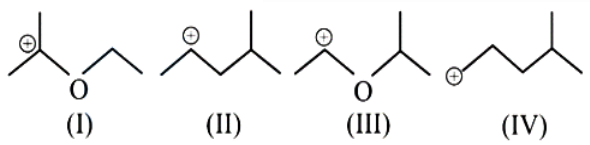
A) propane **B)** propene **C)** propyne **D)** ethyne

64. 

Which one of the following is true about this reaction?

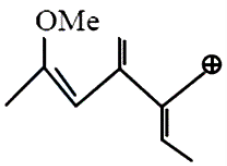
A) A is meso-2, 3-butanediol formed by syn addition
B) A is meso-2, 3-butanediol formed by anti-addition
C) A is a racemic mixture of d and l-2, 3-butanediol formed by anti-addition
D) A is a racemic mixture of d and l-2, 3-butanediol formed by syn addition

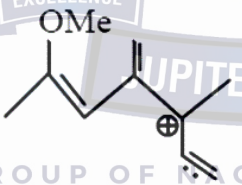
65. The correct stability order for the following species is

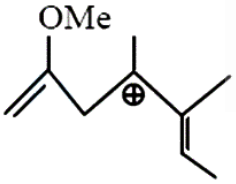


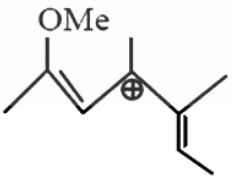
A) (II) > (IV) > (I) > (III)
B) (I) > (II) > (III) > (IV)
C) (II) > (I) > (IV) > (III)
D) (I) > (III) > (II) > (IV)

66. Select the most stable carbocation:

A) 

B) 

C) 

D) 

67. Which among the following is a false statement?

A) SiO_2 has a structure similar to that of CO_2
B) Natural Si exists only in the combined state
C) Si can be prepared by reducing SiO_2 with Mg
D) Si does not exist in graphite-like structure, but exists only in diamond like structure

68. Which of the following statement is/are true -
(I) Borazine is aromatic
(II) There are four isotopic disubstituted borazine molecules $B_3N_3H_4X_2$
(III) Borazine is more reactive towards addition reactions than benzene
(IV) Banana bonds in B_2H_6 are longer but stronger than normal $B-H$ bonds

A) I, II and III
B) I, II and IV
C) I, II, III and IV
D) Only II

69. The following compounds have been arranged in the order of increasing thermal stabilities. Identify the correct order.
K_2CO_3 (I), $MgCO_3$ (II), $CaCO_3$ (III), $BeCO_3$ (IV)

A) I < II < III < IV
B) IV < II < III < I
C) IV < II < I < III
D) II < IV < III < I

70. Which compound will liberate oxygen when reacts with ice cold water?

A) Na_2O_2 B) KO_2 C) Na_2O D) Cs_2O_2

71. Hard water can block radiators due to the formation of

A) Insoluble calcium and magnesium salts
B) Insoluble sodium salts
C) Insoluble phosphate salts
D) Insoluble potassium salts

72. Ratio in hydrogen and oxygen in water molecule by volume is

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

73. In the reaction Bromine
$3\ Br_2 + 6\ OH^- \rightarrow 5\ Br^- + BrO_3^- + 3\ H_2O$

A) is reduced
B) is oxidised
C) disproportionates
D) disintergrates

74. The reaction of aqueous $KMnO_4$ with H_2O_2 in acidic conditions gives

A) Mn^{4+} and MnO_2
B) Mn^{2+} and O_2
C) Mn^{4+} and O_2
D) Mn^{2+} and O_3

75. How many litres of water must be added to 1 litre of an aqueous solution of HNO_3 with a pH of 1 to create an aqueous solution with pH of 2?

A) 5 B) 7 C) 9 D) 11

76. Solubility product (K_{sp}) of saturated $PbCl_2$ in water is $1.8 \times 10^{-4} mol^3\ dm^{-9}$. What is the concentration of Pb^{2+} in the solution?

A) $(0.45 \times 10^{-4})^{\frac{1}{3}}$ mol dm^{-3}
B) $(1.8 \times 10^{-4})^{\frac{1}{3}}$ mol dm^{-3}
C) $(0.9 \times 10^{-4})^{\frac{1}{3}}$ mol dm^{-3}
D) $(2.0 \times 10^{-4})^{\frac{1}{3}}$ mol dm^{-3}

77. Which of the following is not a characteristic property of chemical equilibrium?

A) Rate of forward reaction is equal to rate of backward reaction at equilibrium
B) After reaching the chemical equilibrium, the concentrations of reactants and products remain unchanged with time
C) For $A(g) \rightleftharpoons B(g)$, K_c is 10^{-2}. If this reaction is carried out in the presence of catalyst, the value of K_c decreases

D) After reaching the equilibrium, both forward and backward reactions continue to take place

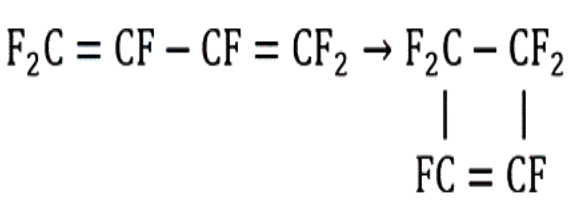
78. For the following equilibrium in gaseous phase, $N_2O_4 \rightleftharpoons 2NO_2$
NO_2 is 50 % of the total volume, when equilibrium is set up. Hence, percent dissociation of N_2O_4 is:

A) 50 % B) 25 %
C) 66.66 % D) 33.33 %

79. What is the melting point of benzene if $\Delta H_{fusion} = 9.95$ kJ/mol and $\Delta S_{fusion} 35.7$ J/K-mol?

A) $278.7^{\circ}C$ B) 278.7 K
C) 300 K D) 298 K

80.



For this reaction (ring closure), $\Delta H = -49$ kJ mol^{-1}, $\Delta S = -40.2$ Jk^{-1} mol^{-1} upto what temperature is the forward reaction spontaneous?

A) $1492^{\circ}C$ B) $1219^{\circ}C$ C) $946^{\circ}C$ D) $1080^{\circ}C$

81. Which is correct for a diatomic molecule, according to the kinetic theory of gases

A) The root mean square velocity is inversely proportional to the temperature
B) The pressure exerted by the gas is proportional to the root mean square velocity of the molecules
C) The mean translational kinetic energy of the molecules is proportional to the absolute temperature
D) The pressure exerted by the gas is proportional to the mean velocity of the molecules

82. A gaseous mixture containing He, CH_4 and SO_2 was allowed to effuse through a fine hole then find what molar ratio of gases coming out initially? (Given mixture contains He, CH_4 and SO_2 in 1 : 2 : 3 mole ratio)

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

83. Select incorrect order

A) $H_2O > H_2S > H_2Se > H_2Te$ (Order of bond angle)
B) $HF > HCl > HBr > HI$ (Order of boiling point)
C) $LiCl < BeCl_2 < BCl_3 < CCl_4$ (Order of covalent character)
D) $CaF_2 > CaCl_2 > CaBr_2 > CaI_2$ (Order of melting point)

84. Which of the following has the regular tetrahedral structure?

A) BF_4^- B) SF_4
C) $[Ni(CN)_4]^{2-}$ D) XeF_4

85. The correct order of the decreasing ionic radii among the following isoelectronic species is

A) $K^+ > Ca^{2+} > Cl^- > S^{2-}$
B) $Ca^{2+} > K^+ > S^{2-} > Cl^-$
C) $Cl^- > S^{2-} > Ca^{2+} > K^+$
D) $S^{2-} > Cl^- > K^+ > Ca^{2+}$

86. The correct decreasing order of electropositive character among the following elements Fe, Sc, Rb, Br, Te, F and Ca is:

A) $Fe > Sc > Rb > Br > Te > F > Ca$
B) $Ca > Rb > Sc > Fe > Te > F > Br$
C) $Rb > Ca > Sc > Fe > Br > Te > F$
D) $Rb > Ca > Sc > Fe > Te > Br > F$

87. The ratio of orbit of first excited state of electron to the area of orbit of ground level, for hydrogen atom, will be

A) 16 : 1 B) 4 : 1 C) 8 : 1 D) 2 : 1

88. For a hypothetical hydrogen like atom, the potential energy of the system is given by $U(r) = \frac{-Ke^2}{r^3}$, where r is the distance between the two particles. If Bohr's model of quantization of angular momentum is applicable then velocity of particle is given by :

A) $v = \frac{n^2h^3}{Ke^2 8\pi^3 m^2}$ B) $v = \frac{n^3h^3}{8Ke^2\pi^3 m^2}$
C) $v = \frac{n^3h^3}{24Ke^2\pi^3 m^2}$ D) $v = \frac{n^2h^3}{24Ke^2\pi^3 m^2}$

89. What mass of $CaCO_3$ is required to react completely with 25 ml of 0.75 M HCl according to the reaction $CaCO_3(s) + 2HCl(aq) \rightarrow CaCl_2(aq) + CO_2(g) + H_2O(l)$

A) 1 g B) 0.3 g C) 0.8 g D) 0.93 g

90. Analysis shows that nickel oxide consists of nickel ion with 96% ions having d^8 configuration and 4% having d^7 configuration. Which amongst the following best represents the formula of the oxide?

A) $Ni_{1.02}O_{1.00}$ B) $Ni_{0.96}O_{1.00}$
C) $Ni_{0.98}O_{0.98}$ D) $Ni_{0.98}O_{1.00}$

Biology - (Zoology)

91. Given below are two statements :
Statement I : Fig fruit is a non-vegetarian fruit as it has enclosed fig wasps in it.
Statement II : Fig wasp and fig tree exhibit mutual relationship as fig wasp completes its life cycle in fig fruit and fig fruit gets pollinated by fig wasp.

In the light of the above statements, choose the most appropriate answer from the options 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

92. Which of the following genetically engineered organisms was used by Eli Lilly to prepare human insulin?

A) Bacterium **B)** Yeast
C) Virus **D)** Phage

93. Which of the following enzyme(s) are NOT essential for gene cloning?
A. Restriction enzymes
B. DNA ligase
C. DNA mutase
D. DNA recombinase
E. DNA polymerase

Choose the correct answer from the options given below:

A) C and D only **B)** A and B only
C) D and E only **D)** B and C only

94. Which of the following are the post-transcriptional events in an eukaryotic cell?
A. Transport of pre-mRNA to cytoplasm prior to splicing.
B. Removal of introns and joining of exons.
C. Addition of methyl group at 5' end of hnRNA.
D. Addition of adenine residues at 3 ' end of hnRNA.
E. Base pairing of two complementary RNAs.

Choose the correct answer from the options given below :

A) A, B, C only **B)** B, C, D only
C) B, C, E only **D)** C, D, E only

95. Choose the correct sequence for cranial menings. (Outer to inner)

A) Arachnoid → Duramater → Pia mater
B) Dura mater → Arachnoid → Pia mater
C) Piamater → Arachnoid → Duramater
D) Duramater → Pia mater → Arachnoid.

96. When a nerve fibre is stimulated the inside of the membrane becomes

A) Negatively charged
B) Positively charged
C) Depolarised
D) Filled with acetylcholine

97. Which one of the following pairs is WRONGLY matched?

A) Fruit juice - pectinase
B) Textile - amylase
C) Detergents - lipase
D) Alcohol - nitrogenase

98. Match the following bacteria with the diseases and select the correct option

	Column I		Column II
A.	*Treponema pallidum*	1.	Plague
b.	*Yersinia pestis*	2.	Anthrax
C.	*Bacillus anthracis*	3.	Syphilis
D.	*Vibrio*	4.	Cholera

A) A-1, B-3, C-2, D-4 **B)** A-3, B-1, C-2, D-4
C) A-2, B-3, C-1, D-4 **D)** A-4, B-3, C-1, D-2

99. Which one of the following is heterosporous?

A) *Dryopteris* **B)** *Salvinia*
C) *Adiantum* **D)** *Equisetum*

100. Which one of the following conditions in humans is correctly matched with its chromosomal abnormality?
A) Sickle cell anaemia - X linked
B) Down's syndrome - 44 autosomes + XO
C) Klinefelter's syndrome - 44 autosomes + XXY
D) Colour blindness - Y linked

101. Foetal ejection reflex is produced by

A) Fully developed foetus only
B) Placenta only
C) Fully developed foetus and placenta
D) Fully developed foetus, placenta and endometrium

102. In a monoecious plant:

A) Male and female sex organs are on different individuals
B) Male and female gametes are of two morphologically distinct types
C) Male and female sex organs are on the same individual
D) All the stamens are fused to form one unit

103. Diaphragms, cervical caps and vaults prevent conception by

A) increasing phagocytosis of sperms within uterus
B) suppressing sperm motility
C) inhibiting ovulation and implantation
D) blocking the entry of sperms through the cervix

104. The thick filament of a myofibril is part of the muscle fibre. Select the incorrect statement regarding it.

A) Each thick filament is a polymerized protein of monomeric meromyosins.
B) Each meromyosin has two important parts, a globular head with a short arm and a tail.
C) The heavy meromyosin components form the cross arms of thick filaments.
D) Short arm of the light meromyosin has an active ATPase enzyme activity.

105. Which one of the following organs in the human body is most affected due to shortage of oxygen?

A) Lungs B) Heart C) Kidney D) Brain

106. In DCT, antidiuretic hormone makes the filtrate _____ to blood plasma.

A) hypertonic B) hypotonic
C) isotonic D) both (A) and (B)

107. Bipolar neurons are found in

A) retina and cerebral cortex both
B) retina but not in cerebral cortex
C) cerebral cortex but not in retina
D) neither retina nor cerebral cortex

108. Mechanism of blood clotting is given below:

An injury or a trauma stimulates the platelets in the blood to release certain factors which activate the mechanism of coagulation. An enzyme complex, _____P_____ is formed by a series of linked enzymic reactions (_____Q_____process) involving a number of factors present in the plasma in an inactive state. This enzyme complex is required for formation of_____R_____. _____S_____ ions play a very important role in clotting.

Identify the correct option that represents P, Q, R, and S.

A)

P	Q	R	S
thrombokinase	inhibitory	prothrombin	magnesium

B)

P	Q	R	S
prothrombin	cascade	thrombin	magnesium

C)

P	Q	R	S
thrombin	cascade	thrombokinase	calcium

D)

P	Q	R	S
thrombokinase	cascade	thrombin	calcium

109. Which of the following enzymes is found in pancreatic juice?

A) Nuclease B) Enterokinase
C) Aminopeptidase D) Dipeptidase

110. If the level of glucose drops in the blood, the body releases _____ to bring it back to normal.

A) insulin from beta cells of pancreas
B) calcitonin from thyroid gland
C) glucagon from alpha cells of pancreas
D) adrenaline from adrenal medulla

111. In cockroach, the common duct of salivary reservoir opens at the base of the

A) Pharynx B) Maxilla C) Mandible D) Hypopharynx

112. The connective tissue which connects bones to muscles are called

A) Tendons B) Ligaments C) Cartilage D) Bones

113. Which of the following phylum possess multicellular, organ grade level of organisation?
1. Platyhelminthes
2. Porifera
3. Nematode
4. Protozoa

A) 1, 2 and 3 are correct
B) 1 and 2 are correct
C) 2 and 4 are correct
D) 1 and 3 are correct

114. An acoelomate animal with bilateral symmetry is:

A) Jelly Fish B) Liver Fluke
C) *Pleurobrachia* D) *Ancylostoma*

115. Ethanol is commercially produced through a particular species of

A) Saccharomyces B) Clostridium
C) Trichoderma D) Aspergillus.

116. The term 'active immunity' means

A) Resistance developed after disease
B) Resistance developed before disease
C) Resistance rate of heart beat
D) Increasing quantity of blood

117. Similarity developed in distantly related groups as an adaptation to the same function is called

A) Convergent evolution B) Connecting link

C) Missing link
D) Divergent evolution

118. A girl of normal vision whose father was colourblind marries a man of normal vision whose father was also colourblind. Their sons would be (of total number of $sons$)

A) All colourblind
B) 50% colourblind
C) All normal
D) 25% colourblind

119. Diaphragms, cervical caps and vaults are

A) Are non-usable
B) For female use only
C) For male use only
D) None of these

120. The layer of cells immediately surrounding the ovum but outside the zona pellucida is called

A) Corona radiata
B) Membrana granulosa
C) Theca interna
D) Germinal epithelium

121. Polar bodies are formed during

A) Spermatogenesis
B) Oogenesis
C) Gametogenesis
D) Spermateleosis

122. Which one of the following pairs is incorrectly matched?

A) Glucagon - Beta cells (source)
B) Somatostatin - Delta cells (source)
C) Corpus luteum - Relaxin (secretion)
D) Insulin - Diabetes mellitus (disease)

123. Which hormone stimulates the secretion of milk during sucking of milk by baby

A) Oxytocin
B) Relaxin
C) Prolactin
D) Progesteron

124. The dark bands (A-bands) of a skeletal muscle are known as

A) Isotropic bands
B) Anisotropic bands
C) Intercalated disc
D) Cross bridges

125. Phallangeal formula of hand of man is

A) $1,2,2,2,2$
B) $2,1,1,1,1$
C) $2,3,3,3,3$
D) $2,3,3,2,2$

126. Which of the following nitrogenous substance is highly toxic

A) Urea
B) Uric acid
C) Amino acid
D) Ammonia

127. In distal convoluted tubule of the nephrons

A) Na reabsorption requires energy
B) Secretion of K ions does not require energy
C) Water reabsorption requires energy
D) Ammonia is secreted

128. A patch of nodal tissue responsible for initiating the rhythmic contractile activity of heart is present in

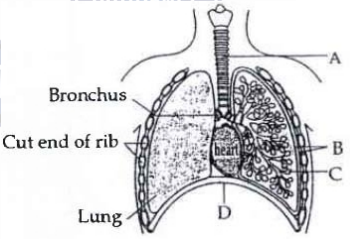
A) Lower left corner of the left ventricle
B) Upper right corner of the right atrium
C) Lower left corner of the right ventricle
D) Upper left corner of the left atrium

129. Match the following column.

Column - I	Column - II
(a) Lymphocytes	(I) Responsible for the immune responses of the body
(b) Monocytes	(II) Are the agranulocytes
(c) Neutrophiles	(III) Most abundant cells of the total WBCs.
(d) Basophiles	(IV) Inflammatory reactions

A) $a-II; b-III, c-IV, d-I$
B) $a-I, b-II, c-III, d-IV$
C) $a-IV, b-III, c-II, d-I$
D) $a-III, b-IV, c-I, -II$

130. The figure shows a diagrammatic view of human respiratory system with labels A, B, C and D. Select the option which gives correct identification and main function and / or characteristic.



A) C - Alveoli - Thin walled vascular bag like structures for exchange of gases.
B) D - Lower end of lungs - Diaphragm pulls it down during inspiration.
C) A - Trachea - Long tube supported by complete cartilaginous rings for conducting inspired air.
D) B - Pleural membrane - Surround ribs on both sides to provide cushion against rubbing.

131. In which form CO_2 is mostly carried by blood

A) Bicarbonate ions
B) Carbonic acid
C) Carbamino compound
D) Carboxyhaemoglobin

132. In cockroach, ootheca coveres...

A) Sperms, in male
B) Fertilised eggs, in female
C) Fertilised eggs, in male

D) Spermatheca, in female

133. Which is incorrect about compound epithelium tissue ?

A) Multi layered and limited role in secretion.
B) Function is to provide protection against chemical and mechanical stresses.
C) They cover dry surface of the skin and moist surface of buccal cavity.
D) Produces hormone only

134. Give the correct match in the following

column $-I$	column $-II$
(A) Flame Cells	(p) sponges
(B) Collar Cells	(q) Hydra
(C) stinging cell	(r) Planaria
	(s) Ascaris

A) $\mathrm{A} = r, \mathrm{B} = p,\ \mathrm{C} = q$
B) $\mathrm{A} = r, \mathrm{B} = p,\ \mathrm{C} = s$
C) $\mathrm{A} = r, \mathrm{B} = s,\ \mathrm{C} = p$
D) $\mathrm{A} = r, B = q,\ \mathrm{C} = s$

135. 'Portuguese man of war' is

A) Soldier of World War $-I$
B) Portuguese soldier
C) A sponge
D) A polymorphic, colonial coelenterate

Biology - (Botany)

136. While trying to find out the characteristic of a newly found animal, a researcher did the histology of adult animal and observed a cavity with presence of mesodermal tissue towards the body wall but no mesodermal tissue was observed towards the alimentary canal. What could be the possible coelome of that animal?

A) Acoelomate
B) Pseudocoelomate
C) Schizocoelomate
D) Spongocoelomate

137. Role of the water vascular system in Echinoderms is _____.
A. Respiration and Locomotion
B. Excretion and Locomotion
C. Capture and transport of food
D. Digestion and Respiration
E. Digestion and Excretion
Choose the correct answer from the options given below :

A) A and B Only
B) A and C Only
C) B and C Only
D) B, D and E Only

138. Which of the following statements are true?

1. Gross Primary Productivity is always greater than Net Primary Productivity.

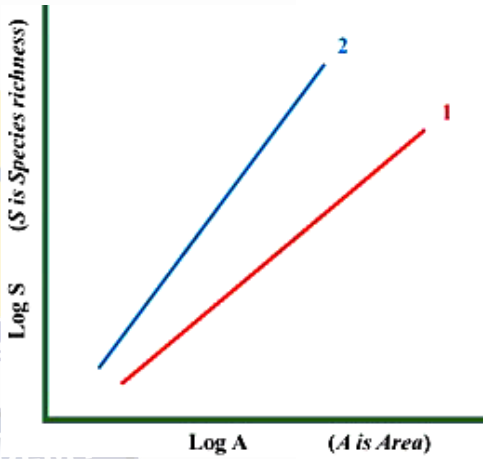
2. Gross Primary Productivity plus the respiration losses give us Net Primary Productivity.

3. The rate of respiration of plants affects the Net Primary Productivity.

4. Net Primary Productivity + Gross Primary Productivity = Respiratory loss.

A) 1 –True ; 2 –False ; 3 –True ; 4 –False
B) 1 –True ; 2 –True ; 3 –False ; 4 –False
C) 1 –False ; 2 –False ; 3 –True ; 4 –False
D) 1 –True ; 2 –True ; 3 –True ; 4 –False

139. Observe the graph of area versus species richness and select the options that explain lines 1 and 2.



A) 1 - Molluscs in New York State and 2 - plants in Britain
B) 1 - plants in Britain and 2 - birds in California
C) 1 - frugivorous birds and mammals in the tropical forests of different continents and 2 - plants in Britain
D) 1 - Molluscs in New York state and 2 - frugivorous birds and mammals in the tropical forests of different continents

140. When resources are limited, populations exhibit logistic growth. In logistic growth, population expansion decreases as resources become scarce, levelling off when the carrying capacity of the environment is reached, resulting in a _____ curve.

A) S-shaped.
B) J-shaped.
C) Straight line.
D) Circular.

141. Which of the following will inactivate the process of catalysis in the catalytic converters fitted in automobiles?

A) Running very fast
B) Use of leaded petrol

C) Using BS IV fuel
D) Use of low sulphur fuel

142. The vector must also have one unique recognition site to enable foreign DNA to be inserted into the vector during the generation of an rDNA molecule. Most of the commonly used vectors contain unique recognition sites for several restriction enzymes in a small region of DNA which is referred to as a polylinker or multiple cloning site (MCS). An MCS provides:

A) Ability to separate DNA fragments
B) Flexibility in the choice of restriction enzyme
C) Flexibility in selectable marker
D) Ability of DNA to mutate itself

143. To produce insulin via a non-human cell, which of the following would be required to be inserted in the vector's plasmid?

A) a segment of DNA from a human
B) a segment of DNA from another bacterium
C) a molecule of insulin
D) an enzyme

144. Which of the following are common freshwater fishes?

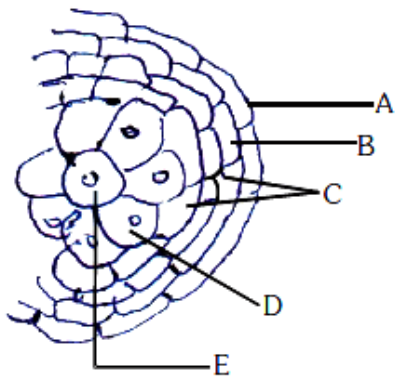
A) *Mackerel* and Rohu
B) Rohu, common carp and *Catla*
C) Hilsa and Sardine
D) None of these

145. How many of these statements are correct?

(i) In transcription, adenosine pairs with uracil.
(ii) Regulation of lac operon by a repressor is referred to as positive regulation.
(iii) The human genome has approximately 50,000 genes.
(iv) DNA fingerprinting utilizes VNTRs and RFLP.

A) Two B) Three C) Four D) One

146. Observe the diagram of T.S. of young anther given here and find the incorrect match.



A) B - Helps in dehiscence of anther
B) C - Absent in mature dehiscent anther
C) D - Provides protection
D) E - Undergoes meiosis to form microspores

147. Who demonstrated that photosynthesis is essentially a light-dependent reaction?

A) Cornelius van Niel B) Julius van Sach
C) Ingenhousz D) T.W. Engelmann

148. Which one of the following is not a nitrogen fixing organism?

A) Anabaena B) Nostoc
C) Azotobacter D) Pseudomonas.

149. When $12H^+$ pass through $F_0 - F_1$ particle, how many ATPs are produced?

A) 6 ATP B) 4 ATP C) 8 ATP D) 10 ATP

150. Root pressure is maximum when

A) Transpiration is high and absorption is very low
B) Transpiration is very low and absorption is high
C) Transpiration and absorption both are high
D) Transpiration and absorption both are low.

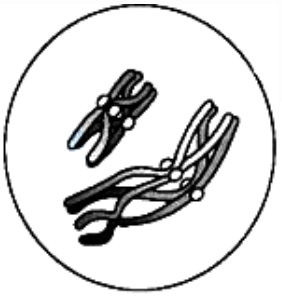
151. Auxin increases the _____ of cell walls.

A) Plasticity B) Thickness
C) Porosity D) Rigidity

152. The main organelle involved in modification and routing of newly synthesized proteins to their destinations is

A) Chloroplast B) Glyoxysomes
C) Endoplasmic reticulum D) Golgi apparatus

153. Correctly identify the stage of cell division shown in the given diagram.



A) Prophase-I B) Prophase-II
C) Anaphase of Mitosis. D) Metaphase -II

154. A tissue is characterized by the presence of thin walls and isodiametric cells that are either closely packed or have intercellular spaces. This tissue is found in

A) Shoot apex B) Wood fibres
C) Pith of monocot root D) Bast fibres

155. Lateral roots in higher plants arise from

A) Endoderm **B)** Epidermis **C)** Cortex **D)** Pericycle

156. The property not shown by the "amphibians of the plant kingdom" is

A) The plant body is thallus like, attached to substratum by help of rhizoids
B) The antherozoids are released in water for fertilization
C) Zygote formed undergoes meiotic division immediately
D) They have leaf like, stem like and root like structures

157. The slime moulds are characterized by the presence of

A) elaters **B)** pseudoelaters
C) myxamoebae **D)** capitulum

158. A homonym is

A) Two or more names for the same taxon
B) Species name repeats the generic name
C) Identical name of two different species
D) Name given to a taxon in local language

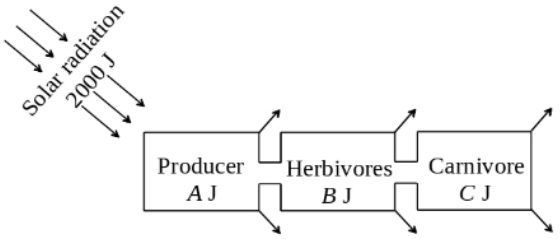
159. Which of the following is not according to the Binomial nomenclature?

A) The first word represents the genus and the second represents species.
B) The names are written in Latin and are italicized
C) Biological names can be written in any language
D) If the name is hand written, it has to be underlined separately.

160. Initially ...A... biodiversity hot spots were identified but subsequently nine more have been added to the list, bringing the total number of biodiversity hot spot in the world to .....B... These hot spots are the regions of accelerated habitat loss. Three of these hot spots-Western ghats and Sri Lanka, Indo-Burma and Himalaya, covers our country's, exceptionally high biodiversity regions
Although all the biodiversity hot spots put together covers less than ...C... $\%$ of the earth's land area, the number of species they collectively harbour is extremely high and the strict protection of these hot spots could reduce the ongoing mass extinctions by almost ..D... $\%, A, B, C$ and D in the paragraph refers to

A) $A-25, B-26, C-2, D-30$
B) $A-25, B-34, C-2, D-30$
C) $A-15, B-20, C-2, D-30$
D) None of these

161. Suppose $2000\ \mathrm{J}$ of solar energy is incident on green vegetation. On the basis of $10\ \%$ law of Lindeman. Identify A, B and C



A) $A-20\ \mathrm{J},\ \mathrm{B}-2\ \mathrm{J}, \mathrm{C}-0.2\ \mathrm{J}$
B) $A-200\ \mathrm{J},\ \mathrm{B}-20\ \mathrm{J}, \mathrm{C}-2\ \mathrm{J}$
C) $A-400\ \mathrm{J},\ \mathrm{B}-40\ \mathrm{J}, \mathrm{C}-4\ \mathrm{J}$
D) $A-40\ \mathrm{J},\ \mathrm{B}-4\ \mathrm{J}, \mathrm{C}-0.4\ \mathrm{J}$

162. Two most important factors influencing the life of organisms are

A) Soil, temperature **B)** Light, water
C) Water, temperature **D)** Soil, Light

163. Choose the false pair

A) Lepidopterans - armyworm
B) Coleopterans - beetles
C) Insects - Crab
D) Dipterans – Mosquitoes

164. Restriction in Restriction endonuclease enzyme refers to

A) Cleaving of phosphodiester bond in DNA by the enzyme
B) Cutting of DNA at specific position only
C) Prevention of bacteriophage multiplication in bacteria
D) Cutting each of the two strands of DNA at specific points in sugar phosphate backbone

165. The element absent in RNA is

A) Nitrogen **B)** Sulpher **C)** Oxygen **D)** Hydrogen

166. Haploids can be obtained form

A) A pollen grains **B)** Root apex
C) Shoot apex **D)** Embryo

167. The cells in the root and shoot apex

A) Are rich is protoplasm
B) Have conspicuous nuclei
C) Have their cell wall which are primary in nature, thin and cellulosic with abundant plasmodesmatal connections
D) All of the above

168. Which one of the following is incorrect statement for mitochondrial ETC and oxidative phosphorylation?

A) Enzyme complex I accepts electrons and H^* from $NADH$ and $FADH_2$
B) Passage of protons through the channel is coupled to the catalytic site of the F_1 for ATP production

C) Cytochrome-c is a mobile protein attached to outer surface of inner membrane
D) $6H^*$ passes through F_0 from intermembrane space to the matrix down the electrochemical proton gradient to produce $3ATP$

169. $NADP$ reductase is located

A) On stroma side of membrane
B) On outer membrane of chloroplast
C) In stromal lamallae
D) In cytoplasm

170. The appearance of recombination nodules on homologous chromosomes during meiosis characterizes:

A) Bivalent
B) Sites at which crossing over occurs
C) Terminalization
D) Synaptonemal complex

171. Melonate inhibits the growth of pathogenic bacteria by inhibiting the activity of

A) Dinitrogenase
B) Succinic dehydrogenase
C) Amylase
D) Lipase

172. The genomic DNA of a bacterium is

A) Circular
B) Linear
C) Segmented
D) Rod shaped

173. The vessel elements of angiosperms differ from other elements of xylem in having

A) Simple pits on their radial walls
B) Bordered pits on their lateral walls
C) Simple and bordered pits on their end walls
D) Simple perforation on their end walls

174. Underground food is stored in

A) Solanaceae and Leguminosae
B) Liliaceae and Cruciferae
C) Cruciferae and Solanaceae
D) Solanaceae and Malvaceae

175. Which one of the following is a non-vascular embryophyte

A) Thallophyta
B) Bryophyta
C) Pteridophyta
D) All the above

176. Filaments of Spirogyra are

A) Uniseriate and unbranched
B) Uniseriate and branched
C) Multiseriate and unbranched
D) Multiseriate and branched

177. Which of the following is/are example(s) of deuteromycetes?

A) Alternaria
B) Colletotrichum
C) Trichoderma
D) All of these

178. What is the nuclear material of a bacterium

A) Nucleic acid and histone protein
B) Nucleic acid and cytoplasm
C) Only nucleic acid
D) All the above

179. Included in Solanum.

A) Melongena, Nigrum
B) Mangifera, Panthera
C) Felidae, Canidae
D) Nigrum, Felis

180. In which book has “binomial nomenclature” been used for the first time

A) Histoire naturelle
B) Systema naturae
C) Historia naturalis
D) Historia plantarum