

Instruction

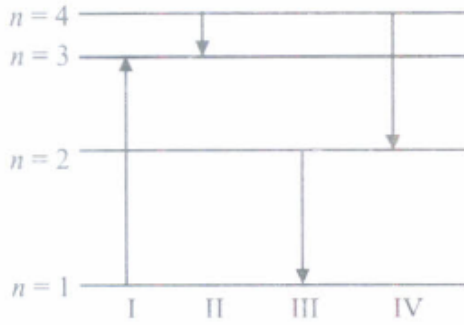
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- Earth is flattened at the poles and bulges at the equator. This is due to the fact that
 - the earth revolves around the sun in an elliptical orbit
 - the angular velocity of spinning about its axis is more at the equator
 - the centrifugal force is more at the equator than at poles
 - none of these
- Which of the following is not true for stationary satellite of the earth?
 - Its time-period is 24 hrs
 - Its angular speed is equal to that of the earth about its own axis
 - It is stationary in space
 - It revolves from west to east
- Sound waves travel at 350 m/s through a warm air and at 3500 m/s through brass. The wavelength of a 700 Hz acoustic wave as it enters brass from warm air _____ .
 - Decreases by a factor 10
 - Increases by a factor 20
 - Increases by a factor 10
 - Decreases by a factor 20
- When the displacement of a particle executing SHM is one-fourth of its amplitude, what fraction of the total energy is the kinetic energy?
 - $\frac{16}{15}$
 - $\frac{15}{16}$
 - $\frac{3}{4}$
 - $\frac{4}{3}$
- Total angular momentum of a rotating body is conserved, if the net torque acting on the body is
 - zero
 - maximum
 - minimum
 - unity
- If the length of a cylinder on heating increases by 2%, the area of its base will increase by:
 - 0.5%
 - 2%
 - 1%
 - 4%
- The dimensional formula of physical quantity is $[M^a L^b T^c]$. Then that physical quantity is :
 - surface tension if $a = 1, b = 1, c = -2$
 - force if $a = 1, b = 1, c = 2$
 - angular frequency if $a = 0, b = 0, c = -1$
 - spring constant if $a = 1, b = -1, c = -2$
- In a given reaction,

$${}_Z^{X^{A-3/4}} \rightarrow {}_{Z+1}^{Y^{A-3/4}} \rightarrow {}_{Z-1}^{K^A} \rightarrow {}_{Z-1}^{K^{A-4}}$$
 Radioactive radiations are emitted in the sequence of:
 - a, b, g
 - g, a, b
 - b, a, g
 - g, b, a
- A beam of light is incident on a glass slab in a direction as shown in the figure. The reflected light is analysed by a polaroid prism. On rotating the polaroid,
 - the intensity remains unchanged
 - the intensity is reduced to zero and remains at zero
 - the intensity gradually reduced to zero and then again increases
 - the intensity increase continuously
 - the intensity increases initially and remains constant afterwards
- The Bernoulli's Theorem is based on the conservation of:
 - mass
 - energy
 - momentum
 - all

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11. The diagram shows the energy levels for an electron in a certain atom. Which transition shown represents the emission of a photon with the most energy?



- a) I b) II c) III d) IV
12. A transverse harmonic wave on a string is described by $y(x, t) = 3\sin(36t + 0.018x + \frac{\pi}{4})$ where x and y are in cm and t is in s. Which of the following statements is incorrect?
- a) The wave is travelling in negative x -direction b) The amplitude of the wave is 3 cm.
c) The speed of the wave is 20 m S^{-1} . d) The frequency of the wave is $\frac{9}{\pi}$ Hz.
13. In the question number 42, the time lag between the current maximum and the voltage maximum is
a) 15.5ms b) 155ms c) 1.55ms d) 1.55s
14. The pressure at a depth of 10m underwater is about
a) four times atmospheric pressure b) two times atmospheric pressure
c) eight times atmospheric pressure d) ten times atmospheric pressure
15. With what minimum acceleration can a fireman slides down a rope while breaking strength of the rope is $\frac{2}{3}$ of his weight?
a) $\frac{2}{3}g$ b) g c) $\frac{1}{3}g$ d) Zero
16. A solid cylinder of mass 3 kg is rolling on a horizontal surface with velocity 4 ms^{-1} . It collides with horizontal spring of force constant 200 Nm^{-1} . The maximum compression produced in the spring will be :
a) 0.7 m b) 0.2 m c) 0.5 m d) 0.6 m
17. The power radiated by a black body is P and it radiates maximum energy at wavelength λ_0 . If the temperature of the black body is now changed so that it radiates maximum energy at wave length $\frac{3}{4}\lambda_0$, the power radiated by it becomes nP . The value of n is :
a) $\frac{3}{4}$ b) $\frac{4}{3}$ c) $\frac{256}{81}$ d) $\frac{81}{256}$
18. Resultant of four non-coplanar non-zero vectors $\vec{a}, \vec{b}, \vec{c}$ and \vec{d} :
a) always lies in the plane containing $\vec{a} + \vec{b}$ b) always lies in the plane containing $\vec{a} - \vec{b}$
c) can be zero d) cannot be zero
19. The sum of the magnitudes of two vectors is 18 and the magnitude of their resultant is 12. If the resultant is perpendicular to one of the vectors, then what are the magnitudes of the two vectors?
a) 5,13 b) 6,12 c) 7,11 d) 8,10
20. **Assertion:** Two vectors are said to be equal if, and only if, they have the same magnitude and the same direction.
Reason: Addition and subtraction of scalars make sense only for quantities with same units.
a) If both assertion and reason are true and reason is the correct explanation of assertion.
b) If both assertion and reason are true but reason is not the correct explanation of assertion.
c) If assertion is true but reason is false. d) If both assertion and reason are false.

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21. There is a hole of area A at the bottom of cylindrical vessel. Water is filled upto a height h and water flows out in t second. If water is filled to a height $4h$, it will flow out in time equal to:
 a) t b) $4t$ c) $2t$ d) $t/4$
22. When a prism is placed in the position of minimum deviation, the ray of light within the prism
 a) Goes parallel to the base b) Goes perpendicular to the base
 c) Makes minimum angle with the base d) Direction is not fixed relative to the base
23. When milk is churned, cream gets separated due to _____.
 a) centripetal force b) centrifugal force c) frictional force d) gravitational force
24. One requires 11 eV of energy to dissociate a carbon monoxide molecule into carbon and oxygen atoms. The minimum frequency of the appropriate electromagnetic radiation to achieve the dissociation lies in :
 a) visible region. b) infrared region. c) ultraviolet region. d) microwave region.
25. A mass of 2 kg is whirled in a horizontal circle by means of a string at an initial speed of 5 revolutions per minute. Keeping the radius constant, the tension in the string is doubled. The new speed is nearly:
 a) 14 rpm b) 10 rpm c) 2.25 rpm d) 7 rpm
26. If the earth stops rotating in its orbit about the sun, there will be variation in the weight of the bodies at:
 a) equator b) latitude 60° c) poles d) no where
27. Two sources of intensity I and $4I$ are used in an interference experiment. The intensity at points where the waves from the two sources superpose with a phase difference (i) zero (ii) $\pi/2$ and (iii) π , are:
 a) $5I, 3I, 0$ b) $5I, 3I, 2I$ c) $9I, 5I, I$ d) $9I, 5I, 0$
28. (A) If all particles of a system lie in a cube, the centre of mass would necessarily be in the cube.
 (R) For a uniform, symmetric body, the centre of mass is necessarily within the matter of the body.
 a) If both assertion and reason are true and reason is the correct explanation of assertion.
 b) If both assertion and reason are true but reason is not the correct explanation of assertion.
 c) If assertion is true but reason is false. d) If both assertion and reason are false.
 e) If assertion is false but reason is true.
29. A battery having 12 V emf and internal resistance 3Ω is connected to a resistor. If the current in the circuit is 1A, then the resistance of resistor and lost voltage of the battery when circuit is closed will be
 a) $7 \Omega, 7 V$ b) $8 \Omega, 8 V$ c) $9 \Omega, 9 V$ d) $9 \Omega, 10 V$
30. The intermediate image formed by the objective of a compound microscope is
 a) real, inverted and magnified b) real, erect and magnified c) virtual, erect and magnified
 d) virtual, inverted and magnified
31. One barn is equal to
 a) 10^{-30} m^2 b) 10^{28} m^2 c) 10^{-28} m^2 d) 10^{30} m^2
32. If force (F), acceleration (a) and time (T) are used as the fundamental units, the dimensional formula for length will be:
 a) $[F^0 a T^2]$ b) $[F a^0 T^2]$ c) $[F a^2 T^0]$ d) $[F a T]$
33. A flat plate of area 10 cm^2 is separated from a large plate by a layer of glycerine 1 mm thick. If the coefficient of viscosity of glycerine is 20 poise, the force required to keep the plate moving with a velocity of 1 cm/sec is

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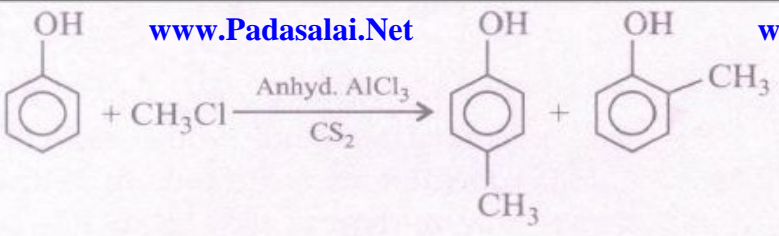
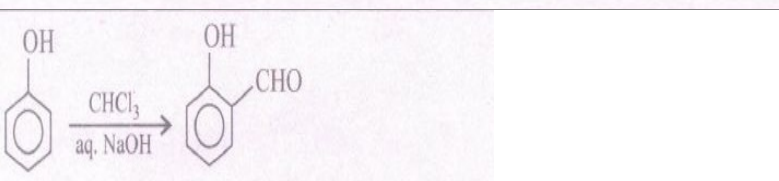
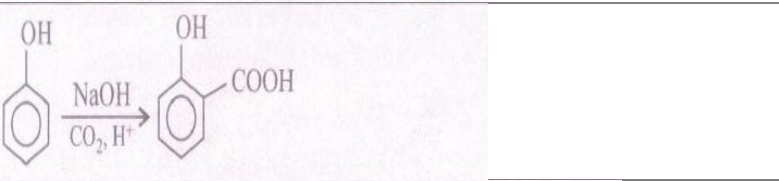
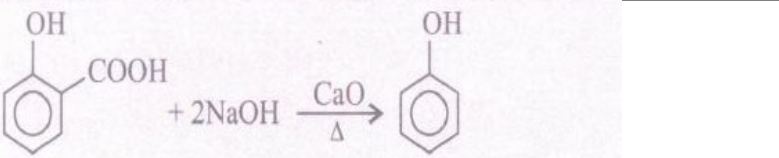
- a) 80 dyne b) 200 dyne c) 800 dyne d) 2000 dyne

34. Direct current is passed through a copper sulphate solution using platinum electrodes. The elements liberated at the electrodes are _____.
- a) copper at anode and sulphur at cathode b) sulphur at anode and copper at cathode
c) oxygen at anode and copper at cathode d) copper at anode and oxygen at cathode
35. (A) Mass is a property of one object alone, whereas weight results from the interaction of two objects. .
(R) If the weight is measured from a non-inertial frame, the measurement gives an apparent weight instead of the actual weight.
- a) If both assertion and reason are true and reason is the correct explanation of assertion.
b) If both assertion and reason are true but reason is not the correct explanation of assertion.
c) If assertion is true but reason is false. d) If both assertion and reason are false.
e) If assertion is false but reason is true
36. A ball A is dropped from a building of height 45 m. Simultaneously another identical ball B is thrown up with a speed 50 m s^{-1} . The relative speed of ball B w.r.t. ball A at any instant of time is (Take $g = 10 \text{ m s}^{-2}$)
- a) 0 b) 10 m s^{-1} c) 25 m s^{-1} d) 50 m s^{-1}
37. A particle is moving along a circular path of radius 5 m with a uniform speed 5 m s^{-1} . What will be the average acceleration when the particle completes half revolution?
- a) Zero b) 10 m s^{-1} c) $10 \pi \text{ m s}^{-2}$ d) $\frac{10}{\pi} \text{ m s}^{-2}$
38. What is the ratio of the shortest wavelength of the Balmer series to the shortest wavelength of the Lyman series?
- a) 4 : 1 b) 4 : 3 c) 4 : 9 d) 5 : 9
39. The temperature of n moles of an ideal gas is increased from T to 4T through a process for which pressure $P = aT^{-1}$ where a is a constant. Then, the work done by the gas is
- a) nRT b) 4nRT c) 2nRT d) 6nRT
40. An object is located 4 m from the first of two thin converging lenses of focal lengths 2 m and 1 m, respectively. The lenses are separated by 3 m. The final image formed by the second lens is located from the source at a distance of
- a) 8 m b) 5.5 m c) 6 m d) 6.5 m
41. If a convex lens of focal length 80 cm and a concave lens of focal length 50 cm are combined together, what will be their resulting power?
- a) + 6.5 D b) - 6.5 D c) + 7.5 D d) - 0.75 D
42. If the current is halved in a coil, then the energy stored is how much times the previous value?
- a) 1/2 b) 1/4 c) 2 d) 4
43. A simple pendulum of mass 200 gm and length 100 cm is moved aside till the string makes an angle of 60° with the vertical. The kinetic and potential energies of the bob, when the string is inclined at 30° to the vertical, are:
- a) $7.174 \times 10^6 \text{ erg}$, $2.626 \times 10^6 \text{ erg}$ b) $7.174 \times 10^6 \text{ erg}$, $2.626 \times 10^6 \text{ erg}$
c) $2.6 \times 10^6 \text{ erg}$, $5.6 \times 10^6 \text{ erg}$ d) $3.6 \times 10^6 \text{ erg}$, $6.2 \times 10^6 \text{ erg}$
44. A person wants a real image of his own, 3 times enlarged. Where should he stand in front of a concave mirror of radius of curvature of 30 cm?
- a) 90 cm b) 10 cm c) 20 cm d) 30 cm

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45. Two particles A and B are projected with same speed so that the ratio of their maximum heights reached in 3 : 1. If the speed of A is doubled without altering other parameters, the ratio of the horizontal ranges attained by A and B is:
 a) 1 : 1 b) 2 : 1 c) 4 : 1 d) 3 : 2 e) 4 : 3
46. Forces of 1 N and 2 N act along the lines $x = 0$ and $y = 0$. The equation of the line along which the resultant lies is given by:
 a) $x - y = 0$ b) $y - 2x = 0$ c) $2y - x = 0$ d) $y + x = 0$
47. Time period of oscillation of a spring is 12 s on earth. What shall be the time period if it is taken to moon?
 a) 6 s b) 12 s c) 36 s d) 72 s
48. The acceleration due to gravity on the planet A is 9 times the acceleration due to gravity on planet B. A man jumps to a height of 2m on the surface of A. What is the height of jump by the same person on the planet B?
 a) $\frac{2}{3}$ m b) $\frac{2}{9}$ m c) 18 m d) 6 m
49. A body constrained to move in y-direction is subjected to a force given by:
 $\vec{F} = (-2\hat{i} + 15\hat{j} + 6\hat{k})N$
 The work done by this force in moving the body a distance of 10 m along the y-axis is:
 a) 20 J b) 150 J c) 160 J d) 190 J
50. For the dipole shown,

 Dipole moment is given by
 a) $p = q \times 2a\hat{p}$ b) $\mathbf{p} = \frac{1}{2}q \times 2a\hat{p}$ c) $p = -q \times 2a\hat{p}$ d) $p = 4q \times 2a\hat{p}$
51. The number of d-electrons retained in Fe^{2+} (atomic number Fe = 26) ion is
 a) 3 b) 4 c) 5 d) 6
52. Molecular shapes of SF_4 , CF_4 , XeF_4 are:
 a) the same with 2, 0 and 1 lone pairs of electrons respectively.
 b) the same with 1, 1 and 1 lone pairs of electrons respectively.
 c) different with 0, 1 and 2 lone pairs of electrons respectively.
 d) different with 1, 0 and 2 lone pairs of electrons respectively.
53. Fill in the blanks by choosing the appropriate option. Conc. H_2SO_4 chars paper, wood and sugar by removing (i) from them. It is also known as (ii). It is manufactured by (iii) process. It is a strong (iv) and (v) acid.
- a)
- | | | | | |
|--------|----------------|---------|-----------|---------|
| (i) | (ii) | (iii) | (iv) | (v) |
| H_2O | oil of vitriol | Contact | oxidising | dibasic |
- b)
- | | | | | |
|-------|----------------|-------|-------------|-----------|
| (i) | (ii) | (iii) | (iv) | (v) |
| O_2 | oil of vitriol | Oleum | dehydrating | monobasic |
- c)
- | | | | | |
|--------|-------------|--------|-------------|---------|
| (i) | (ii) | (iii) | (iv) | (v) |
| H_2O | oil of clay | Solvay | dehydrating | dibasic |
- d)
- | | | | | |
|--------|---------------------|---------|-----------|-----------|
| (i) | (ii) | (iii) | (iv) | (v) |
| SO_2 | oil of winter green | Contact | oxidising | monobasic |
54. Match the column I with column II and mark the appropriate choice.
- | | |
|----------|-----------|
| Column I | Column II |
|----------|-----------|

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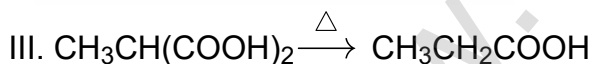
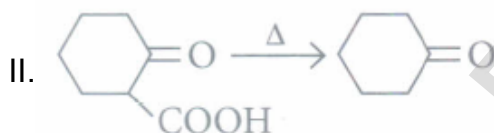
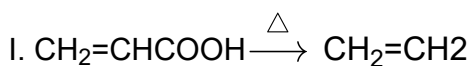
<p>(A) </p>	<p>(i) Decarboxylation</p>
<p>(B) </p>	<p>(ii) Friedel-Crafts reaction</p>
<p>(C) </p>	<p>(iii) Reimer-Tiemann reaction</p>
<p>(D) </p>	<p>(iv) Kolbe's reaction</p>

- a) (A) → 7 (i), (B) → 7 (ii), (C) → 7 (iii), (D) → 7 (iv)
 b) (A) → 7 (ii), (B) → 7 (iii), (C) → 7 (iv), (D) → 7 (i)
 c) (A) → 7 (iii), (B) → 7 (iv), (C) → 7 (i), (D) → 7 (ii)
 d) (A) → 7 (iv), (B) → 7 (iii), (C) → 7 (ii), (D) → 7 (i)

55. Vegetable oils like wheat germ oil, sunflower oil, etc. are the good source of

- a) vitamin K b) vitamin E c) vitamin D d) vitamin A.

56. Consider the following reactions,



In which cases, parent compound loses its functional group in preference?

- a) I, II b) I, II, III c) II, III d) I, III

57. Which of the following does not show similarity between boron and aluminium?

- a) Both form oxides of type M_2O_3 when heated with oxygen at high temperature
 b) Both dissolve in alkalis and evolve hydrogen
 c) Hydroxides of both the elements are basic in nature
 d) Both form nitrides of MN type when heated with N_2

58. A ferromagnetic substance becomes a permanent magnet when it is placed in a magnetic field because

- a) all the domains get oriented in the direction of magnetic field
 b) all the domains get oriented in the direction opposite to the direction of magnetic field
 c) domains get oriented randomly d) domains are not affected by magnetic field

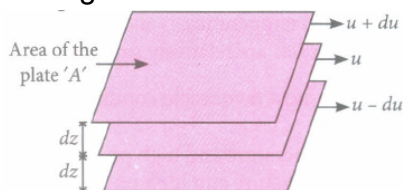
59. The pressure of H_2 required to make the potential of H_2 electrode zero in pure water at 298 K is :

- a) 10^{-10} atm b) 10^{-4} atm c) 10^{-14} atm d) 10^{-12} atm

60. The alkene $R-CH=CH_2$ reacts readily with B_2H_6 and the product on oxidation with alkaline hydrogen peroxide produces ?

- a) $R-CH_2-CHO$ b) $R-CH_2-CH_2-OH$ c) $R-\underset{\text{CH}_3}{C}=O$ d) $R-\underset{\text{OH}}{CH}-\underset{\text{OH}}{CH_2}$

61. The figure



helps to establish the relationship between force and

- a) area of contact b) velocity gradient c) coefficient of viscosity d) both (a) and (b).

62. The combination of two layers of opposite charges around the colloidal particle is called Helmholtz electrical double layer. The potential difference between the fixed layer and the diffused layer of opposite charge is called

- a) electrode potential b) zeta potential c) adsorption potential d) diffused potential.

63. Mark the correct statements

- (i) Mercury can be refined by the process of distillation.
 (ii) In poling, the molten impure metal is stirred with green poles of wood.
 (iii) In electrolytic refining of metals, impure metal is made as cathode and a thin strip of pure metal is made as anode

- a) (i) and (ii) b) (i) and (iii) c) (ii) and (iii) d) (i), (ii) and (iii)

64. Two particles A and B are in motion. If the wavelength associated with particle A is $8 \times 10^{-7}m$. calculate the wavelength associated with particle B if its momentum is 1/4 of A.

- a) $32 \times 10^{-7}m$ b) $2 \times 10^{-7}m$ c) $4 \times 10^{-7}m$ d) $0.5 \times 10^{-8}m$

65. When adenine is attached to ribose sugar, it is called adenosine. To make a nucleotide from it, would require

- a) oxygenation b) addition of a base c) addition of phosphate d) hydrogenation

66. If the density of a solution is 3.12 g mL^{-1} , the mass of 1.5 mL solution in significant figures is _____.

- a) 4.7 g b) $4680 \times 10^{-3} \text{ g}$ c) 4.680 g d) 46.80 g

67. Which one of the following is the correct order of interactions?

- a) Covalent < hydrogen bonding < van der Waals' < dipole-dipole
 b) van der Waals < hydrogen bonding < dipole-dipole < covalent
 c) van der Waals' < dipole-dipole < hydrogen bonding < covalent
 d) Dipole-dipole < van der Waals' < hydrogen bonding < covalent

68. **Assertion** : Carboxylic acids do not undergo Friedel- Crafts reaction.

Reason: Carboxyl group is meta-directing group.

- a) If both assertion and reason are true and reason is the correct explanation of assertion
 b) If both assertion and reason are true but reason is not the correct explanation of assertion
 c) If assertion is true but reason is false d) If both assertion and reason are false.

69. Which of the following are not state functions?

(I) $q + W$, (II) q , (III) W , (IV) $H - TS$

- a) I and IV b) II, III and IV c) I, II and III d) II and III

70. The percentage of empty space in a body centred cubic arrangement is _____.

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a) 74 b) 68 c) 32 d) 26

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71. In which of the following element +3 oxidation state is more stable than +5?
 a) Pb b) Al c) Tl d) Bi
72. A container of 1 L capacity contains a mixture of 4 g of O₂ and 2 g of H₂ at 0°C. What will be the total pressure of the mixture?
 a) 50.42 atm b) 25.21 atm c) 15.2 atm d) 12.5 atm
73. **Assertion** : Aromatic aldehydes and ketones undergo electrophilic substitution reaction at metaposition.
Reason: Carbonyl group activates the ring towards electrophilic substitution reactions.
 a) If both assertion and reason are true and reason is the correct explanation of assertion
 b) If both assertion and reason are true but reason is not the correct explanation of assertion.
 c) If assertion is true but reason is false d) If both assertion and reason are false.
74. Under what conditions a bimolecular reaction may be of first order?
 a) When both reactants have same concentration
 b) When one of the reacting species is in large excess c) When the reaction is at equilibrium
 d) When the activation energy of reaction is less
75. For the reaction, N_{2(g)} + O_{2(g)} ⇌ 2NO_(g) the equilibrium constant is K₁. The equilibrium constant is K₂ for the reaction, 2NO_(g) + O_{2(g)} ⇌ 2NO_{2(g)},
 What is K for the reaction, NO_{2(g)} ⇌ $\frac{1}{2}$ N_{2(g)} + O_{2(g)}?
 a) 1/(4 K₁K₂) b) [1/K₁K₂]^{1/2} c) 1/(K₁K₂) d) 1/(2K₁K₂)
76. Benzoic acid gives benzene on being heated with X and phenol gives benzene on being heated with Y. Therefore, X and Y are respectively.
 a) soda lime and copper b) Zn dust and NaOH c) Zn dust and soda lime
 d) soda lime and zinc dust
77. Picric acid is a yellow coloured compound. Its chemical name is
 a) m-nitrobenzoic acid b) 2, 4, 6-trinitrophenol c) 2, 4, 6-tribromophenol d) p-nitrophenol.
78. The hydrogen-like species Li²⁺ is in a spherically symmetric state S₁ with one radial node. Upon absorbing light the ion undergoes transition to a state S₂ The state S₂ has one radial node and its energy is equal to the ground state energy of the hydrogen atom.
 The state S₁ is
 a) 1s b) 2s c) 2p d) 3s
79. A standard hydrogen electrode has a zero potential because
 a) hydrogen can be most easily oxidised b) hydrogen has only one electron
 c) the electrode potential is assumed to be zero d) hydrogen is the lightest element.
80. Which of the following is the correct order of acidity of carboxylic acids?
 (i) Cl₃CCOOH > Cl₂CHCOOH > ClCH₂COOH
 (ii) CH₃CH₂COOH > (CH₃)₂CHCOOH > (CH₃)₃CCOOH
 (iii) F₂CHCOOH > FCH₂COOH > ClCH₂COOH
 a) (i) and (ii) b) (ii) and (iii) c) (i) and (iii) d) (i), (ii) and (iii)
81. Which of the solids show the following properties?
 (i) Electrical conductivity
 (ii) Malleability

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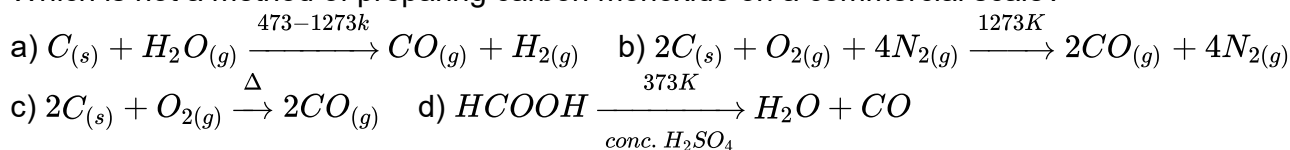
(iii) Ductility www.Padasalai.Net

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(iv) Fairly high melting point

a) Ionic solids b) Covalent solids c) Metallic solids d) Molecular solids

82. Which is not a method of preparing carbon monoxide on a commercial scale?



83. The period that includes all blocks of elements is

a) 1 b) 2 c) 6 d) 7

84. The vapour pressure, at a given temperature, of an ideal solution containing 0.2 mole of a non-volatile solute and 0.8 mole of solvent is 60 mm of Hg. The vapour pressure of the pure solvent at the same temperature is:

a) 150 mm of Hg b) 120 mm of Hg c) 75 mm of Hg d) 60 mm of Hg

85. A black compound of manganese reacts with a halogen acid to give greenish yellow gas. When excess of this gas reacts with NH_3 an unstable trihalide is formed. In this process the oxidation state of nitrogen changes from

a) -3 to +3 b) -3 to 0 c) -3 to +5 d) 0 to -3

86. Which of the following statements is true about hybridisation?

- a) The hybridised orbitals have different energies for each orbital.
b) The number of hybrid orbitals is equal to the number of atomic orbitals that are hybridised.
c) Hybrid orbitals form multiple bonds.
d) The orbitals with different energies undergo hybridisation.

87. The pressure of a 1 : 4 mixture of dihydrogen and dioxygen enclosed in a vessel is one atmosphere. What would be the partial pressure of dioxygen?

a) 0.8×10^5 atm b) $0.008 N m^{-2}$ c) $8 \times 10^4 N m^{-2}$ d) 0.25 atm

88. The correct IUPAC name of the coordination compound $K_3[Fe(CN)_5NO]$ is

- a) potassium pentacyanonitrosylferrate(II) b) potassium pentacyanonitroferrate(III)
c) potassium nitritopentacyanoferrate(IV) d) potassium nitritepentacyanoiron(II).

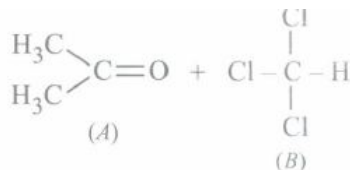
89. Which is the correct thermal stability order for H_2E (E = O, S, Se, Te and Po)

- a) $H_2O < H_2S < H_2Se < H_2Te < H_2Po$
b) $H_2Po < H_2Te < H_2Se < H_2S < H_2O$ c)
d) $H_2S < H_2O < H_2Se < H_2Te < H_2Po$

90. Which one of the following has minimum value of size of cation/anion ratio?

a) NaCl b) KCl c) $MgCl_2$ d) CaF_2

91. When acetone and chloroform are mixed together, which of the following observations is correct?



- a) A - A and B - B interactions are stronger than A - B interactions.
b) A - A and B - B interactions are weaker than A - B interactions.
c) A - A, B - B and A - B interactions are equal.
d) The liquids form separate layers and are immiscible.

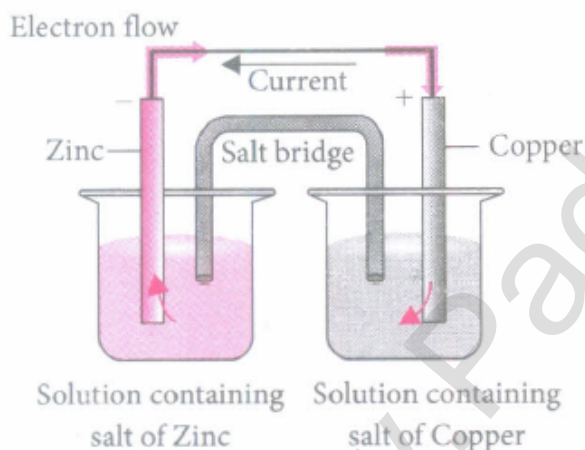
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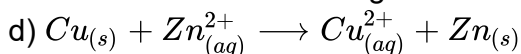
92. Relative lowering of vapour pressure, osmotic pressure of a solution and elevation in boiling points are ___(p)___ properties. Osmosis is the passage of ___(q)___ through a semipermeable membrane from a solution of ___(r)___ towards a solution of ___(s)___. Osmotic pressure is equivalent to mechanical pressure which must be applied on ___(t)___ to prevent osmosis. In the above paragraph p, q, r, s and t respectively are

- a) colligative, solution, higher concentration, lower concentration, solution
 b) colligative, solvent, higher concentration, lower concentration, solution
 c) colligative, solution, lower concentration, higher concentration, solvent
 d) colligative, solvent, lower concentration, higher concentration, solution.
93. Which one of the following characteristics of the transition metals is associated with their catalytic activity
 a) Colour of hydrated ions b) Variable oxidation states c) High enthalpy of atomisation
 d) Paramagnetic behaviour
94. Which of the following statements is not true?
 a) Glucose and fructose both are monosaccharides
 b) The natural glucose and fructose are D-forms.
 c) The solution having equal molecules of D-glucose and D-fructose is termed as invert sugar
 d) Aldohexoses exist in 2^6 optical forms
95. Which of the following statements is correct about the given Daniell cell?



- a) This cell converts the electrical energy liberated during the redox reaction to chemical energy.
 b) This cell has an electrical potential greater than 1.1 V when concentration of Zn^{2+} and Cu^{2+} ions is unity (1 mol dm^{-3})
 c) In this cell, copper is acting as cathode and zinc is acting as anode.

Redox reaction occurring in this cell is



96. The following reaction is known as

$$C_6H_6 + CH_3Cl \xrightarrow[\text{(anhy.)}]{AlCl_3} C_6H_5CH_3 + HCl$$

 a) Wurtz-Fittig reaction b) Friedel-Crafts reaction c) Rosenmund reaction
 d) Sandmeyer reaction.

97. The correct statement regarding the comparison of staggered and eclipsed conformations of ethane is:

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- a) www.Padasalai.Net www.Trb TnpSC.com
 the eclipsed conformation of ethane is more stable than staggered conformation even though the eclipsed conformation has torsional strain
- b)
 the staggered conformation of ethane is more stable than eclipsed conformation, because staggered conformation has no torsional strain
- c)
 the staggered conformation of ethane is less stable than eclipsed conformation, because staggered conformation has torsional strain
- d)
 the eclipsed conformation of ethane is more stable than staggered conformation, because eclipsed conformation has no torsional strain.
98. Which of the following statements do not form a part of Bohr's model of hydrogen atom?
 a) Energy of the electrons in the orbits are quantised.
 b) The electron in the orbit nearest to the nucleus has the lowest energy.
 c) Electrons revolve in different orbits around the nucleus.
 d) The position and velocity of electrons in the orbit cannot be determined simultaneously.
99. Which of the following complexes is used to be as an anticancer agent?
 a) Mer-[Co(NH₃)₃Cl₃] b) Cis-[PtCl₂(NH₃)₂] c) Cis-K₂[PtCl₂Br₂] d) Na₂CoCl₄
100. Graphite is a soft lubricant extremely difficult to melt. The reason for this anomalous behavior is that graphite :
 a) is a non-crystalline substance. b) ia an allotropic form of diamond.
 c) has molecules of variable molecular masses like polymers.
 d)
 has strongly bound carbon atoms arranged in large plates of rings with weak bonds between the plates.
101. Among the following plant group which have independent gametophyte and sporophyte?
 a) Bryophyta b) Pteridophyta c) Gymnosperms d) Angiosperms
102. Tidal Volume and Expiratory Reserve Volume of an athlete is 500 mL and 1000 mL, respectively. What will be his Expiratory Capacity if the Residual Volume is 1200 mL?
 a) 1500 mL b) 1700mL c) 2200 mL d) 2700 mL
103. Select the option that contains micronutrients only.
 a) Mn, Mo, Zn b) C, H, N c) N, P, O d) Mn, K, S
104. When anther and stigma mature at the same time then it is called
 a) Dichogamy b) Allogamy c) Xenogamy d) Homogamy
105. The sporophyte is the dominant phase in
 a) pteridophytes b) gymnosperms c) angiosperms d) all of these.
106. In the following question, a statement of assertion is followed by a statement of reason. Mark the correct choice as :
Assertion: The loss of water in its liquid phase from the leaves is called guttation.
Reason: Guttation takes place at night only.
 a) If both assertion and reason are true and reason is the correct explanation of assertion.
 b) If both assertion and reason are true but reason is not the correct explanation of assertion
 c) If assertion is true but reason is false. d) If both assertion and reason are false.

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107. Which of the following are likely to be present in deep sea water?
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- a) Eubacteria b) Blue-green algae c) Saprophytic fungi d) Archaeobacteria

108. Biomolecules are

- a) inorganic materials b) organic materials
 c) all the carbon compounds obtained from living tissues d) only DNA and RNA

109. Assertion: Rudolf Virchow modified the hypothesis of cell theory given by Schleiden and Schwann.

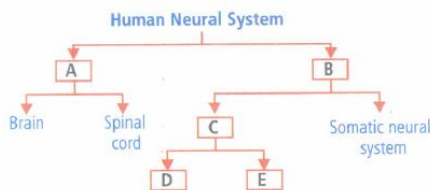
Reason: Cell theory says that all cells arise from pre-existing cells.

- a) If both assertion and reason are true and reason is the correct explanation of assertion
 b) If both assertion and reason are true but reason is not the correct explanation of assertion.
 c) If assertion is true but reason is false d) If both assertion and reason are false.

110. Which one of the following groups of animals is correctly matched with its one characteristic feature without even a single exception?

- a) Reptilia: possess 3 - chambered heart with one incompletely divided ventricle
 b) Chordata: possess a mouth provided with an upper and lower jaw
 c) Chondrichthyes: possess cartilaginous endoskeleton d) Mammalia: give birth to young one.

111. The flow chart given here shows functional organisation of the human neural system. Identify A to E and select the correct option.



a)

A	B	C	D	E
PNS	CNS	ANS	Sympathetic neural system	Parasympathetic neural system

b)

A	B	C	D	E
ANS	CNS	PNS	Parasympathetic neural system	Sympathetic neural system

c)

A	B	C	D	E
CNS	PNS	ANS	Sympathetic neural system	Parasympathetic neural system

d)

A	B	C	D	E
ANS	PNS	CNS	Parasympathetic neural system	Sympathetic neural system

112. Which of the following statements is not correct regarding mycorrhiza?

- a) It helps in absorption of phosphorus from the soil
 b) It is a symbiotic association of fungi with the roots of higher plants
 c) It helps the plant in developing resistance to root-borne pathogens d) None of these

113. How many recombinant therapeutics are being marketed in India?

- a) 8 b) 12 c) 15 d) 30

114. Human blood grouping is called ABO instead of ABC because O signifies.

- a) No antigen b) Over-dominance c) One antibody d) Other antigen

115. If you are asked to classify the various algae into distinct groups, which of the following characters you should choose?

- a) Chemical composition of the cell wall b) Types of pigments present in the cell
 c) Nature of stored food materials in the cell d) Nature of stored food materials in the cell

116. In which of the following options, hormone is not matching with its source and function?

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Hormone	Source	Function
Glucocorticoids	Adrenal cortex	Produces anti inflammatory reactions

b)

Hormone	Source	Function
Vasopressin	Posterior pituitary	Stimulates resorption of water and electrolytes

c)

Hormone	Source	Function
Parathyroid hormone	Thyroid	Decreases the blood Ca^{2+} level

d)

Hormone	Source	Function
Melatonin	Pineal gland	Maintains sleep-wake cycle

117. Which of the following is true about bryophytes?

- a) They possess archegonia b) They contain chloroplast c) They are thalloid
 d) All of the above

118. What is wrong about mycoplasma?

- a) They are called PPLO b) They are pleomorphic c) They are sensitive to penicillin
 d) They produce diseases in plants

119. Which of the following categories possesses maximum number of related characters?

- a) Order b) Phylum c) Class d) Species

120. Beewax is the secretion of abdominal glands of

- a) drones b) worker bees c) queen bees d) worker and queen bees

121. **Assertion:** The maximum frequency of recombination, that can result from crossing over between linked genes, is 50 percent.

Reason: Linked genes shown higher frequency of crossing over if distance between them is longer.

- a) If both assertion and reason are true and reason is the correct explanation of assertion.
 b) If both assertion and reason are true but reason is not the correct explanation of assertion.
 c) If assertion is true but reason is false. d) If both assertion and reason are false

122. Study carefully the given floral diagram and select the option which correctly represents the related floral formula.



(A)

(B)

(C)

- a) $\oplus \underset{\ominus}{\text{P}}_{(3+3)} \text{A}_{3+3} \underline{\text{G}}_{(3)}$ b) $\oplus \underset{\ominus}{\text{P}}_6 \text{A}_6 \underline{\text{G}}_{(3)}$ c) $\oplus \underset{\ominus}{\text{P}}_{5+5} \text{A}_{(5)} \underline{\text{G}}_{(2)}$

(D)

- d) $\oplus \underset{\ominus}{\text{K}}_{(5)} \text{C}_{(5)} \text{A}_{(5)} \underline{\text{G}}_{(2)}$

123. The number of N-glycosidic linkage in ϕ 174 virus is

- a) 5386 b) 3385 c) 48502 d) 10772
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124. The technique of obtaining large number of plantlets by tissue culture method is called _____.

- a) Plantlet culture b) Organ culture c) Micropropagation d) Macropropagation

125. The given statements describe a group of organisms.

- (i) Instead of a cell wall they have a protein rich pellicle making their body flexible.
(ii) They have 2 flagella, a short and a long one.
(iii) They show mixotrophic nutrition.
(iv) They are connecting link between plants and animals.

Which of the following groups is referred to here?

- a) Dinoflagellates b) Slime moulds c) Desmids and diatoms d) Euglenoids

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

- a) Intestine b) Skin c) Kidney d) Brain

127. The controlled aerobic combustion of wastes inside chambers at temperature of 900-1300°C is known as

- a) Incineration b) Recycling c) Pyrolysis d) Sanitary dumping

128. PS II is located on

- a) inner side of thylakoid membrane b) outer side of thylakoid membrane
c) lumen of thylakoid membrane d) stroma lamellae.

129. Slipping of chiasmata towards the ends bivalent is called ;

- a) Terminalisation b) Diakinesis c) Interkinesis d) Heterpynosis

130. From the point of view of early chemical evolution that preceded the origin of life on earth, the most important simple organic molecules formed were

- a) sugars and amino acids b) glycerol and fatty acids c) purines and pyrimidines
d) all of these.

131. Which is not true regarding genetic diversity?

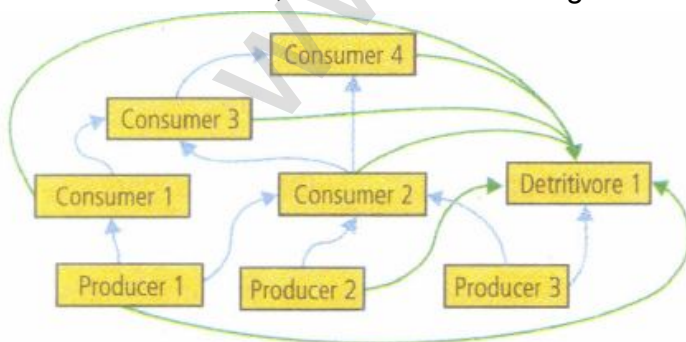
- a) It enables a population to adapt to its environment b) It is also basis of speciation
c) Ecotype formation depends upon it d) Higher diversity increases uniformity

132. Select the hormone-releasing Intra-Uterine Devices _____

- a) Multiload 375, Progestasert b) Progestasert, LNG-20 c) Lippes Loop, Multiload 375
d) Vaults, LNG-20

133. The given diagram represents the relationships between organisms in a remote pond ecosystem.

From this information, which of the following is the most likely to be correct?



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DDT present in the ecosystem would accumulate to the highest concentrations in the tissues of detritivore 1.

b)

The introduction of consumer 4 individuals from an external population would lead to a temporary increase in numbers of producer 2.

c) Disease in the producer 1 population would lead to an increase in the producer 3 population.

d) Extermination of consumer 3 would cause a sustained increase in the population of consumer 2.

134. For human female which of the following is incorrect?

a) Menstrual cycle takes 28 days on an average. b) Menopause occurs at 45-55 years of age.

c) The eggs released during pregnancy die. d) Menstruation takes 4 days on an average.

135. Read the given statements and identify the structure referred here.

(i) Reabsorption in this region is minimum.

(ii) This region plays a significant role in the maintenance of high osmolarity of interstitial fluid.

(iii) Its descending limb is permeable to water but almost impermeable to electrolytes.

(iv) Its ascending limb is impermeable to water but allows transport of electrolytes actively or passively.

a) PCT b) Loop of Henle c) DCT d) Bowman's capsule

136. During microsporogenesis, meiosis occurs in

a) endothecium b) microspore mother cells c) microspore tetrads d) pollen grains

137. Number of chromatids at metaphase is _____.

a) Two each in mitosis and meiosis b) Two in mitosis and one in meiosis

c) Two in mitosis and four in meiosis d) One in mitosis and two in meiosis

138. Apomixis term was coined by

a) Leeuwenhoek b) Winkler c) Juel & Murbeck d) Nawaschin & guignard

139. Read the following statements with one or two blanks in each one of them.

(i) A genus containing more than one species is called _____ genus, e.g., _____

(ii) _____ is a collection of dried, pressed and preserved plants mounted on _____ sheets, properly labelled, systematically arranged and available for reference study.

(iii) Living fossils are ancient organisms persisting in modern times _____ gradual morphological changes.

(iv) A _____ is comprehensive treatise of a taxonomic group, generally, a genus or a family, providing all taxonomic data related to that group.

Which of the following correctly fills any two of the above statements?

a) (i) monotypic, **Homo**; (ii) Herbarium, paper b) (ii) Manual, paper; (iii) with

c) (iii) without; (iv) Monograph d) (i) polytypic, **Solanum**; (iv) Monograph

140. Which of the following can be used for cultivation of SCP?

a) Animal manure b) Straw c) Molasses d) All of these

141. Pteridophytes differ from mosses/ bryophytes in possessing _____.

a) flagellate spermatozoids b) independent gametophyte c) well developed vascular system

d) archegonia

142. Which of the following antibody is related to allergic response?

a) IgA b) IgE c) IgM d) IgG

143. Which of the following is the hormone secreted by zona fasciculata?

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- a) Aldosterone b) Cortisol c) Androstenedione d) Mineralocorticoids

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144. Assertion : During embryo development in dicots, suspensor serves as the main nutritive tissue for the embryo.
Reason : The last cell of the suspensor at the end adjacent to the embryo is known as haustorium.
- a) If both assertion and reason are true and reason is the correct explanation of assertion
b) If both assertion and reason are true but reason is not the correct explanation of assertion
c) If assertion is true but reason is false. d) If both assertion and reason are false.
145. Given below are four statements (A-D) each with one or two blanks. Select the option which correctly fills up the blanks in two statements.
- (A) Wings of butterfly and birds look alike and are the results of ___(i)___ evolution.
(B) Miller showed that CH_4 , H_2 , NH_3 and ___(i)___ when exposed to electric discharge in a flask resulted in formation of ___(ii)___
(C) Vermiform appendix is a ___(i)___ organ and an ___(ii)___ evidence of evolution.
(D) According to Darwin, evolution took place due to ___(i)___ and ___(ii)___ of the fittest.
- a) (A)-(i) convergent; (D)-(i) small variations, (ii) survival
b) (A)-(i) convergent; (B)-(i) oxygen, (ii) nucleosides
c) (B)-(i) water vapour, (ii) amino acids; (C)-(i) homologous, (ii) anatomical
d) (C)-(i) vestigial, (ii) anatomical; (D)-(i) mutations, (ii) multiplication
146. Read the following statements and select the correct option.
Statement 1: Reproduction cannot be considered as defining property of living organisms.
Statement 2: There are many living organisms which do not reproduce, e.g., mules, worker bees, etc.
- a) Statement 1 is incorrect but statement 2 is correct b) Both statements 1 and 2 are incorrect
c) Both statements 1 and 2 are correct d) Statement 1 is correct but statement 2 is incorrect.
147. Which part of the coconut produces coir?
a) Seed coat b) Mesocarp c) Epicarp d) Pericarp
148. Which of the following is an example of isozyme
a) α -amylase b) Glucokinase c) Lactate dehydrogenase d) All of these
149. At which stage of mitosis, the two daughter chromatids separate from each other, migrate towards the opposite poles and are now referred to as chromosomes of the future daughter nuclei?
a) Prophase b) Metaphase c) Anaphase d) Telophase
150. Which among the following is not a prokaryote?
a) Nostoc b) Mycobacterium c) Saccharomyces d) Oscillatoria.
151. If $P_{\text{atm}} = 0$ mm Hg and $P_{\text{alv}} = -2$ mm Hg, then
a) it is the end of the normal inspiration and there is no airflow
b) it is the end of the normal expiration and there is no airflow
c) transpulmonary pressure (P_{tp}) is -2 mm Hg d) air is flowing into the lungs.
152. Which of the following statements regarding the ethical argument for conserving biodiversity is incorrect?
a) We owe to millions of plant, animal and microbe species with whom we share this planet.
b) Every species has an intrinsic value only when it is of an economic value to us.
c) It is our moral duty to care for the well-being of all species i.e., our biological legacy
d) All of these

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153. What is common among silver fish, scorpion, crab and honeybee?
 a) Compound eyes b) Poison glands c) Jointed appendages d) Metamorphosis

154. Read the following statements and select the incorrect one
 a) Semen is preserved for artificial insemination by heating.

b) Mating of animals within the same breed, but having no common ancestors on either side of their pedigree upto 4 - 6 generations is called as outcrossing.

c) Example of interspecific hybridisation is mule

d) Hinny is a hybrid between the female ass and stallion.

155. Membrane-bound organelles are absent in :

a) Plasmodium b) Saccharomyces c) Streptococcus d) Chlamydomonas

156. During nodule formation in leguminous plants, an infection thread is produced carrying the _____(i)_____ into the _____(ii)_____ of the root, where they initiate the nodule formation in the _____(iii)_____ of the root. Fill up the blanks by choosing the correct option.

a)

(i)	(ii)	(iii)
cyanobacteria	pericycle	cortex

b)

(i)	(ii)	(iii)
bacteria	cortex	cortex

c)

(i)	(ii)	(iii)
cyanobacteria	cortex	pericycle

d)

(i)	(ii)	(iii)
bacteria	pericycle	pericycle

157. Cocaine is obtained from

a) Erythroxyton coca b) Papaver somniferum c) Atropa belladonna d) Datura stramonium

158. The group of mineral nutrients known as frame work elements:

a) N, S, P b) C, H, O c) Mg, Fe, Zn d) Zn, Mn, Cu

159. Read the given statements and select the correct option.

Statement 1: Rate of breathing is regulated by respiratory centres present in the medulla oblongata.

Statement 2: Changes in the CO₂ level of the arterial blood control the rate of breathing.

a) Both statements 1 and 2 are correct. b) Statement 1 is correct but statement 2 is incorrect.

c) Statement 1 is incorrect but statement 2 is correct. d) Both statements 1 and 2 are incorrect.

160. What will you look for to identify the sex of the following?

a) Female Ascaris- Sharply curved posterior end.

b) Male frog- A copulatory pad on the first digit of the hind limb. c) Female cockroach-Anal cerci.

d) Male shark-Claspers borne on pelvic fins.

161. Which one of the following has maximum genetic diversity in India?

a) Mango b) Wheat c) Tea d) Teak

162. Geometric representation of age structure is a characteristic of _____.

a) population b) landscape c) ecosystem d) biotic community.

163. The roots that originate from the base of the stem are:

a) Prop roots b) Lateral roots c) Fibrous roots d) Primary roots

164. To increase sugar production in sugarcane, they are sprayed with

a) IAA b) cytokinin c) gibberellin d) ethylene.

165. Which one of the following is a breed of cattle?

a) Ayrshire b) Ghagus c) Kadaknath d) Scampi

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166. Read the given statements regarding a cell organelle. www.Padasalai.Net www.Trb TnpSC.com

- (i) It contains water, sap, excretory products and other unwanted materials.
- (ii) It is bounded by a single membrane called tonoplast.
- (iii) In plant cells, it can occupy upto 90% of cellular volume.
- (iv) Its contents form cell sap.
- (v) It maintains turgor pressure.

The above features are attributed to

- a) lysosome b) vacuole c) peroxisome d) mitochondrion.

167. All genes located on the same chromosome

- a) form different groups depending upon their relative distance b) form one linkage group
- c) will not form any linkage groups d) form interactive groups that affect the phenotype.

168. **Assertion:** Cnidoblasts are present on the tentacles and the body in cnidarians.

Reason: Cnidoblasts are used for anchorage, defence and capture of the prey.

- a) If both assertion and reason are true and reason is the correct explanation of assertion
- b) If both assertion and reason are true but reason is not the correct explanation of assertion
- c) If assertion is true but reason is false. d) If both assertion and reason are false.

169. Which one assists in locomotion?

- a) Trichocysts in Paramecium b) Pedicellariae of starfish c) Clitellum in Pheretima
- d) Posterior sucker in Hirudinaria

170. Proteins perform many physiological functions. For example, some proteins function as enzymes.

One of the following represents an additional function that some proteins perform

- a) antibiotics b) pigment conferring colour to skin c) pigment making colours of flowers
- d) hormones

171. **Assertion:** Prophase is the first stage of mitosis which follows S and G₁ phases of interphase.

Reason: Prophase is marked by the initiation of clusters of chromosomes.

- a) If both assertion and reason are true and reason is the correct explanation of assertion
- b) If both assertion and reason are true but reason is not the correct explanation of assertion
- c) If assertion is true but reason is false d) If both assertion and reason are false

172. Which of the following options best represents the enzyme composition of pancreatic juice?

- a) Amylase, peptidase, trypsinogen, rennin b) Amylase, pepsin, trypsinogen, maltase
- c) Peptidase, amylase, pepsin, rennin d) Lipase, amylase, trypsinogen, procarboxypeptidase

173. Match the columns and choose the correct option

Column I (Fruit)	Column II (Edible part)
a) Walnut	I) Cotyledon
b) Cashewnut	II) Seed
c) Orange	III) Endocarp
d) Strawberry	IV) Thalamus

- a) a-II, b-I, c-III, d-IV b) a-II, b-III, c-I, d-IV c) a-I, b-II, c-IV, d-III d) a-I, b-II, c-III, d-IV

174. Which of the following conditions is not linked to deficiency of thyroid hormone?

- a) Cretinism b) Goitre c) Myxoedema d) Exophthalmia

175. *Bacillus thuringiensis* forms protein crystals which contain insecticidal protein.

This protein:

- a) does not kill the carrier bacterium which is itself resistant to this toxin
- b) binds with epithelial cells of midgut of the insect pest ultimately killing it

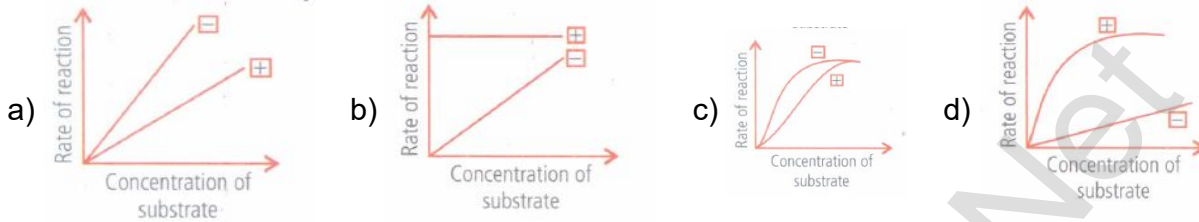
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- c) is coded by several genes including the gene cry
 d) is activated by acid pH of the forgut of the insect pest

176. Select the incorrect statement among the following.

- a) Increase in growth per unit time is growth rate.
 b) A sigmoid growth curve is a characteristic of most living organisms in their natural environment
 c) Rate of growth is constant during geometrical growth.
 d) Exponential phase is also called as log phase.

177. Which of the following graphs correctly indicates the reaction in presence (indicated by +) and absence (indicated as -) of an enzyme?



178. Which one of the following statements is incorrect?

- a) The principle of countercurrent flow facilitates efficient respiration in gills of fishes.
 b) The residual air in lungs slightly decreases the efficiency of respiration in mammals.
 c) The presence of non-respiratory air sacs, increases the efficiency of respiration in birds.
 d) In insects, circulating body fluids serve to distribute oxygen to tissues.

179. Bladderworm/cysticercus is the larval stage of _____ .

- a) tapeworm b) roundworm c) pinworm d) liver fluke

180. Rhizome of ginger is a modification of stem because

- a) It bears Adventitious roots b) It bears nodes and internodes c) It is underground
 d) It stores food material

181. A. Macronutrients are present in plant tissues in excess of 10m mole kg^{-1} of dry matter.

B. C, H and O are obtained mainly from carbondioxide and water and others are absorbed from soil.

- a) Only A is correct b) Only B is correct c) Both A and B are correct
 d) Both A and B are incorrect

182. Which one of the following animals may occupy more than one trophic levels in the same ecosystem at the same time?

- a) Sparrow b) Lion c) Goat d) Frog

183. Dup sound is produced during closure of _____ .

- a) semilunar valves b) bicuspid valve c) tricuspid valve d) Both (b) and (c)

184. Identify the correctly matched pair/pairs of the germ layers and their derivatives.

- A. Ectoderm - Epidermis
 B. Endoderm - Dermis
 C. Mesoderm - M~sclcs
 D. Mesoderm - Notochord
 E. Endoderm - Enamel of teeth

- a) A and D b) A and B c) A, C and D d) A, B, C and E

185. Heterosis can be defined as

- a) When F_1 phenotype is superior to both parents
 b) Only when F_1 phenotype resembles both parental phenotype c) Both (1) & (2)

d) Production of interspecific hybrids only

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186. Non albuminous seeds are present in

- a) Pisum (Pea) b) Ground nut (Arachis) c) Amphimixis d) Apomixis

187. Which of the following industry is devoted to the catching, processing or selling of fish, shellfish or other aquatic animals?

- a) Aquaculture b) Inland Fishery c) Fishery d) Pisciculture

188. Which of the following is a flowering plant with nodules containing filamentous nitrogen-fixing microorganism?

- a) Cicer arietinum b) Casuarina equisetifolia c) Crotalaria juncea d) Cycas revoluta

189. The rupture and fractionation do not usually occur in the water column in vessel/tracheids during the ascent of sap because of _____ .

- a) lignified thick walls b) cohesion and adhesion c) weak gravitational pull
d) transpiration pull e) rapid turgor pressure changes

190. The pathway of water from soil upto the secondary xylem

- a) Soil → root hair → cortex → endodermis → pericycle → protoxylem → Metaxylem
b) Metaxylem → protoxylem → pericycle → cortex → endodermis → Soil → root hair
c) Cortex → root hair → → endodermis → pericycle → protoxylem → Metaxylem
d) pericycle → Soil → root hair → cortex → endodermis → Protoxylem → Metaxylem

191. Which one of the following is not the ecological importance of moss plants?

- a) Some mosses provide food for herbaceous mammals birds and other animals
b) Very high water holding capacity of mosses is useful for trans-shipment of living materials
c) Mosses along with lichens are the pioneering organisms to colonise rocks
d) Mosses form dense mats on the soil and reduce the impact of falling rain.

192. Match column I with column II and select the correct option from the codes given below.

Column - I	Column - II
A. Pseudostratified epithelium	(i) Connective tissue
B. Matrix	(ii) Absorption
C. Striated myofibril	(iii) Trachea
D. Mesothelium	(iv) Body cavity lining
E. Microvilli	(v) Multinucleate

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

193. Father of Indian embryology is

- a) P.Maheshwari b) Swaminathan c) R.Misra d) Butler

194. Lining of intestine of man is

- a) brush bordered b) ciliated c) non-keratinised d) keratinised.

195. Which of the following is not stem modification:

- a) Flattened structures of Opuntia b) Pitcher of Nepenthes c) Thorns of Citrus
d) Tendrils of cucumber

196. Male cat is either black or orange because of

- a) Hemizygous-X b) Heterozygous-x c) Heterozygous-y d) Hemizygous-Y

197. The cells responsible for the resorption of bone matrix during the growth and remodelling of the skeleton are called

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a) Osteoblasts b) Osteoclasts c) Chondroblasts d) Chondroclasts

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198. Bryophytes include:

a) liverworts and ferns b) mosses and ferns c) mosses and liverworts d) all of these.

199. Amino acids which are specified by single codons are:

a) phenylalanine and arginine b) tryptophan and methionine c) valine and proline
d) methionine and arginine

200. Haploids are more suitable for mutation studies than the diploids. This is because:

a) haploids are more abundant in nature than diploids
b) All mutations, whether dominant or recessive are expressed in haploids
c) Haploids are reproductively more stable than diploids
d) Mutagens penetrate in haploids more effectively than in diploids

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