

Previous Paper Questions

1. Q.Id: 193442
Match the following

List1

- A. Trichimella
- B. Redia
- C. Trochophore
- D. Glochidium
- E. .

List2

- I. Platyhelminthes
- II. Mollusca
- III. Echinodermata
- IV. Porifera
- V. Annelida

A) A->IV, B->III, C->V, D->II

B) A->II, B->V, C->I, D->IV

C) A->IV, B->I, C->V, D->II

D) A->III, B->II, C->I, D->V

2. Q.Id: 193441
Match the following

List1

- A. Longitudinal binary fission
- B. Transeverse binary fission
- C. Sporogony
- D. Sporulation
- E. .

List2

- I. Paramoecium
- II. Amoeba
- III. Pleurobrachia
- IV. Plasmodium
- V. Euglena

A) A->V, B->I, C->IV, D->II

B) A->V, B->III, C->IV, D->II

C) A->I, B->II, C->V, D->IV

D) A->V, B->IV, C->I, D->II

3. Q.Id: 193440
Match the following

List1

List2

- | | |
|------------------------|------------------|
| A. Fasciola hepatica | I. Castration |
| B. Plasmodium vivax | II. Kala azar |
| C. Sacculina | III. Hyperplasia |
| D. Leishmania donovani | IV. Neoplasia |
| E. . | V. Hypertrophy |

A) A->III, B->V, C->I, D->IV

B) A->III, B->V, C->I, D->II

C) A->V, B->III, C->I, D->II

D) A->IV, B->III, C->I, D->II

4. Q.Id: 193439
Match the following

List1

List2

- | | |
|------------------------------|--------------------------------|
| A. Hospital wastes | I. Electrostatic precipitators |
| B. SO ₂ pollution | II. Catalytic converters |
| C. Particulates | III. Scrubbers |
| D. Automobile exhausts | IV. Biotoilets |
| E. . | V. Incinerators |

A) A->V, B->III, C->IV, D->II

B) A->V, B->III, C->II, D->I

C) A->II, B->IV, C->III, D->V

D) A->V, B->III, C->I, D->II

5. Q.Id: 193437
Match the following

List1

List2

A. Oogenesis

I. Oxytocin

B. Ovulation

II. Melanocyte
stimulating hormone

C. Parturition

III. Luteotropic hormone

D. Milk production

IV. Follicle stimulating
hormone

E. .

V. Luteinising hormone

A) A->V, B->IV, C->I, D->II

B) A->IV, B->V, C->I, D->III

C) A->IV, B->V, C->III, D->I

D) A->I, B->IV, C->V, D->III

6. Q.Id: 166101
Which of the following is seen only in prokaryotic cells?

A) Dictyosome

B) Ribosome

C) Mesosome

D) Endoplasmic reticulum

7. Q.Id: 166100
Monocot leaves possess

A) Intercalary meristem

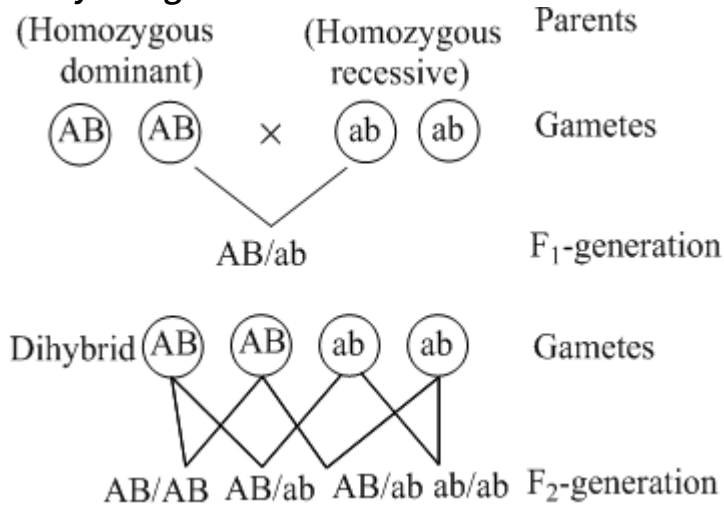
B) Lateral meristem

C) Apical meristem

D) Mass meristem

8. Q.Id: 164339

Study the given test cross and choose the correct option for F₂-generation



A) Hybrid cross (9 : 3 : 3 : 1)

B) Hybrid cross (3 : 1)

C) Dihybrid cross (12 : 4)

D) Dihybrid linked gene cross (3 : 1)

9. Q.Id: 159588

Study the following table

S.No	Part of nephron	Lined by	Substances reabsorbed
I)	Proximal convoluted tubule	Simple squamous epithelium	Glucose, amino acids, water
II)	Descending limb of loop of Henle	Squamous epithelium (thin layer)	Water
III)	Ascending limb of loop of Henle	Squamous epithelium (lower thin and upper thick)	Water, electrolytes
IV)	Distal convoluted tubule	Cuboidal epithelium	Water, HCO ₃ ⁻

Among the above, wrong combination are

A) I, II

B) II, III

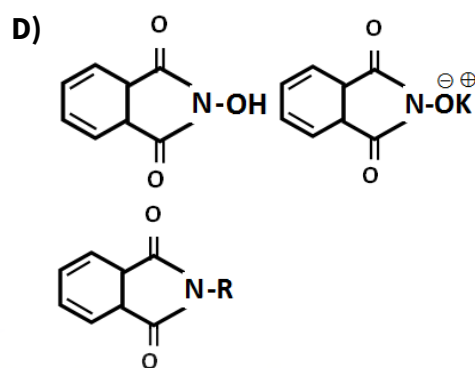
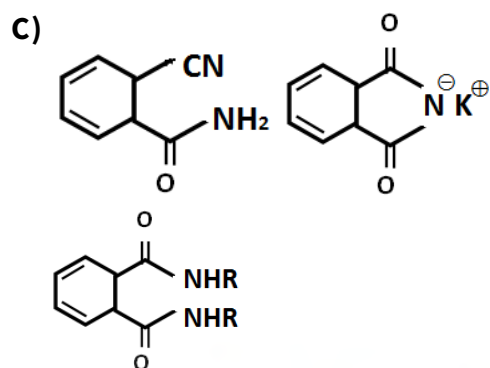
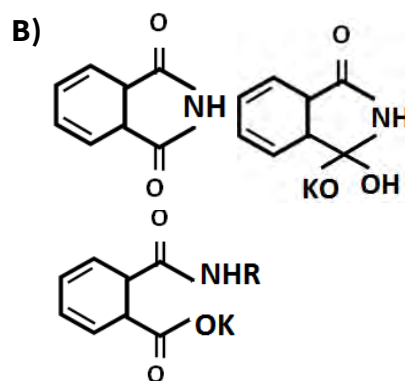
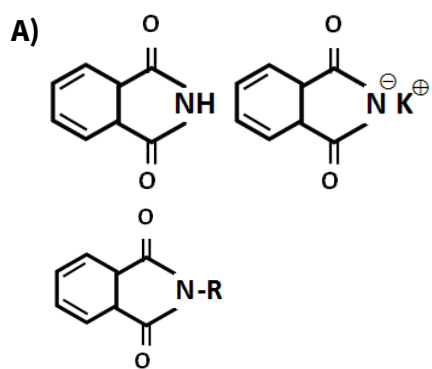
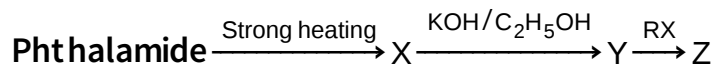
C) I, III

D) I, IV

10.

Q.Id: 159587

What are X, Y and Z in the following reaction sequence ?



11.

Q.Id: 159586

Which of the following reagents are used to distinguish aldehydes from Ketones ?

Fehling's reagent Lucas reagent

I II

Hinsberg's reagent Tollens reagent

III IV

A) I, III, IV

B) II, III

C) I, II

D) I, IV

12.

Q.Id: 159585

Heating cyclohexene with $\text{KMnO}_4 - \text{H}_2\text{SO}_4$ gives

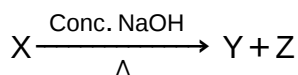
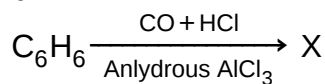
A) Glutaric acid

B) Hexanal

C) Hexanoic acid

D) Adipic acid

13. Q.Id: 159584

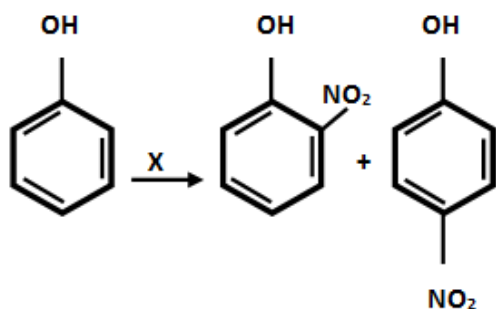


Y and Z in the above sequence of reactions are respectively

- A) HCOONa , $\text{C}_6\text{H}_5\text{CH}_2\text{OH}$ B) $\text{C}_6\text{H}_5\text{COONa}$, $\text{C}_6\text{H}_5\text{OH}$
C) $\text{C}_6\text{H}_5\text{COONa}$, $\text{C}_6\text{H}_5\text{CH}_2\text{OH}$ D) $\text{C}_6\text{H}_5\text{COCH}_3$, $\text{C}_6\text{H}_5\text{ONa}$

14. Q.Id: 159583

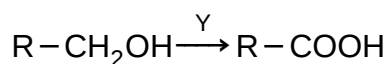
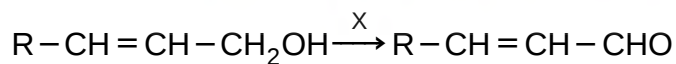
Identify X in the following reaction



- A) Conc. HNO_3 + Conc. H_2SO_4 B) Fuming HNO_3
C) Dilute HNO_3 / 298 K D) Conc. HNO_3 / 300 K

15. Q.Id: 159582

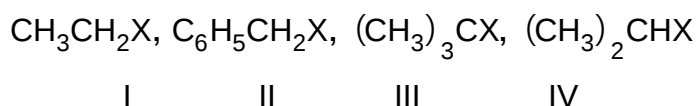
Identify X and Y in the following reactions



- A) X - KMnO_4/H^+ , Y - $\text{K}_2\text{Cr}_2\text{O}_7/\text{H}^{\oplus}$ B) X - PCC, Y - $\text{KMnO}_4/\text{H}^{\oplus}$
C) X - CrO_3 , Y - PCC D) X - PCC, Y - CrO_3

16. Q.Id: 159581

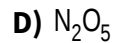
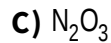
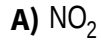
The correct order of reactivity of the following compounds towards $\text{S}_{\text{N}}1$ reaction is



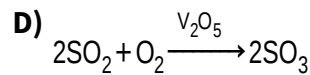
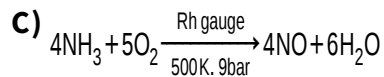
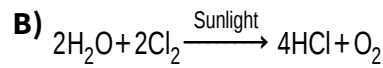
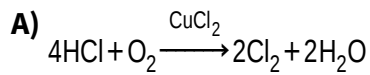
- A) I > IV > III > II B) II > III > IV > I
C) I > IV > II > III D) IV > III > I > II

17. Q.Id: 159580
Which one of the following is an anionic detergent ?
- A) Sodium dodecyl benzene sulphonate B) Sodium palmitate
C) Cetyl trimethyl ammonium bromide D) Sodium stearate
18. Q.Id: 159579
Diseases caused by the deficiency of vitamin D(X) and vitamin B₂(Y) are
- A) X - Scurvy, Y - Cheilosis B) X - Rickets, Y - Cheilosis
C) X - Rickets, Y - Scurvy D) X - Scurvy, Y - Convulsions
19. Q.Id: 159578
The poly Dispersity Index (PDI) of a polymer is 1.5. If its number average molecular mass is 30,000, calculate its weight average molecular mass.
- A) 40,000 B) 20,000
C) 45,000 D) 90,000
20. Q.Id: 159573
Identify the correct statements from the following,
- i. In $[\text{CoCl}(\text{NH}_3)_5]^{2+}$, the Lewis acid is Co^{3+}
ii. An example for heteroleptic complex is $[\text{Co}(\text{NH}_3)_6]^{3+}$
iii. The hybridisation of Mn in $[\text{MnBr}_4]^{2-}$ is sp^2
iv. In $[\text{Ni}(\text{CO})_4]$, the metal - carbon bond possesses σ and π character.
- A) i, ii, iii, iv B) i, iv
C) ii, iii D) i, iii, iv
21. Q.Id: 159572
Which one of the following permanganometric titrations does not gives satisfactory results ?
- A) $2\text{KMnO}_4 + 5\text{H}_2\text{C}_2\text{O}_4 + 3\text{H}_2\text{SO}_4 \rightarrow ?$ B) $2\text{KMnO}_4 + 10\text{FeSO}_4 + 8\text{H}_2\text{SO}_4 \rightarrow ?$
C) $10\text{KI} + 2\text{KMnO}_4 + 16\text{HCl} \rightarrow ?$ D) $2\text{KMnO}_4 + 3\text{MnSO}_4 + 2\text{H}_2\text{O} \rightarrow ?$

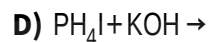
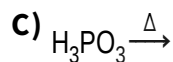
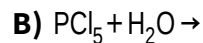
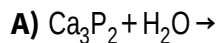
22. Q.Id: 159571
Sulphur reacts with conc. HNO_3 to form H_2SO_4 , H_2O and $\text{X}(\text{g})$. The liberated $\text{X}(\text{g})$ was passed into water to form $\text{Y}(\text{g})$ and HNO_3 . What is Y ?



23. Q.Id: 159570
Which of the following reactions represent Deacon's process ?



24. Q.Id: 159569
Which of the following reactions cannot liberate phosphine ?



25. Q.Id: 159568
Match the following.



List1

List2

A. Zone refining

I. Indium

B. Poling

II. Titanium

C. Van-Arkel method

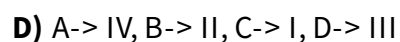
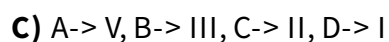
III. Nickel

D. Mond process

IV. Blister copper

E. .

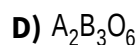
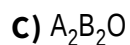
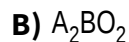
V. Zinc



26. Q.Id: 159567
Which one of the following is correct regarding physisorption ?
- A)** It involves chemical bonds between adsorbent and adsorbate
B) Enthalpy of adsorption is about $80 - 240 \text{ kJmol}^{-1}$
C) It is reversible in nature
D) It results in unimolecular layer only on adsorbent surface under high pressure
27. Q.Id: 159566
If the first order rate constants for the decomposition of ethyl iodide at 600 K and 700 K are $2.0 \times 10^{-5} \text{ s}^{-1}$ and $2.0 \times 10^{-4} \text{ s}^{-1}$ respectively, the activation energy for this reaction in kJmol^{-1} is
- A)** 80.4
B) 40.2
C) 20.1
D) 60.3
28. Q.Id: 159565
If E_{cell}° of a cell represented by $\text{Ni} / \text{Ni}^{2+} (0.04 \text{ M}) \parallel \text{Ag}^{+} (0.002 \text{ M}) / \text{Ag}$ is 1.05 V, the E_{cell} in V is :
- A)** 0.932
B) 0.814
C) 0.466
D) 1.168
29. Q.Id: 159564
Assertion (A) : The flow of solvent molecules from pure solvent to the solution through semipermeable membrane is osmosis
Reason (R) : Pure solvent molecules flow out of the solution through semipermeable membrane if a pressure larger than the osmotic pressure is applied to the solution side
The correct answer is
- A)** Both (A) and (R) are correct and (R) is correct explanation of (A)
B) Both (A) and (R) are correct but (R) is not correct explanation of (A)
C) (A) is correct but (R) is not correct
D) (A) is not correct but (R) is correct
30. Q.Id: 159563
 CO_2 and CH_4 gases were bubbled through two different one litre water flasks at the same partial pressure of P bar at 298 K. If the Henry's law constants of CO_2 and CH_4 gases dissolved in one litre water is
- A)** 4 : 1
B) 1 : 2
C) 1 : 4
D) 2 : 1

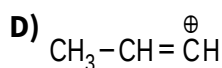
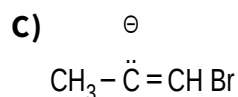
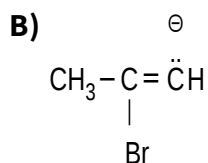
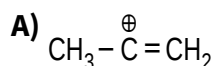
31. Q.Id: 159562

In a cubic closed packed structure of mixed oxide, the oxide ions are in CCP arrangement, $\frac{1}{6}$ of tetrahedral voids are occupied by cations A and $\frac{1}{2}$ of octahedral voids are occupied by cations B. The formula of the oxide is



32. Q.Id: 159561

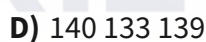
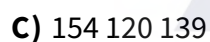
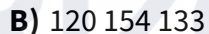
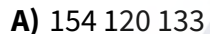
Addition of HBr to propyne takes place through Z. What is Z?



33. Q.Id: 159560

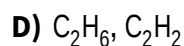
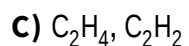
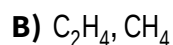
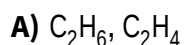
Bond lengths (in pm) of $C-C$, $C\equiv C$ and $C=C$ are

$C-C$ $C\equiv C$ $C=C$



34. Q.Id: 159559

Among the aliphatic hydrocarbons C_2H_6 , C_2H_4 , CH_4 and C_2H_2 the pair having hybrid orbitals to unhybridised orbitals ratio 1 : 1 is



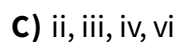
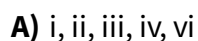
35. Q.Id: 159558

Identify green house gases from the following

i. CO_2 ii. CO

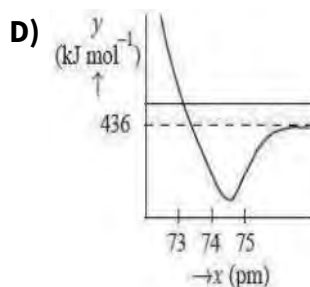
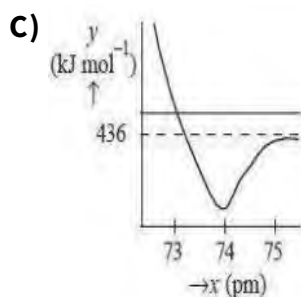
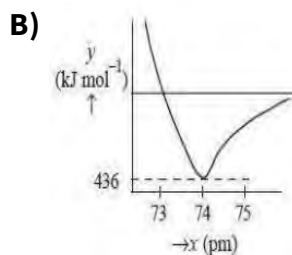
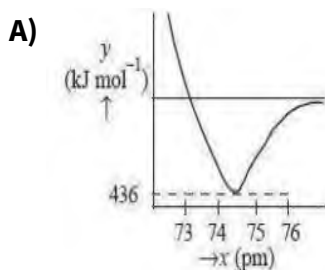
iii. CH_4 iv. O_3

v. SO_2 vi. CFC



36. Q.Id: 159557
Identify the correct statement regarding fullerene
- It has 60 vertices
 - All carbon atoms are in sp^3 hybridisation
 - The number of rings having six carbons each is 20 and the number of rings having five carbons each is 12
 - All C-C bond lengths in it are equal
- A) ii, iv
B) i, ii, iii, iv
C) i, ii, iv
D) i, iii
37. Q.Id: 159556
Diborane reacts with NaH in diethyl ether to form X. Reaction of X with I_2 gives NaI, H_2 and Y. What is Y ?
- A) $Na_2B_4O_7$
B) B_2O_3
C) H_3BO_3
D) B_2H_6
38. Q.Id: 159555
The pair of s-block metals, which give crimson colour to the flame is
- A) Li, Mg
B) Na, Ca
C) Li, Sr
D) K, Ca
39. Q.Id: 159554
When 2.0 mL of 15.18% (w/v) H_2O_2 solution is decomposed the volume of oxygen liberated at STP is
- A) 5.0
B) 30.36
C) 100
D) 7.59
40. Q.Id: 159553
At T(K) if the ionization constants of HCOOH and HCN are 2.0×10^{-4} and 5.0×10^{-9} respectively, the ionization constants of the corresponding conjugate bases respectively are
- A) 2.0×10^{-6} , 5.0×10^{-11}
B) 2.0×10^{-4} , 5.0×10^{-9}
C) 5.0×10^{-9} , 2.0×10^{-4}
D) 5.0×10^{-11} , 2.0×10^{-6}

46. Q.Id: 159546
 The bond length and bond dissociation energy of H_2 are 74 pm and 436 kJ mol^{-1} respectively.
 Which one of the following graphs correctly represents the variation of energy (in y-axis) with inter atomic distance (in x-axis) of H_2 ?



47. Q.Id: 159545
 In the elements of second period of the modern periodic table, the decrease in atomic radius (pm) is maximum with respect to
- A) Be to B B) B to C
 C) C to N D) Li to Be

48. Q.Id: 159544
 According to quantum mechanics, in which of the following all the information about the electron is present ?

- A) Schrodinger equation B) Wave function
 C) Principal quantum number D) Probability density

49. Q.Id: 159543
 If the radius of electron orbit in a hydrogen like species is 52.9 pm, the angular momentum of electron in that orbit is

- A) $\frac{h}{2\pi}$ B) $\frac{h}{3\pi}$
 C) $\frac{h}{\pi}$ D) $\frac{h}{4\pi}$

54. Q.Id: 158830
Two parallel metal plates A and B separated by a distance 25 cm are connected to an ammeter. Photons of energy 3.28 eV are incident on the photosensitive plate A of threshold wavelength 5000Å. The minimum value of the magnetic field to be applied parallel to the plates so that the current through the ammeter becomes zero is $B \times 10^{-5}$ T. Then the value of B is (mass of electron $=9.0 \times 10^{-31}$ kg, charge of electron $=1.6 \times 10^{-19}$ C)
- | | |
|--------|---------|
| A) 9.1 | B) 1.2 |
| C) 4.2 | D) 13.2 |

55. Q.Id: 158829
An observer is at 100 cm from a point source of light of 120 W power. The rms value of the magnetic field due to the source at the position of the observer is _____ T.

(Speed of light in vacuum $=3 \times 10^8$ ms⁻¹, $\frac{1}{4\pi\epsilon_0} = 9 \times 10^9$ Nm² C⁻²)

- | | |
|-----------------------|-----------------------|
| A) 2×10^{-7} | B) 3×10^{-7} |
| C) 4×10^{-7} | D) 5×10^{-7} |
56. Q.Id: 158828
An ideal choke draws a current of 8A when connected to a source of 100 V, 50 Hz.
When a resistor is connected to the same source, it draws a current of 10 A.
Now the choke and the resistor are connected in series and then connected to a source of 100 V, 40 Hz.
The current in the circuit is
- | | |
|------------------|-------------------|
| A) 10 A | B) 8 A |
| C) $5\sqrt{2}$ A | D) $10\sqrt{2}$ A |

57. Q.Id: 158827
A conducting square loop is placed in a magnetic field 'B' with its plane perpendicular to the field. The sides of the loop start shrinking at a constant rate ' α '. The induced emf in the loop at an instant when its side is 'a' is
- | | |
|---------------------------|-------------------|
| A) Zero | B) $a \alpha B$ |
| C) $\frac{a \alpha B}{2}$ | D) $2 a \alpha B$ |

58. Q.Id: 158826

$\oint \vec{B} \cdot d\vec{s} = 0$ equation is not according to the following

- A) The net magnetic flux enclosed by any closed surface is zero.
- B) No isolated magnetic poles are available.
- C) The magnetic flux is positive at some place and it is negative at some other place.
- D) The number of magnetic lines leaving a surface is not equal to that of entering the surface.

59. Q.Id: 158825

An electron enters a magnetic field of $(3\hat{i} + 4\hat{j})\text{T}$ with a velocity of $(6\hat{j} + 4\hat{k})\text{ms}^{-1}$. The acceleration produced is $(\frac{e}{m} \text{ of electron} = 1.76 \times 10^{11} \text{ C kg}^{-1})$

- A) $3.52(-8\hat{i} + 6\hat{j} - 9\hat{k}) \times 10^{11} \text{ ms}^{-2}$
- B) $2.53(-8\hat{i} - 6\hat{j} + 9\hat{k}) \times 10^{11} \text{ ms}^{-2}$
- C) $1.76(-8\hat{i} - 6\hat{j} + 9\hat{k}) \times 10^{11} \text{ ms}^{-2}$
- D) $3.52(-8\hat{i} + 6\hat{j} - 9\hat{k}) \text{ ms}^{-2}$

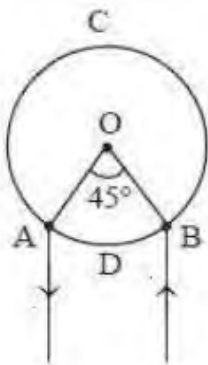
60. Q.Id: 158824

An electron moving in a uniform magnetic field $(4\hat{i} + 6\hat{j} + n\hat{k})\text{T}$ experiences a force $(2\hat{i} + 3\hat{j} + 4\hat{k})\text{N}$. Then the value of 'n' is

- A) -2.5
- B) -6.5
- C) -4.5
- D) 6.5

61. Q.Id: 158823

A and B are two points on a uniform ring of resistance 19Ω . The angle $\angle AOB = 45^\circ$. The equivalent resistance between A and B is _____



- A) 8.02Ω
- B) 20.8Ω
- C) 3.8Ω
- D) 2.08Ω

65. Q.Id: 158818
Two hollow concentric spheres A and B enclosing electric charges $2C$ and $8C$ respectively. If the radius of A is less than that of B, the ratio of electric flux through A to the electric flux through B is

A) 1 : 5
B) 5 : 1
C) 1 : 4
D) 4 : 1

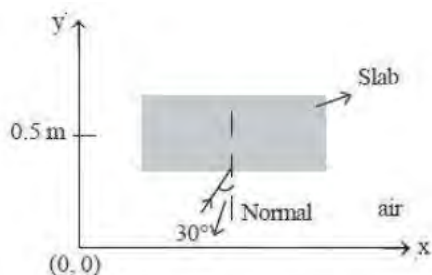
66. Q.Id: 158816
There is a uniform electric field of strength 10^3 Vm^{-1} along the Y-axis. A particle of mass 1 g and charge 10^{-6} C is projected into the field from the origin along the +ve X-axis with a velocity of 40 ms^{-1} . Then the magnitude of its velocity after 30 seconds will be (neglect gravitation)

A) 40 ms^{-1}
B) 50 ms^{-1}
C) 30 ms^{-1}
D) 70 ms^{-1}


67. Q.Id: 158814
Interference fringes were produced in Young's double slit experiment using light of wavelength 6000\AA . When a transparent film of thickness $3 \times 10^{-3} \text{ cm}$ was placed over one of the slits, the fringe pattern is shifted by a distance equal to 20 fringe widths. The refractive index of the material of the film is

A) 1.25
B) 1.33
C) 1.4
D) 1.5

68. Q.Id: 157568
The path of a light ray inside a transparent slab of variable refractive index is $y = 4x^2$. A light ray travelling in air falls on the surface of the slab at an angle 30° as shown in the figure. The refractive index of the slab at $y = 0.5 \text{ m}$ is



A) 1.33
B) 1.5
C) 1.46
D) 1.28

77. Q.Id: 157543
 A string of a material of length 1 m, cross - sectional area 0.2cm^2 requires 200 N to extend it by 1 mm. The same material is used to manufacture the legs of a robot of 50 cm length and of cross - sectional area 0.5cm^2 each. The mass of the robot is 50 kg. When it jumps from a building of height 'h', it experiences a strain 0.05. The maximum height through which the robot can jump without breaking its legs is ($g = 10\text{ms}^{-2}$)
- A) 12.5 m
 B) 2.5 m
 C) 10 m
 D) 7.5 m
78. Q.Id: 157540
 Two bodies of masses 2 kg and 4 kg separated by a distance of 200 cm are approaching towards each other due to their mutual gravitational force only. After 2 s of their start, the separation decreases by nearly
- A) $2 \times 10^{-12}\text{ m}$
 B) $2 \times 10^{-14}\text{ m}$
 C) $2 \times 10^{-10}\text{ m}$
 D) $2 \times 10^{-8}\text{ m}$
79. Q.Id: 157539
 A particle performs SHM along a straight line. In the first second, starting from rest at extreme position, it travels a distance 'a' and in the next second it travels a distance 'b' in the same direction. The amplitude of the SHM is
- A) $\frac{b^2}{2a-b}$
 B) $\frac{2a^2}{3a-b}$
 C) $\frac{2a^2}{2a-b}$
 D) $\frac{3b^2}{2a-b}$
80. Q.Id: 157533
 A rigid uniform rod of mass 'M' and length 'L' is resting on a smooth horizontal table. It is pivoted at its centre. Two marbles each of mass $\frac{M}{6}$ moving with uniform speed $L\text{ms}^{-1}$ in the plane of the table collide with the two ends of the rod simultaneously as shown in the figure. The marbles stuck to the rod and continue to move with the rod. Time taken by the rod to rotate through an angle $\frac{\pi}{2}$ radian is (in seconds)
- 
- A) 1
 B) 2π
 C) π
 D) $\frac{\pi}{2}$

81. Q.Id: 157530
A wheel of mass 10 kg and radius 0.8 m is rolling on a road with an angular speed 20 rad s^{-1} without sliding. The moment of inertia of the wheel about the axis of rotation is 1.2 kgm^2 , then the percentage of rotational kinetic energy in the total kinetic energy of the wheel is _____ (approximately).

- A) 5.8 % B) 15.79 %
C) 17 % D) 18.57 %

82. Q.Id: 157527
When a rubber string is stretched through a distance 'x', the restoring force developed has a magnitude $(px + qx^2 + rx^3)$ where p, q and r are constants. Work done in stretching the unstretched rubber string by a distance 'l' is

- A) $\frac{pl^2}{2} + \frac{ql^3}{3} + \frac{rl^4}{4}$ B) $\frac{1}{2} \left[\frac{pl^2}{2} + \frac{ql^3}{3} + \frac{rl^4}{4} \right]$
C) $pl^2 + ql^3 + rl^4$ D) $pl + ql^2 + rl^3$

83. Q.Id: 157521
A ball falls freely from a height 180 m onto the ground and rebounds a number of times. The coefficient of restitution is 0.5 and $g = 10 \text{ ms}^{-2}$. Then match the quantities given in List - I with their corresponding values in SI units given in List - II.

- | List1 | List2 |
|---|--------------------|
| A. The height it reaches after the first impact | I. 180
II. 6 |
| B. The total distance travelled by it before it comes to rest | III. 45
IV. 300 |
| C. The time taken to reach the ground first time | |
| D. The vertical displacement before it comes to rest | |

- A) A-> IV, B-> II, C-> I, D-> III B) A-> IV, B-> III, C-> II, D-> I
C) A-> I, B-> II, C-> III, D-> IV D) A-> III, B-> IV, C-> II, D-> I

84. Q.Id: 157517
A car of mass 'm' accelerates on a level smooth road when a constant power 'p' is delivered to it. If the velocity of the car at any instant is 'v', then its velocity will be doubled after travelling a distance

- A) $\frac{7mv^3}{3p}$ B) $\frac{4mv^3}{3p}$
C) $\frac{mv^3}{p}$ D) $\frac{18mv^3}{7p}$

85. Q.Id: 157514
Two blocks of masses ' m_1 ' and ' m_2 ' are suspended by a massless string passing over a smooth pulley.

If the acceleration of the system is $\frac{g}{8}$, then the ratio of the masses $\frac{m_2}{m_1} =$

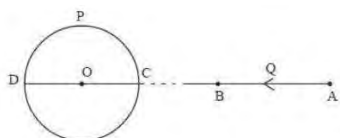
- A) 8 : 1 B) 8 : 7
C) 9 : 7 D) 4 : 3

86. Q.Id: 157512
A stone is thrown with a velocity of 20 ms^{-1} at an angle 60° with the horizontal. The speed of the stone when its direction of motion makes 45° with the horizontal is

- A) 28.28 ms^{-1} B) 14.14 ms^{-1}
C) 7.07 ms^{-1} D) 3.53 ms^{-1}

87. Q.Id: 157509
The time period of a particle 'P' moving along a circular path of radius 1 cm is π s. Another particle 'Q' starts from rest at a point A and travelling along a straight line path reaches the point B in 2 s.

If $AB = 12$ cm and the particles P and Q are respectively at D and B at an instant shown in the figure, the acceleration of particles Q with respect to particle P is _____ cm s^{-2} . (Points A, B, C, D and O lie along the same straight line)



- A) 12 B) 10
C) 8 D) 6

93. Q.Id: 157495
Assertion (A) : Founder effect is a type of genetic drift
Reason (R) : The change in the frequency of a gene that occurs merely by chance and not by selection, in very large population, is called genetic drift
- A)** Both (A) and (R) are correct and (R) is the correct explanation of (A)
B) Both (A) and (R) are correct but (R) is the correct explanation of (A)
C) (A) is correct but (R) is not correct
D) (A) is not correct but (R) is correct
94. Q.Id: 157493
The idea of survival of the fittest was proposed by
- A)** T.R. Malthus
B) Herbert Spenser
C) Charles Lyell
D) A.R. Wallace
95. Q.Id: 157492
Study the following statements
I) Gene that codes for the synthesis of dystrophin is the largest human gene
II) Chromosome 21 contains the highest number of genes
III) Endonucleases are used to cut the DNA at specific region
IV) Whole hereditary information encoded in DNA of an organism is called genome
Among the above identify the correct statements
- A)** I, II
B) II, III, IV
C) I, IV
D) I, III, IV
96. Q.Id: 157490
Assertion (A) : SNPs are more stable
Reason (R) : They have very low mutation rates
- A)** Both (A) and (R) are correct and (R) is the correct explanation of (A)
B) Both (A) and (R) are correct and (R) is not the correct explanation of (A)
C) (A) is correct but (R) is not correct
D) (A) is not correct but (R) is correct
97. Q.Id: 157489
If one gene influences many phenotypic traits, the phenomenon is called
- A)** Polygenetic inheritance
B) Pleiotropy
C) Multiple factorial inheritance
D) Quantitative inheritance

102. Q.Id: 157480
Observe the following diagram of brain of man and identify the parts labeled as I and III



- A) I - Amygdala, III - Corpus Callosum B) I - Corpus Callosum, III - Hypothalamus
C) I - Corpus Callosum, III - Thalamus D) I - Hypothalamus, III - Corpus Callosum
103. Q.Id: 157478
Regulatory proteins in a myofibril are

- A) Actin, Myosin B) Actin, Troponin
C) Myosin, Tropomyosin D) Troponin, Tropomyosin

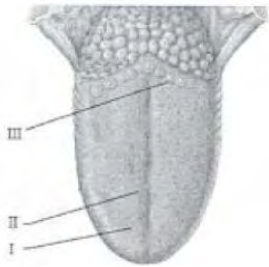
104. Q.Id: 157477
Study the following statements
I) In embryonic stage, the interventricular septum of human heart has foramen ovale
II) Tunica media of human artery has elastic lamina on either side
III) Excretory organs of arachnids are coxal glands
IV) Angiotensin II stimulates the Juxta Glomerular cells to secrete the enzyme renin
Pick up the incorrect statements from the above

- A) I, II B) II, III
C) III, IV D) I, IV

105. Q.Id: 157475
Assertion (A) : 'Dub' is one of the sounds of the heart caused during a cardiac cycle
Reason (R) : The sound is due to closure of semilunar valves present at the bases of aortic arches

- A)** Both (A) and (R) are correct and (R) is the correct explanation of (A)
B) Both (A) and (R) are correct but (R) is not the correct explanation of (A)
C) (A) is correct but (R) is not correct
D) (A) is not correct but (R) is correct

106. Q.Id: 157473
Study the following diagram of human tongue and identify the part I, II, and III



- A)** I - Foliate papillae, II - Fungiform papillae, III - Circumvallate papillae
B) I - Fungiform papillae, II - Filiform papillae, III - Foliate papillae
C) I - Filiform papillae, II - Fungiform papillae, III - Circumvallate papillae
D) I - Circumvallate papillae, II - Filiform papillae, III - Fungiform papillae

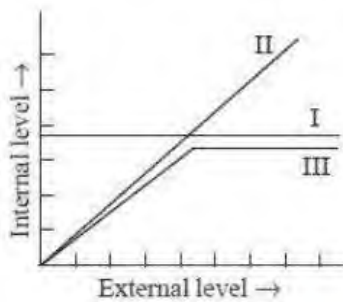
107. Q.Id: 157471
Right side shift of oxygen - haemoglobin dissociation curve occurs during

- A)** Low pH, high CO_2 , high temperature
B) High pH, low CO_2 , low temperature
C) Low pH, low CO_2 , high temperature
D) High pH, high CO_2 , low temperature

108. Q.Id: 157470
 Following are different layers in the wall of alimentary canal of man
 I) Longitudinal muscles
 II) Mucosa
 III) Serosa
 IV) Circular muscles
 V) Sub mucosa
 Arrange them in correct sequence from outer to inner side

- A) III, I, V, IV, II B) III, I, IV, V, II
 C) II, V, IV, I, III D) III, IV, I, V, II

109. Q.Id: 157468
 Observe the following graph of regulators



In the above graph I, II and III represent

- A) Conformers - Regulators - Partial regulators B) Partial regulators - Conformers - Regulators
 C) Regulators - Conformers - Partial regulators D) Partial regulators - Regulators - Conformers

110. Q.Id: 157467
 Study the following statements
 I) In a thermally stratified lake, in winter, the upper layer is known as epilimnion
 II) Animals in lake that are capable of swimming constitute neuston
 III) The natural interconnections of food chain form a network called food web
 IV) Energy flow in an ecosystem is unidirectional
 Among the above correct statements are

- A) I, II B) III, IV
 C) I, III D) II, IV

111. Q.Id: 157463
Assertion (A) : In brakish water stenohaline animals are abundant
Reason (R) : Brakish water animals can with stand wide fluctuations in salinity
- A)** Both (A) and (R) are correct and (R) is the correct explanation of (A)
B) Both (A) and (R) are correct but (R) is not the correct explanation of (A)
C) (A) is correct but (R) is not correct
D) (A) is not correct but (R) is correct
112. Q.Id: 157462
Animals living in air-water interface
- A)** Nekton
B) Periphyton
C) Plankton
D) Neuston
113. Q.Id: 157461
The following are the joints of each leg of a Cockroach
- I) Tibia**
II) Coxa
III) Tarsus
IV) Femur
V) Trochanter
- A)** II, I, III, IV, V
B) II, V, IV, I, III
C) III, I, IV, V, II
D) V, IV, III, II, I
114. Q.Id: 157459
In the abdomen of Cockroach, the ventral nerve cord is absent in the following segments
- A)** 5th segment
B) 7th to 10th segment
C) 8th to 10thsegment
D) 5th, 8th, 9thsegment

115. Q.Id: 157457

Study the following statements

I) Marijuana is extracted from the Indian hemp plant

II) Amphetamines cause sleeplessness

III) Morphine is involved in the transportation of a neurotransmitter, dopamine

IV) Heroin is commonly called smack

Among the above, correct statements are

A) I, II, IV

B) II, III, IV

C) I, III, IV

D) I, II, III

116. Q.Id: 157455

Assertion (A) : Some times relapse of malaria may take place even after treatment

Reason (R) : Activation of hypozoites

A) Both (A) and (R) are correct and (R) is the correct explanation of (A)

B) Both (A) and (R) are correct but (R) is not the correct explanation of (A)

C) (A) is correct but (R) is not correct.

D) (A) is not correct but (R) is correct

117. Q.Id: 157454

Opium is obtained from this plant

A) Papaver somniferum

B) Cannabis Sativa

C) Antropa belladonna

D) Erythroxyllum coca

118. Q.Id: 157451

Study the following table

S.No.	Group	Ancestors	Evolved in
I	Pisces	Osteolepids	Silurian period
II	Amphibia	Osteolepids	Devonian period
III	Reptilia	Labyrinthodonts	Jurassic period
IV	Aves	Therapsids	Carboniferous period
V	Mammalia	Therapsids	Triassic period

Pick up the wrong combinations

A) I, II, IV

B) I, III, IV

C) II, III, IV

D) I, II, III

119. Q.Id: 157449
Among vertebrates tympanum, sternum are first appeared in

- A) Pisces
- B) Amphibians
- C) Reptiles
- D) Aves

120. Q.Id: 157448
Study the following statements

- I) Colloblasts are found in sea gooseberries
 - II) Larva of cestodes is Muller's larva
 - III) Nematodes have renette glands excretion
 - IV) Stomochord is found in hemichordates
- Among the above, correct statements are**

- A) I, II, III
- B) I, III, IV
- C) II, III, IV
- D) I, II, IV

121. Q.Id: 157446
Study the following statements

- I) Microglial cells keep the cerebrospinal fluid in the ventricles of brain in constant circulation
 - II) Arrector pili muscles are unstriated muscles
 - III) Basophils remove antigen-antibody complexes from the blood
 - IV) Perichondrium is absent in fibrous cartilage
- Among the above, the incorrect statements are**

- A) II, III
- B) I, III
- C) III, IV
- D) II, IV

122. Q.Id: 157445
Assertion (A) : In human beings kidneys are retroperitoneal organs
Reason (R) : They are protruded into the body cavity from inner surface of dorsal body wall and have mesodermal peritoneum on their ventral side only

- A) Both (A) and (R) are correct and (R) is the correct explanation of (A)
- B) Both (A) and (R) are correct but (R) is not the correct explanation of (A)
- C) (A) is correct but (R) is not correct
- D) (A) is not correct but (R) is correct

123. Q.Id: 157444

Assertion (A) : Species is an ecological unit

Reason (R) : Individuals of a species share the same ecological niche

- A)** Both (A) and (R) are correct and (R) is the correct explanation of (A) **B)** Both (A) and (R) are correct but (R) is not the correct explanation of (A)
- C)** (A) is correct but (R) is not correct **D)** (A) is correct but (R) is correct

124. Q.Id: 157368

Choose the incorrect statements from the following

I) Blue green algae add organic matter to the soil and increase fertility

II) Fungal symbiont of mycorrhiza facilitates absorption of nitrogen

III) Baculo viruses are not desirable in IPM program

IV) Azospirillum and Azatobacter are free living in air

- A)** I, II, III **B)** II, III, IV
- C)** I, III, IV **D)** I, II, IV

125. Q.Id: 157363

Plants genes have been altered by manipulation for these uses

I) Increased efficiency of mineral usage

II) Alternative resources to industries

III) Enhanced nutritional value of food

IV) Better management practices and uses of agrochemicals

- A)** I, II, IV **B)** I, II, III
- C)** I, III, IV **D)** II, III, IV

126. Q.Id: 157360

The correct combination pair of given strategies in the area of health care developed by the rDNA technological process.

I) ELISA → Antigen - antibody interaction

II) RNA interference → Cellular defence

III) PCR → Gene therapy

IV) Transgenic potato → Pseudomonas resistance

- A)** I, II **B)** II, III
- C)** III, I **D)** IV, II

132. Q.Id: 157344
Some of F_2 progeny are formed in single during dihybrid cross between round and yellow (♂) and wrinkled and green (♀) pea plants. Their genotype are
- A) RRYy, rryy, rrYy, RrYy** **B) RRYy, rryy, rrYy, RrYy**
C) RRYy, rryy, RrYy, rrYy **D) RRYy, rryy, RrYy, RrYy**
133. Q.Id: 157337
The correct combination of hosts and their respective viral diseases
- A) Bovine spongiform encephalitis - Cows**
B) Rubella - Beaf
C) Scrapie disease - Sheep
D) Creutzfeldt Jacob disease - Man
- A) A, B, C** **B) A, C, D**
C) B, C, D **D) A, D**
134. Q.Id: 157336
Choose the wrong statements from the given below
- A) Lederberg and Tatum found that the bacterium donates entire genetic material to recipient**
B) Ehrenberg established link between bacteria and infectious diseases
C) Pasteur showed about the significant changes of nature brought by bacteria
D) Griffith discovered recipient cells of bacteria acquire previous characters
- A) A, B, C** **B) B, C, D**
C) A, C, D **D) A, B, D**
135. Q.Id: 157333
Name for the given phenomena events that occur during the growth of the plant
- A) Production of tissues in woody dicotyledonous plants to perform specific function**
B) Heterophylly at different stages of growth
C) Formation of meristems from parenchyma cells
- A) Redifferentiation, Plasticity, Dedifferentiation** **B) Redifferentiation, Differentiation, Dedifferentiation**
C) Dedifferentiation, Differentiation, Plasticity **D) Dedifferentiation, Plasticity, Redifferentiation**

136. Q.Id: 157331
Growth regulations that help to overcome the given physiological problems in a plant
(A) Withstand desiccation and other factors unfavourable for growth
(B) Promotes female flowers in cucumber
(C) Increase absorption surface
(D) Rapid elongation in internodes
Answers respectively

A) Ethylene, A.BA, Cytokinius B) ABA, Ethylene, Auxins
C) ABA, Ethylene D) Auxins, Gibberelius

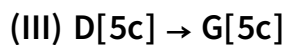
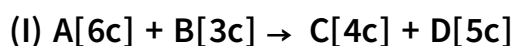
137. Q.Id: 157327
Proceeding reactions of oxidation I, II, III and IV in Krebs cycle

A) Decarboxylation, Hydration, Cleavage and Hydration B) Hydration, decarboxylation, Cleavage and Hydration
C) Cleavage, Hydration, Hydration and Decarboxylation D) Hydration, Cleavage, Decarboxylation and Hydration

138. Q.Id: 157325
No. of ATP, O₂ molecules and NADPH released in photophosphorylation when 12H₂O molecules undergo photolysis

A) 6, 6, 12 B) 6, 12, 6
C) 18, 6, 12 D) 12, 6, 18

139. Q.Id: 157324
Series of enzymes involved in the given reactions of C₃ cycle



A) Aldolases, Transketolases, Isomerases, Kinases B) Transketolase, Aldolases, Epimerases, Kinases
C) Aldolases, Transketolases, Phosphatases, Kinases D) Transketolases, Aldolases, Kinases, Epimerases

140. Q.Id: 157320
Study of the following
I) K_m value - Affinity of the enzyme → Inverse measure → Enzyme affinity
II) Hydrolases → P - O bonds → Linking 2 compounds
III) Transferases → Transfer of a group → Inhibitor of reaction
IV) Emil Fisher → Lock and key hypothesis → Formation of ES complex
The correct combinations are

- | | |
|-----------|------------|
| A) I, IV | B) II, III |
| C) I, III | D) II, IV |

141. Q.Id: 157319
Given mineral ions essential for the physiological activities of plant
A) Nitrogen metabolism
B) Synthesis of Auxins
C) Activation of IAA oxidase enzyme
D) Formation of Mitotic spindle

Answers respectively.

- | | |
|-------------------|-------------------|
| A) Mn, Zn, Cu, Ca | B) MO, Mn, Zn, Ca |
| C) Zn, Cu, Mn, MO | D) MO, Zn, Mn, Ca |

142. Q.Id: 157316
Find correct statements from the following
A) Protein transporters are responsible for maximum rates of transport under saturated state
B) Translocation of substances in bulk flow requires hydrostatic pressure gradient
C) Root pressure plays greatest contribution for upward movement of water in tall plants
D) Transport proteins of endodermal cells are control points for active transport of ions in two directions

The correct answer is

- | | |
|---------|---------|
| A) A, C | B) A, B |
| C) C, B | D) A, D |

143. Q.Id: 157313
In A, B, C, plants with
A) Plant grow in arid zone
B) Absorb more water during rainy reason
C) Withstand prolonged dryness are
Answers respectively
- A) Tribulus, Asparagus, Casuarina B) Tridax, Asparagus, Casuarina
C) Tridax, Tribulus, Asparagus D) Maize, Tridax, Asparagus
144. Q.Id: 157312
Helianthus distinguished from maize based on this anatomical character
- A) Protoxylen lacuna absent, phloem parenchyme absent B) Protoxylen lacuna present, phloem parenchyme present
C) Protoxylen lacuna absent, phloem parenchyme present D) Protoxylen lacuna present, phloem parenchyme absent
145. Q.Id: 157310
Identify group of plants based on given anatomical characters in sequence.
A) Bicollateral vascular bundles
B) Bulliform cells
C) Ring arrangement of vascular bundles
- A) Tridax, Nerium, Zea B) Helianthus, Grass, Nerium
C) Nerium, Tridax, Zea D) Cucurbita, Zea, Tridax
146. Q.Id: 157309
Number of bivalents, chromatid tetrads, DNA strands, telomers present in pachytene phase of meiocyte of Maize
- A) 20, 20, 80, 80 B) 20, 20, 40, 80
C) 10, 10, 40, 80 D) 10, 20, 40, 40

147. Q.Id: 157308

A : Composition of cell membrane of Erythrocyte

B : No. of strands present in peripheral fibril of centriole

C : No. of nucleotides in a typical nucleosome

I) 60% protein. 40% Lipids

II) 53% protein, 40% Lipids

III) Phosphoglycolipids

IV) 3 V) 200 VI) 145

A) I, IV, V

B) III, IV, V

C) III, V, VI

D) II, IV, V

148. Q.Id: 157307

DNA molecule has length of 476Å with 20% Guanosine. Choose the correct features of DNA

I) 56 CTP

II) 336 Hydrogen bonds

III) Total 150 nucleotides

IV) 84 TTP

A) I, II, III

B) I, II, IV

C) II, III, IV

D) I, III, IV

149. Q.Id: 157306

Choose the correct statements

i. Ribosomes are found in Cytoplasm, Chloroplasts, Mitochondria and on rough ER

ii. Mesosomes in bacteria are not the sites of DNA replication

iii. Algae cell wall made of cellulose, galactans, mannan and calcium carbonate

iv. Mitochondria, chloroplast and peroxisomes are the part of Endomembrane System

A) i, iv

B) i, ii

C) i, iii

D) ii, iii

150. Q.Id: 157305
Assertion (A) : In all green plants, each cell shows one chloroplast
Reason (R) : The ratio between the number of chloroplasts and the number of cells in Chlamydomonas is 1 : 1
The correct answer is
- A)** Both (A) and (R) are true and (R) is the correct explanation of (A) **B)** Both (A) and (R) are true but (R) is not correct explanation of (A)
C) (A) is true but (R) is false **D)** (A) is false but (R) is true
151. Q.Id: 157304
Organelles whose functions are co-ordinated with each other as an endomembrane system
- A)** Endoplasmic reticulum, Golgicomplex, Mitochondria, Ribosomes **B)** Endoplasmic reticulum, Golgicomplex, Lysosomes, Vacuole
C) Plasma membrane, Mitochondria, Golgicomplex, Chloroplast **D)** Mitochondria, Chloroplast, Peroxisomes, Ribosomes
152. Q.Id: 157302
Arrange the correct order stages for monosporic development of female gametophyte in angiosperms.
I) Functional megaspore
II) Free nuclear divisions
III) Embryosac
IV) Linear tetrad of megaspore
V) Megaspore mother cell
The correct sequence is
- A)** II, I, IV, V, III **B)** I, II, IV, V, III
C) V, IV, I, II, III **D)** IV, V, I, II, III
153. Q.Id: 157301
Different parts of embryonic axis based on cotyledon position in a dicot embryo
- A)** Cotyledons, Epicotyl, Plumule, Radicle, Hypocotyl, Root cap **B)** Plumule, Epicotyl, Hypocotyl, Radicle, Root cap
C) Epicotyl, Plumule, Cotyledons, Hypocotyl, Radicle, Root cap **D)** Cotyledons, Hypocotyl, Plumule, Epicotyl, Radical, Root cap

154. Q.Id: 157300
Assertion (A) : Pollen grains are well preserved as fossils
Reason (R) : The exine of pollen grains is made up of sporopollenin, which can withstand high temperatures, strong acids and alkali.
- A)** Both (A) and (R) are true and (R) is the correct explanation of (A) **B)** Both (A) and (R) are true but (R) is not correct explanation of (A)
C) (A) is true but (R) is false **D)** (A) is false, (R) is true
155. Q.Id: 157299
Chrysanthemum differ from Jasmine in the given aspects when they give rise to new off springs in vegetative propagation process
- I) Lateral branches arise from basal and underground part of main stem**
II) Branches bent and grow downwards
III) Branches grow obliquely upwards
IV) Lateral branches arise from the base of the main axis and are aerial
- A)** I, III **B)** II, IV
C) I, II **D)** III, IV
156. Q.Id: 157298
Ovaries of four different plants A, B, C and D show variation in the position of ovules as stated below
- A) On central axis without septa**
B) On the inner wall of ovary
C) On the ridge along the ventral suture
D) At the base of the ovary
- Identify the A, B, C and D plants respectively.**
- A)** Tomato, Argemone, Tridax, Dianthus **B)** Primrose, Mustard, Pea, Marigold
C) Citrus, Sunflower, Argemone, Dianthus **D)** Chinrose, Dianthus, Argemone, Sunflower
157. Q.Id: 157297
Study the following statements
- A) Archaea and Eukarya are more closely related to each other than bacteria**
B) R.H. Whittaker placed unicellular eukaryotic organisms in the Kingdom Monera
C) Carl Woes replaced Kingdom Monera with two Kingdoms Bacteria and Archaea
D) 24s subunit of ribosomal RNA is used in the identification of Microbes
- A)** A, C **B)** A, D
C) B, C **D)** B, D

158. Q.Id: 157296
Identify the plant that possess all the following characters
A) Xylem and phloem are main conducting elements
B) Pollen grains are carried by wind
C) Transfer of pollen is direct
D) Ovules develop into seeds after fertilisation

- A) Selaginella B) Marchantia
C) Gnetum D) Eucalyptus

159. Q.Id: 157295
Character of Pteridophyte considered as an important step in evolution

- A) The embryo produces a multicellular well differentiated sporophyte B) Sporophyte is dominant phase in life cycle
C) Development of zygotes into young embryos takes place within the female Gametophytes D) Spores Germinate to give rise to prothalli

160. Q.Id: 157294
Find incorrect statements from the following

- A) Cell wall of Gracillaria has outside gelatinous coating
B) Dictyota has Flagellated spermatium
C) Hornworts show Haplodiplontic life cycle
D) Volvox zygote acts as a zoospore

- A) A, B B) C, D
C) A, C D) A, D

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