PRERNA EDUCATION
IIT-JEE | NEET | BOARDS | NTSE | KVPY | OLYMPIADS

NEET 2024 (CODE - T3)

Physics, Chemistry, Botany, Zoology

Time: 3h:20m **Total Questions: 200** **Marks: 720**

Section - A (Physics)

1. A tightly wound 100 turns coil of radius $10cm$ carries a current of $7A$. The magnitude of the magnetic field at the centre of the coil is (Take permeability of free space as $4\pi \times 10^{-7} SI$ units):

(1) $4.4mT$ (2) $44T$ (3) $44mT$ (4) $4.4T$

Answer: 1

2. Match List-I with List-II. Choose the correct answer from the options given below:

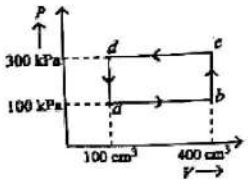
	Column 1		Column 2
1	Diamagnetic	A	x=0
2	Ferromagentic	B	$0 > \chi \geq -1$
3	Paramagnetic	C	$\chi \gg 1$
4	Non- Magnetic	D	$0 < \chi < \varepsilon$ (a small positive number)

(1) A-III, B-II, C-I, D-IV (2) A-IV, B-III, C-II, D-I

(3) A-II, B-III. C-IV, D-I (4) A-II, B-I, C-III, D-IV

Answer: 3

3. A thermodynamic system is taken through the cycle *abcda*. The work done by the gas along the path *bc* is :



(1) -90 J3 (2) $-60J$ (3) zero (4) $30J$

Answer: 3

4. An unpolarised light beam strikes a glass surface at Brewster's angle. Then

(1) (I) both the reflected and refracted light will be completely polarised.

(2) (2) the reflected light will be completely polarised but the refracted light will be partially polarised.

(3) (3) the reflected light will be partially polarised. (4) (4) the refracted light will be completely polarised.

Answer: 2

5. In an ideal transformer, the turns ratio is $\frac{N_p}{N_s} = \frac{1}{2}$. The ratio $V_s : V_p$ is equal to (the symbols carry their usual meaning) :

(1) 1 : 1 (2) 1 : 4 (3) 1 : 2 (4) 2 : 1

Answer: 4

6. A logic circuit provides the output Y as per the following truth table : The expression for the output Y is :

A	B	Y
0	0	1
0	1	0
1	0	1
1	1	0

(1) $\bar{B}$ (2) B (3) $A \cdot B + \bar{A}$ (4) $A \cdot \bar{B} + \bar{A}$

Answer: 1

7. In a vernier calipers, $(N+1)$ divisions of vernier scale coincide with N divisions of main scale. If 1 MSD represents $0.1mm$, the vernier constant (in cm) is :

(1) $100N$ (2) $10(N+1)$ (3) $\frac{1}{10N}$ (4) $\frac{1}{100(N+1)}$

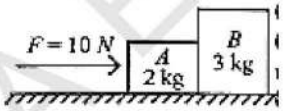
Answer: 4

8. The maximum clongation of a steel wire of $1m$ length if the elastic limit of steel and its Young's modulus, respectively, are $8 \times 10^8 Nm^{-2}$ and $2 \times 10^{11} Nm^{-2}$, is :

(1) $40mm$ (2) $8mm$ (3) $4mm$ (4) $0.4mm$

Answer: 3

9. A horizontal force $10N$ ipapplied to a block A as shown in figure. The massof blocks A and B are $2kg$ and $3kg$, respectively The blocks slide over a frictionless surface. The force exerted by block A on block B is :



(1) $6N$ (2) $10N$ (3) zero (4) 4 N

Answer: 1

10. If the monochromatic source in Young's double slit experiment is replaced by white light, then

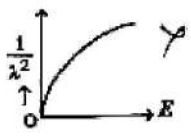
(1) there will be a cental bright white fringe surrounded by a fewcepoloured fringes.

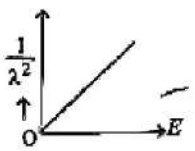
(2) all bright fringes will be of equal width. (3) interference pattern will disappear.

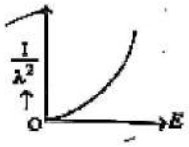
(4) there will be a centrakgark fringe surrounded by a few coloured fringes.

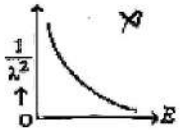
Answer: 1

11. The graph which shows alge variation of $\left(\frac{1}{\lambda^2}\right)$ $r-1$ and its kinetic energy, E if (where λ is de Broglie wavelength of a free particle):

(1) 

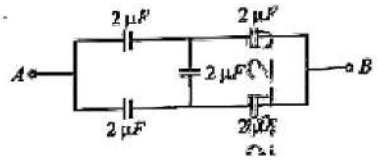
(2) 

(3) 

(4) 

Answer: 2

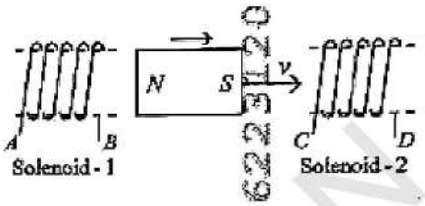
12. In the following circuit, the equivalent capacitance between terminal A and terminal B is :



(1) $0.5\mu F$ (2) $4\mu F$ (3) $2\mu F$ (4) $1\mu F$

Answer: 3

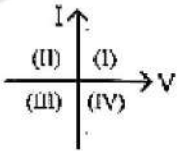
13. In the above diagram, a strong bar magnet is moving towards solenoid-2 from solenoid-1. The direction of induced current in solenoid-1 and that in solenoid-2, respeCtively, are through the directions:



(1) AB and CD (2) BA and DC (3) AB and DC (4) BA and CD

Answer: 3

14. Consider the following statements A and B and identify the correct answer :



A. For a solar-cell, the I-V characteristics lies in the IV quadrant of the given graph.

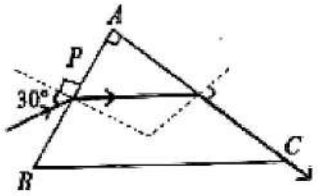
B. In a reverse biased pn junction diode, the current measuredid (μA), is due to majority charge carriers.

(1) Both A and B arengorrect. (2) Both A and B areihcorrect, 1)?

(3) A is correct but B is incorrect. (4) A is incorrect but B is correct.

Answer: 3

15. A light ray enters through a right angled prism at point P with the angle of incidence 30° as shown in figure. It travels through the prism parallel to its base BC and emerges along the face AC. The refractive index of the prism is:



(1) $\frac{\sqrt{3}}{4}$ (2) $\frac{\sqrt{3}}{2}$ (3) $\frac{\sqrt{5}}{4}$ (4) $\frac{\sqrt{5}}{2}$

Answer: 4

16. Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R.

Assertion A : The potential (V) at any axial point, at $2m$ distance (r) from the centre of the dipole of dipole moment vector $\vec{P}$ of magnitude, $4 \times 10^{-6} Cm$, is $\pm 9 \times 10^3 V$.

(Take $\frac{1}{4\pi\epsilon_0} = 9 \times 10^9$ SI units)

Reason R : $V = \pm\frac{2P}{4\pi\epsilon_0 r^2}$, where r is the distance of any axial point, situated at $2m$ from the centre of the dipole.

In the light of the above statements, choose the correct answer from the options given below:

(1) A is true but R is false. (2) A is false but R is true.

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

(4) Both A and R are true and R is NOT the correct explanation of A.

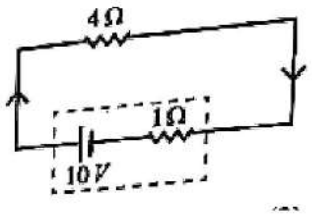
Answer: 1

17. The moment of inertia of a thin rod about an axis passing through its mid point and perpendicular to the rod, is $2400 gcm^2$. The length of the $400g$ rod ismearly"

(1) $20.7cm$ (2) 72.0 cm (3) 8.5 cm (4) 17.5 cm

Answer: 3

18. The terminal voltage of the battery, whose emf is $10V$ and internal resistance 1Ω, when connected through an external resistance of 4Ω as shown in the figure is :



(1) $8V$ (2) $10V$ (3) $4V$ (4) $6V$

Answer: 1

19. Match List I with List II. Choose the correct answer from the options given below:

(1) A-IV, B-III, C-I, D-II (2) A-I, B-II, C-III, D-IV (3) A-II, B-I, C-IV, D-III (4) A-III, B-IV, C-II, D-I

Answer: 4

20. If c is the velocity of light in free space, the correct statements about photon among the following are :

A. The energy of a photon is $E = hv$.

B. The velocity of a photon is c.

C. The momentum of a photon, $p = \frac{hv}{c}$.

D. In a photon-electron collision, both total energy and total momentum are conserved.

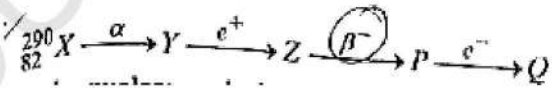
E. Photon possesses positive charge.

Choose the correct answer from the options given below:

(1) A C and D only (2) A B, D and E only (3) A and B only (4) A. B, C and D only

Answer: 4

21. In the nuclear emission stated above, the mass number and atomic number of the product Q respectively, are :



(1) 288,82 (2) 286,81 (3) 280,81 (4) 286,80

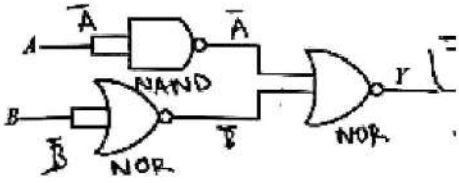
Answer: 2

22. At any instant of time t, the displacement of any particle is given by $2t - 1$ (SI unit) under the influence of force of $5N$. The value of instantaneous power is (in SI unit):

(1) (I) 7 (2) (2) 6 (3) (3) 10 (4) (4) 5

Answer: 3

23. The output (Y) of the given logic gate is similar to the output of an/a :



(1) (1) OR gate (2) (2) AND gate

(3) (3) NAND gate (4) (4) NOR gate

Answer: 1

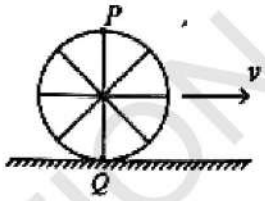
24. The mass of a planet is $\frac{1}{10}$ th that of the earth and its diameter is half that of the earth. The acceleration due to gravity on that planet is :

(1) $4.9ms^{-2}$ (2) $3.92ms^{-2}$ (3) $19.6ms^{-2}$ (4) $9.8ms^{-2}$

Answer: 2

25. Given below are two statements : Statement I : Atoms are electrically neutral as they contain equal number of positive and . negative charges. Statement II : Atoms of each element are stable and emit their characteristic spectrum. In the fight of the above statements, choose the most appropriate answer from the options given below :
(1) (1) Statement I is correct but Statement II is incorrect.(2) (2) Statement I is incorrect but Statement II is correct.
(3) (3) Both Statement I and Statement II are correct. (4) (4). Both Statement I and Statement II are incorrect.
Answer: 1

26. A wheel of a bullock cart is rolling on a level road as shown in the figure below. If its linear speed is v in the direction shown, which one of the following options is correct (P and Q are any highest and lowest points on the wheel, respectively)?

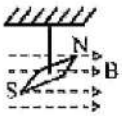


(1) Both the points P and Q move with equal speed.(2) Point P has zero speed.
(3) Point P moves slower than point Q. (4) Point P moves faster than point Q.
Answer: 4

27. A particle moving with uniform speed in a circular path maintains :
(1) constant velocity but varying acceleration. (2) varying velocity and varying acceleration. (3) constant velocity.
(4) constant acceleration.
Answer: 2

28. A thin flat circular disc of radius $4.5cm$ is placed gently over the surface of water. If surface tension of water is $0.07Nm^{-1}$, then the excess force required to take it away from the surface is :
(1) $1.98mN$ (2) $99N$ (3) $19.8mN$ (4) $198N$
Answer: 3

29. In a uniform magnetic field of $0.049T$, a magnetic needle performs 20 complete oscillations in 5 seconds as shown. The moment of inertia of the needle is $9.8 \times 10^{-6} kgm^2$. If the magnitude of magnetic moment of the needle is $x \times 10^{-5} Am^2$; then the value of ' x ' is :



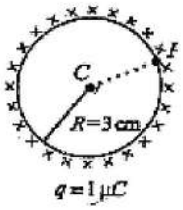
(1) $50\pi^2$ (2) $1280\pi^2$ (3) $5\pi^2$ (4) $128\pi^2$
Answer: 2

30. Two bodies A and B of same mass undergo completely inelastic one dimensional collision. The body A moves with velocity v_1 while body B is at rest before collision. The ivelocity of the system after collision is v_2. The ratio $v_1 : v_2$ is :
(1) 4 : 1 (2) 1 : 4 (3) 1 : 2 (4) 2 : 1
Answer: 4

31. If $x = 5\sin\left(\pi t + \frac{\pi}{3}\right)m$ represents the motion of a particle executing simple harmonic motion, the amplitude and time period of motion, respectively, are :
(1) $5cm, 1s$ (2) $5m, 1s$ (3) $5cm, 2s$ (4) $5m, 2s$
Answer: 4

32. The quantities which have the same dimensions as those of solid angle are :
(1) strain and arc. (2) angular speed and stress (3) strain and angle (4) stress and angte
Answer: 3

33. A thin spherical shell is charged by some source. The potential difference between the two points C and P(in V) showh in the figure is:



(Take $\frac{1}{4\pi\epsilon_0} = 9 \times 10^9$ SI units)

(1) 0.5×10^5 (2) zero (3) 3×10^5 (4) 1×10^5

Answer: 2

34. A bob is whirled in a horizontal plane by means of a string with aÃ□Â±itial speed of ωrpm. The tension in the strifi is T. If speed becomes 2ω while keeping the sadme radius, the tension in the string becomes :

(1) $\frac{T}{4}$ (2) $\sqrt{2}T$ (3) T (4) 47

Answer: 4

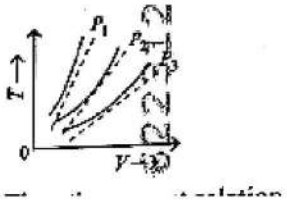
35. A wire of length ' r ' and resistance 100Ω is divided into 10 equal parts. The first 5 parts are connected in series while the next 5 parts are connected in parafiel. The two combinations are again connected ip geries. The resistance of this final conpoination is:

(1) $55\Omega-$ (2) $60\Omega \propto$ (3) $26\Omega \propto$ (4) 52Ω -

Answer: 4

Section - B (Physics)

36. The following graph represents the T-V curves of an ideal gas (where T is the temperature and V the volume) at threc pressures P_1, P_2 and P_3 compared with those of Charles's law represented as dotted lines,



Then the correct relation is:

(1) $P_2 > P_1 > P_3 >$ (2) $P_1 > P_2 > P_3$ (3) $P_3 > P_2 P_1$ (4) $P_1 > P_3 > P_2 >$

Answer: 2

37. A parallel platecapacitor is charged by connecting it to a battery through a resistor. If I is the current in the circuit then in the gap between the plates:

(1) displacÃ©ment current of magnitude equal to I flows if a direction opposite to that of I.

(2) displacement current of magnitude greater than I flows but can be in any direction. (3) there is no current.

(4) displacement current of magnitude equal to I flows hill the same direction as I.

Answer: 4

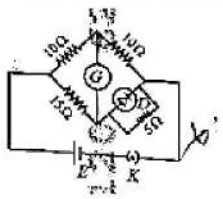
38. The propertywhich is not of an electromagnetic wave travelling in free space is that :

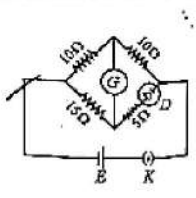
(1) they trakel with a speed equal to $\frac{1}{\sqrt{\mu_0 \in_0}}$. (2) they originate from charges moving with uniform speed.

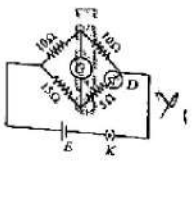
(3) they are transverse in nature.(4) the eneifgy density in electric field is equal to energy density in magnetic field.

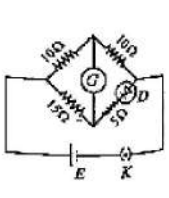
Answer: 2

39. Choose the correct circuit which can achieve the bridge balarice.

(1) 

(2) 

(3) 

(4) 

Answer: 3

40. If the plates of a parallel plate capacitor connected ${}_{10}0^{battery}$ are moved close to each other, then A. the charge stored in it, increases. B. the energy stored in it, decreases. C. its capacitance increases. D. the ratio of charge to its potential remains the same. E. the product of charge and voltage increases. Choose the most appropriate answer from the options given below:

(1) B, D and E only (2) A, B and , C only (3) A, B and E only (4) A, C and E only

Answer: 4

41. A force defined by $F = \alpha t^2 + \beta t$ acts on a particle at a given time t. The factor which is dimensionless, if α and β are constants, is:

(1) $\alpha\beta t$ (2) $\alpha\beta/t$ (3) $\beta t/\alpha$ (4) $\alpha t/\beta$

Answer: 4

42. A metallic bar of Young's modulus, $0.5 \times 10^{11} Nm^{-2}$ and coefficient of linear thermal expansion $10^{-5\circ}C^{-1}$ length $1m$ and area of cross-section $10^{-3}m^2$ is heated from $0^\circ C$ to $100^\circ C$ without expansion or bending. The compressive force developed in it is:

(1) $100 \times 10^3 N$ (2) $2 \times 10^3 N$ (3) $5 \times 10^3 N$ (4) $50 \times 10^3 N$

Answer: 4

43. A small telescope has an objective of focal length $140cm$ and an eye piece of focal length $5.0cm$ The magnifying power of telescope for viewing a distant object is:

(1) \$17 (2) \$32 (3) \$34 (4) \$28

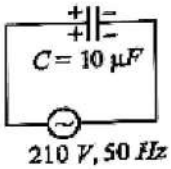
Answer: 4

44. An iron bar of length L has magnetic moment M. It is bent at the middle of its length such that the two arms make an angle 60° with each other. The magnetic moment of this new magnet is:

(1) $2M$ (2) $\frac{M}{\sqrt{3}}$ (3) M (4) $\frac{M}{2}$

Answer: 4

45. A $10\mu F$ capacitor is connected to a $210V, 50Hz$ source as shown in figure. The peak current in the circuit is nearly $(\pi = 3.14)$:



(1) $1.20A$ (2) $0.35A$ (3) $0.58A$ (4) $0.93A$

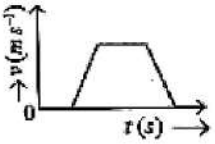
Answer: 4

46. Two heaters A and B have power rating of $1kW$ and $2kW$, respectively. Those two are first connected in series and then in parallel to a fixed power source. The ratio of power outputs for these two cases is:

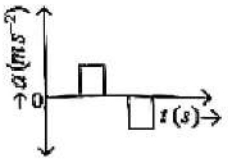
(1) 1 : 2 (2) 2 : 3 (3) 1 : 1 (4) 2 : 9

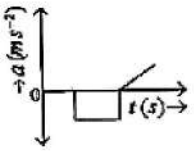
Answer: 4

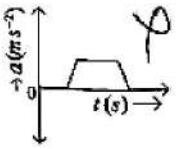
47. The velocity (v) - time (t) plot of the motion of a body is shown below :

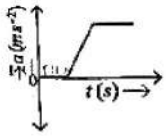


The acceleration (a) -time (t) graph that best suits this motion is :

(1) 

(2) 

(3) 

(4) 

Answer: 1

48. If the mass of the bob in a simple pendulum is increased to thrice its original mass and its length is made half its original length, then the new time period of oscillation is $\frac{x}{2}$ times its original time period. Then the vifue of x is:

(1) $2\sqrt{3}$ (2) 4 (3) $\sqrt{3}y$ (4) $\sqrt{2}$

Answer: 4

49. The minimum energy required to launch a satellite of mass m from the surface of earth of mass M and radius R in a ofkcular orbit at an altitude of $2R$ from the surface of the earth is:

(1) $\frac{GmM}{2R}$ (2) $\frac{GmM}{3R}$ (3) $\frac{5GmM}{6R}$ (4) $\frac{2GmM}{3R}$

Answer: 3

50. A sheet is placed on/a horizontal surface in front of a strong magnetÃ¦Â°Â□ pole. A force is needed to :

A. hold the sheet there if it is magnetic.

B. hold the sheotthere if it is non-magnetic.

C. move the sheeft away from the pole with uniform velaÃ□Â³ty if it is conducting.

D. move the shegt away from the pole with uniform velobily if it is both, non-conducting and non-polar.

Choose the corregtstatement(s) from the options given below: N

(1) A, C and D phly (2) C only (3) B and D only (4) A and C only

Answer: 1

Section - A (Chemistry)

51. Match the Following Question Choose the correct answer from the options give below:

	List 1		List 2
A	$1mol$ of H_2OtoO_{2}	I	3F
B	$1mol$ of MnO_4^- to $Mn^{2+}N$	II	2F
C	$1.5mol$ of $9from$ molten $CaCl_2$	III	1F
D	$1mol$ of FeO to Fe_2O_3	IV	5F

(1) A-II, B-III, C-I, D-IV (2) A-III, B-IV, C-II, D-I

(3) A-II, B-IV C-I, D-III (4) A-III, B-IV, C-I, D-II

Answer: 4

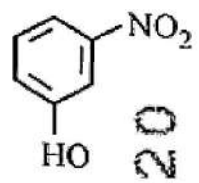
52. Which reaction is NOT a redox reaction?

(1) $H_2 + Cl_2 \rightarrow 2HCl$ (2) $BaCl_2 + Na_2SO_4 \rightarrow BaSO_4 + 2NaCl$ (3) $Zn + CuSO_4 \rightarrow ZnSO_4 + Cu$

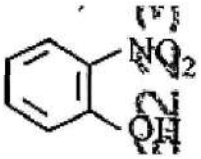
(4) $2KClO_3I_2 \rightarrow 2KIO_3 + Cl_2$

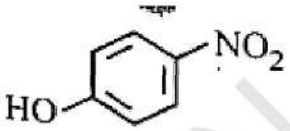
Answer: 2

53. Intramolecular hydrogen bonding is present in

(1) 

(2) HF

(3) 

(4) 

Answer: 3

54. Fehling's solution ' A ' is

(1) alkaline? solution of sodium potasium tartrate (Rochelle's salt) (2) aqueous sodium citrate

(3) aqueous copper sulphate (4) alkaline copper sulphate

Answer: 3

55. 1 g ram of sodium hydroxide was treated with $25mL$ of $0.75MHCl$ solution, the mass of sodium hydroxide left unreacted is equal to

(1) Zero mg (2) $200mg$ (3) $750mg$ (4) $250mg$

Answer: 3

56. Match The Following

	List 1		List 2
A	NH_3	I	Trigonal Pyramidal
B	BrF_5	II	Square Planar
C	XeF_4^-	III	Octahedral
D	SF_6	IV	Square Pyramidal

(1) A-III, B-IV, C-I, D-II (2) A-II, B-III, C-IV, D-I

(3) A-I, B-IV, C-II, D-III (4) A-II, B-IV, C-III, D-I

Answer: 3

57. The E° value for the Mn^{3+}/Mn^{2+} couple is more positive than that of Cr^{3+}/Cr^{2+} or Fe^{3+}/Fe^{2+} due to change of

(1) d^4 to d^5 configuration (2) d^3 to d^5 configuration- (3) d^5 to d^4 configuratiofn (4) d^5 to d^2 configuration

Answer: 1

58. Match List I with List II. Choose the correct answer from the options given below:

	List 1		List 2
A	Isothermal process	I	No Heat Exchange
B	Isochoric Process	II	Carried out at constant Temperature
C	Isobaric Process	III	Carried out at constant volume
D	Adiabatic Process	IV	Carried out at constant pressure

(1) A-I, B-II, C-III, D-IV
(2) A-II, B-III, C-IV, D-I
(3) A-IV, B-III, C-II, D-I
(4) A-IV, B-II, C-III, D-I

Answer: 2

59. Activation energy of any chemical reaction can be calculated if one knows the value of
(1) orientation of reactant molecules during collision.
(2) rate constant at two different temperatures.
(3) rate constant at standard temperature.
(4) probability of collision.

Answer: 2

60. A compound with a molecular formula of C_6H_{14} has two tertiary carbons. Its IUPAC name is:
(1) 2,3-dimethylbutane (2) 2,2-dimethylbutane (3) n-hexane (4) 2-methylpentane

Answer: 1

61. 'Spin only' magnetic moment is same for which of the following ions?
A. Ti^{3+}
C. Mn^{2+}
B. Cr^{2+}
E. Sc^{3+}Choose the most appropriate answer from the options given below: 6
(1) B and C only (2) A and D only (3) B and D only (4) A and E only

Answer: 1

62. Arrange the followipg elements in increasing order of electronegatirity:
N, O, F, C, SiN Choose the correct answer from the options given below:
(1) O < F < N < C < Si >
(2) F < O < N < C < Si $
(3) Si < C < N < O < F
(4) Si < C < O $ < N < F

Answer: 3

63. Which one of the following alcohols reacts instantaneously with lucas reagent?
(1) 1 (2) 2 (3) 3 (4) 4

Answer: 2

64. Given below are two statements :

Statement I : Both $[Co(NH_3)_6]^{3+}$ and $[CoF_6]^{3-}$ complexes are octahedral but differ in their magnetic behaviour.

Statement II : $[Co(NH_3)_6]^{3+}$ is diamagnetic whereas $[CoF_6]^{3-}$ isparamagnetic. 000, 10, 16. In the light of the above statements, choose the correct answer from the options given below:

(1) Statement I is true but Statement II is false.
(2) Statement I is false but Statement II is true.
(3) Both Statement I and Statement II are true.
(4) Both Statement I and Statement II are false.

Answer: 3

65. Given below are two statements:

Statement I : The boiling point of hydrides of Group 16 elements follow the order $H_2O > H_2Te > H_2Se > H_2S$.

Statement II : On the basis of molecular mass, H_2O is expected to have lower boiling point than the other members of the group but due to the presence of extensive H-bonding in H_2O, it has higher boiling point. In the light of the above statements, choose the correct answer from the options given below:

(1) Statement I is true but Statement II is false.
(2) Statement I is false but Statement II is true.
(3) Both Statement I and Statement II are true.
(4) Both Statement I and Statement II are false.

Answer: 3

66. Match List I with List II. Choose the correct answer from the options given below:

	List 1		List 2
A	m_t	I	Shape of orbital
B	m_S	II	Size of Orbital
C	l	III	Orientation of Orbital
D	n	IV	orientation of spin of electron

(1) A-III, B-IV, C-II, D-I
(2) A - II, B - I, C- IV, D - III
(3) A-I, B-III, C-II, D-IV
(4) A-III, B-IV, C-I, D-II

Answer: 4

67. Match List I with List II. Choose the correct answer from the options given below:

(1) A-IV, B-I, C-II, D-III (2) A-I, B-IV, C-II, D-III (3) A-IV, B-I, C-III, D-II (4) A-III, B-I, C-II, D-IV

Answer: 3

68. Identify the correct reagents that would bring about the following transformation.

(1) (i) BH_3
(ii) $H_2O_2/\overset{\ominus}{O}H$
(iii) alk. $KMnO_4$
(iv) $H_3O^{\oplus}$

(2) (i) H_2O/H^+
(ii) PCC

(3) (i) H_2O/H^+
(ii) CrO_3

(4) (i) BH_3
(ii) $H_2O_2/\overset{\ominus}{O}H$(iii) PCC

Answer: 4

69. The reagents with which glucose does not react to give the corresponding tests/products are

A. Tollen's reagent

B. Schiff's reagent

C. HCN

D. NH_2OH

E. $NaHSO_3$

Choosethe correct options from the given below:

(1) B and E (2) E and D (3) B and C (4) A and D

Answer: 1

70. Choose the correct answer from the options given belows:

	List 1		List 2
A	ethane	I	one σ-bond and two π-bonds
B	ethene	II	two π-bonds
C	carbon molecule	III	one σ-bond
D	ethyne	IV	one σ-bond and one π-bond

(1) A-III, B-IV, C-II, D-I (2) A-III, B-IV, C-I, D-Ii

(3) A-I, B-IV, C-II, D-III (4) A-IV, B-III, C-II, D-I

Answer: 1

71. Among Group 16 elements, which one does NOT show -2 oxidation state?

(1) $Te\vee$ (2) Po (3) O (4) Sev

Answer: 2

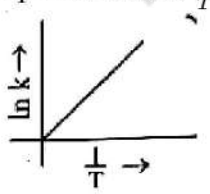
72. For the reaction $2A \cup B + C, K_c = 4 \times 10^{-3}$. At a given time, the composition of reaction mixture is : $[A] = [B] = [C] = 2 \times 10^{-3} M$. Then, which of the following is correct?

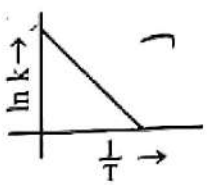
(1) Reaction has a tendency to go in backward direction. (2) Reaction has gone to completion in forward direction.

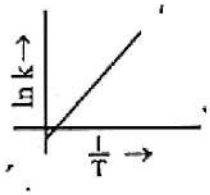
(3) Reaction is at equilibrium.- (4) Reaction has a tendency to go in forward direction.

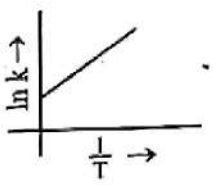
Answer: 1

73. Which plot of ln k vs $\frac{1}{T}$ is consistent with Arrhenius equation?

(1) 

(2) 

(3) 

(4) 

Answer: 2

74. In which of the follawing equilibria, K_p and K_c are NOT equal?

(1) $CO_{(g)} + H_2O_{(g)}\left(CO_{2(g)} + H_{2(g)}\right.$ (2) $2BrCl_{(g)} \rightleftharpoons Br_{2(g)} + Cl_{2(g)}$ (3) $PCl_{5(g)} \rightleftharpoons PCl_{3(g)} + Cl_{2(g)}$

(4) $H_{2(g)} + I_{2(g)} \rightleftharpoons 2HI_{(g)}$

Answer: 3

75. Given below are two statements

Statement I : The boiling point of three isomeric pentanes follows the Order

n-pentane > isopentane > neopentane

Statement II : When branching increases, the molecule attains a shape of sphere. This results in smaller surface area for contact, due to which the intermolecular forces between the spherical molecules are weak, thereby lowering the boiling point.

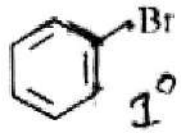
In the light of the aboye statements, choose the most appropriate answer from the options given below:

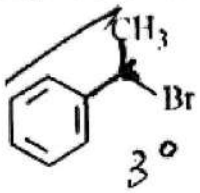
(1) Statement I is Borrect but Statement II is incorrect. (2) Statement I is incorrect but Statement II is correct.

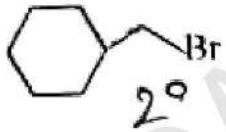
(3) Both Statement I and Statement II are correct. (4) Both Statemehif I and Statement II are incorrect. - à¤□. I.

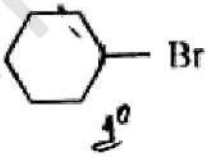
Answer: 3

76. The compound that will undergo S_N reaction with the fastest rate is

(1) 

(2) 

(3) 

(4) 

Answer: 2

77. The energy of an electron in the ground state $(n = 1)$ for He tion is $-xJ$, then that for an electron in $n = 2$ state for Be^{3+} ion in J is :

(1) $-4x$ (2) $-\frac{4}{9}x$ (3) $-x$ (4) $-\frac{x}{9}$

Answer: 3

78. In which of the following processes entropy increases?

A. A liquid evaporates to vapour.

B. Temperature of a crystalline solid lowered from $130K$ to $0K$.

C. $2NaHCO_{3(s)} \rightarrow Na_2CO_{3(s)} + CO_{2(g)} + H_2O_{(g)}$

D. $Cl_{2(g)} \rightarrow 2Cl_{(g)}$ Choose the correct answer from the options given below:

(1) A, C and D (2) C and D (3) A and C (4) A, B and D

Answer: 1

79. On heating, some solid substances change from solid to vapour state without passing through liquid state. The technique used for the purification of such solid substances based on the above principle is known as

(1) Distillation (2) Chromatography (3) Crystallization (4) Sublimation

Answer: 4

80. Match List I with List II.

Choose the correct answer from the options given below:

(1) A-I, B-IV, C-III, D-II (2) A-II, B-IV, C-III, D-I (3) A-II, B-III, C-IV, D-I (4) A-I, B-III, C-IV, D-II

Answer: 3

81. Given below are two statements:

Statement I : Anjline does not undergo FriedelCrafts alkylation reaction.

Statement II : Aniline cannot be prepared through Gabriel synthesis.

In the light of the above statements, choose the correct answer from the options given below:

(1) Statement I is correct but Statement II is false. (2) Statement I is incorrect but Statement II is true.

(3) Both Statement I and Statement II are true. (4) Both Statement I and Statement II are false.

Answer: 3

82. Arrange the following elements in increasing order of first ionization enthalpy: Li, Be, B, C, N

Choose the correct answer from the options given below:

(1) Li $<$ Be $<$ C $<$ B $<$ N (2) Li $<$ Be $<$ N $<$ B $<$ C

(3) Li $<$ Be $<$ B $<$ C $<$ N (4) Li $<$ B $<$ Be $<$ C $<$ N

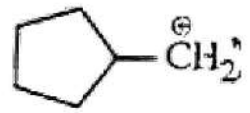
Answer: 4

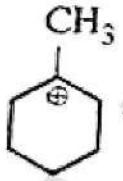
83. The highest number of helium atoms is in

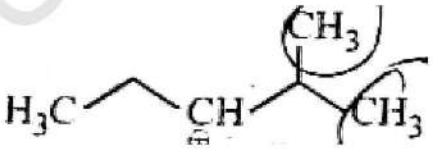
(1) $4g$ of helium (2) $2.271098L$ of helium at STP (3) $4mol$ of helium (4) $4u$ of helium

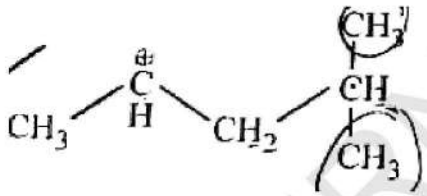
Answer: 3

84. The most stable carbocation among the following is:

(1) 

(2) 

(3) 

(4) 

Answer: 2

85. The Henry's law constant (K_H) values of three gases (A, B, C) in water are $145, 2 \times 10^{-5}$ and $35kbar$, respectively. The solubility of these gases in water follow the order:

(1) A $>$ C $>$ B (2) $A > B > C$

(3) \$\$ B $>$ A $>$ C (4) B $>$ C $>$ A

Answer: 4

Section - B (Chemistry)

86. A compound X contains 32% of A, 20% of B ane remaining percentage of C. Then, the empirical formula of X is :

(Given atomic masses of $A = 64; B = 40; C = 32u$)

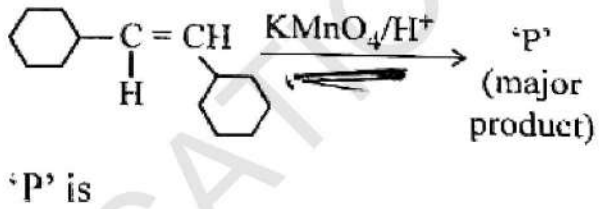
(1) AB, C_2 (2) ABC_4 (3) A_2BC_2 (4) ABC_3

Answer: 4

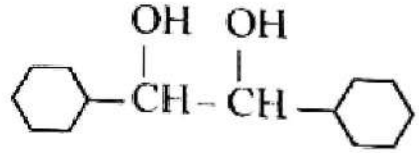
87. The products A ane B obtained in the following reactions, respectively, are
$3ROH + PCI_3) - 3BB) + A$RQH + PCl _{5} \rightarrow RCl + HCl + B$
(1) H_3PO_4 and $POCl_3$ (2) H_3PO_3 and $POCl_3$ (3) $POCl_3$ and H_3PO_3 (4) $POCl_3$ and H_3PO_4
Answer: 2

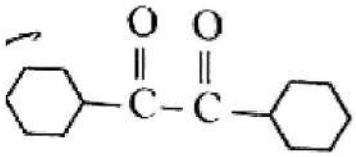
88. The plot of osmotic pressure (Π) vs concentration $\left(molLL^{-1}\right)$ for a solution gives a straight line with slope $25.73Lbarmol^{-1}$. The temperature at which the osmotic pressure measurement is done is:
(Use $R = 0.083Lbarmol^{-1}K^{-1}$)
(1) $25.73°C$ (2) $12.05°C$ (3) $37°C$ (4) $310°C$
Answer: 3

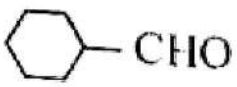
89. For the given reaction:

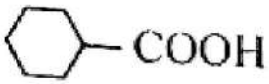


'P' is

(1) 

(2) 

(3) 

(4) 

Answer: 4

90. Given below are two statements : Statement I : $[Co(NH_3)_6]^{3+}$ is a homoleptic complex whereas $[Co\,(NH_3)\,, Cl_2]^{+}$ is a heteroleptic complex.
Statement II : CÃ□Â³nplex $[Co(NH_3)_6]^{3+}$ has only
one kind of ligands but $\left[Co(NH_3)_4' Cl_2\right]^{+}$ has more than one kind of ligands: In the light of the above statements, choose the correct answer fpop the options given belÃ□Â³w:
(1) Statement I IN true but Statement II is false. (2) Statement I (is false but Statement II is true.
(3) Both Statement I and Statement II are true. (4) Both Statement I and Statement II are false.
Answer: 3

91. During the preparat ation of Mohr's salt solution (Ferrous ammopipm sulphate), which of the following acid iÃ□Â□added to prevent hydrolysis of Fe^{2+} ion?
(1) dilute nitric acid φ (2) dilute sulphuric acid (3) dilute hydrocoploric acid (4) concentrated sulphuric acid
Answer: 2

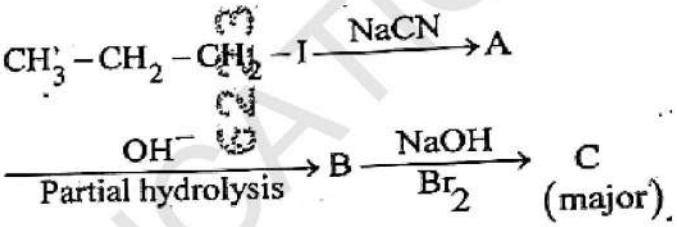
92. Identify the correct answer.
(1) Dipole moment of NF_3 is greater than that of NH_3. (2) Three canonical forms can be drawn for CO_3^{2-} ion. H
(3) Three resonance structures can be drawn for ozone. (4) BF_3 has non-zero dipole moment.
Answer: 3

93. Given below are certain cations. qualitative analysis, arrange them in increasing group number from 0 to VI. A. Al^{3+}
B. Cu^{2+}
C. Ba^{2+}
D. Co^{2+}
E. Mg^{2+}

Choose the corfect answer from the options given below:

(1) E, C, D, B, A (2) E, A, B, C,D (3) B, A, D, C, E (4) B, C, A, D, E
Answer: 3

94. Identify the major product C formed in the following reactioh sequence :



(1) butanamide (2) α-bromÃ□Â´hutanoic acid
(3) propylamine (4) butylamire
Answer: 3

95. The rate of Cal reaction quadruples when temperature ethanges from $27^{\circ}C$ to $57^{\circ}C$. Calculate the energy of activation.
Given $R = 8.314 JK^{-1}mol^{-1}, \log 4 = 0.6021$
(1) $3.80 kJ/molY$ (2) $3804 kJ/mol$ (3) $38.04 kJ/mbl$ (4) $380.4 kJ/mol$
Answer: 3

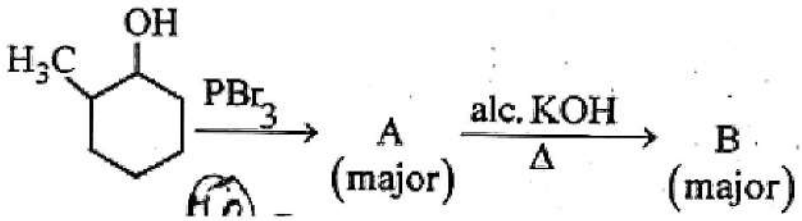
96. Consider the following reaction in a sealed vessel at equilibrium with concentrations of $N_2 = 3.0 \times 10^{-3} M, O_2 = 4.2 \times 10^{-3} M$ and $NO = 2.8 \times 10^{-3} M$
$2NO_{(g)} \rightleftharpoons N_{2(g)} + O_{2(g)}$

If $0.1 molL^{-1}$ of $NO_{(g)}$ is taken in a closed vessel, what will be degree of dissociation (α) of $NO_{(g)}$ at equilibrium 30
(1) 0.8889 (2) 0.717 (3) 0.00889× (4) 0.0889 >>
Answer: 1

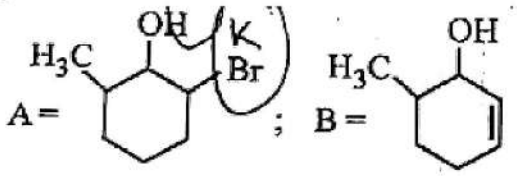
97. The work done during reversible isothermal expansion of one mole of hydrogen gas at $25^{\circ}C$ from pressure of 20 atmosphere to 10 atmosphere is:
(Given $R = 2.0 calK^{-1}mol^{-1}$)
(1) 413.14 calories (2) 100 calories (3) 0 calorie (4) -413.14 calorie
Answer: 4

98. Mass in grams of copper deposited by passing 9.6487 A current through a voltmeter containing copper sulphate solution for 100 seconds is:
(Given : Molar mass of $Cu : 63 gmol^{-1}, 1F = 96487C$)
(1) 31.5 g (2) 0.0315 g (3) 3.15 g (4) 0.315 g
Answer: 4

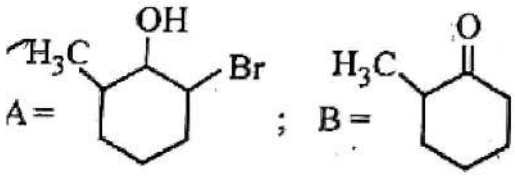
99. Major products A and B formed in the following reaction sequence, are



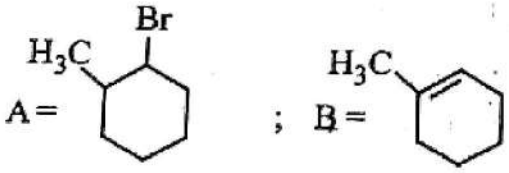
(1)



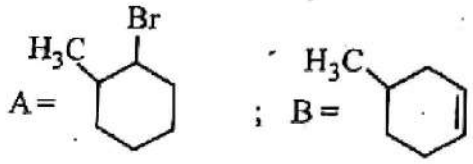
(2)



(3)



(4)



Answer: 3

100. The pair of lanthanoid ions which are diamagnetic is

(1) Gd^{3+} and Eu^{3+} (2) Pm^{3+} and Sm^{3+} (3) Ce^{4+} and Yb^{2+} (4) Ce^{3+} and Eu^{2+}

Answer: 3

Section - A (Botany)

101. Identify the set of correct statements:

A. The flowers of Vallisneria are colourful and produce nectar. water

B. The flowers of waterlily are not pollinated by water.

C. In most of water-pollinated species, the pollen grains are protected from wetting.

D. Pollen grains of some hydrophytes are long and ribbon like.

E. In some hydrophytes, the pollen grains are carried passively inside water.

Choose the correct answer from the options given below:

(1) A C , D*and*E$ only (2) B, C, D and E only (3) C, D and E only (4) A B, C and D only

Answer: 2

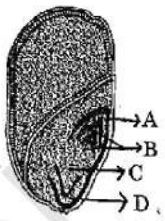
102. The type of conservation in which the threatened species are taken out from their natural habitat and placed in special setting where they can be protected and given special care is called;

(1) Semi-conservative method (2) Sustainable development (3) in-situ conservation (4) Biodiversity conservation

Answer: 4

103. Inhibition of Succinic dehydrogenase enzyme by malonate is a classical example of:
(1) Competitive inhibition (2) Enzyme activation (3) Cofactor inhibition (4) Feedback inhibition
Answer: 1

104. Identify the part of the seed from the given figure which is destined to form root when the seed germinates.



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

105. Bulliform cells are responsible for
(1) Increased photosynthesis in monocots. (2) Providing large spaces for storage of sugars
(3) Inward curling of leaves in monocots. (4) Protecting the plant from salt stress.
Answer: 3

106. Which of the following tapequired for the dark reaction of photosynthesis?
A. Light M
B. Chlorophyll
C. CO_2
D. ATP
E. NADPH V Choose the correct answer from the options given below:
(1) C, D and E only (2) D and E only (3) A, B and C only (4) B, C and D only
Answer: 1

107. Formation of interfascicular cambium from fully developed parenchyma cells is an example for
(1) Dedifferentiation (2) Maturation (3) Differentiation (4) Redifferentiation
Answer: 1

108. Hind II always cuts DNApholecules at a particular point called recognition sequence and it consists of:
(1) 4bp (2) 10bp (3) 8bp (4) 6bp
Answer: 4

109. Tropical regions show greatest level of species richness because
A. Tropical latitudes have remained relatively undisturbed for milfions of years, hence more time was Ã□Â¢kilable for species diversification.
B. Tropical environmeffs are more seasonal.
C. More solar energy is available in tropics.
D. Constant environments promote niche specialization.
E. Tropical environmepts are constant and predictable. m
Choose the correct answer from the options given below:
(1) A, B and E only (2) A, B and D only (3) A, C, D and E only (4) A and B only
Answer: 3

110. Which one of the following is not a criterion for classification of fungi?
(1) Mode of spore formation (2) Fruiting body (3) Morphology of mycelium (4) Mode of nutrition
Answer: 4

111. How many molecules of AIF required for every molecule of CO_2 fixedth the Calvin cycle?

(1) 3 molecules of ATP and 3 molecules of $NADPH$ (2) 3 molecules of ATP and 2 molecules of $NADPH$

(3) 2 molecules of ATP and 3 molecufes of NADPH (4) 2 molecules of ATP and 2 molecules of $NADPH$

Answer: 2

112. These are regarded as major causes of biodNersity loss:

A. Over exploitation

B. Co-extinction

e. Mutation

D. Habitat loss and fragmentation

E.Migration

Choose the correct option:

(1) (1) A, B and E only (2) (2) A, B and Donly (3) (3) A, C and (Donly (4) A, B, C and (D) only

Answer: 2

113. The capacity to generate a whole plant from any cell of the plant is called:

(1) Differentiation (2) Somatic hybridization (3) Totipotency (4) Micropropagation

Answer: 3

114. The equation of Verhulst-Pearl logistic growth is $\frac{dN}{dt} = rN\left[\frac{K-N}{K}\right]$.

From this equation, K indicates:

(1) Carrying capacity (2) Population density (3) Intrinsic rate of natural hicrease (4) Biotic potential

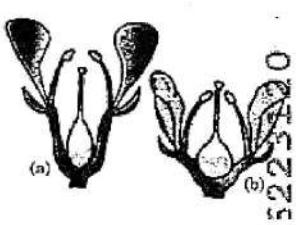
Answer: 1

115. Spindle fibers attach to kinetochores of chromosomes during

(1) Anaphase (2) Telophase (3) Prophase (4) Metaphase

Answer: 4

116. Identify the type of flowers based on the position of calyx, corolla and androecifum with respect to the ovary from the given figures (a) and (b)



(1) (a) Perigynous; (b) Epigynous (2) (a) Perigynous; (b) Perigynous

(3) (a) Epigynous; (b) Hypogynous (4) (a) Hypogynous; (b) Bppgynous

Answer: 2

117. N Mist II Mushroom Smut fungus Bread mould Rust fungus Choose the correct answer below:

	List 1		List 2
A	Rhizopus	I	Mushroom
B	Ustilago	II	Smut fungus
C	Puccinia	III	Bread mould
D	Agaricus	IV	Rust fungus

(1) A-III, B-II, C-I, D-IV (2) A-IV, B-III, C-II, D-I

(3) A-III, B-II, C-IV, D-I (4) A-I, B-III, C-II, D-IV

Answer: 3

118. In a plant, black seed color ($\overline{BB/Bb}$) is dominant over white seed color (bb). In order to find out the genotype of the black seed plant, with which of the following genotype will you cross it?

(1) Bb (2) BB/Bb

(3) BB (4) bb

Answer: 4

119. A pink flowered Snapdragon plant was crossed with a red flowered Spapdragon plant. What type of phenotype/s is/areexpected in the progeny?

(1) Only pink flowered plants (2) Red, Pink as wettas white flowered plants (3) Only red flowered plants

(4) Red flowered as wá°¹ll as pink flowered plants

Answer: 4

120. Match List I with List II

	List 1		List 2
A	Two or more alternative forms of a gene	I	Back cross
B	Cross of F_1 progeny with homozygous recessiveparen	II	Ploidy
C	Cross of F_1 progeny with any of the parents	III	Allele
D	Number of chromosome sets in plant	IV	test cross

Choose the correct ansyer from the options given below:

(1) A-III, B-IV, C-ITD-II (2) A-IV, B-III, C-IN,D-I

(3) A-I, B-II, C-III, D-IV (4) A-II, B-I, C-III, D-IV

Answer: 1

121. Lecithin, a small molecular weight organic compound found in living tissues, is an example of:

(1) Glycerides (2) Carbohydrates (3) Amino acids (4) Phospholipids

Answer: 4

122. Match List I with List II

	List 1		List 2
A	Clostridium butylicum	I	Ethanol
B	Saccharomyces cerevisiae	II	Streptokinase
C	Trichoderma polysporuk	III	Butyric acid
D	Streptococcus sp.	IV	Cyclosporin-A

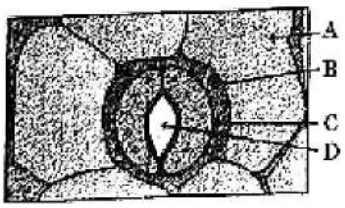
Choose the correct answer from the options given below:

(1) A-III, B-I, C-IV, D-II (2) A-IV, B-I, C-III, D-II

(3) A-III, B-I, C-II, D-IV (4) A-II, B-IV, C-III, D-I

Answer: 1

123. In the given figure, which component has thin outer walls and highly thickened inner walls?



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

Answer: 3

124. Which of the foltowing is an example of actinomorphic flower?

(1) Pisum (2) Sesbania (3) Datura (4) Cassia

Answer: 3

125. A transcription unit in DNA is defined prima by the three regions in DNA and these are respect to upstream and down stream end;

(1) Inducer, Repressor, Structural gene (2) Promotor, Structural.gene, Terminator

(3) Repressor, Operator gene, Structural ger (4) Structural gene, Transposons, Operatorg

Answer: 2

126. What is the fate of a piece of DNA carrying 0 gene of interest which is transferred into an al organism?

A. The piece of DNA would be able to multi, itself independently Ã□Ân the progeny cells the organism.

B. It may get integrated into the genome of recipient.

C. It may multiply and be inherited along w the host DNA.

D. The alien piece of DNA is not an integ
part of chromosome.

E. It shows ability to replicate.

Choose the correct answer from the options giv below:

(1) B and C only (2) and E only (3) and B only (4) D and E only

Answer: 1

127. Auxin is used by gardeners to prepare weed-fto lawns. But no damage is caused to grass as aux

(1) does not affect mature monocotyledonot plants. (2) can help in cell division in grasses, produce growth.

(3) promotes apical dominance. (4) promotes abscission of mature leaves onll)

Answer: 1

128. The cofactor of the enzyme carboxypeptidase

(1) Flavin. (2) Haem (3) Zinc (4) Niacin

Answer: 3

129. The lactose present in the growth medium bacteria is transported to the cell by the action of

(1) Permease (2) Polymerase (3) Beta-galactosidase (4) Acetylase

Answer: 1

130. Which one of the following can be explained on the basis of Mendel's Law of Dominance?

A. Out of one pair of factors one is dominant and the other is recessive.

B. Alleles do not show anyexpression and both the characters appean as such in F_2 generation. m

C. Factors occur in pairin normal diploid plants. N

D. The discrete unit controlling a particular character is called factor.

E. The expression of only (one of the parental characters is found in atmonohybrid cross.

Choose the correct answer from the options given below:

(1) B, C and D only (2) A, B, C, D and E (3) A, B and C only (4) A, C, D and E only

Answer: 4

131. Given below are two statemerits:

Statement I : Bt toxins are insect group specific and coded by a gene *cry* IAc.

Statement II : Bt toxinCekists as inactive protoxin in B. thuringiensis. However, after ingestion by the insect the inactive protoxin gets converted into active form dye to gidic pH of the insect gut. In the light of the above statements, choose the correct answer from the optigns given below:

(1) Statement I is true but Statement II is false (2) Statement I is false but Statement II is true

(3) Both Statement I and Sthtement II are true (4) Both Statement I and Statement II are false

Answer: 1

132. Given below are two statements: Statement I : Parenchyma is living but collenchyma is dead tissue.

Statement II : Gymnosperms lack xylem vessels but presence of xylem vessels is the characteristic of angiosperms. In the light of the above statements, choose the correct answer from the options given below:

(1) Statement I is true put Statement II is false (2) Statement I is falsef but Statement II is true

(3) Both Statement I gipd Statement II are true (4) Both Statement I and Statement II are false

Answer: 2

133. Given below are two statements:

Statement I : Chrom 6 Somes become gradually visible under light mierrbscope during leptotene stage.

Statement II : The beginfing of diplotene stage is recognized by dissolftion of synaptonemal complex. In the light of the above statements, choose the correct answer from the options given below:

(1) Statement I is truebut Statement II is false (2) Statement I is fatse but Statement II is true

(3) Both Statement Fahd Statement II are true (4) Both Statement Fand Statement II are false

Answer: 3

134. Match List I with List II

	List 1		List 2
A	Nucleolus	I	Site of formation of glycolipid
B	Centriole	II	Organization like the cartwheel
C	Leucoplas:	III	Site for active ribosomal RNA synthesis
D	Golgi apparatus	IV	For storing nutrients

Choose the correct answer from the options given below:

(1) A-III, B-IV, C-II P-1 (2) A-I, B-II, C-III, D-IV

(3) A-III, B-II, C-IVCP-I (4) A-II, B-III, C-I, P-IV

Answer: 4

135. List of endangered species was released by-

(1) FOAM (2) IUCN (3) GEAC (4) WWaid

Answer: 2

Section - B (Botany)

136. The DNA present in chloroplast is:

(1) Linear, single stranded (2) Circular, single stranded (3) Linear, double stranded (4) Circular, double stranded

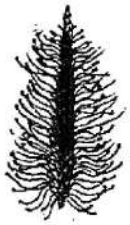
Answer: 4

137. Which of the following are fused in somatic hybridization involving two varieties of plants?

(1) Protoplasts (2) Pollens (3) Callus (4) Somatic embryos

Answer: 1

138. Identify the correct description about the given figure:



(1) Cleistogamous flowers showing autogamy. (2) Compact inflorescence showing complete autogamy.

(3) Wind pollinated plant inflorescence showing flowers with well exposed stamens.

(4) Water pollinated flowers showing stamens with mucilaginous covering.

Answer: 3

139. Spraying sugarcane crop with which of the following plant growth regulators, increases the length of stem, thus, increasing the yield?

(1) Cytokinin (2) Abscisic acid (3) Auxin (4) Gibberellin

Answer: 4

140. Match List I with List I List II

	List 1		List 2
A	Frederick Griffith	I	Genetic code
B	Francois Jacob& Jacque	II	Semi-conservative mode of DNA replication
C	Har Gobind Khorana	III	Transformation
D	Meselson & Stahl	IV	Lac operon

Choose the correct answer from the options giv below:

(1) A-II, B-III, C-IV, D-I (2) A-IV, B-I, C-II, D-III

(3) A-III, B-II, C-I, D-IV (4) A-III, B-IV, C-I, D-II

Answer: 4

141. Match List I with List II

	List 1		List 2
A	GLUT-4	I	Hormone
B	Insulin	II	Enzyme
C	Trypsip	III	Intercellular ground substance
D	Collage	IV	Enables glucose transport into cell:

Choose the correct answer from the options giv below:

(1) A-II, B-III, C-IV, D-I (2) A-III, B-IV, C-I, D-II

(3) A-IV, B-I, C-II, D-III (4) {A-I, B-II, C-III,}$ D-IV

Answer: 3

142. Given below are two statements:

Statement I : In C_3 plants, some O_2 binds RuBisCO, hence CO_2 fixation is decreased.

Statement II : In C_4 plants, mesophyll cells shc very little photorespiration while bundle shee cells do not show photorespiration. In the light of the above statements, choose t correct answer from the options given below:

(1) Statement I is true but Statement II is fals (2) Statement I is false but Statement II is tr

(3) Both Statement I and Statement II are tru (4) Both Statement I and Statement II are fal:

Answer: 3

143. Identify the step in tricarboxylic acid cycle, which does not involve oxidation of substrate.

(1) Succinyl-CoA $\rightarrow$ Succinic acid (2) Isocitrate $\rightarrow$ α-ketoglutaric acid (3) Malic acid $\rightarrow$ Oxaloacetic acid .

(4) Succinic acid $\rightarrow$ Malic acid

Answer: 1

144. Match List I with List II

	List 1		List 2
A	Citric acid cycle	I	Cytoplasm
B	Glycolysis	II	Mitochondrial matrix
C	Electron transport	III	Intermembrane space of mitochondria
D	Proton gradient	IV	Inner mitochondrial membrane

Choose the correct answer from the option below:

(1) A-III, B-IV, C-I, D-II (2) A-IV, B-III, C-II, D-I

(3) A-I, B-II, C-III, D-IV (4) A-II, B-I, C-IV, D-III

Answer: 4

145. Which of the following statement is correct regarding the process of replication in E.coli?

(1) The DNA dependent DNA polymerase catalyses polymerization in $5' \rightarrow 3'$ as well as 3' $\rightarrow$ 5' direction.

(2) The DNA dependent DNA polymerase catalyses polymerization in $5' \rightarrow 3$ ' direction.

(3) The DNA dependent DNA polymerase catalyses polymerization in one direction that is $3' \rightarrow 5$ '.

(4) The DNA dependent RNA polymerase catalyses polymerization in one direction, that is $5' \rightarrow 3'$.

Answer: 2

146. In an ecosystem if the Net Primary Productivity (NPP) of first trophic level is $100x\left(kcalm^{-2}\right)\dot{t}^{-1}$ what would be the GPP (Gross Primary Productivity) of the third trophic level of the same ecosystem?

(1) $10x\left(kcalm^{-2}\right)yr^{-1}$ (2) $\frac{100x}{3x}\left(kcalm^{-2}\right)yr^{-1}$ (3) $\frac{x}{10}\left(kcalm^{-2}\right)yrr^{-1}$ (4) $x\left(kcalm^{-2}\right)yr^{-1}$

Answer: 1

147. Match List I with List II

	List 1		List 2
A	Rose	I	Twisted Aestivation
B	Pea	II	Perigynous flower
C	Cotton	III	Drupe
D	Mango	IV	Marginal Placentation

Choose the correct answer from the options given below:

(1) A-IV, B-III, C-II, D-I (2) A-II, B-III, C-IV, D-I

(3) A-II, B-IV, C-I, D-III (4) A-I, B-II, C-III, D-IV

Answer: 3

148. Match List I with List II

	List 1		List 2
A	Robert May	I	Species-Area relationship
B	Alexander von Humboldt	II	Long term ecosystem experiment using out door plots
C	Paul Ehrlich	III	Global species diversity at about 7 million
D	David Tilman	IV	Rivet popper hypothesis

Choose the correct answer from the options given below:

(1) A-I, B-III, C-II, D-IV (2) A-III, B-IV, C-II, D-I

(3) A-II, B-III, C-I, D-IV (4) A-III, B-I, C-IV, D-II

Answer: 4

149. Match List I with List II Choose the correct anstier from the opti below:

(1) A-I, B-II, C-IV, B-III (2) A-III, B-I, C-IV,A-II (3) A-IV, B-II, C-I, (4) A-IV, B-I, C-II, P-III

Answer: 3

150. Read the following statements and choose the set of correct statements $In the members of Phagephyceae,

A. Asexual reproduttion occurs usually by biflagellate zoospres.

B. Sexual reproductfon is by oogamous method only.

C. Stored food is in the form of carbohydrates which is either mannitol or laminarin.

D. The major pigntehts found are chlorophyll a, c and carotenoids and xanthophyll.

E. Vegetative cells Shave a cellulosic wall, usually covered on the outside by gelatinous coating of algin.

Choose the correct answer from the options given below:

(1) A(C)(D) and E onfy (2) $A, B, (C$ and E onfy (3) A, B, (C) and C)only $\\$ (4) B(C) D) and E only

Answer: 1

Section - A (Zoology)

151. Match List I with List II :

	List 1		List 2
A	Typhoid	I	Fungus
B	Leishmaniasic	II	Nematode
C	Ring worm	III	Protozoa
D	Filariasis	IV	Bacteria

(1) A-III, B-I, CQIV, D-II (2) A-II, B-IV, CUIII, D-I

(3) A-I, B-III, E-II, D-IV (4) A-IV, B-III, C-I, D-II

Answer: 4

152. Match List I withList II :

	List 1		List 2
A	Non - medicated IUD	I	Multiload 375
B	Copper releasing IUD	II	Progestogens
C	Hormone releasing IUD	III	Lippes loop
D	Implants	IV	LNG - 20

Choose the correct answer from the options given below:

(1) A-IV, B-I, C-II, D-III (2) A-III, B - I, C-IV , D - II

(3) A-III, B-I, C-II, D-IV (4) A-I, B-III, C-IV, D-II

Answer: 2

153. Given below are tho statements :

Statement I : The presence or absence of hymen is not a reliable indicator of virginity.

Statement II : The hymen is torn during the first coitus only.

In the light of the above statements, choose the correct answer from the options given below :

(1) Statement I IS true but Statement II is false (2) Statement I is false but Statement II is true

(3) Both Statement I and Statement II are true (4) Both Statement I and Statement II are false

Answer: 1

154. In both sexes of cockroach, a pair of jointed filamentous structures called anal cerci are present on :

(1) 8^{th} and 9^{th} (2) 11^{th} segment (3) 5^{th} segment (4) 10^{th} segment

Answer: 4

155. Match List I with List II :

	List 1		List 2
A	Pons	I	Provides additional space for Neurons, regulates posture and balance.
B	Hypothalamus	II	Controls respiration and gastric secretions.
C	Medulla	III	Connects different regions of the brain.
D	Cerebellum	IV	Neuro secretory cells

Choose the correct answer from the options given below :

(1) A-I, B-III, C-II, D-IV (2) A-II, B-I, C-III, D-IV

(3) A-II, B-III, C-I, D-IV (4) A-III, B-IV, C-II, D-I

Answer: 4

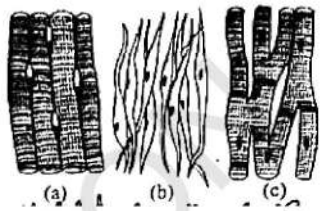
156. Which of the following is not a steroid hormone?

(1) Progesterone (2) Glucagon (3) Cortisol (4) Testosterone

Answer: 2

157. Which one is the correct product of DNA dependent RNA polymerase to the given template?
3'TACATGGCAAATATCCATTCA5'
(1) 5'AUGUACCGUUUAUAGGGAAGU3' (2) 5'ATGTACCGTTTATAGGTAAGT3'
(3) 5'AUGUACCGUUUAUAGGUAAGU3' (4) 5'AUGUAAAGUUUAUAGGUAAGU3'
Answer: 3

158. Three types of muscles are given as a, b and c. Identify the correct matching pair along with their location in human body : skeletal smooth Cardiac Name of muscle/location



(1) (a) Skeletal - Biceps (b) Involuntary - Intestine (c) Smooth - Heart.
(2) (a) Involuntary - Nose tip (b) Skeletal - Bone (c) Cardiac - Heart.
(3) (a) Smooth - Toes (b) Skeletal - Legs (c) Cardiac - Heart.
(4) (a) Skeletal-Triceps (b) Smooth - Stomach (c) Cardiac - Heart.
Answer: 4

159. Following are the stages of cell division :
A. Gap 2 phase
B. Cytokinesis
C. Synthesis phase
D. Karyokinesis
E. Gap 1 phase
Choose the correct sequence of stages from the options given below :
(1) B-D-E-A-C (2) E-C-A-D-B (3) C-E-D-A-B (4) E-B-D-A-C
Answer: 2

160. Which of the following are Autoimmune disorders?
A. Myasthenia gravis
B. Rheumatoid arthritis'
C. Gout
D. Muscular dystrophy
E. Systemic Lupus Erythematosus (SLE)
Choose the most appropriate answer from the options given below :
(1) B, C & E only (2) C, D & E only (3) A B & D only (4) A, B & E only
Answer: 4

161. Match List I with List II :

	List 1		List 2
A	Lipase	I	Peptide bond
B	Nuclease	II	Ester bond
C	Protease	III	Glycosidic bond
D	Cerebellum	IV	Phosphodiester bond

Choose the correct answer from the options given below

(1) A-II, B-IV, CAI, D-III (2) A-IV, B-I, C-III, D-I

(3) A-IV, B-II, EVIII, D-I. (4) A-III, B-II, C-l, D - IV

Answer: 1

162. The flippers of the Penguins and Dolphins are the example of the

(1) Convergent evolution (2) Divergent evlolution (3) Adaptive radiation (4) Natural selection

Answer: 1

163. Match List I with fist II :

	List 1		List 2
A	Expirator capacity	I	Expiratory reserve volume + Tidal volume + Inspiratory reserve volume
B	Functional residual capacity	II	Tidal volume + Expiratory reserve volume
C	Vital capacity	III	Tidal volume + Inspiratory reserve volume
D	Inspiratory capacity	IV	Expiratory reserve volume + Residual volume

Choose the correptanswer from the options given below :

(1) A-II, B-I, C-IN, D-III (2) A-I, B-III, QGI, D-IV

(3) A-II, B-IV, C-I, D-III (4) A-III, B-II,C-IV, D-I

Answer: 3

164. Which one of the following factors will not affect the Hardy-Weinberg equilibrium?

(1) Gene migration (2) Constant gene pool (3) Genetic recombination (4) Genetic drift

Answer: 2

165. Given below are some stages of human evolution Arrange them in correct sequence. (Past to Recent)

A. Homo habiliss

B. Homo sapiens

C. Homo neanderihalensis

D. Home erectus

Choose the correctsequence of human evolution from the options given below :

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

Answer: 2

166. Following are the stages of pathway for conduction of an aftion potential through the heart:

A. AV bundle

B. Purkinje fibres

C. AV node

D. Bundle branches

E. SA node

Choose the correct sequence of pathway from the options given below :

(1) B-D-E-C-A (2) E-A-D-B-C (3) E-C-A-D-B (4) A-E-C-B-D

Answer: 3

167. Which of the following factors are favourable for the formation of oxyhaemoglobin in alveoli?

(1) Low pCO_2 and High H^+concentration (2) Low pCO_2 and High temperature (3) High pO_2 and High pCO_2

(4) High pO_2 and Lesser H^+concentration

Answer: 4

168. Match List I with Dist II :

	List 1		List 2
A	$\alpha - 1$ antitrypsis	I	Cotton bollworm
B	Cry IAb	II	ADA deficiency
C	Cry IAc	III	Emphysema
D	Enzyme replacement therapy	IV	Corn borer

Choose the correct answer from the options given below :

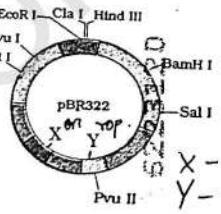
(1) A-III, B-IV, C-I, D-II (2) A-II, B-IV, C-IV D-III

(3) A-II, B-I, C-IV, D-III (4) A-II, B-I, C-II, D-IV

Answer: 1

169. Given below are two statements : one is labelled as Assertion A and the other is labelled as Reason R :
Assertion A : FSH acts upon ovarian follicles in female and Leydig cells in male.
Reason R : Growing ovarian follicles secrete estrogen in female while interstitial cells secrete androgen in male human being.
In the light of the above statements, choose the correct answer from the options given below :
(1) A is true but R isfalse (2) A is false but R is true
(3) Both A and R are true and R is the correct explanation of A.
(4) Both A and R are true but R is NOT the correct explanation of A.
Answer: 2

170. The following diagram showing restriction sites in E.coli cloning vectorpBR322. Find the role of ' X ' and ' Y ' genes :



(1) The gene ' X ' is for protein involved in replication of Plasmid and ' Y ' for resistance to antibiotics.
(2) Gene ' X ' is responsible for recognition sites and ' Y ' is responsible for antibiotic resistance.
(3) The gene ' X ' is responsible for resistance to antibiotics and ' Y ' for protein involved in the replication of Plasmid.
(4) The gene ' X ' is responsible for controlling the copy numberof the linked DNA and ' Y ' for protein involved in the replication of Plasmid.
Answer: 4

171. Match List I with List II : List I Choose the correct answer from the op below :
(1) A-II, B-I, C-III, D-IV (2) A-III, B-IV, C-I, D-II (3) A-IV, B-III, C-I, D-II (4) A-I, B-III, C-II, DIIV
Answer: 2

172. Consider the following statements :
A. Annelids are true coelomates
B. Poriferans are pseudocoelomates >
C. Aschelminthes are acoelomates D. Platyhelminthes are pseudocoelomates Choose the correct answer from the options given below :
(1) C only (2) D only (3) B only (4) A only
Answer: 4

173. Given below are two statements : Statement I : In the nephron, the descending limb of loop of Henle is ippermeable to water and permeable to electrolytes. Statement II : The proximal convoluted tubule is lined by simple columnar brush border epithelium and increases the surface area for reabsorption. In the light of the above statements, choose the correct answer from the options given below :
(1) Statement I is true but Statement II is false (2) Statement I is fa/se but Statement II is true
(3) Both Statement Nand Statement II are true (4) Both Statement I and Statement II are false
Answer: 4

174. Match List I with List II :

	List 1		List 2
A	Fibrous joints	I	Adjacent vertebrae, limited movement
B	Cartilaginous joints	II	Humerus and Pectoral girdle, rotational movement
C	Hinge joints	III	Skull, don't allow any movement
D	ball and socket joints	IV	Knee, help in locomotion

Choose the correct answer from the options given below :

(1) A-II, B-III, C-I, D-IV (2) A-III, B-I, C-IV, D-II

(3) A-IV, B-II, C-III, D-I (4) A-I, B-III, C-II, D-IV

Answer: 2

175. Which of the following is not a natural/traditional contraceptive method?

(1) Lactational amenorrhea (2) Vaults (3) Coitus interruptus (4) Periodic abstinence

Answer: 2

176. Match List I with List II :

	List 1		List 2
A	Pleurobraciths	I	Mollusca
B	Radul	II	Ctenophora
C	Stomochord	III	Osteichthyes
D	Air bladder	IV	Hemichordata

Choose the correct answer from the options given below :

(1) A-II, B-IV, C-I, D-III (2) A-IV, B-III, C-II, D-I

(3) A-IV, B-II, C-III, D-I (4) A-II, B-I, C-IV, D-III

Answer: 4

177. Match List I with List II :

	List 1		List 2
A	Axoneme	I	Centriole
B	Cartwheel pattern	II	Cilia and flagella
C	Cristar	III	Chromosome
D	Satellite	IV	Mitochondria

Choose the correct answer from the options given below :

(1) A-II, B-IV, C-I, D-III (2) A - II , B - I , C - IV ,D - III

(3) A-IV, B-III, C-II, D-I (4) A-IV, B-II, C-III, D-I

Answer: 2

178. Which of the following statements is incorrect?

(1) Bio-reactors are used to produce smallscale bacterial cultures.

(2) Bio-reactors have an agitator system, an oxygen delivery system and foam control system.

(3) A bio-reactor provides optimal growth conditions for achieving the desired product.

(4) Most commonly used bio-reactors are of stirring type.

Answer: 1

179. Match List I with List II Choose the correct answer from the options given below:

(1) A-II, B-IV, C-I, D-III (2) A-IV, B-III, C-II, D-I (3) A-IV, B-II, C-III, D-I (4) A-I, B-II, C-IV, D-III

Answer: 1

180. Match List I with List II :

	List 1		List 2
A	Diakinesis	I	Synaptonemal complex formation
B	Pachytene	II	Completion of terminalisation of chiasmata
C	Zygotene	III	Chromosomes look like thin threads
D	Leptotene	IV	Appearance of recombination nodules

Choose the correct answer from the options given below;

(1) A-III, B-I, C-II, D-IV (2) A-IV, B-II, C-III, D-I

(3) A-II, B-IV, C-III, D-I (4) A-I, B-III, C-II, D=IV

Answer: 1

181. Given below are two statements : one is labelled as Assertion A and the other is labelled as Reason R :

Assertion A: Breast-feeding during initial period of infant growth is recommended by doctors for bringing a healthy baby.

Reason R : Colostrum contains several antibodies absolutely essential tordevelop resistance for the new born baby.

In the light of the above statements, choose the most appropriate ansÃ□Âªr from the options given below :

(1) A is correct but R is not correct. (2) A is not correct but R is correct.

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

(4) Both A and R are-correct but R is NOT the correct explanatioh of A.

Answer: 3

182. Match List I with Lisf:

Choose the correct answer from the options given below :

(1) A-IV, B-I, C-II, D-III (2) A-III, B-II, C-I, D-IV (3) A-II, B-I, C-III, D-IV (4) A-III, B-I, C-II, D-IV

Answer: 4

183. The "Ti plasmid" of Agrobacterium tumefaciens stands for

(1) Tumor inducing plasmid (2) Temperatureindependent plasmid (3) Tumour;inhibiting plasmid

(4) Tumor independent plasmid

Answer: 1

184. Which of the following is not a component of Fallopian tube?

(1) Infundibulum (2) Ampulla (3) Uterine fundus (4) Isthmus

Answer: 3

185. Match List I with

Choose the correct answer from the options given below :

(1) A-III, B-IV,C-I,D-II (2) A-IV, B-I, C-II, D-III (3) A-I, B-II, C-III, D-IV (4) A-II, B-III, C-IV,D-I

Answer: 1

Section - B (Zoology)

186. The following are the statements about nonchordates:

A. Pharynx is perforated by gill slits.

B. Notochord is absent.

C. Central nervous system is dorsal.

D. Heart is dorsal if present.

E. Post anal tail is absent.

Choose the most appropriate answer from the options given below :

(1) B,D&E Only (2) B, C & D only (3) A & C only (4) A.B& D only

Answer: 1

187. Match List I with List II : Choose the correct answer from the options given below :

(1) A-I, B-II, C-IV, D-III (2) A-III, B-I, C-IV, D-II (3) A-II, B-I, C-III, D-IV (4) A-III, B-I. C-II, D-IV

Answer: 2

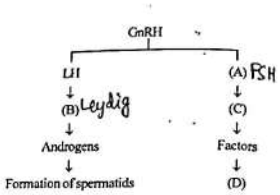
188. Given below are two statements : Statement I : The cerebral hemispheres are connected by nerve tract known as corpus callosum. Statement II : The brain stem consists of the medulla oblongata, pons and qerebrum. In the light of the above statements, choose the most appropriate answer from the options given below :

(1) Statement I is correct but Statement II is incorrect. (2) Statement I is incorrect but Statement II is correct.

(3) Both Statement I and Statement II are correct. (4) Both Statement I and Statement II are incorrect.

Answer: 1

189. Identify the correct option (A), (B), (C), (D) with respect to spermatogenesis.



(1) (1) FSH, Sertoli cells, Leydig cells, spermatogenesis.

(2) (2) ICSH, Leydig cells, Sertoli cells, spermatogenesis.

(3) (3) FSH, Leydig cells, Sertoli cells, spermiogenesis

(4) (4) ICSH, Interstitial cells, Leydig cells, spermiogenesis.

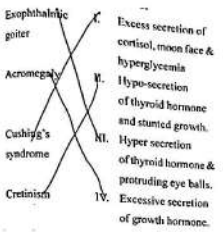
Answer: 3

190. Match List I with List II : Choose the correct answer from the options given below :

(1) A-III, B-IV, C-I, D-II (2) A-IV, B-III, C-I, D-II (3) A-II, B-IV, C-I, DÌ□-III (4) A-III, B-II, C-IV, D-I

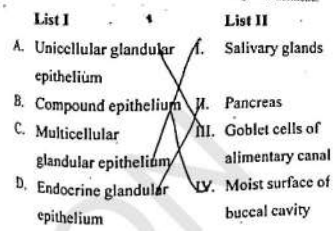
Answer: 2

191. Match List I with List II : Choose the correct answer from the options given below :



(1) A-III, B-IV, C-II, D-I (2) A-III, B-IV, C-I, D-II (3) A-I, B-III, C-II, D-IV
(4) A-IV, B-II, C-I, D-III
Answer: 2

192. Match List I with List II : Choose the correct answer from the options given below :

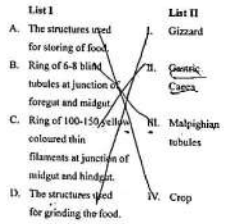


(1) A-III, B-IV, C-I, D-II (2) A-II, B-I, C-IV, D-III (3) A-II, B-I, C-III, D-IV
(4) A-IV, B-III, C-I, D-II
Answer: 1

193. Given below are two statements : Statement I : Bone marrow is the main lymphoid organ where all blood cells including lymphocytes are produced. Statement II : Both bone marrow and thymus provide micro environments for the development and maturation of T-lymphocytes. In the light of the above statements, choose the most appropriate answer from the options given below:

(1) Statement I is correct but Statement II is incorrect. (2) Statement I is incorrect but Statement II is correct.
(3) Both Statement I and Statement II are correct. (4) Both Statement I and Statement II are incorrect.
Answer: 3

194. Match List I with List II related to digestive system of cockroach. Choose the correct answer from the options given below:

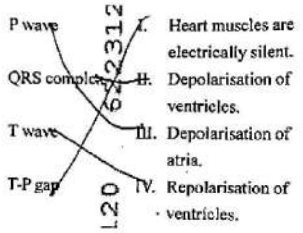


(1) A-IV, B-III, C-II, D-I (2) A-III, B-II, C-IV, D-I (3) A-IV, B-II, C-III, D-I
(4) A-I, B-II, C-III, D-IV
Answer: 3

195. Choose the correct statement given below regarding juxta medullary nephron.

(1) Loop of Henle of juxta medullary nephron runs deep into medulla.
(2) Juxta medullary nephrons outnumber the cortical nephrons.
(3) Juxta medullary nephrons are located in the columns of Bertini.
(4) Renal corpuscle of juxta medullary nephron lies in the outer portion of the renal medulla.
Answer: 1

196. Match List I with List II : Choose the correctfanswer from the options given below :



(1) A-II, B-III, CHI, D-IV (2) A-IV, B-II, C-I, D-III (3) A-I, B-III, C-IV, D-II
(4) A-III, B-II, C-IV, D-I
Answer: 4

197. As per ABO bleop grouping system, the blood group of father B^+, mother is A^+ and child is O^+. Their respedifie genotype can be

A. $I^{B_i}/I^{A_i}/i_i$

B. $I^BI^B/I^AI^A/ii$

C. $I^AI^B/iI^A/I^{B_i}$

D. $I^{A_i}/I^{B_i}/I^A$

E. $iI^B/II^A/I_{F_1}I^B$ Choose the mostlappropriate answer from the options given befow :

(1) C & B only (2) D & E only (3) A only (4) B only

Answer: 1

198. Given below are two statements :

Statement I : Gause's competitive exl $_{Cl_{Si}}$, principle states that two closely related speci, competing for different resources cannot ex_i indefinitely? Statement I : According to Gause's principh, during competition, the inferior will be elimingatey This may betrue if resources are limiting. In the light bf the above statements, choose correct answer from the options given below:

(1) Statement I is true but Statement II is false (2) Statement I is false but Statement II is true

(3) Both Statement I and Statement II are true (4) Both Statement I and Statement II are false

Answer: 2

199. Regarding catalytic cycle of an enzyme actio select the qorrect sequential steps :

A. Substrate enzyme complex formation.

B. Free enzyme ready to bind with anoth substrate.

C. Release of products.

D. Chemical bonds of the substrate broken.

E. Substrate binding to activÃ□Â¨ site.

Choose the correct answer from the options give below :

(1) B, A, C, D, E (2) E, D, C, B, A (3) $E, A, D, C, B (4) $A , E , B , D , C,

Answer: 3

200. Given belou are two statements :

Statementh: Mitochondria and chloroplasts s both doubleqmembrane bound organelles.

Statemenf II : Inner membrane of mitochondr is relatively less permeable, as compared chloroplast.

In the light of the above statements, choose themo appropriateanswer from the options given below

(1) Statement I is correct but Statement I incortect. (2) Statement I is incorrect but Statement II correct

(3) Bothistatement I and Statement II are corred (4) Both Statement I and Statement I^{19^9} incorrect.

Answer: 1