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NEET ACE TEST SERIES

(NATS)

TEST-18

CLASS 11TH + 12TH

Full Syllabus Test 10

Duration : 3 Hours 20 Minutes **M.Marks : 720**

Physics	:	Complete Class 11th + 12th Syllabus
Chemistry	:	Complete Class 11th + 12th Syllabus
Botany	:	Complete Class 11th + 12th Syllabus
Zoology	:	Complete Class 11th + 12th Syllabus

Instructions

1. The test is of 3 hours 20 min. duration.
2. The test booklet consists of 200 questions. The maximum mark is 720.
3. There are four Sections in the Question Paper, Sections I, II, III, and IV consisting of Section I (Physics), Section II (Chemistry), Section III (Botany) and Section IV (Zoology) have 50 Questions in each Subject and each subject is divided into two Sections,
   Section A consists of 35 questions (all questions compulsory) and Section B consists of 15 Questions (Any 10 questions
   are compulsory).
4. There is only one correct response for each question.
5. Each correct answer will give 4 marks while 1 Mark will be deducted for a wrong MCQ response.
6. No student is allowed to carry any textual material, printed, or written, bits of paper, pager, mobile phone, any
   electronic device, etc. Inside the
   examination room/hall.
7. On completion of the test, the candidate must hand over the Answer Sheet to the Invigilator on duty in the Room/Hall. However, the Candidates are allowed to take away this Test Booklet with them.

SECTION – A

1. A balloon with mass 'm' is descending down with an acceleration 'a' (where a < g). How much mass should be removed from it so that it starts moving up with an acceleration 'a'? (Assume that it's volume does not change)

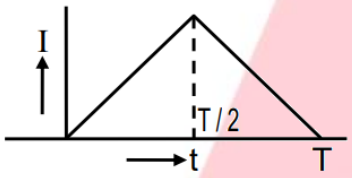
(1) $\frac{2ma}{g+a}$

(2) $\frac{2ma}{g-a}$

(3) $\frac{ma}{g+a}$

(4) $\frac{ma}{g-a}$

2. The current (I) in the inductor is varying with time according to the plot shown in figure.



Which one of the following is the correct variation voltage with time in the coil?

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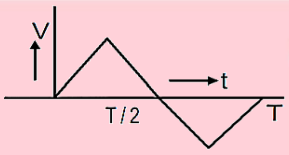

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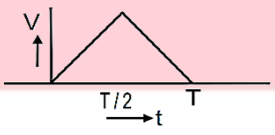

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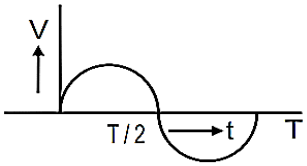

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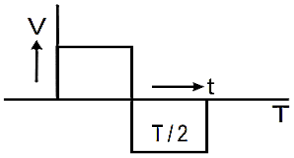


3. The motion of a particle along a straight line is described by equation $x = 8 + 12t - t^3$ where x is in meter and t in second. The retardation of the particle when its velocity becomes zero is:

(1) $6\ ms^{-2}$
(2) $12\ ms^{-2}$
(3) $24\ ms^{-2}$
(4) zero

4. A stone fall freely under gravity. It covers distances h_1 h_2 and h_3 in the first 5 seconds, the next 5 seconds and the next 5 seconds respectively. The relation between h_1 h_2 *and* h_3 is:

(1) $h_1 = h_2 = h_3$
(2) $h_1 = 2h_2 = 3h_3$
(3) $h_1 = \frac{h_2}{3} = \frac{h_3}{5}$
(4) $h_2 = 3h_1 = h_3$

5. What is the dimension of electric flux

(1) $[ML^3T^{-3}A^{-1}]$
(2) $[ML^2T^{-3}A^{-1}]$
(3) $[ML^1T^{-3}A^{-1}]$
(4) $[ML^1T^{-2}A^{-1}]$

6. A stone is dropped from a height h. It hits the ground with a certain momentum P. If the same stone is dropped from a height 100% more than the previous height, the momentum when it hits the ground will change by:

(1) 68%
(2) 41%
(3) 200%
(4) 100%

7. The potential energy of a particle in a force field is: $U = \frac{A}{r^2} - \frac{B}{r}$

Where A and B are positive constants and r is the distance of particle form the

center of the field. For stable equilibrium, the distance of the particle is:

(1) A/B
(2) B/A
(3) B/2A
(4) 2A/B

8. During an adiabatic process, the pressure of a gas is found to be proportional to the cube of its temperature. The ratio of $\frac{C_p}{C_V}$ for the gas is:

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

9. A man of 50kg mass is standing in a gravity free space at a height of 10m above the floor. He throws a stone of 0.5kg mass downward with a speed 2m/s. When the stone reaches the floor, the distance of the man above the floor will be:

(1) 20 m
(2) 9.9 m
(3) 10.1 m
(4) 10 m

10. The instantaneous angular position of a point on a rotating wheel is given by the equation $\theta(t) = 2t^3 - 6t^2$ rad/s. The torque on the wheel becomes zero at:

(1) $t = 1s$
(2) $t = 0.5\ s$
(3) $t = 0.25\ s$
(4) $t = 2s$

11. A planet moving along an elliptical orbit is closest to the sun at a distance r_1 and farthest away at a distance r_2. If V_1 and V_2 are the linear velocities at these points respectively, then the ratio $\frac{V_1}{V_2}$ is:

(1) $(r_1/r_2)^2$
(2) r_2/r_1
(3) $(r_2/r_1)^2$
(4) r_1/r_2

12. The equation of a simple harmonic wave is given by

$y = 3\sin\frac{\pi}{2}(50t - x)$

Where x and y are in meters and t is in seconds. The ratio of maximum particle velocity to the wave velocity is:

(1) $\frac{3}{2}\pi$
(2) 3π
(3) $\frac{2}{3}\pi$
(4) 2π

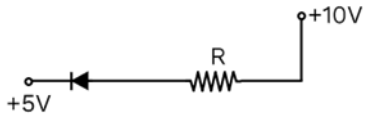
13. Certain quantity of water cools from $70°C$ to $60°\ C$ in the first 5 minutes and to $54°C$ in the next 5 minutes. The temperature of the surrounding is:

(1) $42°C$
(2) $10°C$
(3) $45°C$
(4) $20°C$

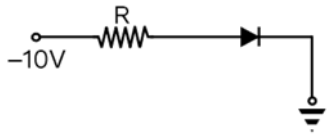
14. When a biconvex lens of glass having refractive index 1.47 is dipped in a liquid, it acts as a plane sheet of glass. This implies that the liquid must have refractive index

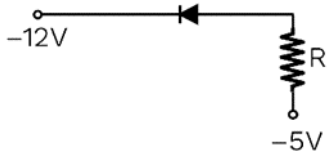
(1) Less than that of glass
(2) Equal to that of glass
(3) Less than one
(4) Greater than that of glass

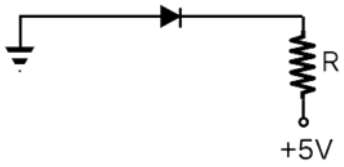
15. In the following figure, the diodes which are forward biased are:



(a)

(b) 

(c) 

(d) 

(1) only (a) and (b) are forward bias
(2) only (b) and (d) are forward bias
(3) only (a) and (c) are forward bias
(4) only (b) and (c) are forward bias

16. A charge Q is enclosed by a Gaussian spherical surface of radius R. If the radius is doubled, then the outward electric flux will:
(1) increase four times
(2) be reduced to half
(3) remain the same
(4) be doubled

17. Two metallic spheres of radii 1 cm and 3 cm are given charges of $-1 \times 10^{-2}\ C\ and\ 5 \times 10^{-2}$ C, respectively. If these are connected by a conducting wire, the final charge on the bigger sphere is:
(1) $2 \times 10^{-2} C$
(2) $3 \times 10^{-2} C$
(3) $4 \times 10^{-2} C$
(4) $1 \times 10^{-2} C$

18. If voltage across a bulb rated 220 Volt-100 Watt drops by 2.5% of its rated value, the percentage of the rated value by which the power would decreases is:
(1) 20%
(2) 2.5%
(3) 5%
(4) 10%

19. The internal resistance of a 2.1 V cell which give a current of 0.2 A through a resistance of 10Ω is:
(1) 0.5Ω
(2) 0.8Ω
(3) 1.0Ω
(4) 0.2Ω

20. If $|\vec{A} \times \vec{B}| = \sqrt{3}\,\vec{A}.\vec{B}$, then the value of $|\vec{A} + \vec{B}|$ is
(1) $\left(A^2 + B^2 + \frac{AB}{\sqrt{3}}\right)^{1/2}$
(2) $A + B$
(3) $\left(A^2 + B^2 + \sqrt{3}\,AB\right)^{1/2}$
(4) $(A^2 + B^2 + AB)^{1/2}$

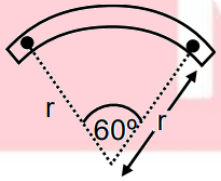
21. Two parallel metal plates having charges $+Q\ and - Q$ face each other with a certain separation between them. If the plates are now dipped in kerosene oil tank, the electric field between the plates will:
(1) Increases
(2) Decrease
(3) Remain same
(4) Become zero

22. A car of mass 1000 kg negotiates a banked curve of radius 90 m on a frictionless road. If the banking angle is 45°, the speed of the car is:
(1) $5\ ms^{-1}$
(2) $10\ ms^{-1}$
(3) $20\ ms^{-1}$
(4) $30\ ms^{-1}$

23. **Assertion: -** Parallel current in wires attracts each other due to magnetic force.
Reason: - Two electron beams moving parallel to each other repels to each other due to electric force.
(1) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
(2) Both Assertion and Reason are true but Reason is not correct explanation of Assertion.
(3) Assertion is true but Reason is false.
(4) Both Assertion and Reason are false.

24. Two similar coils of radius R are lying concentrically with their planes at right angles to each other. The currents flowing in them are I and 2I respectively. The resultant magnetic field induction at the center will be:
(1) $\frac{\mu_0 I}{2R}$
(2) $\frac{\mu_0 I}{2R}$
(3) $\frac{\sqrt{5}\mu_0 I}{2R}$
(4) $\frac{3\mu_0 I}{2R}$

25. A bar magnet of length l and magnetic dipole moment M is bent in the form of an arc as shown in figure. The new magnetic dipole moment will be:



(1) $3\,M/\pi$
(2) $2\,M/\pi$
(3) $M/2$
(4) M

26. In an ac circuit an alternation voltage $e = 200\sqrt{2}$ sin 100 t volts is connected to a capacitor of capacity 1 μF. The r.m.s value of the current in the circuit is:
(1) 20 mA
(2) 10 mA
(3) 100 mA
(4) 200 mA

27. Match the following

	Column-I	Column-II
a	To increase current in a series RL cut	(p). Decrease R
b	To increase phase angle in a series RL circuit	(q). Increase R
c	To decrease the phase angle in series RL circuit	(r). Increase frequency
d	To decrease the current RL circuit in a series	(s). Connect C in series

(1) $A \to P,S; B \to P,R; C \to Q; D \to Q,R$
(2) $A \to Q,S; B \to P,R; C \to Q; D \to Q,R$
(3) $A \to Q,S; B \to P,R; C \to P; D \to Q,S$
(4) $A \to P,R; B \to Q,S; C \to P; D \to Q,S$

28. The electric field associated with an EM wave in vacuum is given by $\vec{E} = 40\cos(kz - 6\times10^8 t)\hat{\imath}$, where E, z and t are in volt/m, meter and seconds respectively. The value of wave vector k is:
(1) $6\,m^{-1}$
(2) $3\,m^{-1}$
(3) $2\,m^{-1}$
(4) $0.5\,m^{-1}$

29. The velocity of water flowing in a non-uniform tube is 20 cm/s at a point where the tube radius is 0.2 cm. The velocity at another point, where the radius is 0.1 cm is:
(1) 80 cm/s
(2) 40 cm/s
(3) 20 cm/s
(4) 5 cm/s

30. The magnifying power of a telescope is 9. When it is adjusted for parallel rays the distance between the objective and eyepiece is 20 cm. The focal lengths of lenses are:
(1) 11 cm, 9 cm
(2) 10 cm, 10 cm
(3) 15 cm, 5 cm
(4) 18 cm, 2 cm

31. A parallel beam of fast-moving electrons is incident normally on a narrow slit. A fluorescent screen is placed at a large distance from the slit. If the speed of the electrons is increased, which of the following statements is correct?
(1) Diffraction pattern is not observed on the screen in the case of electrons
(2) The angular width of the central maximum of the diffraction pattern will increase
(3) The angular width of the central maximum will decrease
(4) The angular width of the central maximum will be unaffected

32. The wavelength of the first line of Lyman series for hydrogen atom is equal to that of the second line of Balmer series for a hydrogen like ion. The atomic number Z of hydrogen like ion is:
(1) 3
(2) 4
(3) 1
(4) 2

33. In the Davisson and Germer experiment, the velocity of electrons emitted from the electron gun can be increased by:
(1) increasing the potential difference between the anode and filament
(2) increasing the filament current
(3) decreasing the filament current
(4) decreasing the potential difference between the anode and filament

34. The binding energy per nucleon of $^{7}_{3}\text{Li}$ and $^{7}_{3}\text{He}$ nuclei are 5.60 MeV and 7.06 MeV, respectively. In the nuclear reaction $^{7}_{3}\text{Li} + {}^{1}_{1}\text{H} \rightarrow 2\,{}^{4}_{2}\text{He} + \text{Q}$, the value of energy Q released is:
(1) 19.6 MeV
(2) -2.4 MeV
(3) 8.4 MeV
(4) 17.3 MeV

35. A wire of length $2m$ is bent into a circular loop. When a current of $1A$ is passed through the loop, then the magnetic moment of the loop is
(1) $2\pi\ Am^2$
(2) $\frac{\pi}{2}Am^2$
(3) $\frac{\pi}{4}Am^2$
(4) $\frac{1}{\pi}Am^2$

SECTION – B

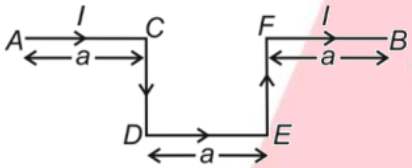
36. **Assertion:** Electrons in the atom are held due to coulomb forces,
Reason: The atom is stable only because the centripetal force due to Colomb's law is balanced by the centrifugal force.
(1) Both assertion and reason are true and reason is the correct explanation of the assertion
(2) Both assertion and reason are true but reason is not the correct explanation of the assertion.
(3) Assertion is true but reason is false
(4) Both assertion and reason are false.

37. The stopping potential for a metallic surface illuminated by monochromatic light of wavelength λ is $4V_0$ while for another light of wavelength 3λ it is V_0. Threshold wavelength of the surface for photoelectric emission is
(1) λ
(2) 3λ
(3) 9λ

(4) $\frac{\lambda}{9}$

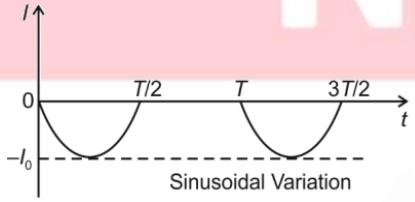
38. An object thrown vertically upwards from the top of a building reaches the ground in time t_1. It takes time t_2 if thrown vertically downward with same speed. If the time of free fall is t, when released from the rest, then
(1) $t = \sqrt{t_1 t_2}$
(2) $t = \sqrt{t_1^2 + t_2^2}$
(3) $t = \frac{t_1 + t_2}{2}$
(4) $t = \frac{t_1 t_2}{t_1 + t_2}$

39. A uniform magnetic field $\vec{B} = B_0\hat{k}$ exists in a region. A current carrying wire is placed in x-y plane as shown in the figure. The force acting on the wire AB, if each section of wire is of length 'a', will be



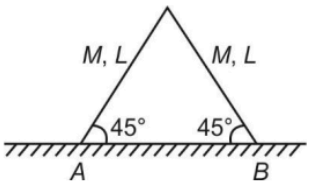
(1) $5IaB_0\hat{j}$
(2) $-5IaB_0\hat{j}$
(3) $-3IaB_0\hat{k}$
(4) $-3IaB_0\hat{j}$

40. The r.m.s value of current over a complete cycle for a current variation shown by the graph is



(1) I_0
(2) $\frac{I_0}{\sqrt{2}}$
(3) $\frac{I_0}{2}$
(4) Zero

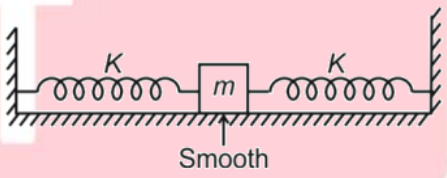
41. Two identical ladders are arranged as shown in the figure. Mass of each ladder is M and length is L. The system is in equilibrium. The magnitude of frictional force on each ladder is



(1) Mg
(2) $\frac{Mg}{2}$
(3) $\frac{Mg}{3}$
(4) $\frac{Mg}{4}$

42. A force $\vec{F} = (\hat{\imath} + 2\hat{\jmath} + 3\hat{k})N$ displaces a particle from position $\vec{r}_1 = (\hat{\imath} + \hat{\jmath} + \hat{k})m$ to position $\vec{r}_2 = (\hat{\jmath} + \hat{k})m$.
The work done by the force in doing so is
(1) $-1\,J$
(2) $-2\,J$
(3) $1\,J$
(4) $3\,J$

43. A mass m, connected with two identical springs, has oscillation frequency f. If one of the springs is removed, then the new oscillation frequency of the mass will be



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

44. Two identical bodies of mass m, initially at rest, are large distance apart. They approach each other due to gravitational interaction. The relative speed of

approach at the instant when they are at distance 'a' apart is

(1) $2\sqrt{\frac{Gm}{a}}$

(2) $\sqrt{\frac{2Gm}{a}}$

(3) $\sqrt{\frac{Gm}{2a}}$

(4) $\sqrt{\frac{5Ga}{m}}$

45. A liquid drop of radius R breaks into 27 tiny drops each of radius r. If the surface tension of liquid is T, then gain in surface energy is

(1) $8\pi R^2T$

(2) $12\pi R^2T$

(3) $28\pi R^2T$

(4) $16\pi R^2T$

46. A Carnot engine working between 300 K and 600 K has a work output 600 J per cycle. The amount of heat energy supplied to the engine from the source in each cycle is

(1) 1200 J

(2) 600 J

(3) 3600 J

(4) 2400 J

47. When boron is added to silicon semiconductor, then the resulting material is

(1) conductor

(2) n – type semiconductor

(3) p – typed semiconductor

(4) insulator

48. A train moves towards a stationary observer with speed 32 m/s. The train sounds whistle and its frequency perceived by observer is f_1. If train speed is reduced to 16 m/s. the frequency perceived is f_2.

The ratio of $\frac{f_1}{f_2}$ is (take speed of sound 320 m/s)

(1) $\frac{18}{19}$

(2) $\frac{19}{18}$

(3) $\frac{17}{18}$

(4) $\frac{18}{17}$

49. A long solenoid with 40 turns per cm carries a current of 1 A. The magnetic energy stored per unit volume is ____ J/m^3

(1) $3.2\,\pi$

(2) $32\,\pi$

(3) $1.6\,\pi$

(4) $6.4\,\pi$

50. The condition of minimum deviation is achieved in an equilateral prism kept on the prism table of a spectrometer. If the angle of incidence is 53°, the angle of deviation is

(1) 40°

(2) 46°

(3) 53°

(4) 43°

SECTION – A

51. Gem 'ruby' contains the impurity of
(1) Co
(2) Ni
(3) Cr
(4) Fe

52. $N_2 + 3H_2 \rightleftharpoons 2NH_3 + heat.$

What is the effect of the increase in temperature on the equilibrium of the reaction?
(1) Equilibrium is unaltered.
(2) Reaction rate does not change.
(3) Equilibrium is shifted to the left.
(4) Equilibrium shifted to the right.

53. Which of the following compound is wrongly named?

(1) $CH_3CH_2CH_2CHCOOH$ (Cl)
2-Chloropentanoic acid

(2) $CH_3C \equiv CCHCOOH$ (CH_3)
2- Methylpent -3yn-oic acid

(3) $CH_3CH_2CH=CHCOCH_3$
Hex-3-en-2-one

(4) $CH_3-CHCH_2CH_2CHO$ (CH_3)
4-methyl pentanal

54. The pH of 10^{-3} M solution of NaOH is
(1) 3
(2) 11
(3) 4
(4) 12

55. A buffer solution is prepared by mixing equal concentration of acid (ionisation constant K_a) and a salt. The pH of buffer is
(1) $pK_a + 7$
(2) $14 - pK_a$
(3) pK_a
(4) $pK_a + 1$

56. In the disproportionation reaction, $3HClO_3 \longrightarrow HClO_4 + Cl_2 + 2O_2 + H_2O$, the equivalent mass of the oxidizing agent is (molar mass of $HClO_3$ = 84.45)
(1) 16.89
(2) 32.22
(3) 84.45
(4) 28.15

57. Which of the following statement is incorrect?
(1) O_3 is diamagnetic but O_2 is paramagnetic
(2) Al_2O_3 is in soluble in water
(3) Ozone is powerful oxidizing agent compare to O_2
(4) SO_2 is an oxidising agent

58. A current strength of 9.65 amperes is passed through excess fused $AlCl_3$ for 5 hours. How many litres of chlorine will be liberated at STP? (F = 96500 C)
(1) 2.016
(2) 1.008
(3) 11.2
(4) 20.16

59. Identify the least stable ion among the following.
(1) Li^-
(2) B^-
(3) Be^-
(4) $C^{\ominus}$

60. Standard electrode potential of half-cell reactions are given below:
$Cu^{2+} + 2e^- \longrightarrow Cu$; $E° = 0.34$ V
$Zn^{2+} + 2e^- \longrightarrow Zn$; $E° = -0.76$ V
What is the EMF of the cell?
(1) +1.10 V
(2) −1.10 V
(3) −0.42 V
(4) +0.42 V

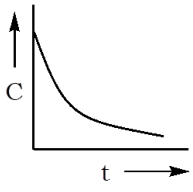
61. Screening effect is Not observed is
(1) He^+
(2) Li^{+2}
(3) Be^{+3}
(4) In all cases

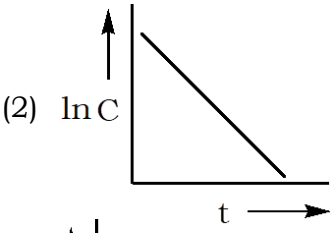
62. For preparing a buffer solution of pH 6 by mixing sodium acetate and acetic acid, the ratio of the concentration of salt and acid should be = ($K_a = 10^{-5}$)
(1) 1 : 10
(2) 10 : 1
(3) 100 : 1
(4) 1 : 100

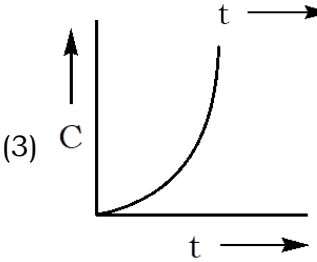
63. Which of the following aqueous solutions has the highest freezing point?
(1) 0.1 molal $Al_2(SO_4)_3$
(2) 0.1 molal $BaCl_2$
(3) 0.1 molal $AlCl_3$
(4) 0.1 molal NH_4Cl

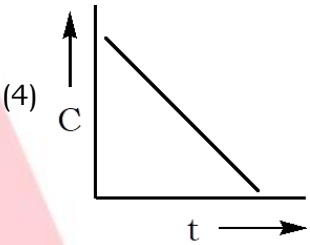
64. Ketones can be prepared by:
(1) Rosenmund reduction
(2) Etard reaction
(3) Cannizzaro reaction
(4) Friedel-Craft reaction

65. The plot between concentration versus time for a zero-order reaction is represented by

(1) 

(2) 

(3) 

(4) 

66. What will be the orbital angular momentum of 3d orbital
(1) $\sqrt{8}.\frac{h}{2\pi}$
(2) $\sqrt{12}.\frac{h}{2\pi}$
(3) $\sqrt{3}.\frac{h}{2\pi}$
(4) $\sqrt{6}.\frac{h}{2\pi}$

67. Correct order of lattice energy
(1) NaCl > NaF
(2) NaF > MgO
(3) KCl > Na_2O
(4) MgO > CaO

68. For a reaction, A + 2B ⟶ C + D
If ΔH = 25 kcal, T = 300 K and ΔS = 90 cal then the reaction is:
(1) non-spontaneous at 300 K
(2) spontaneous at 300 K
(3) at equilibrium at 300 K
(4) Can't be predicted.

69. How many isomeric halogen derivatives including stereoisomers are possible for $C_2H_2Br_2$?

(1) 2

(2) 3

(3) 4

(4) 5

70. Which among the following will show back bonding?

(1) $NH_3.BF_3$

(2) BF_4^-

(3) $CH_3 - OH$

(4) $SiH_3 - OH$

71. Match the column

Column I		Column II	
1.	$Cl_2 \xrightarrow[\text{Excess}]{NH_3}$	A.	PCl_5
2.	$Cl_2(\text{Excess}) \xrightarrow{NH_3}$	B.	PCl_3
3.	$P_4 \xrightarrow{SOCl_2}$	C.	NCl_3
4.	$P_4 \xrightarrow{SO_2Cl_2}$	D.	$NH_4Cl + N_2$

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

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

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

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

72. **Assertion:** Actinoids form relatively less stable complexes as compared to lanthanoids.

Reason: Actinoids can utilize their $5f$ orbitals along with $6d$ oribitals in bonding but lanthanoids do not use their $4f$ orbital for bonding.

(1) Both assertion and reason are true and reason is the correct explanation of assertion

(2) Both assertion and reason are true but reason is not the correct explanation of assertion.

(3) Assertion is not true but the reason is true.

(4) Both assertion and reason are false.

73. Among the following, which is a redox reaction?

(1) $N_2 + O_2 \xrightarrow{2000K}$

(2) Formation of O_3 from O_2

(3) Reaction between NaOH and H_2SO_4

(4) Reaction between $AgNO_3$ and NaCl

74. Which among following do not show green House effect?

(1) N_2O

(2) CO_2

(3) SO_2

(4) CH_4

75. sp^2 carbon is not present in

(1) Fullerene

(2) Graphite

(3) Carbonic Acid

(4) Dry ice

76. Correct bond energy order of the following is:

(1) C – Cl > C – Br > C – I > C – F

(2) C – F < C – Cl < C – Br < C – I

(3) C – F > C – Cl > C – Br > C – I

(4) C – I < C – Br < C – F > C – Cl

77. $C_6H_5NO_2 \xrightarrow{SnCl_2/HCl} A \xrightarrow[0°C]{NaNO_2/HCl} B$;

In the above sequence Benzene from B, is suitably obtained by using:

(1) Ethanol

(2) H_3PO_2

(3) Both the above

(4) Methanol

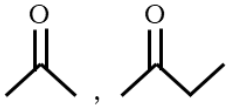
78. Choose the Incorrect statement:

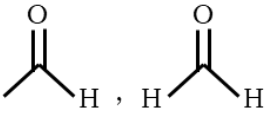
(1) Addition of HCl to vinyl chloride mainly yield vicinal dichloride.

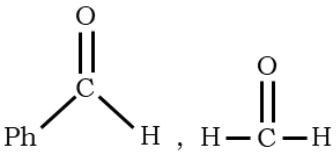
(2) There is difference between peroxide effect and Kharash effect.

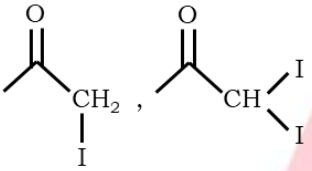
(3) Peroxide is a ready source of free radical in the Anti-Markownikoff's reaction.
(4) Propene with HCl in presence of peroxide mainly gives isopropyl chloride.

79. Which of the following pair is differentiated by iodoform test?

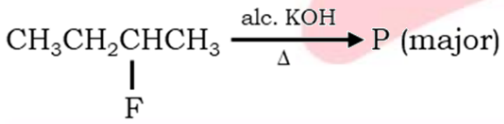
(1) 

(2) 

(3) 

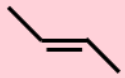
(4) 

80. Major product of the given reaction is



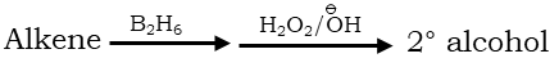
Major product P is

(1) 

(2) 

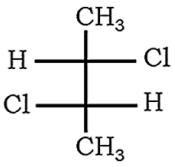
(3) 

(4) 

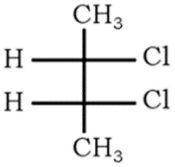
81. 

The alkene would be:
(1) $CH_3 - CH = CH_2$
(2) $CH_3CH_2 - CH = CH_2$
(3) $CH_3 - \underset{\underset{CH_3}{|}}{C} = CH_2$
(4) $CH_3 - CH = CH - CH_3$

82. If optical rotation produced by



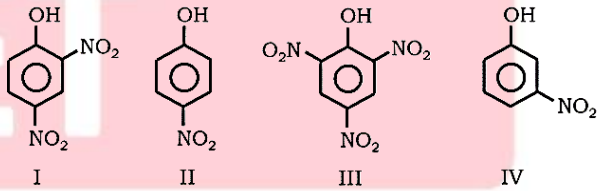
is +36° then that produced by



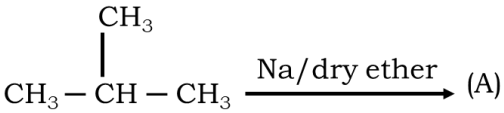
is:
(1) –36°
(2) 0°
(3) +36°
(4) Unpredictable

83. Which one given below is a non-reducing sugar?
(1) Maltose
(2) Lactose
(3) Glucose
(4) Sucrose

84. The correct order of increasing dissociation constant of the following compound is:



(1) II < IV < I < III
(2) IV < III < I < II
(3) IV < II < I < III
(4) IV < I < II < III

85. 

Major product (A) is:
(1) $CH_3 - CH_2 - CH_2 - CH_2 - CH_2 - CH_3$

(2) $CH_3-\underset{\underset{CH_3}{|}}{CH}-\underset{\underset{CH_3}{|}}{CH}-CH_3$

(3) $CH_3CH_2-CH_2CH_3$

(4) $CH_3-CH=CH_2$

SECTION – B

86. Match the following column

Column I		Column II	
1.	$B_3N_3H_6$	A.	White ppt
2.	$Na_2B_4O_7$	B.	3 centred $2e^{\ominus}$ bond
3.	H_3BO_3	C.	Inorganic Benzene
4.	B_2H_6	D.	Crystalline solid less soluble in cold water but more soluble in hot water

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

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

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

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

87. The product of following reaction is

$$CH_3-\underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}}-CH=CH_2 \xrightarrow[(ii)\ NaBH_4]{(i)\ Hg(OAc)_2\cdot H_2O}$$

(1) $CH_3-\underset{\underset{CH_3\ OH}{|}}{\overset{\overset{CH_2}{|}}{C}}-CH-CH_2$

(2) $CH_3-\underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}}-CH_2-CH_2OH$

(3) $CH_3-\underset{\underset{CH_3}{|}}{\overset{\overset{OH\ CH_3}{|}}{C}}-CH-CH_3$

(4) $HOCH_2-\underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}}-CH_2-CH_2$

88. $H_3C-\underset{\underset{CH_3}{|}}{CH}-CH=CH_2+HBr\longrightarrow A$

(1) $CH_3-\underset{\underset{Br}{|}}{CH}-\underset{\underset{CH_3}{|}}{CH}-CH_3$

(2) $CH_3-\underset{\underset{CH_3}{|}}{CH}-\underset{\underset{Br}{|}}{CH}-CH_3$

(3) $CH_3-\underset{\underset{CH_3}{|}}{CH}-CH_2-CH_2Br$

(4) $CH_3-\underset{\underset{CH_3}{|}}{\overset{\overset{Br}{|}}{C}}-CH_2CH_3$

89. Find out the atoms which are is neutronic:

(1) ${}^{14}_{6}C$, ${}^{15}_{7}N$, ${}^{17}_{9}F$

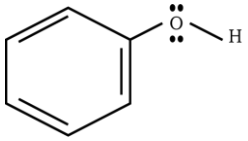
(2) ${}^{12}_{6}C$, ${}^{14}_{7}N$, ${}^{19}_{9}F$

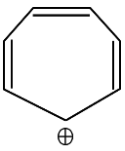
(3) ${}^{14}_{6}C$, ${}^{14}_{7}N$, ${}^{17}_{9}F$

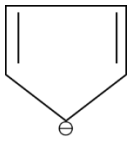
(4) ${}^{14}_{6}C$, ${}^{14}_{7}N$, ${}^{19}_{9}F$

90. Which one of the following compounds is not aromatic?

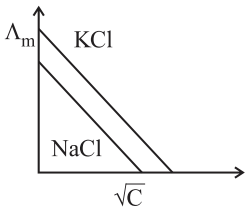
(1) 

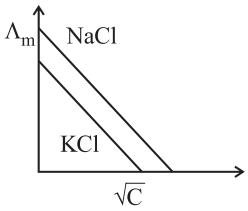
(2) 

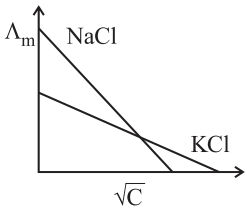
(3) 

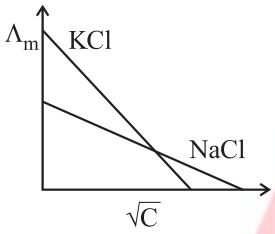
(4) 

91. The graph of Λ_m vs $\sqrt{c}$ for the substances NaCl, KCl is:

(1) 

(2) 

(3) 

(4) 

92. 1 mole of non-electrolyte A and B are mixed in two different solvents of 100g. ebullioscopic constants of A and B are in ratio 1:5. Find the ratio of their elevation in Boiling point:

(1) 1 : 5
(2) 5 : 1
(3) 2 : 3
(4) 4 : 3

93. $\Delta H - \Delta U$ in combustion of heptane is:

(1) +4RT
(2) +3RT
(3) −4RT
(4) −3RT

94. When excess of NH_3(aq) is added to a blue solution containing $Cu^{2+}_{(aq)}$ ions

(1) Solution turns red due to formation of Cu^+ ions
(2) Solution becomes red due to formation of $[Cu(NH_3)_4]^{2+}_{aq}$
(3) Solution become deep blue due to formation of $[Cu(NH_3)_4]^{2+}_{aq}$
(4) Solution becomes colourless due to excess colourless NH_3

95. In B_2H_6 (diborane) maximum no. of H atom in same-plane

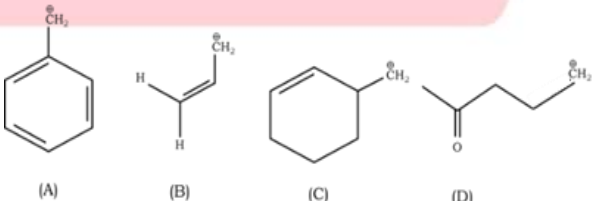
(1) 6
(2) 4
(3) 2
(4) 3

96. Which of the following molecule is Diamagnetic in nature?

(1) B_2
(2) O_2
(3) S_2
(4) N_2

97. **Assertion:** Fullerene is purest Allotrope of carbon.
Reason: Due to Absence of Dangling Bond.

(1) If both assertion and reason are true and the reason is the correct explanation of the assertion.
(2) If both assertion and reason are true but reason is not the correct explanation of the assertion.
(3) If assertion is true but reason is false.
(4) If the assertion and reason both are false.

98. 

Among the given species the Resonance stabilized carbocations are

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

99. For a chemical reaction rate constants at temp 27°C and 127 °C are 2.5 and 10 respectively. Calculate the activation energy for the reaction.

(Given ln2= 0.693)

(1) 13.827 kJ
(2) 16.436 kJ
(3) 27.439 kJ
(4) 32.432 kJ

100. In the hydrocarbon

$$\underset{6}{CH_3} - \underset{5}{CH} = \underset{4}{CH} - \underset{3}{CH_2} - \underset{2}{C} \equiv \underset{1}{CH}$$

The state of hybridization of carbons 1, 3 and 5 are in the following sequence respectively is:

(1) sp, sp^2, sp^3
(2) sp^3, sp^2, sp
(3) sp^2, sp^2, sp^3
(4) sp, sp^3, sp^2

SECTION – A

101. Mark the **incorrect** matching pairs:

(1) Flattened stem – Opuntia
(2) Thorn – Citrus, Bougainvillea
(3) Underground stem – Potato
(4) Stem tendril – Colocasia

102. Read the following statements (I-IV) and answer them accordingly:

I. Glycerol would enter the respiratory pathway after being converted to PGAL
II. Respiratory quotient depends upon the type of respiratory substrate used during respiration
III. Pure proteins or fats are used as respiratory substrates.
IV. When fats are used in respiration, the RQ is less than 1.

Choose the **correct** option?

(1) I, II and III
(2) II, III and IV
(3) I, II and IV
(4) All of the above

103. In which kingdom of Whittaker's classification does Chlamydomonas, chlorella, paramecium and amoeba are placed?

(1) Plantae
(2) Monera
(3) Protista
(4) Fungi

104. **Assertion:** Nucleopolyhedrovirus are broad spectrum insecticides.
Reason: They have been shown to have negative impacts on mammals and birds.

(1) If both assertion and reason are true and reason is the correct explanation of assertion.
(2) If both assertion and reason are true but reason is not the correct explanation of assertion.
(3) If assertion is true but reason is false.
(4) If both assertion and reason are false.

105. All are correct for sporopollenin, **except**

(1) Most resistant organic material known.
(2) Present in germ pores of exine
(3) Can withstand high temperatures
(4) Can withstand strong acids and alkali

106. What activates the lac operon in E. coli?

(1) Binding of lactose to the repressor, when lactose is present
(2) Binding of repressor to the operator.
(3) Binding of RNA polymerase to the operator.
(4) Binding of Lactose to RNA polymerase.

107. Identify the statement that describes the characteristics of C_4 plants.

(1) RuBP as the primary acceptor of CO_2
(2) PGA as the first stable product
(3) Have greater productivity of biomass
(4) No separation of initial and final carboxylation

108. Mark the **incorrect** matching pair-

(1) Equisetum – Heterosporous and dependent gametophyte
(2) Salvinia – Heterosporous and dependent

female gametophyte

(3) Prothallus – Free living and multicellular

(4) Protonema – Branched and Filamentous

109. Microbodies are:

(1) Membrane bound minute vesicles

(2) Non-membrane bound organelles
(3) Present only in animals
(4) Present only in plants

110. Select the list of items of **Column I** with **Column II** and select the correct option from the codes given below:

Column I		Column II	
A.	Hypocotyl	i.	Portion above the cotyledons
B.	Epicotyl	ii.	Portion below the cotyledons
C.	Plumule	iii.	Stem tip

(1) A-ii, B-i, C-iii
(2) A-ii, B-iii, C-i
(3) A-i, B-ii, C-iii
(4) A-i, B-iii, C-ii

111. The monocot stems -

(1) Have scattered vascular bundles
(2) Have well developed endodermis
(3) Show secondary growth
(4) Have well developed pericycle

112. If plant with genotype TtRr produce pollen, then percentage pollen with Tr is

(1) 50 %
(2) 40%
(3) 25%
(4) 75%

113. All are correct for vegetative cell, **except**

(1) Bigger in size
(2) Has abundant food reserve
(3) Spindle shaped
(4) Large irregularly shaped nucleus

114. ICBN refers to

(1) International Code of Botanical Nomenclature
(2) International Code for Botanical Naming
(3) Internal Code of Botanical Nomenclature
(4) None of the above

115. Who was the scientist known for demonstrating the importance of different wavelengths of light using green algae and aerobic bacteria?

(1) Jan Ingenhousz
(2) Julius von Sachs
(3) Cornelius van Niel
(4) T. W. Englemann

116. The scientist that received the Nobel Prize in 1945 for the discovery and development of penicillin as an antibiotic is-

(1) Howard Florey
(2) Ernst Chain
(3) Alexander Fleming
(4) All of the above

117. Select the list of items of **Column I** with **Column II** and select the correct option from the codes given below:

Column I		Column II	
A.	Chromatophores	i.	Loose sheath of glycocalyx
B.	Mesosomes	ii.	Rigid layer of glycocalyx

C.	Slime layer	iii.	Membranous extensions in cyanobacteria
D.	Capsule	iv.	Helps in cell wall formation

(1) A-i, B-ii, C-iii, D-iv
(2) A-ii, B-iii, C-i, D-iv
(3) A-iii, B-iv, C-i, D-ii
(4) A-iii, B-ii, C-i, D-iv

118. Which one of the following statements is **correct**?
(1) Cell divided by cytokinesis only in mitosis
(2) DNA is replicated before the start of meiosis only
(3) Spindles consisting of microtubule form only in mitosis
(4) Exchange of genetic material occurs only in meiosis

119. Mark the **incorrect** statement-
(1) African catfish Clarias gariepinus is an example of alien species invasion
(2) Steller's Sea cow from Russia become extinct due to over-exploitation.
(3) 23 percent of all mammal species face the threat of extinction.
(4) All are correct

120. Read the following **statements** (A-D) and answer the question which follows them:
A. In most ecosystems, all the pyramids, of number, of energy and biomass are upright.
B. Any calculations of energy content, biomass or numbers, has to include all organisms at that trophic level
C. The pyramid of biomass in sea is generally inverted because the biomass of fishes far exceeds that of phytoplankton.
D. A given species may occupy more than one trophic level in the same ecosystem at the same time

How many of the above statements are **correct**?
(1) Four
(2) One
(3) Two
(4) Three

121. Variable Number of Tandem Repeats (VNTR) DNA-
I. Is a minisatellites.
II. Is used in fingerprinting.
III. Shows high degree of polymorphism.
IV. Normally do not code for any protein.

Choose the **correct** option
(1) Only I and II
(2) I, III and IV
(3) I, II, III and IV
(4) I, II and IV

122. In animal cells, during the S phase, DNA replication begins in the ……..A….., and the centriole duplicates in the …….B……
(1) A-Nucleoplasm, B- Protoplasm
(2) A-Nucleoplasm, B- Mitochondria
(3) A- Nucleus, B- Cytoplasm
(4) A- Nucleoid, B- Cytoplasm

123. Consider the following **statements**.
I. RBC become sickle-shaped under low oxygen tension in sickle- cell anaemia.
II. Thalassemia differs from sickle-cell anaemia in that the former is a quantitative problem while the latter is a qualitative problem.

(1) I is true, but II is false

(2) I is false, but II is true

(3) I and II are true

(4) I and II are false

124. In the process of mineralization by microorganisms, which of the following is **correct**?

(1) Release of inorganic nutrients from humus

(2) Release of both organic and inorganic nutrients from detritus

(3) Release of organic nutrients from humus

(4) Release of inorganic nutrients from detritus and the formation of humus

125. The cells of ..... phase, attain their maximal size in terms of wall thickening and protoplasmic modifications.

(1) Divisional

(2) Elongation

(3) Maturation

(4) Differentiation

126. **Assertion:** UTRs are additional sequences of mRNA that are not translated.

Reason: UTRs are required for efficient translation process.

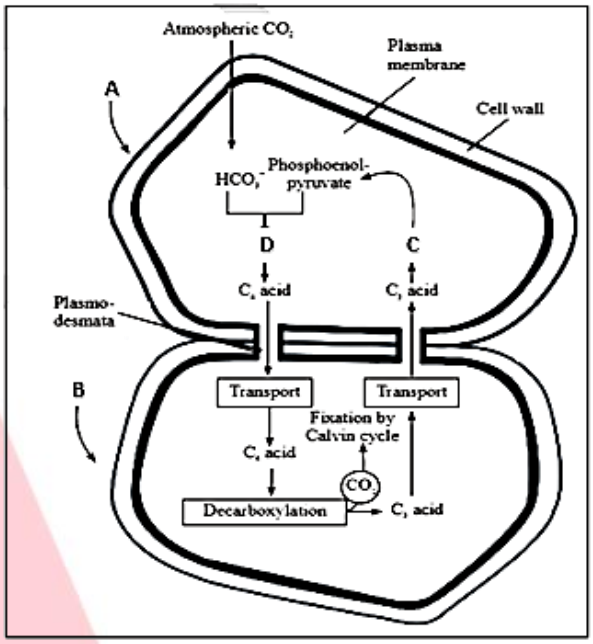
(1) If both assertion and reason are true and reason is the correct explanation of assertion.

(2) If both assertion and reason are true but reason is not the correct explanation of assertion.

(3) If assertion is true but reason is false.

(4) If both assertion and reason are false.

127. The given diagram represents the Hatch and Slack Pathway. Identify A, B, C and D and choose the **correct** option.



(1) A-Bundle sheath cell, B-Regeneration, C- Mesophyll cell, D-Decarboxylation

(2) A-Mesophyll cell, B- Bundle sheath cell, C- Regeneration, D-Fixation

(3) A-Chloroplast, B- Regeneration, C-Bundle sheath cells, D-Fixation

(4) A-Chloroplast, B-Fixation, C-Bundle sheath cell, D-Fixation

128. Select the list of items of **Column I** with **Column II** and select the correct option from the codes given below:

Column I		Column II	
A.	Klinefelter's syndrome	i.	Autosomal dominant trait

B.	Myotonic dystrophy	ii.	45 chromosomes, XO type
C.	Phenylketo-nuria	iii.	47 chromosomes, XXY
D.	Turner's syndrome	iv.	Autosomal recessive trait

(1) A-i, B-ii, C-iii, D-iv
(2) A-ii, B-iv, C-i, D-iii
(3) A-iii, B-i, C-iv, D-ii
(4) A-iii, B-ii, C-i, D-iv

129. The event that does not occur during zygotene is-

(1) Chromosome pairing
(2) Formation of synaptonemal complex
(3) Compaction of chromosomes
(4) Appearance of bivalents

130. Before the postulation of the genetic code, what was tRNA called as?
(1) sRNA (sedimentary RNA)
(2) sRNA (soluble RNA)
(3) mRNA (messenger RNA)
(4) RNA (ribosomal RNA)

131. **Assertion:** Crossing over is dependent on recombinase enzyme
Reason: Recombination between homologous chromosomes is completed
by the end of diplotene
(1) If both the assertion and the reason are true and the reason is a correct explanation of the assertion
(2) If both the assertion and reason are true but the reason is not a correct explanation of the assertion.
(3) If the assertion is true but the reason is false.
(4) If both the assertion and reason are false.

132. Similar experiments like Meselson and Stahl was performed by Taylor. The radioisotope used by Taylor was-
(1) Nitrogen
(2) Thymidine
(3) Titanium
(4) Iron

134. In the Hershey-Chase experiment

(1) DNA from parent bacteriophage appeared in progeny bacteriophages
(2) Most of the phage DNA never entered the bacteria
(3) More than three-fourths of the phage protein appeared in progeny phages
(4) DNA was labeled with radioactive sulfur

135. Which of the following is **not** true for the Glycolysis?
(1) Hexokinase converts glucose to glucose-6- phosphate
(2) NAD^+ is reduced to NADH + H^+
(3) Through substrate level phosphorylation, net gain of ATP is six
(4) Two pyruvic acid molecules are produced from one glucose molecule

SECTION – B

136. Gap between division phase and start of DNA-replication is called: -

(1) G_1 - phase
(2) G_2 - phase
(3) M - phase
(4) Interkinesis

137. Which of the following forms sexual spore endogenously and asexual spore exogenously?

(1) *Rhizopus*
(2) Claviceps
(3) Trichoderma
(4) Puff ball

138. Consider the following matching pairs-

I.	Valvate	–	Cassia and Calotropis
II.	Twisted	–	China rose and ladyfinger
III.	Imbricate	–	Cassia and Gulmohar
IV.	Vexillary	–	Pea and Tomato

How many are **incorrectly** matched?
(1) One
(2) Two
(3) Three
(4) Four

139. In lac operon, repressor binds to which region and prevents RNA polymerase from transcribing the operon?

(1) Promoter
(2) Operator
(3) Inducer
(4) Lac Z region

140. Identify the **correct** location for the following crucial events in aerobic respiration:

(A) The complete oxidation of pyruvate by the stepwise removal of all the hydrogen atoms, leaving three molecules of CO_2.

(B) The passing on of the electrons removed as part of the hydrogen atoms to molecules of O_2, with simultaneous synthesis of ATP.

(1) A-Outer mitochondrial membrane, B-Matrix of mitochondria
(2) A-Matrix of mitochondria, B-Inner mitochondrial membrane
(3) A-Inner mitochondrial membrane, B-Outer mitochondrial membrane
(4) A-Inner mitochondrial membrane, B- Matrix of mitochondria

141. **Assertion:** In *Selaginella*, the development of the zygotes into young embryos take place within the female gametophytes

Reason: This event is precursor to seed habit considered an important step in evolution.

(1) If both assertion and reason are true and reason is the correct explanation of assertion
(2) If both assertion and reason are true but reason is not the correct explanation of assertion
(3) If assertion is true but reason is false
(4) If both assertion and reason are false

142. African catfish *Clarias gariepinus* was introduced in Indian water for aquaculture purposes. It is an example of-

(1) Disturbance and degradation
(2) Co-extinction
(3) Alien species invasions
(4) Over-exploitation

143. Which of the following non-human model organisms have been sequenced through human genome project?

(1) Caenorhabditis elegans
(2) Arabidopsis
(3) Bacteria
(4) All

144. Mark the **incorrect** pair:

1)	Starch synthesis in pea	-Multiple alleles
2)	ABO blood group	-Co-dominance
3)	XO type sex determination	-Grasshopper
4)	Down's syndrome	-Trisomy of chromosome 21

145. Mitosis differs from meiosis as former-

(1) Results in four haploid cells.
(2) Involves the pairing of homologous chromosomes and their subsequent separation
(3) Involves the duplication of chromosomes and subsequent separation of the duplicates.
(4) Leads to the doubling of each chromosome, with each pair showing four chromatids.

146. What is true about law of dominance-

(1) Trait is controlled by discrete units called factors
(2) Factor occurs in pair
(3) In dissimilar pair of factors, one is dominant and the other is recessive
(4) All of these

147. **Assertion:** Brood parasitism is seen in birds.

Reason: The parasitic bird lays its eggs in the nest of its host and lets the host incubate them.
(1) If both assertion and reason are true and reason is the correct explanation of assertion
(2) If both assertion and reason are true but reason is not the correct explanation of assertion
(3) If assertion is true but reason is false
(4) If both assertion and reason are false

148. **Assertion:** Biodiversity hotspots are the regions with very high levels of species richness and high degree of endemism.

Reason: It is an ex-situ conserved area.
(1) If both assertion and reason are true and reason is the correct explanation of assertion
(2) If both assertion and reason are true but reason is not the correct explanation of assertion.
(3) If assertion is true but reason is false
(4) If both assertion and reason are false

149. Which hormone is responsible for the bending of coleoptile in response to phototropism?

(1) Auxin
(2) Gibberellic acid
(3) Ethephon
(4) Kinetin

150. Select the list of items of Column I with Column II and select the **correct** option from the codes given below:

Column I	Column II

A.	Parasitism	i.	Balanus and Chathamalus
B.	Commensalism	ii.	Lice on humans
C.	Competition	iii.	Epiphyte on a mango branch
D.	Predation	iv.	Calotropis

(1) A-i, B-ii, C-iii, D-iv
(2) A-ii, B-i, C-iv, D-iii
(3) A-iii, B-i, C-iv, D-ii
(4) A-ii, B-iii, C-i, D-iv

Zoology

SECTION – A

151. The medullary interstitial fluid has a very high osmolarity which is maintained by
(1) Movement of urea from collecting duct into medullary interstitium
(2) Movement of NaCl from descending limb of Henle's loop into medullary interstitium
(3) Movement of $K^+$and Cl^- from PCT and DCT into peri-tubular capillaries
(4) Uric acid and H^+ present in Interstitium

152. Purpose of tubectomy is to prevent:
(1) Egg formation
(2) Embryonic development
(3) Fertilization
(4) Coitus

153. The head of a mature sperm is mainly composed of:
(1) Elongated nucleus and acrosomal material
(2) Mitochondria, cytoplasm & nucleus
(3) Two centriole & the axial filament
(4) All of the above

154. Choose the correct options from below regarding MTP.
I. MTPs are generally advised during first trimester
II. MTPs are used as a contraceptive method
III. MTPs are safest till seven months after the pregnancy
IV. MTPs requires qualified and experienced doctors
(1) III and II
(2) II and III
(3) I and IV
(4) I and II

155. "A" Cells start division and enter in "B" stage of meiotic division and get temporarily "C" at this stage. Identify A, B, C
(1) A: Primary oocyte; B: Metaphase I; C: Arrested;

(2) A: Primary oocyte; B: Anaphase I; C: Released
(3) A: Primary oocyte; B: Prophase I; C: Arrested;
(4) A: Primary oocyte; B: Telophase I; C: Released

156. Function of 'ori site in a vector is to:
(1) Initiate insertional inactivation
(2) Initiate replication
(3) Codes for the proteins involved in replication of the plasmid
(4) Initiate antibiotic resistance

157. Spermatogenesis starts due to significant increases in the secretion of
(1) Somatostatin from hypothalamus
(2) GnRH from hypothalamus
(3) GnRH from anterior pituitary gland
(4) GnRH from posterior pituitary Gland

158. Which of the following is an infectious disease?
(1) Malaria
(2) Diabetes
(3) Hypertension
(4) Kwashiorkor

159. **Assertion:** There is no mixing of oxygenated and deoxygenated blood in the human heart.
Reason: Valves are present in the heart which allows the movement of blood one direction only.
(1) If both assertion and reason are true and reason is the correct explanation of assertion.
(2) If both assertion and reason are true but reason is not the correct explanation of assertion.
(3) If assertion is true but reason is false
(4) If assertion is false but reason is true

160. In the box given below, how many diseases are caused by protozoans?
Malaria, Pneumonia, Common cold, Amoebic dysentery, Ascariasis, Elephantiasis
(1) Zero
(2) One
(3) Two
(4) Three

161. The reasons of infertility in human could be
(1) Uses of drugs
(2) Congenital
(3) Psychological
(4) All of these

162. Which is caused by virus?
(1) Typhoid
(2) Tuberculosis
(3) Common cold
(4) Diphtheria

163. Core techniques that enabled birth of modern biotechnology are:
(1) Genetic engineering
(2) Bioprocess engineering
(3) Traditional hybridization
(4) Both 1 & 2

164. Stabilizing selection favours
(1) both extreme forms of a trait
(2) intermediate forms of a trait
(3) environmental differences
(4) one extreme form over the other extreme form and over intermediate forms of a trait.

165. The factor that leads to founder effect in a population is:
(1) Mutation
(2) Genetic drift
(3) Natural selection
(4) Genetic recombination

166. Hardy-Weinberg equation is binomial expansion of
(1) $p + q$
(2) $(p + q)^2$

(3) $p^2 + q^2$

(4) $(p+q)^2 - 1$

167. Which of the following character is found in Non – chordates

(1) Ventral central nervous system

(2) Gill slits

(3) Ventral heart

(4) Post-anal tail

168. What will happen in human body if level of angiotensin-II increases?

(1) Decrease in blood colloidal osmotic pressure

(2) Decrease in glomerular filtration rate

(3) Inhibition of aldosterone secretion

(4) Increase in glomerular hydrostatic pressure

169. Change in gene frequency of small population by chance is

(1) mutation

(2) founder's effect

(3) gene flow

(4) genetic drift

170. How many ova and sperm will be formed from 50 secondary oocytes and 50 secondary spermatocytes?

(1) 50 ova & 200 sperm

(2) 50 ova & 100 sperm

(3) 100 ova & 200 sperm

(4) 100 ova & 400 sperm

171. **Assertion :** Presence of insert results into insertional inactivation of the b-galactosidase gene and the colonies do not produce any colour.

Reason : The presence of a chromogenic substrate do not gives coloured colonies if the plasmid in the bacteria does not have an insert

(1) If both assertion and reason are true and reason is a correct explanation of assertion

(2) If both assertion and reason are true but reason is not a correct explanation of assertion

(3) If assertion is true but reason is false

(4) If both assertion and reason are false

172. A special neural center that regulates the cardiac function through ANS is located in

(1) Medulla oblongata

(2) Pons

(3) Hypothalamus

(4) Adrenal gland

173. Coronary artery disease (CAD) is often referred to as

(1) Heart failure

(2) Cardiac arrest

(3) Atherosclerosis

(4) Angina

174. Intervertebral disc is found in the vertebral column of

(1) Birds

(2) Reptiles

(3) Mammals

(4) Amphibians

175. The brain can be divided into three major parts known as -

(1) Forebrain, Thalamus, Hindbrain

(2) Midbrain, Hindbrain, Epibrain

(3) Forebrain, Midbrain, Hindbrain

(4) Epibrain, Myobrain, Endobrain

176. On a chromosome, site for attachment of spindle fibres is

(1) Secondary constriction

(2) Primary constriction

(3) Kinetochore
(4) Satellite

177. A mature female frog can lay _____ ova at a time
(1) 250 to 300
(2) 600 to 900
(3) 2500 to 3000
(4) 6000 to 9000

178. Match the following columns

Column I		Column II	
A.	Sternum	1.	Synovial fluid
B.	Glenoid cavity	2.	Vertebrae
C.	Freely movable joint	3.	Pectoral girdle
D.	Cartilaginous joint	4.	Flat bone

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

179. Correct statement related to head of cockroach is
(1) Triangular in shape and lies posteriorly at right angles to the longitudinal body axis
(2) Triangular in shape and lies anteriorly at right angles to the longitudinal body axis
(3) Rectangular in shape and lies anteriorly at right angles to the longitudinal body axis
(4) Rectangular in shape and lies posteriorly at right angles to the longitudinal body axis

180. Air is breathed through
(1) Trachea → lungs → larynx → pharynx → alveoli
(2) Nose → larynx → pharynx → bronchus → alveoli → bronchioles
(3) Nostrils → pharynx → larynx → trachea → bronchi → bronchioles → alveoli
(4) Nose → trachea → larynx → bronchi → pharynx → alveoli

181. Sound box in human is
(1) Larynx
(2) Pharynx
(3) Syrinx
(4) Adam's apple

182. Biopiracy is
(1) Distribution of bio-resources fairly
(2) Patenting bio-resources with authorization
(3) Use of bio-resources without authorization
(4) Destroying bio-resources

183. Which one is not a Platyhelminthes?
(1) Tapeworm
(2) Liver fluke
(3) Planaria
(4) Hookworm

184. Hugo deVries brought forth the idea of mutations based on his work on
(1) Evening Primrose
(2) Finches
(3) Moths
(4) Australian marsupials

185. In a female, 60,000-80,000 primary follicles are left in each ovary at the age of
(1) Birth
(2) Puberty
(3) Menopause
(4) Embryonic development

SECTION – B

186. Which of the given process occurs in primary lymphoid organs

(1) Immature lymphocytes differentiate into antibody-sensitive lymphocytes.
(2) Mature lymphocytes differentiate into antigen-sensitive lymphocytes
(3) Mature lymphocytes differentiate Into antibody-sensitive lymphocytes.
(4) Immature lymphocytes differentiate into antigen-sensitive lymphocytes

187. Which of the following is used in the production of insulin by genetic engineering?
(1) *Rhizobium*
(2) *Entamoeba coli*
(3) *Saccharomyces*
(4) *Escherichia coli*

188. Which of the following act as substrate for DNA synthesis

(1) Deoxyribonucleoside triphosphates
(2) Ribonucleoside triphosphates
(3) Amino acids
(4) All

189. In India, the organization responsible for assessing the safety of introducing genetically modified organisms for public use is
(1) NACO
(2) WHO
(3) RCGM
(4) GEAC

190. Which of the following is incorrect regarding agarose.
(1) It is used as medium in gel electrophoresis
(2) It is a natural polymer
(3) It is obtained from sea weeds
(4) None of these

S191. Which of the following secondary metabolites is/are used as drugs?
(1) Abrin and ricin
(2) Vinblastine and curcumin
(3) Anthocyanins
(4) Gums and cellulose

192. In ELISA method infection by pathogen can be detected by
(1) Only presence of antigen specific to that pathogen in serum
(2) Only presence of antibody in serum against that particular pathogen
(3) Both presence of antigen and antibody in serum that particular pathogen
(4) Presence of genetic material in serum

193. DNA sequence, which of responsible for initiating replication is called
(1) Origin of replication
(2) Incubating site
(3) Identifying site
(4) Selectable Marker

194. **Statement I:** The process of excreting ammonia is called *Ammonotelism*.
Statement II: Many bony fishes, aquatic amphibians and aquatic insects are ammonotelic.
(1) Both statement I and II are correct
(2) Statement I is correct but II is incorrect
(3) Statement I is incorrect but II is correct
(4) Both statement I and II are Incorrect

195. Number of hormones secreted by pars nervosa and pars intermedia is?
(1) Seven and six respectively
(2) Six and seven respectively

(3) One and two respectively
(4) Two and one respectively

196. **Statement I:** When cut by the same restriction enzyme. The resultant DNA fragments have the same kind of sticky ends.
Statement II: Sticky ends of DNA fragments can be joined together wing DNA Helicase
(1) Both statement I and II are correct
(2) Statement I is correct but II is incorrect
(3) Statement I is incorrect but II is correct
(4) Both statement I and II are incorrect

197. **Assertion:** The first non-cellular forms of life could have originated 3 billion years back.
Reason: The first cellular form of life did not possibly originate till about 2000 million years ago.
(1) Both (A) and R) are true and (R) is the correct explanation of (A).
(2) Both (A) and (R) are true but (R) is not the correct explanation of (A)
(3) (A) is true statements but (R) is false
(4) Both (A) and (R) are false.

198. Which of the following organic compounds are acid insoluble fraction?
(i) Proteins
(ii) Nucleic acids
(iii) Polysaccharides
(iv) Lipids
(1) (i), (ii) and (iii) only
(2) (ii), (iii) and (iv) only
(3) (i) and (iii) only
(4) (i), (ii), (iii) and (iv)

199. Which of the following are used in gene gun method
(1) Gold or Magnesium
(2) Tungsten Magnesium
(3) Gold or Tungsten
(4) Magnesium & silver

200. DNA is a .....
(1) Hydrophilic molecule
(2) Hydrophobic molecule
(3) Molecular which can pass through cell membrane
(4) Both (1) & (2)