meritroot
STRONG ROOTS CREATE MERIT

NEET MOCK TEST-02

Time : 3.00Hrs   **200 MCQs PATTERN**   **Max.Marks.720**

INSTRUCTIONS

1. This test will be a 3 hours Test, Maximum Marks 720M.

2. This test consists of Physics, Chemistry, Botany and Zoology questions with equal weightage of 180 marks.

3. Each question is of 4 marks.

4. There are four parts in the question paper, consisting Part-I Physics (Q.no.1 to 50), Part-II Chemistry (Q.no.51 to 100), Part-III Botany (Q. no. 101 to 150) and Part-IV Zoology (Q. no.151 to 200). Each part is divided into two Sections, Section A consists of 35 multiple choice questions & Section-B consists of 15 Multiple choice questions, out of these 15 questions candidates can choose to attempt any 10 questions.

5. There will be only one correct choice in the given four choices for each question. For each question 4 marks will be awarded for correct choice, 1 mark will be deducted for incorrect choice and zero mark will be awarded for unattempted question.

6. Any textual, printed or written material, mobile phones, calculator etc. is not allowed for the students appearing for the test.

7. All calculations / written work should be done in the rough sheet provided.

==

Syllabus

Physics   **: CLASS XI & XII**

Chemistry   **: CLASS XI & XII**

Biology   **: CLASS XI & XII**

==

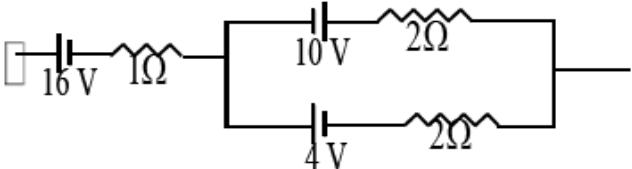## PART-1 : PHYSICS : SECTION-A

1. Two towers A and B each of height 20 m are separated by a distance 200m. A body thrown horizontally from the tower A with a velocity 20m/s towards the tower B hits the ground at a point P. Similar body projected horizontally from the tower B towards A with same velocity hits the ground at Q. The uniform velocity with which a truck can move from P to Q in 4 seconds is $\left(g = 10 m / s^2 \right)$

   (1) $5 m / s$ (2) $20 m / s$ (3) $15 m / s$ (4) $30 m / s$

2. The rms value of emf given by $\left(3 \sin \omega t + 4 \cos \omega t \right) V$ is

   (1) $\dfrac{5}{\sqrt{2}} V$ (2) $5\sqrt{2} V$ (3) 5 V   (4) 7 V

3. A convex mirror has a focal length 'f'. A real object is placed at a distance 'f' in front of it from the pole produce s an image at
   1) infinity   2) f'   3) f/2   4) 2f

4. A circular coil of wire of radius r has 600 turns and self inductance 108 mH. The self inductance of a coil with same radius and 500 turns is
   (1) 108 mH   (2) 75 mH   (3) 90 mH   (4) 190 mH

5. A)When a ball is dropped on to the ground from certain height, it comes to rest after few bounces, loosing all of its energy. It is an example of the violation of conservation of energy.
   B) In uniform circular motion, the acceleration of the body is constant.
   (1) A alone is true   (2) B along is true
   (3) Both A and B are true   (4) Both A and B are false

6. The current through the cell in the following network is (Diodes are ideal)
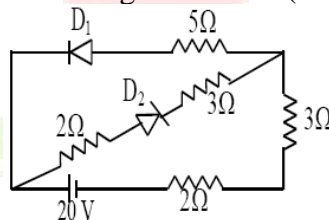
   (1) 1 A   (2) 2 A   (3) 6 A   (4) 4 A

7. A projectile of mass m has velocities 3m/s and 4m/s at two points during its flight in the uniform gravitational field of the earth. If these two velocities are perpendicular to each other, then the velocity of the projectile at the highest point of its path is
   (1) 0.6 m/s   (2) 0.4 m/s   (3)2.4 m/s   (4)1.8 m/s

8. The amplitude of damped oscillator becomes half in one minute. The amplitude after 3 minutes will be $\dfrac{1}{x}$ times the original. Then is x

   (1) 8   (2) 4   (3) 12   (4) 6

9. An electron moving with a velocity $V_1 = \hat{i}\, m / s$ at a point in a magnetic field experiences a force $\bar{F} = \left(-e\,\hat{j} \right)$ Newton where 'e' is the charge of the electron. If the electron moves with a velocity $\bar{V}_2 = 2\hat{k}\, m / s$ at the same point, the force experienced by it is
   (1) + e k Newton   (2) – e k Newton   (3) Zero   (4) e i Newton

10. Two particles P and Q each of mass 3m lie on X axis at points $(-a, 0)$ and $(a, 0)$ respectively at rest. A third particle R of mass 2m initially at the origin moves towards the particle Q. If all the collisions are elastic and head on, then the total number of collisions in the system is
    (1) 5   (2) 4   (3) 3   (4) 2

11. A potentiometer wire has uniform potential gradient. The specific resistance of the material of the wire is 10^{-7} ohm - m and the current passing through it is 0.1 amp. If the cross – sectional area of the wire is $10^{-6}\, m^2$, the potential gradient of the wire is
    (1) $10^{-4}V/m$ (2) $10^{-2}V/m$ (3) $10^{-6}V/m$ (4) $10^{-8}V/m$

12. If $F = \dfrac{\upsilon}{c\ell n(xb)}$, then (F , υ and x denote force , velocity and distance respectively.)
    (1) the dimension of c are [MT]
    (2) the dimension of x must be same as $\dfrac{\upsilon}{cb}$
    (3) the dimension of $\dfrac{\upsilon}{c}$ can never be same as F
    (4) the dimension of b are $\left[L^{-1} \right]$

13. Escape velocity of a body at the equator is υ. The escape velocity of the body at the poles, if the value of acceleration due to gravity at the equator is $\dfrac{1}{3}$ of the value at the poles, is (Average radius of the earth is R)
    (1) υ (2) $\sqrt{2}\upsilon$ (3) $\sqrt{3}\upsilon$ (4) $\dfrac{\upsilon}{\sqrt{3}}$

14. The emf and internal resistance of a single battery that can replace the combination below is

    (1) $13V, 2\Omega$ (2) $4V, 2\Omega$ (3) $10V, 2\Omega$ (4) $19V, 2\Omega$

15. A sample of an ideal gas occupies a volume V at a pressure P and absolute temperature T. The mass of each molecule is m. If K is the Boltzmann constant, then the density of the gas is
    (1) $d = \dfrac{Pm}{KT}$ (2) $d = \dfrac{PT}{Km}$ (3) $d = \dfrac{m}{PKT}$ (4) $d = \dfrac{Km}{PT}$

16. Sensitivity of potentiometer can be increased by
    a) increasing series resistance in the primary circuit
    b) decreasing the length of potentiometer wire
    c) using potentiometer a wire of high temperature coefficient of resistance
    d) increasing the length of the wire
    1) a and c are correct   2) b and d are correct
   3) b and c are correct   4) a and d are correct

17. An ideal gas whose adiabatic exponent is γ is expanded according to the relation $P = \alpha V$. The molar specific heat of the process is (α is a positive constant)

(1) $\dfrac{R}{2}\left(\dfrac{\gamma+1}{\gamma-1}\right)$　　(2) $\left(\dfrac{\gamma+1}{\gamma-1}\right)R$　　(3) $R\left(\dfrac{\gamma-1}{\gamma+1}\right)$　　(4) $\dfrac{R}{2}\left(\dfrac{\gamma}{\gamma+1}\right)$

18. Two wires of same length and of same material have diameters in the ratio 2 : 3. The elastic potential energy per unit volume for the wires, when stretched by the same force is

(1) $\dfrac{2}{3}$　　(2) $\dfrac{4}{9}$　　(3) $\dfrac{81}{16}$　　(4) $\dfrac{16}{81}$

19. The truth table for the following logic gate is same as that of
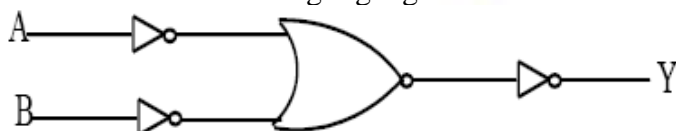
(1) NOR gate　　(2) NAND gate　　(3) OR gate　　(4) AND gate

20. A ball is freely falling under gravity from certain height. When it is at a height 10m from the ground its velocity is v_0. It collides the ground and loses 50% of its energy and rises back to the height of 10m. Then the height from the ground from where the ball is falling is

(1) 20 m　　(2) 25 m　　(3) 40 m　　(4) 60 m

21. A particle of charge q and mass m starts moving from the origin under the action of an electric field $\bar{E} = E\hat{i}$ and magnetic field $\bar{B} = B\hat{i}$ with a velocity $v = \bar{v}_0\,\hat{j}$. The speed of the particle will be $2v_0$ after a time

(1) $t = \dfrac{2mv_0}{Bq}$　　(2) $\dfrac{\sqrt{3}mv_0}{Eq}$　　(3) $t = \dfrac{\sqrt{3}Bq}{mv_0}$　　(4) $t = \dfrac{2Bq}{mv_0}$

22. A kettle with 2 litre water at $27^{o}C$ is heated by operating a heater coil of power 1000W. The heat lost to the atmosphere at constant rate is $160\,J/s.$, when the lid is open. In how much time will water heated to $77^{o}C$ with the lid open,

(1) 8 min 20 sec　　(2) 6 min 2 sec　　(3) 14 min　　(4) 7 min

23. Two identical discs are moving with the same kinetic energy. One rolls and the other slides. The ratio of their speed is

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

24. A closed pipe is suddenly opened and changed to an open pipe of same length. The fundamental frequency of this open pipe is less than the 3rd harmonic of the earlier closed pipe by 55 Hz. The value of the fundamental frequency of the closed pipe is

(1) 55 Hz　　(2) 110 Hz　　(3) 330 Hz　　(4) 220 Hz

25. n identical drops each of radius r combine into a big drop of radius R. The energy loss during this formation is 3E where E is the energy of the bigger drop. The value of 'n' is

(1) 4　　(2) 16　　(3) 64　　(4) 128

26. Three identical spheres each of radius R are placed touching side by side along X axis, so that the centre of the first sphere is at the origin. Now the sphere at the extreme end is removed. The shift in the centre of mass is

(1) R　　(2) 2R　　(3) R/2　　(4) 3R

27. The area of hysteresis loop of a material is equivalent to 250 joule. When 10 kg material is magnetized by an alternating field of 50 Hz, then energy lost in one hour will be, if the density of material is $7.5\ gm\ /\ c\ m^3$

    (1) $6\times10^4\ J$ (2) $4\times10^3\ J$ (3) $3\times10^2\ J$ (4) $2\times10^4\ J$

28. A block of mass 5 kg is moving horizontally at a speed of $1.5\ m/s$. A perpendicular force of 5 N acts on it for 4 sec. What will be the distance of the block from the point where the force started acting?

    (1) 10 m   (2) 8 m   (3) 6 m   (4) 2 m

29. Angle of a prism is 'A' and its one surface is silvered. Light rays falling at an angle of incidence 2A on first surface return back through the same path after suffering reflection at second silvered surface. Refractive index of the material of the prism is

    (1) 2 sin A   (2) 2 cos A   (3) 1/2cosA   (4) 2 tan A

30. A beam of 10.6 eV photons of intensity $2.0\ W/m^2$ falls on a platinum surface of area $1.0\times10^{-4}\ m^2$ and work function 5.6 eV. If 0.53 % of the incident photons eject photo electrons, then find the number of photoelectrons emitter per second and maximum energy of ejected electrons (in eV) are

    (1) $6.25\times10^{11}, 5eV$ (2) $6.25\times10^{8}, 5eV$ (3) $6.25\times10^{11}, 0.5eV$ (4) $0, 5eV$

31. In Young's experiment interference bands are produced on the screen placed at 1.5 m from the two slits 0.15 mm apart and illuminated by light of wavelength $6000\ \overset{o}{A}$. If the screen is now taken away from the slit by 50 cm, the change in the fringe width will be

    (1) $2\times10^{-4}\ m$ **(2)** $2\times10^{-3}\ m$ **(3)** $6\times10^{-7}\ m$ **(4)** $1.2\times10^{-4}\ m$

32. A radioactive material decreases by simultaneous emissions of two particles with half lives 1620 and 810 years. The time after which ¼ of the material remained is

    (1) 1080 years   (2) 2000 years   (3) 1500 years   (4) 1200 years

33. If $\lambda_1\ and\ \lambda_2$ are the wavelengths of the first members of the Lyman and Paschen series, respectively, then $\lambda_1 : \lambda_2$ is

    (1) 1 : 3   (2) 1 : 30   (3) 7 : 50   (4) 7 : 108

34. A flood light is covered with a filter that transmits red light. The electric field of the emerging beam is represented by a sinusoidal plane wave $E_x = 36\sin\left(1.20\times10^7\ z - 3.6\times10^{15}\ t\right)V/m.$ The average intensity of the beam will be

    (1) $0.86\ W/m^2$ (2) $1.72\ W/m^2$ (3) $3.44\ W/m^2$ (4) $6.88\ W/m^2$

35. In a parallel plate capacitor the separation between plates is $3x$. This separation is filled by two layers of dielectrics, in which one layer has thickness x and dielectric constant 3k, the other layer is of thickness $2x$ and dielectric constant 5k. If the plates of the capacitor are connected to a battery, then the ratio of potential difference across the dielectric layers is

    (1) $\dfrac{2}{3}$ (2) $\dfrac{5}{6}$ (3) $\dfrac{4}{5}$ (4) $\dfrac{3}{4}$

SECTION-B

36. A non-isotropic solid metal cube has coefficients of linear expansion as $5\times10^{-5}\ /^o\ C$ along the X - axis and $5\times10^{-6}\ /^o\ C$ along the Y and the Z - axes. If coefficient of areal expansion of the solid is $K\times10^{-6}\ /^o\ C$, then the value of 'K' is

(1) 60   (2) 32   (3) 40   (4) 52

37. If electric potential V at any point (x, y, z) all in metres in space is given by $V = 4x^2$ volt. Calculate the electric field at the point (1m, 0m, 2m).

1) $-8x\hat{i}$ 2) $-8x\hat{j}$ 3) $-8x\hat{k}$ 4) $-2x\left(\hat{i} + \hat{j} + \hat{k}\right)$

38. A Carnot engine of efficiency 40 %, takes heat from a source maintained at a temperature of 500 K. It is desired to have an engine of efficiency 60 %. Then, the source temperature, for the same sink temperature, must be

(1) 750 K   (2) 630 K   (3) 420 V   (4) 500 K

39. Two moles of an ideal gas with $\dfrac{C_P}{C_V} = \dfrac{5}{3}$ are mixed with 3 moles of another ideal gas with $\dfrac{C_P}{C_V} = \dfrac{4}{3}$.

The values of $\dfrac{C_P}{C_V}$ for the mixture is

(1) 2.5   (2) 1.42   (3) 4.6   (4) 3.2

40. Consider two solid spheres of radii $R_1 = 1m, R_2 = 2m$ and masses M_1 and M_2, respectively. The gravitational field due to sphere 1 and 2 are shown. The value of M_1 / M_2 is
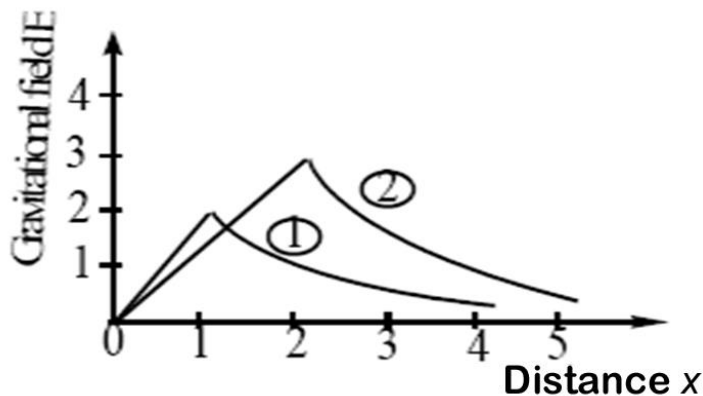
(1) $\dfrac{3}{4}$ (2) $\dfrac{1}{6}$ (3) $\dfrac{1}{2}$ (4) $\dfrac{2}{3}$

41. Two point charges are kept in air with certain separation between them. The force between them is F_1, if half of the space between the charges is filled with a medium of dielectric constant 4 and the force between them is F_2, if $\dfrac{1}{3}$ rd of the space between the charges is filled with dielectric of dielectric constant 9. Then F_1 / F_2 is

1) $\dfrac{100}{81}$ 2) $\dfrac{50}{30}$ 3) $\dfrac{81}{100}$ 4) $\dfrac{30}{50}$

42. Statement A : When a proton and a neutron enter into a transverse magnetic field with equal speeds, then they trace circular paths of equal radii.

Statement B : In a transverse magnetic field the period of revolution of a charged particle in a circular path is directly proportional to the mass of the particle

(1) Both A and B are correct   (2) Both A and B are not correct

(3) A is correct and B is not correct   (4) A is not correct and B is correct

43. A tank having cross sectional area 64 A is filled with water to a height 4 h. If a small hole of cross sectional area A is made at the bottom of the tank, then the time taken by the water level to decrease from 16 h to 4 h is

(1) $120\sqrt{\dfrac{h}{g}}$ (2) $115\sqrt{\dfrac{3h}{g}}$ (3) $120\sqrt{\dfrac{h}{2g}}$ (4) $128\sqrt{\dfrac{2h}{g}}$

44. Two conductors of capacity 8.4 mF each charged to potential 500V and -500V are joined by a conducting wire. If the mass of the wire 500 g and specific heat of the material is 0.1 cal/g/°C, the raise in the temperature of the wire is

(1) $2.5^{\circ}C$ (2) $5^{\circ}C$ (3) $10^{\circ}C$ (4) $20^{\circ}C$

45. The earth's magnetic field is due to electrical currents produced by convective motion of metallic fluids (molten iron and nickel) in the outer core of the earth. This effect is known as

(1) Tyndall's effect   (2) Dynamo effect   (3) Meissner effect   (4) Peltier effect

46. Two identical wires are stretched by same tension of 100 N and each wire emits note of frequency 400 Hz. If the tension of any wire is increased by 2 N then beat frequency heard is

(1) 1 Hz   (2) 2 Hz   (3) 3 Hz   (4) 4 Hz

47. The equation of a stationary wave in a string is given by $y = 2A\sin kx.\cos\omega t$. Maximum transverse speed of the particle is
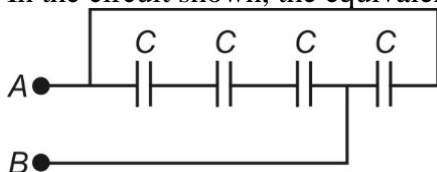
1) $\dfrac{\omega}{k}$ 2) $\dfrac{2A}{\omega}$ 3) $2kA$ 4) $2\omega A$

48. There exists uniform electric field $\vec{E}$ as shown in the space. Four points A, B, C and D are also shown which are equidistant from origin. If V_A, V_B, VC and VD are their respective potentials then
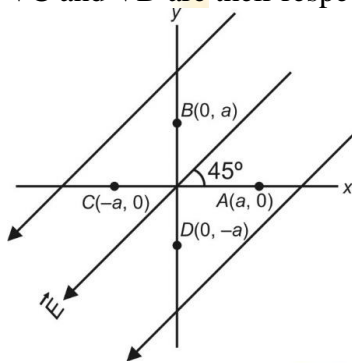
(1) $V_A > V_B > V_C > V_D$ (2) $V_A = V_B > V_C = V_D$

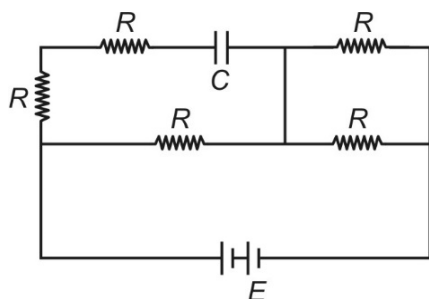(3) $V_C = V_D > V_A = V_B$ (4) $V_A > V_B > V_C = V_D$

49. In the circuit shown, the equivalent capacitance between A and B is

1) $\dfrac{C}{4}$ 2) $\dfrac{3C}{4}$ 3) $\dfrac{C}{3}$ 4) $\dfrac{4C}{3}$

50. In the electrical network shown, the energy stored in the capacitor at steady state is

(1) $\dfrac{CE^2}{9}$ 2) $\dfrac{2CE^2}{9}$ 3) $\dfrac{CE^2}{3}$ 4) $\dfrac{2CE}{3}$

PART-2 : CHEMISTRY : SECTION-A

51. The radius of nth stationary orbit in hydrogen atom is given by the expression $R_n = R^0 \times n^2$, where R^0 is called Bohr's radius and its value is

1) $5.29\,\overset{o}{A}$ 2) $52.9\,\overset{o}{A}$ 3) $0.529\,\overset{o}{A}$ 4) $0.0529\,\overset{o}{A}$

52. A molecule of organic compound contains atoms of Carbon, Hydrogen, Nitrogen and oxygen in the ratio 9:15:1:3. If there are 18 oxygen atoms per molecule then the molecular formula of the organic compound is

1) $C_9H_{15}N_6O_{18}$ 2) $C_{27}H_{45}N_3O_{18}$ 3) $C_{54}H_{90}N_6O_{18}$ 4) $C_{54}H_{15}N_6O_{18}$

53. The set of Quantum numbers that is not possible for a d-electron

1) $n=3; l=2; m=0; s=+1/2$ 2) $n=2; l=2; m=-2; s=+1/2$

3) $n=4; l=2; m=+2; s=+1/2$ 4) $n=4; l=2; m=-1; s=-1/2$

54. Which of the following metal sulphide has maximum solubility in water?

1) $FeS\left(K_{sp} = 11\times10^{-20}\right)$ 2) $HgS\left(K_{sp} = 32\times10^{-54}\right)$

3) $ZnS\left(K_{sp} = 11\times10^{-22}\right)$ 4) $CdS\left(K_{sp} = 36\times10^{-30}\right)$

55. Which of the following compound is/are polar?

$$\underset{A}{CCl_4} \quad \underset{B}{BCl_3} \quad \underset{C}{NH_3} \quad \underset{D}{SO_2} \quad \underset{E}{C_6H_6} \quad \underset{F}{H_2O}$$

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

56. Which one of the following is a correct set?

1) SF_4, sp^3d, sea-saw geometry   2) I_3^-, sp, linear

3) H_3O^-, sp^3, angular   4) PCl_4^+, dsp^2, tetrahedral

57. 2 mol of N_2 and 1 mol of He are introduced into a 10L evacuated closed container at 27°C. The pressure set up in the container will be

1) $\dfrac{4\times0.0821\times300}{10}\, atm$ 2) $\dfrac{2\times0.0821\times300}{10}\, atm$

3) $\dfrac{1\times0.0821\times300}{10}\, atm$ 4) $\dfrac{3\times0.0821\times300}{10}\, atm$

58. Which of the following is the correct order of acidic nature of oxides?

1) $SO_3 < Cl_2O_7 < Na_2O < MgO$ 2) $MgO < P_4O_{10} < SiO_2 < Cl_2O_7$

3) $Na_2O < Al_2O_3 < P_4O_{10} < SO_3$ 4) $Cl_2O_7 < SO_3 < P_4O_{10} < SiO_2$

59. The electron affinity values of four successive elements of third period A, B, C and D are respectively –135, –60, –200 and –348 kJ mol^{-1}. The outer electronic configuration of element B is
1) $3s^2 3p^5$ 2) $3s^2 3p^3$ 3) $3s^2 3p^4$ 4) $3s^2 3p^2$

60. Incorrect statement is
(1) The electropositive character of alkali metals increases with increase in atomic number
(2) Lithium is the hardest metal of IA group
(3) Alkali metals are strong Oxidising agents
(4) All alkali metals show colour in the flame test

61. In which of the following reaction H2O2 neither acts as oxidising agent nor reducing agent?
1) $Cr_2O_7^{2-} + H^+ + H_2O_2 \rightarrow$ 2) $PbS + H_2O_2 \rightarrow$
3) $NaOH + H_2O_2 \rightarrow$ 4) $KI + H_2O_2 \rightarrow$

62. Incorrect statement in the following is
(1) Order of melting points is B>Al>Tl >In>Ga
(2) Order of boiling point is B>Al>Ga>In>Tl
(3) Borozole $\left(B_3N_3H_6\right)$ is called inorganic benzene
(4) Oxides of boron are amphoteric in nature

63. Ingredients of Portland cement are
(1) Dicalcium silicate, tricalcium silicate, tricalcium aluminate
(2) Dialuminium silicate, trialuminium silicate, dicalcium silicate
(3) Dicalcium silicate, tricalcium aluminate, zinc sulphate
(4) Baking soda, limestone, iron oxide

64. Which statement is incorrect in the following?
(1) CCl_4 does not undergo hydrolysis as Carbon has no vacant d – orbitals
(2) Except Pb, all IVA group elements show catenation property.
(3) Graphite acts as a lubricant due to layer lattice structure
(4) Pb^{+2} is less stable than Pb^{+4}

65. Read the following statements
A. Gabriel phthalimide synthesis is used to prepare all 1^0 amines
B. $C_6H_5Cl \xrightarrow[dry\,ether]{Na} C_6H_5 - C_6H_5$ is known as wurtz reaction
C. In S_N^1 mechanism there is more inversion than retention leading to partial racemization
D. All aldehydes give red precipitate with Fehling's solution
E. Reactivity order of alkyl halides towards SN^2 reaction is $1^0 > 2^0 > 3^0$
Number of correct statements among these
(1) 2   (2) 4   (3) 5   (4) 3

66.
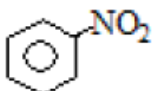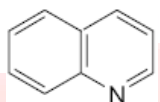| LIST -1(Pollutant)	LIST – 2(Effect)
A) $SO_4^{-2} > 550$ ppm	1) causes disease blue baby syndrome
B) $NO_3^{-1} > 50$ ppm	2) Damage to kidney, liver, reproduction system
C) Lead and Hg	3) Eutrophication of the pond
D) PO_4^{-3}	4) Causes laxative effect
	5) fluorosis

The correct match is

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

67. $A \rightleftharpoons B, K = 10$ --------(I)

$B \rightleftharpoons C, K = 100$ -------(II)

$C \rightleftharpoons D, K = 0.01$ -----(III), then correct order of $\Delta_r G^0$ values of processes at the same temperature is

(1) III > I > II   (2) III > I = II   (3) I > III > II   (4) II = I = III

68. Kjeldahl's method cannot be used for estimation of nitrogen in

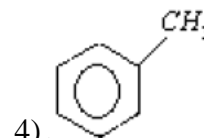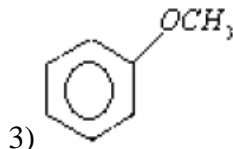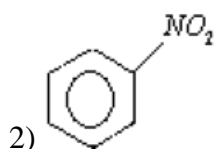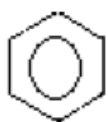1)   2)   3) $C_6H_5N = NC_6H_5$ 4) All of these

69. The configuration of the chiral carbon and the geometry of the double bond in the following molecule can be described by
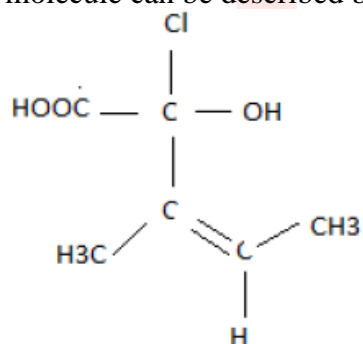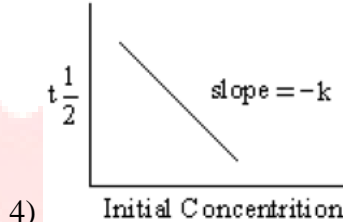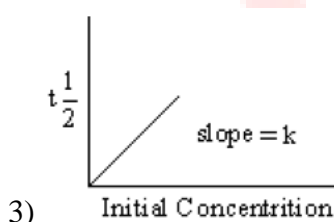
(1) R and E   (2) S and E   (3) R and Z   (4) S and Z

70. In the reaction $C_2H_6 \xrightarrow{(CH_3COO)_2 Mn} A \xrightarrow{NaOH} B$, the correct statement about B is

(1) On decarboxylation with soda lime it gives Methane
(2) On Kolbe's electrolysis it gives Ethane
(3) On decarboxylation with soda lime it gives Ethane
(4) Both 1 and 2

71. The catalyst required for the reaction
$HC \equiv CH + dil.H_2SO_4 \xrightarrow{Catalyst} CH_3CHO$

(1) $HgSO_4$ (2) Pd   (3) Pt   (4) $AlCl_3$

72. Benzoic acid gives benzene on being heated with X. Phenol gives benzene on being heated with Y. X and Y are respectively
(1) Soda dust and NaOH   (2) Zinc dust and NaOH
(3) Zinc dust and Soda lime   (4) Soda lime and Zinc dust

73. Which of the following will be most easily attacked by an electrophile?

1) [benzene ring] 2) [benzene ring with NO_2] 3) [benzene ring with OCH_3] 4) [benzene ring with CH_3]

74. The molar freezing point constant for water is 1.86 K.Kg mole^{-1}. If 342 gm of cane sugar ($C_{12}H_{22}O_{11}$) are dissolved in 1000gm of water, the solution will freeze at

1) $-1.86^\circ C$ 2) $1.86^\circ C$ 3) $-3.92^\circ C$ 4) $2.42^\circ C$

75. The most commonly used salt like food preservative is

(1) SO_2 (2) $KHSO_3$ (3) C_6H_5COONa (4) BHT

76. Which among the following graph is correct for zero order reaction

1) [graph: $t\frac{1}{2}$ vs Initial Concentration, increasing line, slope = $\frac{1}{2k}$]

2) [graph: $t\frac{1}{2}$ vs Initial Concentration, horizontal line]

3) [graph: $t\frac{1}{2}$ vs Initial Concentration, increasing line, slope = k]

4) [graph: $t\frac{1}{2}$ vs Initial Concentration, decreasing line, slope = -k]
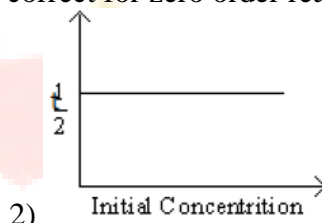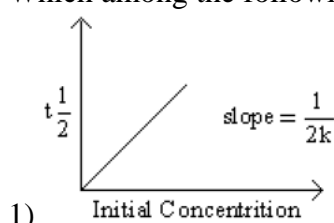
77. The incorrect statement in the following is

(1) Maltose is known as malt sugar and contain $\alpha - 1$, 4 - linkage between glucose units

(2) Sucrose is known as cane sugar and contain Linkage between C_1 of $\alpha - D$ -glucose and C_2 of $\beta - D$- fructose

(3) Lactose is also known as milk sugar and contain $\beta - 1$, 4 linkage between glucose units

(4) $\alpha - D$ -Glucose and $\beta - D$- Glucose are anomers

78. The order of bond angle in hydrides of VA group elements is

1) $NH_3 > PH_3 > SbH_3 > AsH_3$ 2) $NH_3 > AsH_3 > PH_3 > SbH_3$

3) $NH_3 > PH_3 > AsH_3 > SbH_3$ 4) $NH_3 > SbH_3 > PH_3 > AsH_3$

79. HCOOH reacts with conc. H_2SO_4 to produce

(1) CO   (2) H_2S (3) SO$_4$ (4) CO_2

80. An alcohol (A) on dehydration gives (B) which on ozonolysis gives acetone and formaldehyde. (A) and (B) are respectively

1) $CH_3CH_2CH_2CH_2OH$ and $CH_3CH_2CH = CH_2$

2) $CH_3CH_2CHOHCH_3$ and $CH_3CH = CH - CH_3$

3) $(CH_3)_3 COH$ and $(CH_3)_2 C = CH_2$

4) $(CH_3)_3 CCH_2OH$ and $(CH_3)_2 C = CH_2$

81. The final product of hydrolysis of XeF$_6$ is

1) $XeOF_4$
2) XeO_4
3) XeO_3
4) XeO_2F_2

82. Statement – I: F_2 is better oxidising agent than Cl_2
    Statement – II: HI is strongest acid and strongest reducing agent among hydrides of VIIA
    (1) Statement – I & II are correct
    (2) Statement – I & II are incorrect
    (3) Statement – I is correct but statement – II is incorrect
    (4) Statement – I is incorrect but statement – II is correct

83. The gold number of Gelatin, haemoglobin and sodium acetate are 0.005, 0.05 and 0.7 respectively. The protective actions will be in order:
    (1) Gelatin< haemoglobin < sodium acetate
    (2) Haemoglobin >Gelatin< sodium acetate
    (3) Gelatin> haemoglobin > sodium acetate
    (4) Sodium acetate >Gelatin> haemoglobin

84. In which pair, both ions are coloured in aqueous medium
    1) Sc^{+3}, Zn^{+2}
    2) Cu^{+2}, Ti^{+4}
    3) Ti^{+3}, Co^{+3}
    4) Cu^+, Mn^{+2}

85. Which of the following detergent is used as germicide?
    (1) Cetyltrimethyl ammonium bromide
    (2) p-dodecylbenzenesulphonate
    (3) Sodium lauryl sulphonate
    (4) Butylated hydroxy toluene

SECTION-B

86. The limiting molar conductivities $\left(\Lambda^0\right)$ for NaCl, KBr and KCl are 126, 152 and 150 S. cm2mol⁻ respectively. Then Λ^0 for NaBr is
    1) $128\,S\,cm^2 mol^{-1}$
    2) $302\,S\,cm^2 mol^{-1}$
    3) $278\,S\,cm^2 mol^{-1}$
    4) $176\,S\,cm^2 mol^{-1}$

87. Schottky defect causes
    (1) Increase in the density of solid
    (2) Decrease in the density of solid
    (3) No change in the density of solid
    (4) Changes stoichemistry

88. Which of the following complex and its structure not correctly matched
    1) $\left[NiCl_4\right]^{2-}$, tetrahedral
    2) $\left[Ni(CO)_4\right]$, square planar
    3) $\left[Ni(CN)_4\right]^{-2}$, square planar
    4) $\left[Cu(NH_3)_4\right]^{+2}$, square planar

89. Which of the following is incorrect ?
    (1) In elastomers, polymer chains are held together by weak vanderwaals forces and few cross links are introduced between the chains
    (2) Cross linked polymers have strong covalent bonds within the linear polymeric chains
    (3) Fibres have crystalline nature
    (4) Natural rubber has coiled structure

90. Which of the following conversion can be brought about under Wolff – Kishner reduction?
    (1) Benzaldehyde to benzyl alcohol
    (2) Cyclohexanol to cyclohexane
    (3) Cyclohexanone to cyclohexanol
    (4) Cyclohexanone to cyclohexane

91. Correct order of basic nature of the following species

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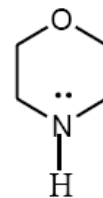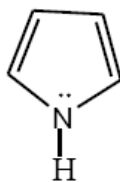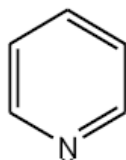
(1) A > B > C > D   (2) D > A > B > C   (3) A > D > B > C   (4) B > C > A > D

92. The equilibrium constant for a reaction $A + 2B \rightleftharpoons 2C$ is 40. The equilibrium constant for reaction $C \rightleftharpoons B + \frac{1}{2}A$ is

1) 1/40   2) $\left(\frac{1}{40}\right)^{\frac{1}{2}}$ 3) $\left(\frac{1}{40}\right)^{2}$ 4) 40

93. Which of the following is false?
(1) Gold can be extracted by hydro metallurgy
(2) Cresol acts like a froth stabilizer in froth floatation process
(3) Coke acts like reducing agent for iron oxides at high temperature
(4) Principle involved in the formation of copper matte is that copper has greater affinity towards oxygen and iron has greater affinity towards sulphur

94. Reimer – Tiemann reaction is

(1) Electrophilic addition reaction and electrophile is $\overset{..}{C}Cl_2$

(2) Nucleophilic substitution reaction and nucleophile is $\overset{..}{C}Cl_2$

(3) Nucleophilic addition reaction and nucleophile is $\overset{..}{C}Cl_2$

(4) Electrophlic substitution reaction and electrophile is $\overset{..}{C}Cl_2$

95. $CH_3CHO + HCHO \xrightarrow[Heat]{dil\,NaOH} A \xrightarrow[H_3O^+]{HCN} B.$ The structure of the compound is

1) $H_2C=CH-CH-COOH$ with OH
2) $H_2C=CH-CH-OH$ with CN
3) $CH_3-HC=CH-CH-COOH$ with OH
4) $CH_3-CH-COOH$ with OH

96. Froth floatation cannot be done for concentration of
(1) PbS   (2) ZnS   (3) Cu_2S (4) Ag_2S

97. Hot and concentrated HNO_3 on reaction with Zn, Cu and Fe separately gives
(1) NO_2, NO_2, NO_2 (2) NO, NO_2, NO_2 (3) NO_2, NO_2, NO (4) NO_2, NO, NO_2
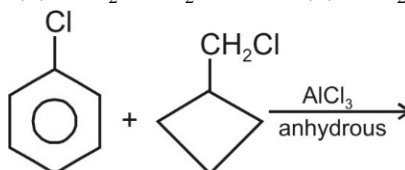
98. The major product of the following reaction

![Cl-benzene + cyclobutyl-CH2Cl, AlCl3 anhydrous] will be

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

99.   At higher concentration of NaOH, the order of Cannizzaro reaction is
     (1) 1   (2) 2   (3) 3   (4) 4

100.   Yellow oily liquid is formed when HNO2 reacts with
     (1) CH_3NH_2 (2) $C_6H_5NH_2$ (3) $(CH_3)_2 NH$ (4) $(CH_3)_3 N$

PART-3 : BOTANY : SECTION-A

101.   The *lac* operon in *E.coli*, is controlled by both the *lac* repressor and the catabolite activation protein (CAP). In an *in vitro* experiment with *lac* operon, the following observations were made
     A) cAMP levels are high
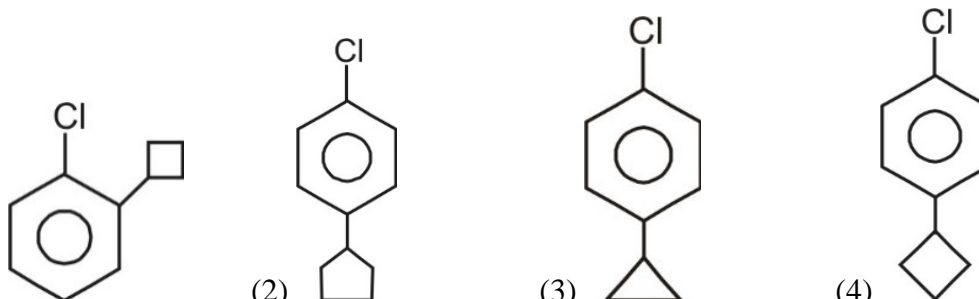   B) Repressor is bound with allolactose
     C) CAP is interacting with RNA polymerase
     Which one of the following conclusions is most appropriate based on the above observation?
     1) Glucose and lactose are present
     2) Glucose is present and lactose is absent
     3) Both are absent
     4) Glucose is absent and lactose is present

102.   Viruses contain the following
     I. Genome   II. Capsid   III. Capsule   IV. Enzyme
     1) I, II and III are correct   2) I, II, III and IV are correct
     3) I, II and IV are correct   4) II, III and IV are correct

103.   A plant of the genotype AaBb is selfed. The two genes are linked and are 50 map units apart. What proportion of the progeny will have the genotype aabb?
     1) 1/2   2) 1/4   3) 1/8   4) 1/16

104.   Which one of the following set of non-leguminous plants show nodulation?
     1) *Tectona, Sesbania*
     2) *Casuarina(Australian pine), Alnus (Alder), Myrica*
     3) *Shorea, Chick pea*
     4) *Azadirachta, Pisum sativum*

105.   RNA molecules that exhibit catalytic activity are called :
     1) mRNA   2) Ribonucleases   3) Ribozymes 4) Ribonucleotides

106.   In which one of the following groups chlorophyll d is present?
     1) Chlorophyceae   2) Bacillariophyceae   3) Rhodophyceae 4) Xanthophyceae

107.   Which one of the following fungus produces basidiospores?
     1) Albugo   2) Alternaria   3) Ustilago   4) Erysiphe

108. How many genetically different gametes can be made by an individual of genotype AaBbccDDEe, assuming they are independently assorting?
 1) 3 2) 5 3) 8 4) 32
109. Red rot of sugarcane is caused by
 1) Colletotrichum falcatum 2) *Peronospora*
 3) *Xanthomonas oryzae* 4) *Dreschlera oryzae*
110. *M.incognitia* affects ___of tobacco plant
 1) Fruit 2) Seed 3) Root 4) Bud
111. Lichens are the major pollution indicators of
 1) SO_2 in air 2) NO_2 in air 3) Mercury in water 4) CO in air
112. Bryophytes have all the following characteristic except:
 1) Multicellularity 2) Lignified vascular tissues
 3) Parenchyma 4) A reduced, dependent sporophyte
113. The following is the biochemical pathway for purple pigment production in flowers of sweet pea: Colorless precursor 1 $\xrightarrow{AlleleA}$ Colorless precursor 2 $\xrightarrow{AlleleB}$ Purple pigments. Recessive mutation of either gene A or B leads to the formation of white flowers. A cross is made between two parents with the genotype: AaBb × aabb. Considering that the two genes are not linked, the phenotypes of the expected progenies are
 1) 9 purple : 7 white 2) 3 white : 1 purple
 3) 1 purple : 1 white 4) 9 purple : 6 light purple : 1 white
114. Morgan carried out several dihybrid crosses in *Drosiphila* to study genes that were sex linked which of the following is incorrect statement related to this?
 1) genes for yellow body colour and white eye traits are present in female only
 2) genes for body colour and eye colour did not segregate independently of each other and F_2 ratio deviated from 9 : 3 : 3 : 1
 3) Genes for eye colour and wing size are present on x chromosome
 4) Genes for body colour and eye colour are tightly linked
115. Heterospory is seen in one of the following set of examples?
 1) *Lycopodium, Pteris* 2) *Equisetum, Adiantam*
 3) *Psilotum, Lycopodium* 4) *Marsilea, Salvinia, Selaginella*
116. The enzyme that joins the DNA strand during construction of recombinant DNA is
 1) Polymerase 2) Lipase 3) Ligase 4) DNA gyrase
117. A nitrogen fixing cyanobacteria found in coralloid roots of *Cycas revoluta* is
 1) Aulosira 2) Anabaena 3) Scytonema 4) Calothrix
118. A mechanism that can cause a gene to move from one linkage group to another is
 1) Crossing over 2) Inversion 3) Translocation 4) Duplication
119. Match the List – I (Scientists) with List II (theories) and select the correct answer using the codes given below

	List – I			List - II
a)	Sutton & Boveri	1)		One gene one-enzyme hypothesis
b)	Beadle and Tatum	2)		Cell theory
c)	Schleiden & Schwan	3)		Chromosome theory of inheritance
d)	Jacob & Monad	4)		Lac operon model of gene regulation

1) a- 1, b – 3, c – 4, d – 2   2) a – 2, b – 1, c – 3, d – 4

3) a – 2, b – 4, c – 1, d - 3   4) a – 3, b – 1, c – 2, d - 4

120. In cell division, kinetochore helps in
    1) The formation of synaptonemal complex
    2) Condensing the chromatin
    3) Attaching chromosome with spindle fibres
    4) Cytokinesis

121. Gene 'cry' is present in
    1) Bacillus subtilis   2) Bacillus megasporium
    3) Bacillus amyloliquefaciens   4) Bacillus thuringiensis

122. Two pure lines of corn have mean cob length of 9 and 3 inches, respectively. The polygenes involved in this trait exhibit additive gene action. Crossing these two lines is expected to produce a progeny population with mean cob length (in inches) of :
    1) 12.0   2) 7.5   3) 6.0   4) 2.75

123. In a cell major proportion of RNA is found in
    1) Nucleolus   2) Plastids   3) Mitochondria   4) Ribosomes

124. Repeated chromatid replication and non segregation of daughter chromatids leads to the formation of
    1) Pachytene chromosome   2) Polytene chromosome
    3) Lamprush chromosome   4) Leptotene chromosome

125. Plasmids containing replication origin sequences of 2 different hosts are
    1) Amplification vectors   2) Shuttle vectors
    3) Expression vectors   4) Integrating vectors

126. Which chemicals given below would you find in phospholipid?
    1) C, H, O, N, P   2) C, H, O, Fe   3) C, H, O, Mg   4) C, H, O, Mn

127. DNA polymerase I is multifunctional enzyme because it promotes
    I. Polymerisation reaction
    II. Removal of nucleotides from 3' terminus in DNA
    III. Removal of nucleotides from 5' terminus in DNA
    IV. Joining of ends of DNA fragments
    1) I & IV are correct   2) II & IV are correct
    3) III & IV are correct   4) I, II & III are correct

128. Which of the following is not a component of mitochondrial electron transport?

1) Ubiquinone   2) Cytochrome b_6 3) Cytochrome c   4) Cytochrome a_3

129. Which of the following is caused due to proteinaceous infectious agent?
   1) Potato spindle tuber disease   2) Anthrax
   3) Cr-Jacob disease   4) Mosaic disease

130. The bonding of two amino acid molecules to form a larger molecule requires
   1) The release of a water molecule
   2) The release of a carbon dioxide molecule
   3) The addition of a nitrogen atom
   4) The addition of a water molecule

131. When hydrogen ions are pumped out of the mitochondrial matrix, across the inner mitochondrial membrane, and into the space between the inner and outer membranes, the result is
   1) Damage to the mitochondrion
   2) The reduction of NAD
   3) The restoration of the $Na^+ - K^+$ balance across the membrane
   4) The creation of a proton gradient

132. Match the following

I)	Bt cotton	1)	Improved shelf life
II)	Flavr Savr tomato	2)	Improved nutritional quality
III)	Roundup ready soyabean	3)	Pest resistance
IV)	Golden yellow rice	4)	Herbicide tolerance

   1) I – 4, II – 2, III – 1, IV – 3
   2) I – 3, II – 1, III – 4, IV – 2
   3) I – 4, II – 2, III – 3, IV – 1
   4) I – 3, II – 2, III – 1, IV – 4

133. The function of water in photosynthesis is to
   1) Combine with CO_2
   2) Absorb light energy
   3) Supply electrons in the light –dependent reactions
   4) Transport H^+ ions in the light – independent (dark) reactions

134. If a segment of DNA is $5' - TACGATTAG - 3'$, the RNA that results from the transcription of this segment will be
   1) $3' - TACGATTAU - 5'$ 2) $3' - ATGCTAATA - 5'$
   3) $3' - UACGAUUAG - 5'$ 4) $3' - AUGCUAAUC - 5'$

135. Electron acceptor during glycolysis
   1) FAD   2) FMN   3) $NADH_2$ 4) NAD

SECTION-B

136. Zeatin is a naturally occurring
   1) Cytokinin   2) Gibberellin   3) Auxin   4) Abscisic acid

137. Which of the following RNA serves as adapter molecule during protein synthesis ?
   1) rRNA   2) mRNA   3) tRNA   4) hnRNA

138. List I consists of some terms and List II includes their corresponding definitions. Select the code showing correct matching.

	List – I(Terms)		List – II(Definitions)
I)	Photoxidation	1)	Influence of duration of day and night on flowering of plants
II)	Photoperiodism	2)	Splitting of water molecule by light
III)	Photolysis	3)	Damage of cells under high intensity of light
IV)	Photorespiration	4)	Respiration in chloroplasts during day time

1) I – 4, II – 3, III – 4, IV – 2
2) I – 3, II – 4, III – 3, IV – 1
3) I – 2, II – 1, III – 4, IV – 3
4) I – 3, II – 1, III – 2, IV – 4

139. List I consists of some terms and List II includes their corresponding definitions. Select the code showing correct matching.

	List – I(Terms)		List – II(Definitions)
I)	Photoxidation	1)	Influence of duration of day and night on flowering of plants
II)	Photoperiodism	2)	Splitting of water molecule by light
III)	Photolysis	3)	Damage of cells under high intensity of light
IV)	Photorespiration	4)	Respiration in chloroplasts during day time

1) I – 1, II – 2, III – 3, IV – 4
2) I – 2, II – 1, III – 4, IV – 3
3) I – 3, II – 4, III – 2, IV – 1
4) I – 4, II – 1, III – 2, IV – 3

140. In lac operon, the gene which encodes the repressor protein is
1) 'z' 2) 'a' 3) 'o' 4) 'i'

141. The following statements have been proposed for plant vegetative development:
A) Lateral roots develop from epidermal cells
B) Axillary meristem develops from shoot apical meristem during differentiation of leaf primordia
C) Root cap is made up of dead cells
D) Lateral meristems and cylindrical meristems found in roots and shoots results in secondary growth
Which of the above statements are true?
1) (A) and (B) 2) (B) and (D) 3) (A), (B) and (D) 4) (C) and (D)

142. During reproductive development in plants
A) Male and female gamete are produced as a result of two mitotic divisions after meiosis
B) Generative cell form two male gametes

C) Antipodals are persistent and provide nourishment to developing embryo

D) Pollen tube ruptures and releases both the male gametes in one of the degenerating synergid.
Which of the above statements are true?

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

133. Which of the following is a process of formation of seeds without fertilization ?

1) Apomixis   2) Parthenocarpy   3) Parthenospory   4) Both 1 & 2

144. Which one of the following enzyme combinations yields protoplasts satisfactorily?

1) Ligninase – cellulase – lipase

2) Cellulase – lipase – hemicellulase

3) Cellulase – hemicelulase – chitinase

4) Pectinase – cellulase – hemicellulase

145. Who for the first time experimentally demonstrated that only DNA of the bacteriophage enters the host cell and not the phage protein?

1) Beadle and Tatum   2) Jacob and Monad   3) Luria and Delbruck   4) Hershey and Chase

146. During sewage treatment when the BOD is reduced significantly, the effluent is passed to the

1) Large aeration tank to form flocs

2) Primary settling tank to remove primary sludge

3) Secondary settling tank to sediment the flocs

4) Anaerobic sludge digester

147. Secondary metabolites Abrin and Ricin are

1) Alkaloids   2) Drugs   3) Lectins   4) Toxins

148. How many statements are correct w.r.t. ecological succession?

1) Climax community is most stable & shows more niche specialisation.

2) Lichen and fungi are examples of climax communities

3) Hydarch succession leads to mesic condition.

4) Xerarch succession leads to very wet condition.

1) Four   2) Three   3) Two   4) One

149. The reaction,

$$\begin{array}{c} X \quad\quad Y \\ | \quad\quad | \\ C \text{——} C \end{array} \longrightarrow X - Y + C = C \text{ is catalysed by a/an}$$

1) Transferase   2) Hydrolase   3) Lyase   4) Isomerase

150. Proteins coded by cry IAb control

1) Corn borer   2) Cotton bollworm   3) Meloidogyne incognita   4) Bacillus thuringiensis

PART-4 : ZOOLOGY : SECTION-A

151. Which of the following feature is shared by cnidarians and ctenophores?

1) Cnidocytes   2) Comb plates   3) Radial symmetry   4) Metagenesis

152. Which of the following characteristic feature always holds true for the corresponding phylum?

1) Platyhelminthes   Incomplete gut

2) Annelida   Parapodia

3) Echinodermata   Water vascular system

4) Mollusca   External shell

153. Which of the following feature is not present in the phylum Chordata?

1) Post anal tail   2) Pharyngeal gill slits
3) Dorsal hollow nerve chord   4) Calcareous ossicles

154. Which type of tissue correctly matches with its location?

| Tissue	Location
1) Skeletal muscle	Blood vessels
2) Dense connective tissue	Tendons
3) Compound epithelium	Lining of stomach
4) Simple epithelium	Dry surface of skin

155. Which of the following feature is not present in *Periplaneta americana*
1) Hypognathous head 2) Myogenic heart 3) Muscular gizzard   4) Supra oesophageal ganglia

156. Which of the following guards the opening of stomach into the duodenum?
1) Sphincter of oddi   2) Cardiac sphincter 3) Sphincter of Boyden 4) Pyloric sphincter

157. In the stomach, the factor essential for the absorption of vitamin B_{12} is secreted by the
1) Oxyntic cells   2) Chief cells   3) Goblet cells   4) Peptic cells

158. The delivary of oxygen to tissue depends on all except
1) Haemoglobin amount   2) Cardiac output
3) Ventilation rate   4) Partial pressure of nitrogen

159. Volume of air that will remain in the lungs after a normal expiration is represented as
1) VC = TV + IRV + ERV   2) FRC = ERV + RV
3) IC = TV + IRV   4) TLC = VC + RV

160. Difficulty in breathing causing wheezing due to inflammation of bronchi and bronchioles is the symptom of
1) Asthma   2) Emphysema   3) Pneumonia   4) Asbestosis

161. In mammals, which blood vessel would normally carry richest amount of nutrients
1) Hepatic vein   2) Hepatic artery   3) Hepatic portal vein   4) Dorsal aorta

162. Maximum amount of blood transferred from atria to ventricles in a cardiac cycle is during
1) Atrial systole   2) Joint diastole   3) Ventricular systole   4) Joint systole

163. The macula densa cells are modified tubular epithelial cells of
1) DCT   2) PCT   3) Loop of Henle   4) Collecting duct

164. Several hormones regulate the tubular reabsorption of water and electrolytes at different sites in the nephron. Which of the following combination is correct?
1) ADH in PCT   2) Aldosterone in DCT
3) ANP in loop of Henle   4) PTH in Bowman's capsule

165. Which of the following component is absent in visceral muscles?
1) Myosin   2) Actin   3) Sarcosome   4) Sarcomere

166. Most diffusible ion when the axonal membrane of a neuron is at rest is
1) Na^+ 2) Mg^{++} 3) K^+ 4) Cl^-

167. The visible coloured portion of the human eye is involved in the regulation of
1) Lacrimal secretion   2) Diameter of pupil
3) Size of the lens   4) Movement of eye ball

168. Which of the following hormone is an amino acid derivative?
1) Epinephrine   2) Prolactin   3) Progesterone   4) Thyrocalcitonin

169. Which of the following pair of hormones are antagonistic to each other in their actions?

1) Adrenaline-Noradrenaline   2) Vasopressin-Aldosterone
3) Insulin-Glucagon   4) Thyrotropin-Thyroxine

170. Spermatogenesis starts at the age of puberty due to significant increase in secretion of
    1) GHRH   2) hCG   3) GnIH   4) GnRH

171. Ovulation in a women with 28-day menstrual cycle occurs at
    1) 14 days prior to menstruation   2) Just after corpus luteum formation
    3) Just before LH surge   4) 14 days prior to beginning of secretory phase

172. Seminal plasma in human males is rich in
    1) Glucose and Potassium   2) Maltose and Zinc
    3) Fructose and Calcium   4) Sucrose and Sodium

173. Which of the following is a finger-like structure and lies at the upper junction of two labia minora above urethral opening?
    1) Mons pubis   2) Clitoris   3) Hymen   4) Fourchette

174. Find the correct pair regarding contraceptive method and its action

1) Tubectomy	Prevent Ovulation
2) Contraceptive pill	Retard entry of sperms
3) Condoms	Prevent menstruation
4) Coitus interruptus	Prevent spermatogenesis

175. The test tube baby program employs which one of the following techniques?
    1) AI (IVI)   2) IUI   3) GIFT   4) ZIFT

176. According to Oparin, which one of the following was not present in the primitive atmosphere
    1) Ammonia   2) Oxygen   3) Methane   4) Hydrogen

177. Diversity in the type of beaks of finches adapted to different feeding habits on the Galapagos islands provides evidence for
    1) Panspermia   2) Special creation   3) Natural selection   4) Spontaneous generation

178. Which of the following statement is wrong regarding the eye of octopus and of mammals?
    1) They are result of convergent evolution   2) They indicate different ancestry
    3) They are analogous structures   4) They are anatomically similar

179. Which of the following sets of protozoans causes diseases in humans
    1) *Entamoeba histolytica* and *Plasmodium vivax*
    2) *Salmonella typhi* and *Streptococcus pneumoniae*
    3) *Ascaris lumbricoides* and *Wuchereria malayi*
    4) *Trichophyton* and *Epidermophyton*

180. The injection of preformed antibodies against snake venom is a type of
    1) Active immunity   2) Innate immunity   3) Passive immunity   4) Auto immunity

181. What is the name of chemical structure given below and its effect
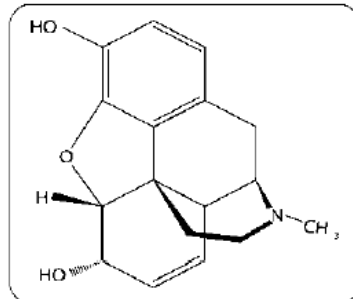
1) Hashish – Potent hallucinogen   2) Morphine – Effective sedative
3) Cocaine – Potent stimulant   4) Benzodiazepine-Effective anxiolytic

182. Hisardale is a new variety of sheep developed in Punjab by
1) Mating of individuals of different species
2) Mating of related individuals of same breed
3) Mating of unrelated individuals of same breed
4) Mating of individuals of different breeds

183. Find the odd one out in terms of molecular diagnosis
1) Recombinant DNA technology   2) Electrocardiography
3) Enzyme Linked Immune Sorbent Assay   4) Polymerase Chain Reaction

184. Predict from the following chart
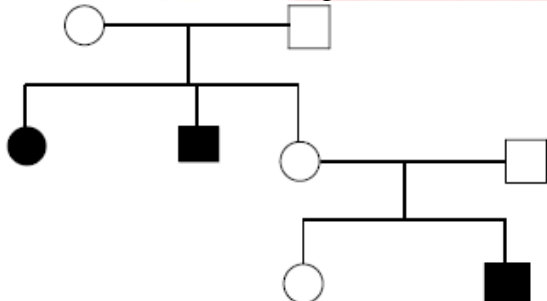
1) Character is X-linked dominant   2) Character is autosomal dominant
3) Character is X-linked recessive   4) Character is autosomal recessive

185. Male is homogametic in
1) *Homosapiens*   2) *Neophron*   3) *Periplaneta*   4) *Drosophila*

SECTION-B

186. Match the Column-I with Column-II and choose the correct answer

| Column-I	Column-II
A) Pacific salmon	i) Produces a small number of large sized offspring
B) Mammals	ii) Produces a large number of small sized offspring
C) Oysters	iii) Breed only once in their life time
D) Birds	iv) Breed many times during their life time

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

187. Which of the following is the example of the interaction confers benefits on both the interacting species

1) Sea anemone & Clown fish   2) Cuscuta & Hedge plant
3) Orchid & Bumblebees   4) Balanus & Cathamalus

188. Choose the incorrect match from given population growth curve
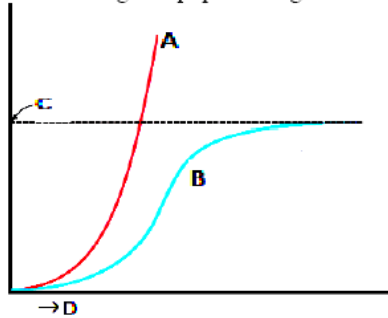
1) A is exponential growth   2) B is logistic growth
3) C is carrying capacity   4) D is population density

189. Which of the following given ecological pyramid is not upright
1) Pyramid of number in Grass land   2) Pyramid of energy in Forest
3) Pyramid of Biomass in an ocean   4) Pyramid of number in a pond

190. All of the given organisms are primary consumers except
1) Frog   2) Cow   3) Zoo plankton   4) Goat

191. Who among the following found that, plots with more species showed less year-to-year variation in total biomass?
1) Paul Ehrlich   2) David Tilman   3) Edward Wilson   4) Robert May

192. "In recent years ex situ conservation has advanced beyond keeping threatened species in enclosures", which of the following option justify the above statement?
1) Zoological Park   2) Cryopreservation
3) National Parks   4) Wildlife Safari Park

193. Montreal protocol was signed at Montreal (Canada) to control the emission of ozone depleting substances in the year
1) 1981   2) 1997   3) 1974   4) 1987

194. Match the items given in Column-I with those in Column-II and select the correct option given below
A) DDT accumulation   i) Premature breaking of eggs
B) UV-B   ii) Snow blindness
C) Algal bloom   iii) Deterioration of the water quality
D) Deforestation   iv) Soil erosion
1) A-i, B-iv, C-ii, D-iii   2) A-iv, B-iii, C-i, D-ii
3) A-i, B-ii, C-iii, D-iv   4) A-iii, B-i, C-iv, D-ii

195. Natural ageing of a lake by nutrient enrichment of its water is called
1) Biomagnification   2) Eutrophication
3) Biodegradation   4) Denitrification

196. False statement about Periplaneta americana is
1) Paurometabolous development   2) Deuterostome with enterocoely
3) It has mosaic vision during night with more sensitivity but less resolution
4) It has biting type of mouth parts as mandibles are present with both incising and grinding regions

197. False statement about Amphioxus is that

1) It is exclusively marine

2) It is a cephalochordate, notochord extends from head to tail, persistent throughout life

3) Protonephridia or flame cells are its excretory structures

4) Central nervous system is ventral, solid and double

198. Presence of the following factors will cause deviation in the gene frequencies as predicted by Hardy Weinberg equilibrium, except

1) Mutation   2) Genetic drift   3) Selective mating   4) Random mating

199. Which of the following epithelium covers the dry surface of the skin, moist surface of the buccal cavity, pharynx, lining of the ducts of salivary glands and pancreatic ducts?

1) Non-keratinised stratified squamous   2) Ciliated epithelium

3) Compound epithelium   4) Cuboidal epithelium

200. All are edible marine fishes, except

1) Common carp   2) Hilsa   3) Sardines and Mackerel   4) Pomfret