SATISH SCIENCE ACADEMY
DHANORI PUNE - 411015

NEET PAPER 1
ENTRANCE EXAM - NEET-UG

Time Allowed: 3 hours and 20 minutes

Maximum Marks : 720

General Instructions:
- The test is of 3 hours and 20 minutes and it contains 200 questions. Internal choice is given within the sections.
- For each correct response, the candidate will get 4 marks.
- For each incorrect response, one mark will be deducted from the total scores.
- The maximum marks are 720.

PHYSICS (Section-A)

1) Given that M is the mass suspended from a spring of force constant K. The dimension of the formula for $(M/K)^{\frac{1}{2}}$ is same as that for: **[4]**
   a) Wavelength
   b) Time period
   c) Frequency
   d) Velocity

2) Which of the following is the smallest unit? **[4]**
   a) Angstrom
   b) Fermi
   c) Millimetre
   d) Metre

3) On a foggy day, two drivers spot each other when 80 m apart. They were travelling at 70 km/h and 60 km/h. Both apply brakes simultaneously which retard the cars at the rate of 5 ms^{-2} . Which of the following statements is correct? **[4]**

   a) They will cross each other.
   b) The collision will take place.
   c) They will just collide.
   d) The collision will be averted.

4) The speed of a boat is 5 km/h in still water. It crosses a river of width 1.0 km along the shortest path in 15 minutes. The velocity (in km/h) of the river water is: **[4]**
   a) 1
   b) 5
   c) 4
   d) 3

5) A mosquito is moving with a velocity $\vec{v} = 0.5t^2\hat{i} + 3t\hat{j} + 9\hat{k}$ m/s and accelerating in uniform conditions. What will be the direction of mosquito after 2 s? **[4]**

   a) None of these
   b) Tan$^{-1}\left(\frac{2}{3}\right)$ from y - axis
   c) Tan$^{-1}\left(\frac{5}{2}\right)$ from x - axis
   d) Tan$^{-1}\left(\frac{5}{2}\right)$ from y - axis

6) The spring balance A reads 2.5 kg with a block m suspended from it. A balance B reads 12 kg when a beaker filled with liquid is put on the pan of the balance. The two balances are now so arranged that the hanging mass is inside the liquid as shown in the figure. In this situation,

[4]

   a) The balance B will read less than 5 kg
   b) The balances A and B will read 2.5 kg and 12 kg respectively
   c) The balance A will read more than 2.5 kg
   d) The balance A will read less than 2.5 kg and B will read more than 12 kg

7) A particle moves from a point$(-2\hat{i} + 5\hat{j})$ to $(4\hat{j} + 3\hat{k})$ when a force of $(4\hat{i} + 3\hat{j})$N is applied. How much work has been done by the force? **[4]**
   a) 11J
   b) 5J
   c) 8J
   d) 2J

8) A ball of mass m moves with speed v and strikes a wall having infinite mass and it returns with the same speed, then the work done by the ball on the wall is: **[4]**
   a) MvJ
   b) Zero
   c) $\left(\frac{v}{m}\right)$ J
   d) $\left(\frac{m}{v}\right)$ J

9) A particle with position vector$\vec{r}$ has a linear momentum p. Which of the following statements is true in respect of its angular momentum L about the origin? **[4]**

   a) L acts along r
   b) L is maximum when p and r are parallel
   c) L acts along p
   d) L is maximum when p is perpendicular to r

10) A disc is rotating with angular speedω . If a child sits on it, what is conserved **[4]**
    a) Kinetic energy
    b) Linear momentum
    c) Angular momentum
    d) Potential energy

11) If v_e is escape speed from the Earth and v_p is that from a planet of half the radius of Earth, then: **[4]**
    a) $V_e = \frac{v_P}{\sqrt{2}}$
    b) $V_e = 2v_p$
    c) $V_e = v_p$
    d) $V_e = \frac{v_p}{4}$

12) If there were a smaller gravitational effect, which of the following forces do you think would alter in some respect? **[4]**
    a) Electrostatic forces
    b) Viscous forces
    c) Archimedes' uplift
    d) Nuclear forces

13) If the temperature difference on the two sides of a wall increases from 100°C to 200°C, its thermal conductivity: **[4]**
    a) Is halved
    b) Is doubled
    c) Remains unchanged
    d) Becomes four times

14) Two rods of lengths L_1 and L_2 are made of materials whose coefficients of linear expansion are α_1 and α_2 . If the difference between the two lengths is independent of temperature: **[4]**

    a) $\alpha_1^2 L_1 = \alpha_2^2 L_2$

b) $L_1^2\alpha_1 = L_2^2\alpha_2$

c) $\left(\frac{L_1}{L_2}\right) = \left(\frac{\alpha_2}{\alpha_1}\right)$

d) $\left(\frac{L_1}{L_2}\right) = \left(\frac{\alpha_1}{\alpha_2}\right)$

15) A thermally insulated vessel contains an ideal gas of molecular mass M and ratio of specific heats γ . It is moving with speed v and is suddenly brought to rest. Assuming no heat is lost to the surroundings, its temperature increases by: **[4]**

a) $\frac{(\gamma - 1)}{2\gamma R}Mv^2$K

b) $\frac{(\gamma, - 1)}{2R}Mv^2$K

c) $\frac{\gamma Mv^2}{2R}$K

d) $\frac{(\gamma - 1)}{2(\gamma + 1)R}Mv^2K$

16) The r.m.s. speed of the molecules of an enclosed gas is V. What will be the r.m.s. speed, if the pressure is doubled, keeping the temperature constant? **[4]**

a) $\frac{V}{2}$
b) 4V
c) V
d) 2V

17) The length of the seconds pendulum is decreased by 0.3 cm when it is shifted to Chennai from London. If the acceleration due to gravity at London is 981 cm/sec^2, the acceleration due to gravity at Chennai is: (assume π^2 =10) **[4]**

a) 978 cm/sec^2
b) 984 cm/sec^2
c) 975 cm/sec^2
d) 981 cm/sec^2

18) A stretched string of length L, fixed at both ends, can sustain stationary waves of wavelength λ , given by: **[4]**

a) $\lambda = \frac{2L}{n}$

b) $\lambda = \frac{l^2}{2n}$

c) $\lambda = 2ln$

d) $\lambda = \frac{n^2}{2l}$

19) The equation of a plane progressive wave is:
y = 0.09 sin $8\pi\left(t - \frac{x}{20}\right)$
When it is reflected at rigid support, its amplitude becomes $\left(\frac{2}{3}\right)$rd of its previous value. The equation of the reflected wave is: **[4]**

a) Y = 0.06 sin$8\pi\left(t - \frac{x}{20}\right)$

b) Y = 0.06 sin$8\pi\left(t + \frac{x}{20}\right)$

c) Y = 0.09 sin$8\pi\left(t - \frac{x}{20}\right)$

d) Y = - 0.06 sin$8\pi\left(t + \frac{x}{20}\right)$

20) Six charges, three positve and three negative of equal magnitude are to be placed at the vertices of a regular hexagon such that the electric field when only one positive charge of same magnitude is placed at R. Which of the following arrangements of charge is possible for P, Q, R, S, T and U respectively?

[4]

a) +, +, - , + , - , -
b) +, - , +, - , +, -
c) +, - ,+, - , - ,+
d) - ,+, +, - , +, -

21) A, B and C are three points in a uniform electric field. The electric potential is:

[4]

a) Same at all the three points A, B and C
b) Maximum at C
c) Maximum at A
d) Maximum at B

22) Five identical lamps, each of resistance 1100 ohm are connected to 220 volt as shown in the following figure. The reading of an ideal ammeter A is:

[4]

a) $\frac{220}{1100} \times 3$amp

b) $\frac{220}{1100} \times 5$ amp

c) $\frac{220}{1100} \times 2$ amp

d) $\frac{220}{1100} \times 1$amp

23) Select the correct statement among the following?
   i. A magnetic field can accelerate a charged particle.
   ii. A magnetic field can not accelerate a charged particle.
   iii. A magnetic field can increase the speed of a charged particle.
   iv. A magnetic field can not change the velocity of a charged particle.

[4]

a) Iv
b) I
c) Ii
d) Iii

24) A magnet is suspended at an angle 60° to an external magnetic field of 5×10^{-4} T. What is the work done by the magnetic field in bringing it in its direction? The magnetic dipole moment of the magnet is 20 amp $\times$ metre^2. **[4]**

a) 5×10^{-5} J
b) $- 5\times 10^{-3}$ J
c) $- 5\times 10^{-5}$ J
d) 5×10^{-3} J

25) Magnetic materials used for making permanent magnets (P) and magnets in a transformer (T) have different properties of the following, which property best matches for the type of magnet required? **[4]**

a) P : Large retentivity, large coercivity
b) T : Large retentivity, small coercivity
c) T : Large retentivity, large coercivity
d) P : Small retentivity, large coercivity

26) A coil is placed in magnetic field such that plane of coil is perpendicular to the direction of magnetic field. The magnetic flux through a coil can be changed:
   i. By changing the magnitude of the magnetic field within the coil
   ii. By changing the area of coil within the magnetic field
   iii. By changing the angle between the direction of magnetic field and the plane of the coil
   iv. By reversing the magnetic field direction abruptly without changing its magnitude.

[4]

a) A, Band C only
b) A and C only
c) A and B only
d) A, B and D only

27) An emf is induced if a coil rotates between the two poles of the magnet. The device working on this principle is known as: **[4]**

a) Meter
b) Conductor
c) Transformer
d) Generator

28) The phase difference between the current and voltage of LCR circuit in series combination at resonance is: **[4]**

a) π
b) $\frac{\pi}{2}$
c) 0°
d) $\frac{\pi}{2}$

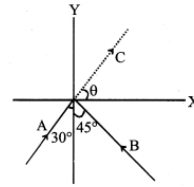29) The energy contained in a small volume through which an electromagnetic wave is passing oscillates with: **[4]**

a) Zero frequency
b) The frequency of the wave
c) Double of the frequency of wave
d) Half of the frequency of the wave

30) In a terrestrial telescope, the focal length of erecting lens is 2 cm. The length of the telescope is 96 cm. If the magnifying power of the telescope is 10, then the focal lengths of eye - piece and objective are respectively: **[4]**

   a) 5 cm, 100 cm
   b) 6 cm, 90 cm
   c) 8 cm, 80 cm
   d) $\frac{96}{11}$ cm, $\frac{960}{11}$ cm

31) In a biprism experiment, by using light of wavelength 5000Å , 5 mm wide fringes are obtained on a screen 1.0 m away from the coherent sources. The separation between the two coherent sources is: **[4]**
   a) 0.05 mm
   b) 1.0 mm
   c) 0.01 mm
   d) 0.1 mm

32) In a photoelectric experiment photons of energy 4.8 eV are incident on a metal surface. They liberate electrons that are just stopped by an electrode at a potential of - 3.3 volt with respect to the metal. The work function of the metal surface (in electron volt) is: **[4]**
   a) 4.8
   b) 3.3
   c) 1.5
   d) 8.1

33) Light of wavelength 0.6μ m from a sodium lamp falls on a photocell and causes the emission of photoelectrons for which the stopping potential is 0.5 volt. With light of wavelength 0.40 μ m from a mercury vapour lamp the stopping potential is 1.5 volt; then the value of (h/e) is: **[4]**
   a) 4×10^{-15} V - s
   b) 0.25×10^{15} V - s
   c) 4×10^{-59} V - s
   d) 4×10^{-8} V - s

34) The ratio of the speed of the electron in the first Bohr orbit of hydrogen and the speed of light is equal to (where e, h and c have their usual meanings): **[4]**

   a) $\frac{e^2}{2\varepsilon_0 hc}$
   b) $\frac{e^2 h}{2\pi c}$
   c) $\frac{2\pi hc}{e^2}$
   d) $\frac{e^2 c}{2\pi h}$

35) Given the masses of various atomic particles m_p = 1.0072 u, m_n= 1.0087u, m_e= 0.000548u, $m_{\bar{v}}$ = 0, m_d = 2.0141 u, where p = proton, n = neutron, e = electron, v = antineutrino and d $\equiv$ deuteron. Which of the following process is allowed by momentum and energy conservation? **[4]**

   a) N + p$\to$ d + γ
   b) E$^+$ + e $\to$ γ
   c) P$\to$ n + e$^+$ + $\bar{v}$
   d) N + n$\to$ deuterium atom (electron bound to the nucleus)

PHYSICS (Section-B)

Attempt any 10 questions

36) Two particles A and B of equal mass M are moving with the same speed v as shown in the figure. They collide completely inelastically and move as a single particle C. The angle θ that the path of C makes with the X - axis is given by:

[4]

   a) $\tan\theta = \frac{\sqrt{3}-\sqrt{2}}{1-\sqrt{2}}$
   b) $\tan\theta = \frac{\sqrt{3}+\sqrt{2}}{1-\sqrt{2}}$
   c) $\tan\theta = \frac{1-\sqrt{3}}{1+\sqrt{2}}$
   d) $\tan\theta = \frac{1-\sqrt{2}}{\sqrt{2}(1+\sqrt{3})}$

37) Moment of inertia of a hollow cylinder of mass M and radius r about its own axis is: **[4]**
   a) $\frac{2}{3}$ Mr^2
   b) $\frac{1}{3}$ Mr^2
   c) $\frac{2}{5}$ Mr^2
   d) Mr^2

38) The mass density of a planet of radius R varies with the distance r from its centre as $\rho(r) = \rho_0\left(1 - \frac{r^2}{R^2}\right)$. Then the gravitational field is maximum at: **[4]**

   a) $r = \sqrt{\frac{5}{9}}R$
   b) $r = \frac{1}{\sqrt{3}}R$
   c) $r = \sqrt{\frac{3}{4}}R$
   d) R = R

39) Steam is passed through the water contained in a beaker. The water can boil when the steam is at: **[4]**

   a) Any pressure
   b) Pressure lower than the atmosphere
   c) Atmospheric pressure
   d) Pressure higher than the atmosphere

40) Oxygen is 16 times heavier than hydrogen. The equal volumes of hydrogen and oxygen are mixed. The ratio of the speed of sound in the mixture to that in hydrogen is: **[4]**
   a) $\sqrt{\frac{1}{8}}$
   b) $\sqrt{\frac{2}{17}}$
   c) $\sqrt{\frac{32}{17}}$
   d) $\sqrt{8}$

41) There are two organ pipes of exactly the same length and material but of different radii. The loss of sound will be: **[4]**

   a) More from a narrower pipe
   b) Same for both pipes
   c) More from a wider pipe
   d) Different for both pipes

42) A single current carrying loop of wire carrying current I flowing n anticlockwise direction seen from +ve z direction and lying in xy plane in shown in figure. The plot of $\hat{j}$ component of magnetic field (By)at a distance 'a' (less than radius of the coil) and on yz plans vs z coordinate look like

[4]

   a)

b)

c)

d)
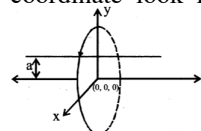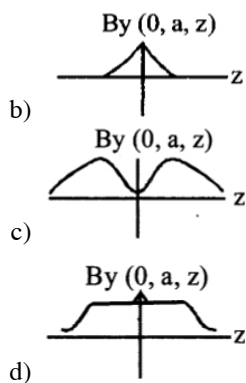
43) A toroid of n turns, mean radius R and cross - sectional radius a carries current I. It is placed on a horizontal table taken in x - y plane. Its magnetic moment $\vec{M}$: **[4]**

   a) Is zero, otherwise there would be a field falling as $\left(\frac{1}{r^3}\right)$ at large distances outside the toroid.
   b) Points along the axis of the toroid $(\vec{M} = M\hat{\phi})$
   c) Is pointing radially outwards
   d) Is non - zero and points in the z - direction by symmetry

44) A square coil of side 25 cm having 1000 turns is rotated with a uniform speed in a magnetic field about an axis perpendicular to the direction of the field. At an instant t, the emf induced in the coil is e = 200 sin 100π t. The magnetic induction is: **[4]**
   a) 0.02 T
   b) 10^{-3} T
   c) 0.1 T
   d) 0.50 T

45) For an LCR circuit, the power transferred from the driving source to the driven oscillator is P = I^2 Z cos ϕ . Then: **[4]**

   a) All of these
   b) The driving source can give no energy to the oscillator (P = 0) in some cases
   c) The driving source can not syphon out (P < 0) the energy out of the oscillator
   d) The power factor cos$\phi \geq$ 0, P $\geq$ 0

46) A ray incident at a point at an angle of incidence of 60° enters a glass sphere of R.I. n =$\sqrt{3}$ and is reflected and refracted at the farther surface of the sphere. The angle between the reflected and refracted rays at this surface is: **[4]**
   a) 60°
   b) 40°
   c) 90°
   d) 50°

47) A light ray from the air is incident (as shown in the figure) at one end of glass fiber (refractive index,μ = 1.5) making an incidence angle of 60° on the lateral surface so that it undergoes a total internal reflection. How much time would it take to traverse the straight fiber of length 1 km?
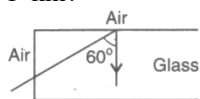
[4]
   a) 3.85μ s
   b) 5.77μ s
   c) 3.33μ s
   d) 6.67μ s

48) The wavelength of a photon needed to remove a proton from a nucleus which is bound to the nucleus with 1 MeV energy is nearly: **[4]**
   a) 1.2×10^1 nm
   b) 1.2×10^{-3} nm
   c) 1.2 nm
   d) 1.2×10^{-6} nm

49) The solar spectrum shows dark lines superposed over a continuous spectrum. These dark lines are due to: **[4]**

   a) Scattering of dust particles in the earth's atmosphere
   b) Absorption by atoms of different elements present in the solar atmosphere
   c) Absorption by water vapours
   d) Emission of light by the sun

50) When a microgram of matter is converted to energy, the amount of energy released will be: **[4]**
   a) 9×10^7 J
   b) 9×10^{10} J
   c) 3×10^4 J
   d) 9×10^{17} J

CHEMISTRY (Section-A)

51) What is the number of significant figures in calculated value of mass of 3.00 moles of electrons? [Mass of one mole of electrons = 54.9×10^{-8} kg]**[4]**
   a) Five
   b) Seven
   c) Three
   d) Eight

52) Number of radial nodes present in 4d and 5f orbitals respectively are _____. **[4]**
   a) 4, 5
   b) 1, 4
   c) 1, 1
   d) 2, 3

53) With respect to oxygen maximum oxidation state is shown by: **[4]**
   a) Nitrogen family
   b) Boron family
   c) Oxygen family
   d) Halogen family

54) Most predominantly electrovalent compounds are obtained by the combination of atoms in groups _____. **[4]**
   a) 1 and 2
   b) 1 and 14
   c) 14 and 15
   d) 1 and 17

55) Certain combinations of cations and anions lead to the formation of coloured salts in solid state even though each of these ions with other counter ions may produce colourless salts. This phenomenon is due to a temporary charge transfer between the two ions. Out of the following, the salt that can exhibit this behaviour is: **[4]**
   a) $SnCl_4$
   b) SnI_4
   c) $SnBr_2$
   d) $SnCl_2$

56) Find the molecule having least dipole - moment: **[4]**
   a) CCl_4
   b) CH_2Cl_2
   c) CH_3Cl
   d) $CHCl_3$

57) If saturated vapours are compressed slowly (temperature remains constant) to half the initial volume, their pressure will: **[4]**
   a) Become double
   b) Become four time
   c) Becomes half
   d) Remain unchanged

58) The pH of 0.01 M solution of sodium salt of a substituted benzoic acid at 25°C is: (K_a = 1.0 $\times$ 10^{-4} at 25°C) **[4]**
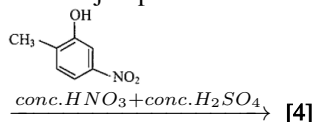   a) 6
   b) 8
   c) 12
   d) 10

59) Which is not correct in case of Mohr's salt?
   i. It decolourises $KMnO_4$
   ii. It is primary standard
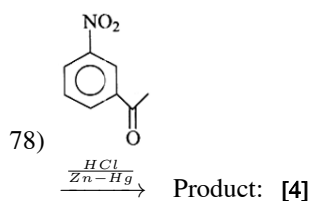   iii. It is a double salt
   iv. Oxidation state of Fe is + 3 in the salt
   [4]
   a) Only iv
   b) Iii and iv
   c) I and ii
   d) Ii and iii

60) $4I^- + Hg^{2+} \longrightarrow HgI_4^{2-}$, 1 mole each of Hg^{2+} and I⁻ will form HgI_4^{2-} : [4]
   a) 2 mol
   b) 1 mol
   c) 0.25 mol
   d) 0.5 mol

61) Which of the following is a set of greenhouse gases? [4]
   a) CO_2, CH_4, N_2O, O_3
   b) O_3, N_2, CO_2, NO_2
   c) O_3, NO_2, SO_2, Cl_2
   d) CH_4, O_3, N_2, SO_2

62) Which one of the following elements is unable to form MF_6^{3-} ion? [4]
   a) Al
   b) In
   c) B
   d) Ga

63) Point out the incorrect statement about resonance. [4]

   a) In resonance structures, the constituent atom should be in the same position.
   b) Resonance structures should differ only in the location of electrons around the constituent atoms.
   c) Resonance structure should have equal energy.
   d) In resonance structure there should be the same number of electron pairs.

64) Cyclic hydrocarbon **A** has all the carbon and hydrogen atoms in a single plane. All the carbon - carbon bonds have the same length less than 1.54 $\overset{o}{A}$ but more than 1.34 $\overset{o}{A}$. The C - C - C bond angle will be: [4]
   a) 120°
   b) 180°
   c) 100°
   d) 109°28'

65) Which of the following is correct?

[4]

   a) No reaction

   b)

   c)

   d)

66) The vapour pressure of acetone at 20°C is 185 torr. When 1.2 g of a non - volatile substance was dissolved in 100 g of acetone at 20°C, its vapour pressure was 183 torr. The molar mass (g mol⁻¹) of the substance is: [4]
   a) 488
   b) 128
   c) 64
   d) 32

67) On dissolving sugar in water at room temperature solution feels cool to touch. Under which of the following cases dissolution sugar will be most rapid? [4]

   a) Sugar crystals in cold water
   b) Powdered sugar in cold water
   c) Powdered sugar in hot water
   d) Sugar crystals in hot water

68) Which is incorrect for an electrolytic cell? [4]

   a) Direct current from external source is used.
   b) The positive electrode is anode.
   c) The spontaneous reaction takes place and this generates electricity.
   d) Converts electrical energy to chemical energy.

69) Consider the given plots for a reaction obeying Arrhenius equation (0°C < T< 300°C) : (k and E_a are rate constant and activation energy, espectively)

   Choose the correct option. [4]

   a) I is wrong but II is right
   b) Both I and II are correct
   c) I is right but II is wrong
   d) Both I and II are wrong

70) Which of the following is an example of a pseudo - first - order reaction? [4]

   a) Hydrolysis of ester
   b) Thermal decomposition of hydrogen iodide on gold surface
   c) Hydrogenation of ethane on nickel surface
   d) Decomposition of nitrogen pentoxide

71) Select the **correct** order of oxidising power in acidic medium. [4]

   a) $VO_2^+ < MnO_4^- < Cr_2O_7^{2-}$
   b) $MnO_4^- < Cr_2O_7^{2-} < VO_2^+$
   c) $Cr_2O_7^{2-} < VO_2^+ < MnO_4^-$
   d) $VO_2^+ < Cr_2O_7^{2-} < MnO_4^-$

72) Which of the following properties increases on going down in group 17 elements? [4]

   a) Atomic radius
   b) Electron gain enthalpy
   c) Ionisation enthalpy
   d) Electronegativity

73) Four successive members of the first row transition elements are listed below with their atomic numbers. Which one of them is expected to have the highest third ionisation enthalpy? [4]
   a) Manganese (Z = 25)
   b) Vanadium (Z = 23)
   c) Chromium (Z = 24)
   d) Iron (Z = 26)

74) Which of the following molecule or ions is a bidentate ligand? [4]
   a) CH_3NH_2
   b) $C_2O_4^{2-}$
   c) $CH_3 - C = N$
   d) Br_2^+

75) The spin only magnetic moment value (in Bohr magneton units) of $Cr(CO)_6$ is: [4]
   a) 4.90
   b) 2.84
   c) 5.92
   d) 0

76) Chloroform is slowly oxidized by air in the presence of light to form _____. [4]
   a) Phosgene
   b) Tear gas
   c) Chloropicrin
   d) Freon

77) The major product of the following reaction is _____.

$$\xrightarrow{conc.HNO_3+conc.H_2SO_4}$$ [4]

a)

b)

c)

d)

78)

$$\xrightarrow[Zn-Hg]{HCl}$$ Product: [4]

a)

b)

c)

d)

79) Acetamide is treated separately with the following reagents. Which one of these give methylamine?
   i. PCl_5
   ii. Sodalime
   iii. $NaOH + Br_2$
   iv. Hot concentrated H_2SO_4
   [4]
   a) Only D   b) Only C
   c) Only B   d) Only A

80) Which of the following will not show mutarotation? [4]
   a) Glucose   b) Lactose
   c) Sucrose   d) Maltose

81) Glycosidic linkage is [4]
   a) An amine linkage   b) An ether linkage
   c) An ester linkage   d) An amide linkage

82) An aromatic compound 'A' having molecular formula $C_7H_6O_2$ on treating with aqueous ammonia and heating forms compound 'B'. The compound 'B' on reaction with molecular bromine and potassium hydroxide provides compound 'C' having molecular formula C_6H_7N. The structure of 'A' is [4]
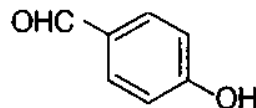
a)

b)

c)

d)

83) The limiting equivalent conductivity of H_2SO_4 is _____.
   $\lambda^{\circ}_{(H+)}$ = 349.6 S cm^2 mol^{-1}
   $\lambda^{o}_{(SO_4^{2-})}$ = 160 S cm^2 mol^{-1} [4]
   a) 510 S cm^2 eq^{-1} b) 430 S cm^2 eq^{-1}
   c) 43 S cm^2 eq^{-1} d) 127 S cm^2 eq^{-1}

84) The technique of gas chromatography is suitable for compounds which [4]

   a) Are soluble in water
   b) Vapourize without decomposition
   c) Are liquids
   d) Have very low boiling points

85) The number of electrons lost per formula unit of ammonium ferrous sulphate during titration with $KMnO_4$ is _____. [4]
   a) 3   b) 2
   c) 5   d) 1

CHEMISTRY (Section-B)

Attempt any 10 questions

86) Find the correct order of the given property from the following. [4]

   a) $K_2CO_3 > Na_2CO_3 > Li_2CO_3$; thermal stability order
   b) $BaO > BaF_2$; melting point order
   c) All of these
   d) $CaO > CaF_2$; extent of polarisation order

87) In $K_2Cr_2O_7$ titration, using the indicator diphenylamine, an intense blue color is obtained just after the equivalence point. In this process, $Cr_2O_7^{2-}$ oxidizes the indicator and itself undergoes reduction. How many electrons are needed when the following half - reaction is balanced?
   $Cr_2O_7^{2-} + H^+ + ?e^- \longrightarrow Cr^{3+} + H_2O$ [4]
   a) 4   b) 2
   c) 6   d) 3
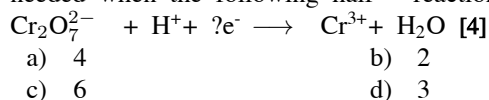
88) Which of the following is used for the absorption of CO? [4]

   a) Conc. H_2SO_4
   b) Conc. KOH
   c) Ammonical solution of CuCl
   d) Ammonical solution of $AgNO_3$

89) Which of the following have total 18 electrons and it is larger than Cl$^-$? [4]
   a) None of these   b) Ca^{2+}
   c) K^+ d) Br$^-$

90) Identify INCORRECT statement from the following: [4]

   a) All orbitals have directional characteristics.

b) Maximum number of electrons in an orbital is two.

c) All orbits have same shape.

d) An orbit represents the planar motion of an electron.

91) Which one of the following statements about the zeolites is false? **[4]**

   a) They are used as cation exchangers

   b) Some of the SiO_4^{-4} units are replaced by AlO_4^{-5} and AlO_6^{9-} ions in zeolites

   c) They have an open structure which enables them to take up small molecules

   d) Zeolites are aluminosilicates having three - dimensional network

92) The half - life period of a first - order reaction, A→ P is 6.93 h. The value of the rate constant is: **[4]**
   a) 0.1 h^{-1}
   b) 4.802 h^{-1}
   c) 10 h^{-1}
   d) 1.596 h^{-1}

93) The standard reduction potentials of Cu^{2+}/Cu and Cu^{2+}/Cu^+ are 0.337 and 0.153 V respectively. The standard electrode potential of Cu^+/Cu half cell is: **[4]**
   a) 0.827 V
   b) 0.521 V
   c) 0.490 V
   d) 0.184 V

94) Which one are correct about the temperature coefficient of emf? **[4]**

   a) $\left(\frac{\delta E}{\delta T}\right)_P = 0$ for weston cadmium cell
   b) All of these
   c) $\left(\frac{\delta E}{\delta T}\right)_P = \frac{\Delta S}{nF}$
   d) $\left(\frac{\delta E}{\delta T}\right)_P = \frac{(E_2 - E_1)}{(T_2 - T_1)}$

95) For the reaction, $2NO(g) + 2H_2(g) \rightarrow N_2(g) + 2H_2O(g)$ the rate expression can be written in the following ways:
   $\frac{d[N_2]}{dt} = K_1 [NO][H_2]$; $\frac{d[H_2O]}{dt} = K_2 [NO][H_2]$
   $-\frac{d[NO]}{dt} = K_3 [NO][H_2]$; $-\frac{d[H_2]}{dt} = K_4 [NO][H_2]$
   The relationship between K_1, K_2, K_3 and K_4 is: **[4]**
   a) $2K_1 = K_2 = K_3 = K_4$
   b) $K_1 = K_2 = K_3 = K_4$
   c) $K_1 = 2K_2 = K_3 = K_4$
   d) $K_1 = K_2 = K_3 = 2K_4$

96) It is possible to obtain oxygen from air by fractional distillation because: **[4]**

   a) Oxygen is in a different group of the periodic table from nitrogen
   b) Oxygen has a lower density than nitrogen
   c) Oxygen is more reactive than nitrogen
   d) Oxygen has higher b.p. than nitrogen

97) A colorless aqueous solution contains nitrates of two metals, X and Y. When it was added to an aqueous solution of NaCl, a white precipitate was formed. This precipitate was found to be partly soluble in hot water to give a residue P and a solution Q. The residue P was soluble in aq. NH_3 and also in excess sodium thiosulphate. The hot solution Q gave a yellow precipitate with KI. The metals X and Y, respectively, are **[4]**
   a) Cd and Pb
   b) Ag and Pb
   c) Ag and Cd
   d) Cd and Zn

98) Identify the **incorrect** statement among the following:
   i. D - block elements show irregular and erratic chemical properties among themselves.
   ii. La and Lu have partially filled d - orbitals and no other partially filled orbitals.
   iii. The chemistry of various lanthanoids is very similar.
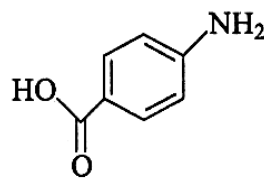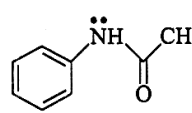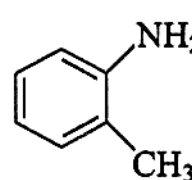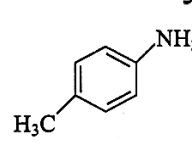   iv. 4f and 5f - orbitals are equally shielded.
   [4]

a) C
b) B
c) D
d) A

99) The species having tetrahedral shape is: **[4]**
   a) $[NiCl_4]^{2-}$
   b) $[Ni(CN)_4]^{2-}$
   c) $[Pd(CN)_4]^{2-}$
   d) $[PdCl_4]^{2-}$

100) Identify major product of following sequence of reaction : **[4]**
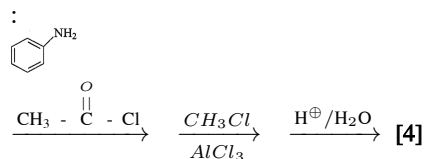
a)

b)

c)

d)

BOTANY (Section-A)

101) Which of the following is correct for growth in unicellular organisms? **[4]**

   a) Grow by cell division
   b) Both cell elongation and cell division
   c) None of these
   d) Grow by cell elongation

102) Lowest rank in the classification is : **[4]**
   a) Variety
   b) Sub - species
   c) Species
   d) Genera

103) The correct match is:

Disease	Causative agent
(a) Early blight of potato	(i) Puccinia graminis
(b) Late blight of potato	(ii) Ustilago tritici
(c) Smut of wheat	(iii) Phytophthora infection
(d) Rust of wheat	(iv) Alternaria solani

[4]

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

104) What is the mode of nutrition in kingdom fungi? **[4]**

a) Photosynthetic
b) All of these
c) Autotrophic
d) Heterotrophic

105) A typical angiospennic embryo sac is [4]

a) 8 - celled and 7 - nucleate
b) 7 - celled and 7 - nucleate
c) 7 - celled and 8 - nucleate
d) 8 - celled and 8 - nucleate

106) Select the mismatch: [4]

a) Equisetum - Homosporous
b) Salvinia - Heterosporous
c) Cycas - Dioecious
d) Pinus - Dioecious

107) Select the wrong statements: [4]

a) Mitochondria are the power house of the cell in all kingdoms except monera
b) Pseudopodia are locomotory and feeding structures in sporozoans
c) Cell wall is present in members of fungi and plantae
d) Mushrooms belong to basidiomycetes

108) The non - nutritive structure is [4]
a) Perisperm
b) Tapetum
c) Endosperm
d) Integuments of ovule

109) The term used for transfer of pollen grains from anthers of one plant to stigma of a different plant which, during pollination, brings genetically different types of pollen grains to stigma, is [4]
a) Chasmogamy
b) Cleistogamy
c) Xenogamy
d) Geitonogamy

110) Companion cells are closely associated with: [4]
a) Sieve elements
b) Trichomes
c) Guard cells
d) Vessel elements

111) Drupe contains [4]
a) Edible epicarp
b) Stony mesocarp
c) Stony endocarp
d) Edible endocarp

112) Mesophyll differentiated into palisade parenchyma and the spongy parenchyma in _____. [4]
a) Dorsiventral leaf
b) Monocot root
c) Dicot stem
d) Dicot root

113) In sickle - cell anaemia glutamic acid is replaced by valine. Which one of the following triplets codes for valine? [4]
a) AAG
b) GUG
c) GAA
d) GGG

114) Alleles are: [4]

a) True breeding homozygotes
b) Different phenotype
c) Heterozygotes
d) Different molecular forms of a gene

115) Match the names of triplet codons listed under column I with the amino acids given under column II. Choose the answer which gives the correct combination of the alphabets of the two columns:

Column I	Column II
A. UUU	I. Alanine
B. CCC	Ii. Glycine
C. AAA	Iii. Lysine
D. GGG	Iv. proline
	V. Phenyl alanine

[4]

a) (a) - (v), (b) - (iv), (c) - (iii), (d) - (ii)
b) (a) - (iv), (b) - (v), (c) - (ii), (d) - (iii)
c) (a) - (ii), (b) - (iii), (c) - (iv), (d) - (v)
d) (a) - (i), (b) - (iii), (c) - (iv), (d) - (v)

116) Which one of the following is the starter codon? [4]
a) UAG
b) AUG
c) UGA
d) UAA

117) Which of the following was proposed the hypothesis that the bodies of animals and plants are composed of cells and products of cell? [4]

a) Schleiden
b) Virchow
c) Schwann
d) Schleiden and Schwann

118) Plasmid occur in: [4]
a) Bacteria
b) Viruses
c) Chromosomes
d) Chloroplast

119) Which global organization promotes tobacco control through the Framework Convention on Tobacco Control (FCTC)? [4]

a) World Health Organization (WHO)
b) United Nations International Children's Emergency Fund (UNICEF)
c) United Nations Educational, Scientific and Cultural Organization (UNESCO)
d) World Trade Organization (WTO)

120) Antibody production is controlled by [4]

a) Both B - lymphocytes and T - lymphocytes
b) T - lymphocytes
c) Interferon
d) B - lymphocytes

121) Which one of the following structures is not found in mitotic cells of higher plants? [4]

a) Centromere
b) Cell plate
c) Spindle fibres
d) Centrioles and asters

122) In accordance with their life styles, parasites evolved special adaptations such as the: [4]

a) Loss of unnecessary sense organs
b) Loss of digestive system and high reproductive capacity
c) All of these
d) Presence of adhesive organs or suckers to cling on to the host

123) The storage of energy of consumer level is known as: [4]

a) Secondary productivity
b) Net primary productivity
c) Net productivity
d) Gross primary production

124) Which of the following organism is used in the production of beverages like wine, beer, whisky brandy or rum? **[4]**

a) Aspergillus niger
b) Saccharomyces cerevisiae
c) Penicillium notatum
d) Clostridium butylicum

125) Protected bird is: **[4]**

a) Pavo
b) Both Pavo and Choriotes
c) Choriotes
d) Columba

126) The major cause of loss of numbers of migratory birds is:
   i. Bad weather
   ii. Urbanization
   iii. Pesticides
   iv. Fragmentation
   v. Loss of habitat
[4]
a) (iv) and (v) only
b) (i), (ii), (v) only
c) (i) and (ii) only
d) (ii), (iv), (v) only

127) Bird sanctuary in Rajasthan is situated at: **[4]**
a) Bandipur
b) Bharatpur
c) Sariska
d) Pallamu

128) As a result of meiosis four cells are produced, these are: **[4]**

a) 75 % paternal, 25 % maternal
b) 50 % paternal, 50 % maternal
c) All identical
d) All different

129) Mitosis is characterized by: **[4]**

a) Reduction division
b) Equal division
c) Both reduction and equal division
d) Paining of homologous chromosomes

130) One of the following is photosynthetic non - sulphur bacterium: **[4]**
a) All of these
b) Chlorobium
c) Rhodospirillum
d) Chromatium

131) Which of the following does not participate when the light reaction synthesizes only ATP or performs the cyclic flow of electrons? **[4]**
a) Ferredoxin
b) Plastocyanin
c) PS - I
d) PS - II

132) Cyclic photophosphorylation results in the formation of **[4]**
a) $NADH_2$ and O_2
b) $NADPH_2$, ATP and O_2
c) NADP and ATP
d) ATP

133) The reaction centre for PS - I and PS - II are: **[4]**

a) P_{680} and P_{700} respectively
b) P_{580} and P_{700} respectively
c) P_{700} and P_{580} respectively
d) P_{700} and P_{680} respectively

134) Choose the correct names of A, B, C and D.
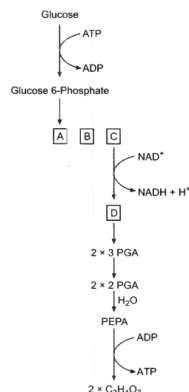
Choose the correct names of A, B, C and D

	A	**B**	**C**	**D**
(a)	1,3 di PGA	3 PGAL	Fr, 1, 6 di P	Fr, 6 P
(b)	3 PGAL	1, 3 di PGA	Fr, 1, 6 di P	Fr, 6 P
(c)	Fr, 6 P	Fr, 1,6 di P	1, 3di PGA	3 PGAL
(d)	Fr. 6P	Fr. 1,6,diP	3 PGAld	1, 3 diPGA

[4]
a) Only A
b) Only D
c) Only C
d) Only B

135) Plant growth is unique because: **[4]**

a) Plants not retain the capacity for unlimited growth throughout their life
b) Plants retain the capacity for limited growth throughout their life
c) Plants retain the capacity for unlimited growth during some part of their life
d) Plants retain the capacity for unlimited growth throughout their life

BOTANY (Section-B)

Attempt any 10 questions

136) An organism with similar traits of any rank is : **[4]**
a) Species
b) Order
c) Taxon
d) Genus

137) There exists a close association between the alga and the fungus within lichen. The fungus **[4]**

a) Releases oxygen for the alga.
b) Provides protection, anchorage and absorption for the algae.
c) Provides food for the alga.
d) Fixes the atmospheric nitrogen for the alga.

138) What is the use of pteridophytes? **[4]**
a) All of these
b) Ornamentals
c) Soil - binders
d) Medicinal purposes

139) Pollination in water hyacinth and water lily can be carried out by: **[4]**
a) Insects and wind
b) Wind and water
c) Only water
d) Insects only

140) Phyllode is present in: **[4]**

a) Asparagus   b) Euphorbia
c) Australian Acacia   d) Opuntia

141)

in pedigree represents: **[4]**
a) Dizygotic twins   b) Sibling brothers
c) Monozygotic twins   d) Either of two

142) The replicating units of DNA of a chromosome are called: **[4]**
a) Palindromes   b) Okazaki pieces
c) Replicons   d) Okazaki units

143) Which of the following statements regarding mitochondria is incorrect? **[4]**

a) Outer membrane is permeable to monomers of carbohydrates, fats and proteins.
b) Enzymes of electron transport are embedded in outer membrane.
c) Mitochondrial matrix contains single circular DNA molecule and ribosomes.
d) Inner membrane is convoluted with infoldings.

144) Which one of the following is an example of carrying out biological control of pests/diseases using microbes? **[4]**

a) Lady bird beetle against aphids in mustard
b) Bt - cotton to increase cotton yield
c) Trichoderma sp. against certain plant pathogens
d) Nucleopolyhedrovirus against white rust in Brassica

145) In plants, exchange of gases takes place through **[4]**

a) Stomata and chlorophyll.
b) Lenticels and stomata.
c) Ribosomes and mitochondria.
d) Lenticels and chlorophyll.

146) Conversion of sugar into alcohol during fermentation is due to the direct action of: **[4]**

a) Temperature
b) Micro - organisms
c) Concentration of sugar solution
d) Zymase

147) Rate of conversion of light energy into chemical energy of organic molecules in an ecosystem is **[4]**

a) Gross secondary productivity
b) Gross primary productivity
c) Net primary productivity
d) Net secondary productivity

148) 2, 4 - D is a: **[4]**
a) Insecticide   b) Nematicide
c) Rodenticide   d) Weedicide

149) During seed germination, its stored food is mobilised by: **[4]**
a) Ethylene   b) Cytokinin
c) Gibberellin   d) ABA

150) Which of the chloroplast does not contain grana? **[4]**

a) Hydrophytic stem
b) Mesophyll of grasses
c) Bundle sheath of sugarcane leaf
d) Pea leaf

ZOOLOGY (Section-A)

151) Cell found around the osculum in sponges: **[4]**
a) Chormocytes   b) Myocytes
c) Choanocytes   d) Porocytes

152) Which of the following is wrong for habitat of roundworm? **[4]**

a) They may be parasitic in plants and animals
b) They may be free - living
c) They may be aquatic and terrestrial
d) None of these

153) Identify diagram and select correct option for given diagram I and II from following options.

i.

ii.
[4]

a) I - Locust - Gregarious pest, II - Scorpion - Vectors
b) I - Locust - Gregarious pest, II - Scorpion - Book lungs
c) I - Locust - Gregarious pest, II - Scorpion - Harmful insect
d) I - Locust - Gregarious pest, II - Scorpion - Gregarious pest

154) Which structure is known as lower lip of cockroach? **[4]**
a) Labrum   b) Labium
c) Mantum   d) Submentum

155) Which of the following is a loose connective tissue? **[4]**

a) Adipose tissue and areolar tissue
b) Blood
c) Tendon and ligament
d) Bone and cartilage

156) Carbon dioxide combines with haemoglobin: **[4]**

a) 200 - 250 times more readily than oxygen
b) Twice less readily than oxygen
c) 100 times less readily than oxygen
d) 20 - 25 times more readily than oxygen

157) During expiration the diaphragm becomes: **[4]**
a) Concave   b) Dome - shaped
c) Flattened   d) Oblique

158) What would happen if human blood becomes acidic (low pH)? **[4]**

a) RBCs count decreases
b) Oxygen carrying capacity of haemoglobin increases
c) RBCs count increases
d) Oxygen carrying capacity of haemoglobin decreases

159) Respiratory process is regulated by certain specialized centres in the brain. One of the following listed centres can reduce the inspiratory duration upon stimulation : **[4]**

a) Chemosensitive centre
b) Pneumotoxic centre
c) Apneustic centre
d) Medullary inspiratory centre

160) Every 100 ml oxygenated blood delivers following amount of O_2 to the tissues under normal physiological condition: **[4]**
    a) 25 ml
    b) More than 50 ml
    c) 50 ml
    d) 5 ml

161) In human foetus, the heart begins to beat at development age of: **[4]**
    a) 3rd week
    b) 8th week
    c) 6th week
    d) 4th week

162) Normal sperm count is _____ million per mL. **[4]**
    a) 40 - 300
    b) 200
    c) < 10
    d) 10 - 20

163) Which of the following present in the ovary of mammals: **[4]**
    a) Sertoli cells
    b) All of these
    c) Corpus callosum
    d) Corpus albicans

164) LUI is a **[4]**
    a) AIT
    b) NFT
    c) IVF technique
    d) Embryo transfer technique

165) Which of the following is not true for MTP? **[4]**
    a) It is an intentional termination of pregnancy before fall term
    b) Misuse of MTP is, by amniocentesis determine the sex of the unborn child and if the foetus is found to be female, it is followed by MTP
    c) It is an involuntary termination of pregnancy before full term
    d) It is an induced abortion before full term

166) Which of the following gas, was absent in the primitive atmosphere? **[4]**
    a) H_2
    b) O_2
    c) N_2
    d) NH_3

167) Genetic drift operates only in: **[4]**
    a) Non - reproduction population
    b) Larger isolated population
    c) Smaller isolated population
    d) Slow reproductive population

168) Atrial natriuretic factor (ANF) is released in response to the increase in blood volume and blood pressure. Which of the followings is not the function of ANF? **[4]**
    a) Inhibits the release of renin from JGA.
    b) Stimulates aldosterone secretion.
    c) Inhibits sodium reabsorption from collecting duct.
    d) Stimulates salt loss in urine.

169) A diagrammatic representation of a nephron showing blood vessels, duct and tubule, with structures labelled 1, 2, and 3. Select option which correctly identifies them?

[4]
    a) 1 - Afferent arteriole, 2 - Vasa recta, 3 - Collecting duct

    b) 1 - Efferent arteriole, 2 - Afferent arteriole, 3 - Collecting duct
    c) 1 - Efferent arteriole, 2 - Vasa recta, 3 - Distal convoluted duct
    d) 1 - Afferent arteriole, 2 - Vasa recta, 3 - Distal convoluted duct

170) Kidneys are not the only organs of excretion; their work is supplemented by: **[4]**
    a) Intestine
    b) Liver
    c) Skin
    d) Lungs

171) In the centre of each I - band there is an elastic fibre called **[4]**
    a) Z - line
    b) A - line
    c) I - line
    d) H - zone

172) Inter - vertebral disc occurs in: **[4]**
    a) Wall of liver
    b) Public symphysis
    c) In between two vertebrae
    d) Wall of heart

173) Articulation of the atlas with the axis is an example of: **[4]**
    a) Pivot joint
    b) Hinge joint
    c) Ball and socket joint
    d) Gliding joint

174) The afferent nerve fibres transmit impulses **[4]**
    a) From tissues/organs to the CNS.
    b) From the CNS to the involuntary organs.
    c) From the CNS to the concerned peripheral tissues/organs.
    d) From the CNS to skeletal muscles.

175) The nerves leading to the central nervous system are called: **[4]**
    a) Afferent
    b) Efferent
    c) Motor
    d) Thoracic nerves

176) Choroid becomes thick in the anterior part of eye to form the: **[4]**
    a) Pupil
    b) Iris
    c) Lens
    d) Ciliary body

177) Match the columns:

Column I	Column II
(A) Cortisol	(i) Cell - mediated immunity
(B) PTH	(ii) Anti - inflammatory reaction
(C) Thymosin	(iii) Reabsorb water from the kidney tubules
(D) Vasopressin	(iv) Increases absorption of calcium in the blood

[4]
    a) (A) - (ii), (B) - (iv), (C) - (iii), (D) - (i)

b) (A) - (i), (B) - (ii), (C) - (iii), (D) - (iv)

c) (A) - (i), (B) - (iii), (C) - (iv), (D) - (ii)

d) (A) - (ii), (B) - (iv), (C) - (i), (D) - (iii)

178) Gluconeogenesis, lipolysis and proteolysis processes are stimulated by [4]

a) Mineralocorticoids.

b) Both (glucocorticoids) and (mineralocorticoids)

c) Glucocorticoids.

d) Insulin

179) What percentage of total WBC represented by neutrophils? [4]

a) 60 - 65 percent b) 0.5 - 1 percent

c) 6 - 8 percent d) 20 - 25 percent

180) The child of a couple has a blood group B. His mother's blood group was AB. What will be the blood group not of the father? [4]

a) B b) AB

c) None of these d) A

181) In humans, blood passes from the post - caval to the diastolic right atrium of heart due to [4]

a) Pushing open of the venous valves.

b) Suction pull

c) Pressure difference between the post - caval and atrium

d) Stimulation of the sino - auricular node.

182) The given figure represents a typical agarose gel electrophoresis showing migration of an undigested and digested set of DNA fragments. Select the correct option for the migration of fragments?
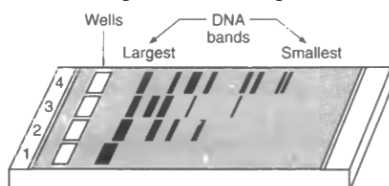
[4]

a) Lane 2 to 4 - undigested and lane 1 - digested set of DNA fragments

b) Lane 2 and 3 - undigested and lane 1 and 4 - digested set of DNA fragments

c) Lane 1 to 3 - undigested and lane 4 - digested set of DNA fragments

d) Lane 1 - undigested and lane 2 to 4 - digested set of DNA fragments

183) Which one of the following represents a palindromic sequence in DNA? [4]

a) 5' - GAATTC - 3'3' - CTTAAG - 5'

b) 5' - CATTAG - 3'3' - GAT AAC - 5'

c) 5' - GATACC - 3'3' - CCTAAG - 5'

d) 5 - CCAATG - 3' 3' - GAA TCC - 5'

184) Select correct option from the given table :

Column I	Column II
(A) E.coli	(i) Control bollworms
(B) RNAi	(ii) Controls com borer
(C) crylAc and cryllAb	(iii) Nematode resistant plants
(D) crylAb	(iv) Human insulin

[4]

a) (A) - (iv), (B) - (iii), (C) - (i), (D) - (ii)

b) (A) - (i), (B) - (ii), (C) - (iv), (D) - (iii)

c) (A) - (ii), (B) - (i), (C) - (iii), (D) - (iv)

d) (A) - (iv), (B) - (iii), (C) - (ii), (D) - (i)

185) Sex hormone is a: [4]

a) Carbohydrate b) Fat

c) Protein d) Steroid

ZOOLOGY (Section-B)

Attempt any 10 questions

186) Metagenesis refers to: [4]

a) Alternation of generation between asexual and sexual phases of an organism

b) Presence of a segmented body and parthenogenetic mode of reproduction

c) Occurrence of a drastic change in form during post - embryonic development

d) Presence of different morphic forms

187) The bone cells are present in the spaces called: [4]

a) Lacunae b) All of these

c) Lamellae d) Cannaliculi

188) **X** is the protein that makes RBCs red. It binds easily with oxygen molecules and most oxygen being transported in the blood is bound to this. Identify **X**. [4]

a) Haemoglobin b) Platelets

c) Globulin d) T cells

189) Bulk of oxygen diffuses from the plasma into the red blood corpuscles where it joins loosely with Fe^{2+} ions of hemoglobin (Hb) to form bright red oxyhemoglobin (HbO_2). The process is called [4]

a) Dehydrogenation b) Oxidation

c) Oxygenation d) Hydration

190) Acrosome is a type of [4]

a) Lysosome

b) Vacuole

c) Endoplasmic reticulum

d) Ribosome

191) In which of the following conditions, MTP is not necessary? [4]

a) Both Unwanted pregnancy and Pregnancy resulting from rape.

b) Unwanted pregnancy

c) Pregnancy resulting from rape

d) Unborn foetus of undesired sex

192) Lamarck's theory of evolution is also known as [4]

a) Theory of use and disuse of organs.
b) Theory of spontaneous characters.
c) Theory of impose characters.
d) Theory of genetic characters.

193) When a person is suffering from poor renal reabsorption, then which of the following will not help in the maintenance of blood volume? **[4]**

a) Decreased glomerular filtration
b) Increased arterial pressure in kidney
c) Decreased arterial pressure in kidney
d) Increased ADH secretion

194) Smooth muscle fibres are:
   i. Cylindrical, unbranched, striated, multinucleate and voluntary
   ii. Spindle - shaped, unbranched, non - striated, uninucleate and involuntary
   iii. Cylindrical, unbranched, non - striated, multinucleated and involuntary
   iv. Spindle - shaped, unbranched, striated, uninucleated and voluntary

   [4]
   a) Only C   b) Only A
   c) Only B   d) Only D

195) Last end of spinal cord is called: **[4]**
   a) Funiculus   b) Cauda equine
   c) Fasciculi   d) Filum terminale

196) Secretion of which of the following is under 'neurosecretory nerve axons'? **[4]**
   a) Adrenal cortex   b) Posterior pituitary
   c) Anterior pituitary   d) Pineal

197) Daily rhythms (24 - hours) are usually associated with: **[4]**
   a) Hypothalamus   b) Pineal
   c) Pituitary   d) Thymus

198) A certain road accident patient with unknown blood group needs immediate blood transfusion. His one doctor friend at once offers his blood. What was the blood group of the donor? **[4]**
   a) Blood group A   b) Blood group B
   c) Blood group AB   d) Blood group O

199) When an alien DNA is ligated in tetracycline resistant gence, the recombinant will **[4]**

   a) Will lose tetracycline resistant
   b) Become tetracycline resistant
   c) Both become tetracycline resistant and will remain the same
   d) Will remain the same

200) Bio - weapons are conventionally used by terrorists as they are **[4]**

   a) Invisible and extremely difficult to detect
   b) Are expensive
   c) Can cause causality
   d) Easily available