Free Mock
Test 09 - NEET

(Target: NEET 2024)

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Physics - Section A

Section A Shall Consist Of 35 (Thirty-five) Questions In Each Subject .All Questions Are Compulsory.

1. The dimension of torque are :

(1) $\left[ML^3\ T^{-3}\right]$ (2) $\left[ML^{-1}\ T^{-1}\right]$

(3) $\left[ML^2\ T^{-2}\right]$ (4) $\left[ML^{-2}\right]$

2. A point moves along a circle with velocity v = at where a = 0.5 m/sec^2. Then the total acceleration of the point at the moment when it covered (1/10) th of the circle after beginning of motion

(1) 0.5 m/sec^2 (2) 0.6 m/sec^2

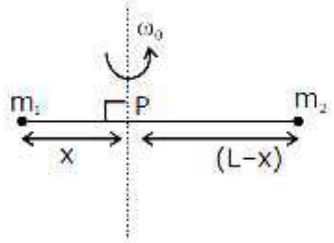
(3) 0.7 m/sec^2 (4) 0.8 m/sec^2

3. The mass and diameter of a planet are twice those of earth. The period of oscillation of pendulum on this planet will be (If it is a second's pendulum on earth)

(1) $\frac{1}{\sqrt{2}}$sec (2) $2\sqrt{2}$ sec

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

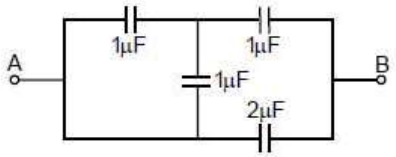
4. Point masses m_1 and m_2 are placed at the opposite ends of a rigid rod of length L, and negligible mass. The rod is to be set rotating about an axis perpendicular to it. The position of point P on this rod through which the axis should pass so that the work required to set the rod rotating with angular velocity ω_0 is minimum, is given by:



(1) $x = \frac{m_1 L}{m_1+m_2}$ (2) $x = \frac{m_1}{m_2}L$

(3) $x = \frac{m_2}{m_1}L$ (4) $x = \frac{m_2 L}{m_1+m_2}$

5. The equivalent capacitance between points A and B of the circuit shown will be :



(1) $\frac{2}{3}\mu F$ (2) $\frac{5}{3}\mu F$

(3) $\frac{8}{3}\mu F$ (4) $\frac{7}{3}\mu F$

6. A particle moves along a straight line such that its position is given by $x = t^2 - 4t + 6$ Find magnitude of displacement of particle from $t = 0$ to $t = 3$ sec.

(1) $x = 3m$ (2) $x = 4m$

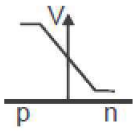
(3) $x = 5m$ (4) $x = 6m$

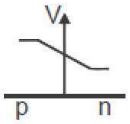
7. The equations of displacement of two waves are $y_1 = 10\sin\left[3\pi t + \frac{\pi}{3}\right]$ and $y_2 = 5\left[\sin 3\pi t + \sqrt{3}\cos 3\pi t\right]$. The ratio of their amplitudes is

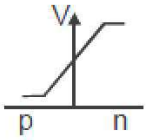
(1) 1 : 2 (2) 2 : 1

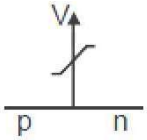
(3) 1 : 1 (4) 1 : 5

8. In a forward biased p-n junction diode, the potential barrier in the depletion region is of the form-

(1) 

(2) 

(3) 

(4) 

9. The escape velocity of a body from the earth depends on :
(i) the mass of the body
(ii) the location from where it is projected
(iii) the direction of projection
(iv) the height of the location from where the body is launched

(1) (i) and (ii) (2) (ii) and (iv)
(3) (i) and (iii) (4) (iii) and (iv)

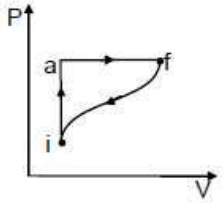
10. Geostationary satellite-

(1) is situated at a great height above the surface of earth
(2) moves in equatorial plane
(3) have time period of 24 hours
(4) have time period of 24 hours and moves in equatorial plane

11. A short magnet of moment $6.75\ A-m^2$ produces a neutral points on its axis. If the horizontal component of earth's field is 5×10^{-5} Wb/m^2 the distance of the neutral point should be :

(1) 10 cm (2) 20 cm
(3) 30 cm (4) 40 cm

12. If $Q_{iaf} = 80$ cal, $W_{iaf} = 60$ cal and $W=-30$ cal for the curved path $f \rightarrow i$, then value of Q for path $f \rightarrow i$, will be



(1) 50 cal (2) 30 cal
(3) -30 cal (4) -50 cal

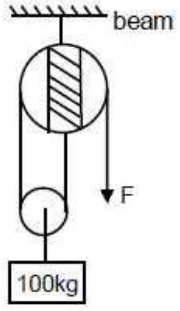
13. Two small charged sphere having charges of $2 \times 10^{-7}C$ and $3 \times 10^{-7}C$ are placed at a distance of 30 cm from each other in air. The force between two spheres is

(1) $6 \times 10^{-3}N$ (attractive)
(2) $6 \times 10^{-3}N$ (repulsive)
(3) $6 \times 10^{-5}N$ (attractive)
(4) $6 \times 10^{-5}N$ (repulsive)

14. An increase in pressure required to decrease the 200 litres volume of a liquid by 0.004% in container is : (Bulk modulus of the liquid = 2100 MPa)

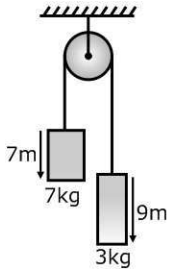
(1) 188 kPa (2) 8.4 kPa
(3) 18.8 kPa (4) 84 kPa

15. A mass of 100 kg is moved with uniform velocity under the influence of force F, then the force acting on the beam due to string connected to the ceiling– (use $g = 9.8\ m/s^2$)



(1) 1470 N (2) 1760 N
(3) 960 N (4) 490 N

16. In figure shown, both blocks are released from rest. The time to cross each other is



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

17. The electric intensity due to a dipole of length 10 mm and having a charge of 500 μC, at a point on the axis at a distance 20 cm from dipole in air is

(1) 11.25×10^7 N/C (2) 11.25×10^6 N/C
(3) 22.5×10^{11} N/C (4) 22.5×10^7 N/C

18. Two wires of the same material and same length but diameters in the ratio 1 : 2 are stretched by the same force. The potential energy per unit volume of the two wires will be in the ratio :

(1) 1 : 2 (2) 4 : 1
(3) 2 : 1 (4) 16 : 1

19. A certain electrical conductor has a square cross-section, 2.0 mm on a side and is 12 m long. The resistance between its ends is 0.072Ω. The resistivity of its material is equal to :

(1) $2.4 \times 10^{-6}\Omega$m (2) $1.2 \times 10^{-6}\Omega$m
(3) $1.2 \times 10^{-8}\Omega$m (4) $2.4 \times 10^{-8}\Omega$m

20. Which has the largest wavelength ?

(1) Radio wave (2) X-ray
(3) Ultraviolet ray (4) Infra-red ray

21. What is the De-Broglie wavelength in (Å) of the α -particle accelerated through a potential difference V-

(1) $\frac{0.287}{\sqrt{V}}$ (2) $\frac{12.27}{\sqrt{V}}$
(3) $\frac{0.101}{\sqrt{V}}$ (4) $\frac{0.22}{\sqrt{V}}$

22. A circular loop of area 1 cm^2, carrying a current of 10A, is placed in a magnetic field of 0.1 T perpendicular to the plane of the loop. The torque on the loop due to the magnetic field is

(1) Zero (2) 10^{-4}N − m
(3) 10^{-2}N − m (4) 1N − m

23. The number of beta particle emitted by a radioactive substance is twice the number of alpha particles emitted by it. The resulting daughter is an

(1) isomer of parent (2) isotone of parent
(3) isotope of parent (4) isobar of parent

24. What will be the input of A and B for the Boolean expression $\overline{(A+B)} \cdot \overline{(A.B)} = 1$?

(1) 0 , 0 (2) 0 , 1
(3) 1 , 0 (4) 1, 1

25. The electric potential between proton and electron given by the relation $V = V_0 \ln \frac{r}{r_0}$ where V_0 and r_0 constant. Assuming Bohr's model to be valid, which of the following represent correct relation between r_n (radius of n^{th} orbit) and n. Where n is the principal quantum number?

(1) $r_n \propto \frac{1}{n}$ (2) $r_n \propto n^2$
(3) $r_n \propto n$ (4) $r_n \propto \frac{1}{n^2}$

26. Conversion of a liquid to vapour state is :-

(1) a cyclic change (2) An adiabatic change
(3) Isobaric change (4) None

27. If 2 moles of an ideal monoatomic gas at temperature T_0 is mixed with 4 moles of another ideal monoatomic gas at temperature $2T_0$, then the temperature of the mixture is :

(1) $\frac{5}{3}T_0$ (2) $\frac{3}{2}T_0$
(3) $\frac{4}{3}T_0$ (4) $\frac{5}{4}T_0$

28. In a Carnot engine, when heat is rejected to the sink, temperature of sink

(1) Increases (2) Decreases
(3) Remains constant (4) May increase or decrease

29. An object is at a distance of $0.5\ \text{m}$ in front of a plane mirror. Distance between the object and image is

(1) $0.5\ \text{m}$ (2) $1\ \text{m}$

(3) $0.25\ \text{m}$ (4) $1.5\ \text{m}$

30. A cubical glass paper-weight of side 'a' is placed over a physics paper. What should be the value of refractive index so that the paper cannot be seen from the walls of the cube?

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

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

31. In heavy fog, yellow colour of headlight of vehicle is preferred as compare to other colours. Why?

(1) Yellow colour is maximum scattered.

(2) Yellow colour is minimum scattered.

(3) Yellow colour is maximum sensitive to eye.

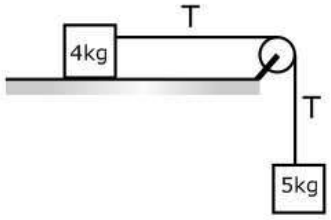
(4) Yellow colour is originate by less power consumption.

32. Two equal lumps of putty are suspended side by side from two long strings so that they are just touching. One is drawn aside so that its center of gravity rises a vertical distance h. It is released and then collides inelastically with the other one. The vertical distance risen by the center of gravity of the combination is -

(1) h. (2) 3h/4

(3) h/2 (4) h/4

33. Two bodies of 5 kg and 4 kg are tied to a string as shown in the fig. If the table and pulley both are smooth, acceleration of 5 kg body will be equal to- [g= 10 m/s^2]



(1) 10 m/s^2 (2) 2.5 m/s^2

(3) $\frac{40}{9}\text{m/s}^2$ (4) $\frac{50}{9}\text{m/s}^2$

34. Two particles of mass 1 kg and 5 kg have same momentum, calculate ratio of their K. E.

(1) 5 : 1 (2) 25 : 1

(3) 1 : 1 (4) 10 : 1

35. If the kinetic energy of a body increases by 4% the momentum:

(1) increases by 2%

(2) increases by 4%

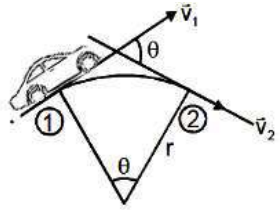
(3) increases by 8%

(4) increases by 16%

Physics - Section B

Section B Shall Consist Of 15 (Fifteen) Questions In Each Subject. Candidate Needs To Attempt Any 10 (Ten) Questions Out Of 15 (Fifteen) In Each Subject.

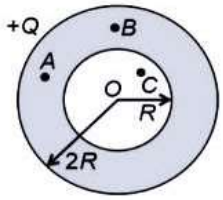
36. A car runs over a curved path of radius r at a constant speed of u m/s. Find the average acceleration over the distance shown in the figure.



(1) $u^2\sin\theta/2$ (2) $2u^2\sin\theta/2$

(3) $\frac{2u^2\sin\theta/2}{r\theta}$ (4) $\frac{u^2\sin\theta/2}{\theta}$

37. A hollow conducting sphere of inner radius R and outer radius 2R is given a charge Q as shown in the figure, then the



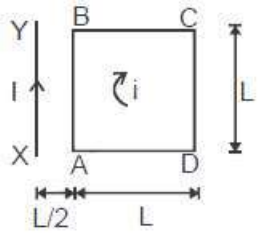
(1) Potential at A and B is different

(2) Potential at O and B is different

(3) Potential at O and C is different

(4) Potential at A, B, C and O is same

38. A square loop ABCD carrying a current i, is placed near and coplanar with a long straight conductor XY carrying a current I, the net force on the loop will be :



(1) $\frac{2\mu_0 Ii}{3\pi}$ (2) $\frac{\mu_0 Ii}{2\pi}$

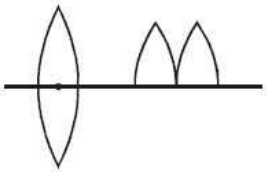
(3) $\frac{2\mu_0 IiL}{3\pi}$ (4) $\frac{\mu_0 IiL}{2\pi}$

39. If the spinning speed of the earth is increased, then the weight of the body at the equator-

(1) does not change (2) doubles

(3) decreases (4) increases

40. A lens is cut from the optical centre along the principal axis and the two parts of the lens are placed sideways as shown in figure. Then the new focal length of the combination



(1) Remains the same (2) Becomes double

(3) Becomes half (4) Becomes triple

41. In a Wheatstone's network, $P = 2\Omega$, $Q = 2\,\Omega$; $R = 2\,\Omega$ and $S = 3\,\Omega$. The resistance with which S is to be shunted. So that the bridge may be balanced is :

(1) 1 Ω (2) 2 Ω

(3) 4 Ω (4) 6Ω

42. If magnifying power of a terrestrial telescope for relaxed eye is 9 & $f_e = 10$ cm & focal length of intermediate lens is 5 cm, then its tube length is

(1) 100 cm (2) 120 cm

(3) 110 cm (4) 150 cm

43. A star is moving away from earth and shift in spectral line of wavelength 5700 Å is 1.90 Å. Speed of the star is

(1) 50 km s^{-1} (2) 70 km s^{-1}

(3) 80 km s^{-1} (4) 100 km s^{-1}

44. A two slit Young's experiment is done with monochromatic light of wavelength 6000 Å. These slits are 2 mm apart and fringes are observed on a screen placed 10 cm away from the slits. If a transparent plate of thickness 0.5 mm is placed in front of one of the slit, interference pattern shifts by 5 mm. Then refractive index of transparent plate should be

(1) 1.1 (2) 1.2
(3) 1.3 (4) 1.5

45. In Fraunhofer diffraction by a single slit, a position where first order minimum is formed by the wavelength of 9000Å, first order maximum is formed due to an unknown wavelength (λ'). The unknown wavelength λ' is-

(1) 8000 Å (2) 2000 Å
(3) 6000 Å (4) 4000 Å

46. Unpolarized light of intensity I_0 is incident on surface of a block of glass at Brewster's angle. In that case, which of the following statements is true?

(1) transmitted light is partially polarized with intensity $I_0/2$
(2) transmitted light is completely polarized with intensity less than $I_0/2$
(3) reflected light is completely polarized with intensity less than $I_0/2$
(4) reflected light is partially polarized with intensity $I_0/2$

47. A magnet is taken towards a coil- [a] Rapidly [b] Slowly Then the induced emf is-

(1) More in (a)
(2) Less in (a)
(3) Same in both (a) and (b)
(4) More or less depends on radius

48. A metallic conductor of 1 m length is rotated vertically about its one end at an angular velocity of 5 rad / sec. If the horizontal component of earth's field is 0.2×10^{-4} T, the voltage generated at both ends of the conductor will be-

(1) 5 mV (2) 5×10^{-4} V
(3) 50 mV (4) 50μV

49. In an L–C–R series circuit $R = \sqrt{5}\Omega, X_L = 9\Omega$ and $X_C = 7\Omega$. If applied voltage in the circuit is 50 volt then impedance of the circuit in ohm will be-

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

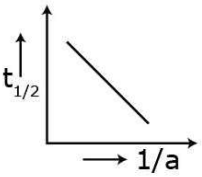
50. In an A.C. circuit capacitance of 5μF has a reactance as 1000Ω. The frequency of A.C. will be-

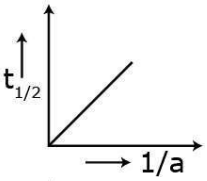
(1) $\frac{1000}{\pi}$ cycle / s
(2) $\frac{100}{\pi}$ cycle / s
(3) 200 cycle / s
(4) 5000 cycle / s

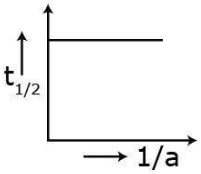
Chemistry - Section A

Section A Shall Consist Of 35 (Thirty-five) Questions In Each Subject .All Questions Are Compulsory.

51. Which of these is correct for second order reaction?

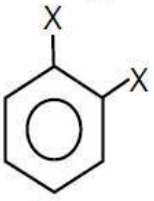
(1) 

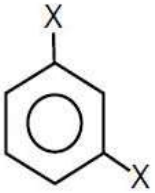
(2) 

(3) 

(4) None of these

52. Which molecule has maximum dipole moment (μ)?
{where X = $-NO_2$}

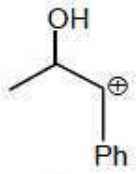
(1) 

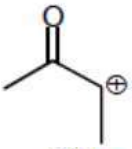
(2) 

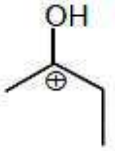
(3) 

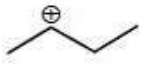
(4) All has same 'μ'

53. Most stable carbocation is-

(1) 

(2) 

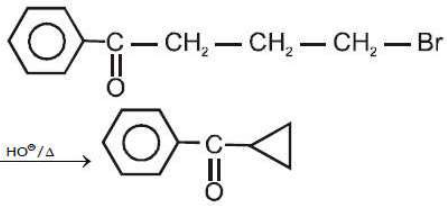
(3) 

(4) 

54. Which of the following is a β-elimination reaction?

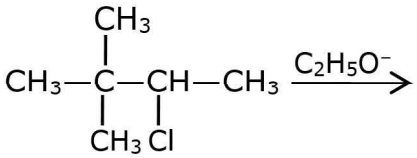
(1) $HO - CH_2 - CH_2 - Br \xrightarrow{NaOH/\Delta}$ 

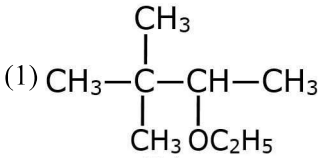
(2) $CHCl_3 + KOH \xrightarrow{\Delta} CCl_2$

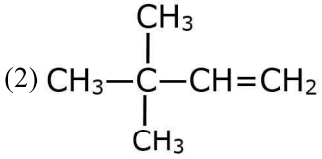
(3) 

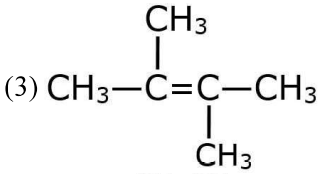
(4) $CH_2 = CH - Cl \xrightarrow{NaNH_2} HC \equiv CH$

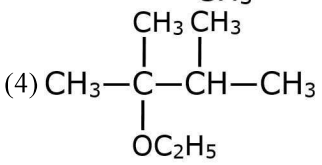
55. Major product of following reaction-

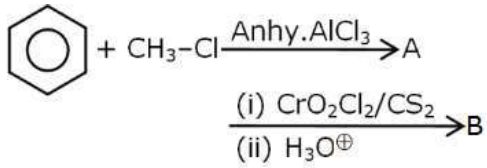


(1) 

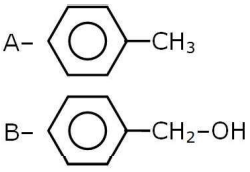
(2) 

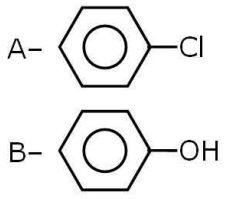
(3) 

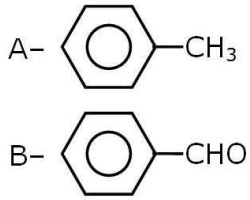
(4) 

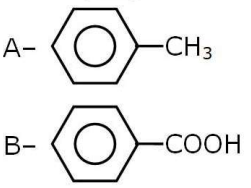
56. 

Identify the major products A and B in the following sequence of reactions-

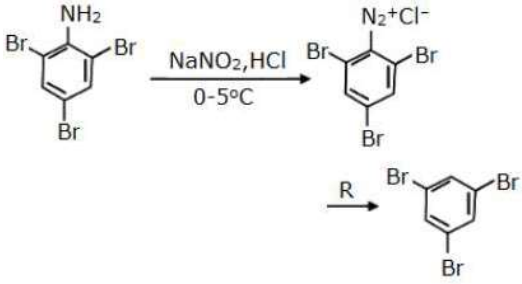
(1) 

(2) 

(3) 

(4) 

57. The reagent 'R' in the given sequence of chemical reaction is-



(1) CuCN/KCN (2) H_2O

(3) CH_3CH_2OH (4) HBF_4

58. If molality of the dilute solutions is doubled, the value of molal depression constant (K_f) will be :

(1) halved (2) tripled

(3) unchanged (4) doubled

59. Which of the following aqueous solution has maximum freezing point?

(1) 0.01 M NaCl (2) 0.005 M C_2H_5OH

(3) 0.005 M MgI_2 (4) 0.01 M $MgSO_4$

60. 100 mL solution of HCl has pH = 6 is diluted to 1000 mL. Resulting solution has pH-

(1) 7.0 (2) 6.7 (3) 7.3 (4) 6.4

61. The resistance of a deci normal solution of a salt occupying a volume between two platinum electrodes 1.80 cm apart and 5.4 cm^2 in area was found to be 50 ohm. Calculate the equivalent conductance of the solution-

(1) 77.77 ohm^{-1} cm^2 $equiv^{-1}$

(2) 55.66 ohm^{-1} cm^2 $equiv^{-1}$

(3) 44.44 ohm^{-1} cm^2 $equiv^{-1}$

(4) 66.66 ohm^{-1} cm^2 $equiv^{-1}$

62. Ionic compound CsBr has been crystallizes in bcc structure with edge length 4.3 Å. The shortest inter ionic distance in between Cs^+ and Br^- is-

(1) 3.72 Å (2) 1.86 Å

(3) 7.44 Å (4) 4.3 Å

63. Aluminium hydroxide forms a positively charged sol. Which of the following ionic substances should be most effective in coagulating the sol?

(1) NaCl (2) $Fe_2(SO_4)_3$

(3) $CaCl_2$ (4) K_3PO_4

64. What will be the freundlich's adsorption isotherm equation at high pressure?

(1) $\frac{x}{m} = k$ (2) $\frac{x}{m} = kp$

(3) $\frac{x}{m} = \frac{k}{p}$ (4) None of these

65. Calculate the volume of 1 g He gas at NTP-

(1) 11.2 L (2) 5.6 L

(3) 22.4 L (4) 10 L

66. As the number of orbit increase from the nucleus, the difference between the adjacent energy levels-

(1) increases (2) remains constant

(3) decreases (4) none of these

67. If the ratio of the masses of SO_3 and O_2 gases confined in a vessel is 1 : 1, then the ratio of their partial pressures would be-

(1) 5 : 2 (2) 2 : 5

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

68. K_c for $A + B \rightleftharpoons C + D$ is 10 at 25°C. If a container contains 1, 2, 3, 4 mol per litre A, B, C and D respectively at 25°C, the reaction shall-

(1) proceed from left to right (2) proceed from right to left

(3) be at equilibrium (4) none

69. When a gas is compressed adiabatically and reversibly, the final temperature is-

(1) Higher than the initial temperature

(2) Lower than the initial temperature

(3) The same as initial temperature

(4) Dependent upon the rate of compression

70. Which of the following species can undergo both oxidation and reduction?

(1) PCl_5 (2) SO_3

(3) NH_3 (4) Cl_2

71. What is the value of electron gain enthalpy of Na^+ if IE_1 of Na = 5.1 eV?

(1) + 10.2 eV (2) −5.1 eV

(3) −10.2 eV (4) + 2.55 eV

72. Which of the following is not employed for refining of metal?

(1) distillation (2) Leaching

(3) Electrolysis (4) Liquation

73. Iron carbonyl, $Fe(CO)_5$ is-

(1) trinuclear (2) mononuclear

(3) tetranuclear (4) dinuclear

74. Which of the following isomerism is present in complex $[Co(NH_3)_4(SCN)_2]Br$?

(1) Geometrical isomerism (2) linkage isomerism

(3) Ionisation isomerism (4) All of these

75. $KMnO_4$ is a strong oxidizing agent in acid medium. To provide acid medium H_2SO_4 is used instead of HCl. This is because-

(1) H_2SO_4 is a stronger acid than HCl

(2) HCl is oxidized by $KMnO_4$ to Cl_2

(3) H_2SO_4 is a dibasic acid

(4) rate is faster in the presence of H_2SO_4

76. Which of the following is used as a good oxidising agent in analytical chemistry?

(1) Gd(III) (2) Ce(IV)

(3) Eu(II) (4) Lu(III)

77. Which of the following is not a product, when RbO_2 reacts with H_2O?

(1) RbOH (2) H_2O_2

(3) O_2 (4) Rb_2O_2

78. The basic strength of which hydroxide is maximum?

(1) LiOH (2) NaOH

(3) CsOH (4) KOH

79. White phosphorus has-

(1) 4 P—P single bonds (2) 4 lone pairs of electrons

(3) P—P—P angle of 90° (4) All of these

80. Ozone acts as-

(1) Oxidising agent (2) reducing agent

(3) bleaching agent (4) All

81. Species having zero dipole moment-

(1) XeF_4 (2) 1,2,4-Trichloro benzene

(3) SF_4 (4) CH_2Cl_2

82. **Statement** : To stop bleeding from an injury ferric chloride can be applied-

(1) It is not true, ferric chloride is a poison.

(2) It is true, Fe^{3+} ions coagulate blood which is negatively charged sol.

(3) It is not true, Cl^- ions form positively charged sol, profuse bleeding takes place.

(4) It is true, coagulation takes palce because of formation of negatively charged sol with Cl^- ions.

83. $CH_3-CH_2-CH_2-C\equiv N$; $CH_3-\underset{\underset{CN}{|}}{CH}-CH_3$

(A) (B)

Relation between(A) and (B) is-

(1) chain isomers (2) positional isomers

(3) functional isomers (4) metamers

84. Which is incorrect statement?

(1) PVC is a polymer of vinyl chloride

(2) Chloroprene is a monomer of neoprene

(3) Teflon is a polymer of acrylonitrile

(4) Bakelite is a thermosetting polymer of phenol and farmaldehyde

85. $CH_3-\underset{\underset{O}{||}}{C}-CH_3 \xrightarrow[NaOH]{I_2} (A) \xrightarrow{AgPowder} (B) \xrightarrow[Hg^{++}]{H_2SO_4\ dil.} (C)$

Product A, B & C are-

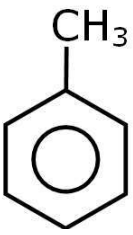
(1) Iodoform, Acetylene & Acetaldehyde

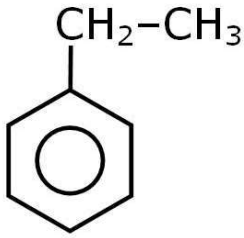
(2) Tri-iodomethane, Ethyne & Acetone

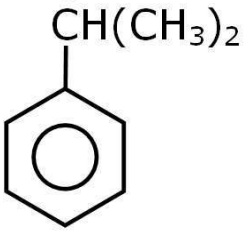
(3) Iodoform, Ethene & Ethylene glycol

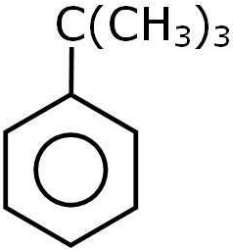
(4) Ethene, iodoform & Ethylhydrogen sulphate

86. 'A' compound is oxidised in the presence of air and subsequent treating with dilute acid to yield phenol and acetone. 'A' is-

(1) 

(2) 

(3) 

(4) 

87. At 300 K, the vapour pressure of an ideal solution containing 3 mole of A and 2 mole of B is 600 torr. At the same temperature, if 1.5 mole of A & 0.5 mole of C (non-volatile) are added to this solution the vapour pressure of solution increases by 30 torr. What is the value of P_B^o?

(1) 940 (2) 405
(3) 90 (4) none of these

88. Solubility product of AgCl at 100ºC is 1.44×10^{-4}, solubility of AgCl in boiling water may be-

(1) 0.72×10^{-4} M (2) 1.20×10^{-2} M
(3) 0.72×10^{-2} M (4) 1.20×10^{-4} M

89. In the electrochemical reaction,
$2Fe^{3+} + Zn \rightarrow Zn^{2+} + 2Fe^{2+}$
increasing the concentration of Fe^{2+}-

(1) Increasing the cell emf
(2) Increasing the current flow
(3) Decreasing the cell emf
(4) Alter the pH of the solution

90. How much faster would a reaction proceed at 25°C than at 0°C if the activation energy is 65 kJ?

(1) 2 times (2) 5 times
(3) 11 times (4) 16 times

91. The correct statement regarding defects in crystalline solids is:

(1) Frenkel defect is found in halides of alkaline metals.
(2) Schottky defects have no effect the density of crystalline solids.
(3) Frenkel defects decreases the density of crystalline solids.
(4) Frenkel defect is a dislocation defect.

92. Electron in an excited state of the hydrogen atom is in the sixth energy level. When it comes back to the ground state-

(1) Energy is absorbed contineously.
(2) Two spectral lines are found in the infrared region.
(3) Four spectral lines are found in the visible region.
(4) Six spectral lines are found in the ultraviolet region.

93. In the reaction $A_{(s)} + B_{(g)} + \text{heat} \rightleftharpoons 2C_{(s)} + 2D_{(g)}$ equilibrium is established. If the pressure of B is quadrupled then the factor by which pressure of D is changed is-

(1) $\sqrt{2}$ (2) 2

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

94. What is ΔG° for the following reaction?
$1/2\ N_2(g) + 3/2\ H_2(g) \rightarrow NH_3(g)$; $K_p = 4.0 \times 10^4$ at 25°C

(1) –26.25 kJ mol^{-1} (2) –11.5 kJ mol^{-1}

(3) –2.2 kJ mol^{-1} (4) –0.97 kJ mol^{-1}

95. The balanced chemical reaction in acidic medium for the equation involves
$MnO_4^- + AsO_3^{3-} \longrightarrow Mn^{+2} + AsO_4^{3-}$

(1) $3\,MnO_4^-$ & $2\,Mn^{+2}$

(2) $5\,AsO_4^{3-}$ & $3H_2O$

(3) $5\,AsO_3^{3-}$ & $12H^+$

(4) $2\,Mn^{+2}$ & $7H_2O$

96. An ore after levigation is found to have acidic impurities. Which of the following can be used as flux during smelting operation?

(1) H_2SO_4 (2) $CaCO_3$

(3) SiO_2 (4) Both (A) and (B)

97. Aqueous solution of Ni^{2+} contains $[Ni(H_2O)_6]^{2+}$ and its magnetic moment is 2.83 BM. When ammonia is added in it, comment on the magnetic moment of solution-

(1) It will remain same

(2) It increases from 2.83 BM

(3) It decreases from 2.83 BM

(4) It cannot be predicted theoretically

98. Which of the following oxides of nitrogen is a coloured gas?

(1) N_2O (2) NO

(3) N_2O_4 (4) NO_2

99. Change in size is maximum in which process?

(1) $O_{(g)} \longrightarrow O^+_{(g)}$ (2) $O_{(g)} \longrightarrow O^-_{(g)}$

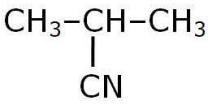
(3) $O^+_{(g)} \longrightarrow O^-_{(g)}$ (4) $O^+_{(g)} \longrightarrow O^{-2}_{(g)}$

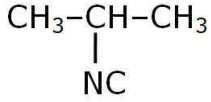
100. $CH_3-CH=CH_2 \xrightarrow[(C_6H_5CO)_2O_2]{HBr} A \xrightarrow{KCN} [B]$

Product [B] is-

(1) $CH_3—CH_2—CH_2—CN$

(2) $CH_3—CH_2—CH_2—NC$

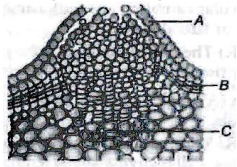
(3) 

(4) 

Botany - Section A

Section A Shall Consist Of 35 (Thirty-five) Questions In Each Subject .All Questions Are Compulsory.

101. Choose the correct option to label A, B and C in the given diagram of lenticel.



(1) A-Epidermis, B-Cork cambium, C-Secondary cortex
(2) A-Stomata, B-Cork cambium, C-Secondary cortex
(3) A-Stomata, B-Cork cambium, C-Endodermis
(4) A-Epidermis, B-Cork cambium, C-Endodermis

102. The transference of a gene or of several genes from doner bacterial cell by bacteriophage acting as an intermediate agent is known as

(1) Transition (2) Translation
(3) Transduction (4) Transformation

103. A naked RNA particle causing the symptoms like that of a virus disease is known as-

(1) Viroid (2) Virion
(3) Viral (4) None of these

104. Bacteriophages kill

(1) Fungi (2) All monerans
(3) Bacteria (4) Viruses

105. Virus envelope is known as :-

(1) Core (2) Capsid
(3) Virion (4) Nucleoprotein

106. Female reproductive part of bryophytes is

(1) Antheridium (2) Oogonium
(3) Archegonium (4) Sporangium

107. Which one of these does not participate in fertilisation in ferns ?

(1) Water (2) Pollen tube
(3) Archegonium (4) Flagellate antherozoid

108. Which structure formed in life cycle of fern plant is dominant?

(1) Seed (2) Pollen grain
(3) Spore (4) None

109. Total number of meiocytes in human

(1) 23 (2) 46
(3) 22 (4) 441

110. In which of the following organisms fusing gametes are morphologically similar ?

(1) Fucus (2) Human
(3) Angiosperm (4) Cladophora

111. In rainy season wooden door swells up due to:-

(1) Osmosis (2) Imbibition
(3) Turgor pressure (4) Capillarity

112. Rate of water absorption in plants is directly proportional to :-

(1) Root pressure (2) Transpiration
(3) Soil concentration (4) Both (2) and (3)

113. In the process of photosynthesis the light quanta required to produce reducing power for reduction of one molecule of CO_2 is :-

(1) 48 (2) 8
(3) 2 (4) 0

114. Photorespiration takes place in :-

(1) Golgibody, E.R., Peroxisome

(2) Mitochondria, E.R., Peroxisome

(3) Nucleosome, Golgibody, Glyoxisome

(4) Chloroplast, Peroxisome, Mitochondria

115. Mineral related to carbohydrate translocation is :

(1) Mn (2) S

(3) B (4) K

116. In both aerobic and anaerobic respiration which same product is formed

(1) Lactic acid (2) Pyruvic acid

(3) Citric acid (4) Organic acid

117. All of the following are co-factors in pyruvate to acetyl CoA reaction, except-

(1) Mn

(2) Thiamine pyrophosphate and coenzyme A

(3) Lipoic acid

(4) NAD

118. Gibberellins do not cause -

(1) Shortening of genetically tall plants

(2) Stimulation of seed germination

(3) Promotion of parthenocarpy

(4) Induction of α - amylase synthesis in barley

119. Organisms may avoid stressful conditions by suspending their activities for some time period. If they do it to avoid high temperate it is called.....and if they do it to avoid low temperature it is called.....

(1) aestivation, migration (2) migration, hibernation

(3) aestivation, hibernation (4) hibernation, aestivation

120. A population growing in habitat with limited resources shows the sequence-

(1) Lag phase, acceleration, asymptote, deceleration

(2) Log phase, acceleration, deceleration, asymptote

(3) Lag phase, acceleration, deceleration, asymptote

(4) Lag phase, deceleration, acceleration, asymptote

121. Which of the following is not a feature of stable ecosystem?

(1) Net annual community productivity is almost stable

(2) Resistant to the occasional disturbances

(3) Facing rapid environmental changes

(4) Photosynthesis to respiration ratio is one

122. An ecosystem in which number of primary living organic matter is very high but Biomass is very less. This type of pyramid found in :-

(1) Tree ecosystem (2) Pond ecosystem

(3) Grass ecosystem (4) None of above

123. How many of the following are the broad utilities of biodiversity ?

(a) Crop improvement

(b) Pollination

(c) Soil formation and conservation

(d) Drug production

(e) Habitat for wild life

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

124. Which of the following statements is correct

(1) Lichens do not grow in polluted areas

(2) Algal component of lichens is called mycobiont

(3) Fungal component of lichens is called phycobiont

(4) Lichens are not good pollution indicators

125. Global warming will cause

(1) Rise in level of oceans (2) Decrease in glaciers

(3) Reduction in ice caps (4) All the above

126. Read the following character.
(i) Vexillary aestivation of corolla
(ii) Marginal placentation
(iii) Diadelphous
Identify related plant :-

(1) Gram (2) Sugar cane
(3) Onion (4) Pea

127. Tetradynamous condition has :-

(1) Five stamens, two short and three long
(2) Six stamens, two long and four short
(3) Six stamens, two short in outer whorl and four long in inner whorl
(4) Four stamens, two short and two long in outer and inner whorls respectively

128. Bark is the non-technical term which refers to

(1) a few tissues exterior to the vascular cambium
(2) a few tissues interior to the vascular cambium
(3) all the tissues interior to the vascular cambium
(4) all the tissues exterior to the vascular cambium

129. Which of the following cross is used to find out the homozygosity or the heterozygosity of a dominant individual :-

(1) Test cross (2) Back cross
(3) Reciprocal cross (4) Out cross

130. When both alleles of a pair are fully expressed in a heterozygous, they are called:

(1) Lethals (2) Co-Dominant
(3) Recessive alleles (4) In-complete dominant

131. Human female contain

(1) 23 linkage group (2) 24 linkage group
(3) 22 linkage groups (4) 1 linkage groups

132. Which of the following term is used to describe the component isolated from a plant, for in vitro culturing in the specific medium.

(1) Synthetic seeds (2) Embryoid
(3) Callus (4) Explant

133. c-DNA is :-

(1) Formed over RNA template (2) Formed over DNA template
(3) Formed by transcription (4) Formed by translation

134. The unequivocal proof that DNA is the genetic material came from the experiment which utilized?

(1) Streptococcus
(2) T_2, E. Coli
(3) E.Coli, heavy nitrogen
(4) P^{32}, S^{35}, R-type bacteria

135. The binding site of t RNA with m RNA and amino acids respectively are

(1) m RNA with DHU loop end and amino acid with CCA end
(2) m RNA with CCA end and amino acid with anticodon loop
(3) m RNA with anticodn loop and amino acid with DHU loop
(4) m RNA with anticodon loop and amino acid with CCA end

Botany - Section B

Section B Shall Consist Of 15 (Fifteen) Questions In Each Subject. Candidate Needs To Attempt Any 10 (Ten) Questions Out Of 15 (Fifteen) In Each Subject.

136. The most vital event of sexual reproduction is:

(1) The development of gametes (2) Fusion of gametes
(3) Fertilisation (4) Both (B) And (C)

137. A diploid parent plant body produces ———— gametes and a haploid parent plant body produces ———— gametes.

(1) diploid, haploid (2) haploid, diploid
(3) diploid, diploid (4) haploid, haploid

138. Haploid plant body is not found in :

(1) Bryophytes (2) Pteridophytes

(3) Algae (4) Rhodophyceae

139. Noncyclic photophosphorylation differs from cyclic photo phosphorylation in that the latter has

(1) Only PSI (2) Evolution of oxygen

(3) Reduction of $NADP^+$ (4) Both B and C

140. The plants growing in dark show yellowing in leaves and elongated internodes, this condition is called as

(1) Etiolation (2) Chlorosis

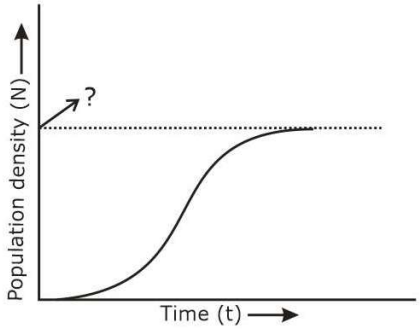
(3) Dark effect (4) None of them

141. When yeast ferments glucose, the products are :-

(1) Water + CO_2 (2) Ethanol + H_2O

(3) Ethanol + CO_2 (4) Methanol + CO_2

142. The given arrow in graph represents -



(1) Biotic potential

(2) Carrying capacity

(3) Population density at time `t

(4) Intrinsic rate of increase

143. A consumer whose carbon atom have already passed through three species is a :-

(a) Autotrophs

(b) Decomposer

(c) Secondary consumer

(d) Tertiary consumers

(1) a and d (2) b and c

(3) Only c (4) Only d

144. Recently extinct species are :-

(1) Dodo (2) Quagga

(3) Stellers sea cow (4) All of the above

145. Which of the following is correct combination of family and its respective members?

(1) Fabaceae – Tomato, Chilli

(2) Solanaceae – Tobacco, Brinjal

(3) Malvaceae – Wheat, Rice

(4) None of the above

146. Choose the incorrect pair

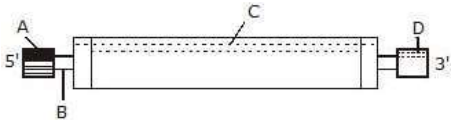
(1) Earlywood – Spring season

(2) Springwood — Large number of xylary elements

(3) Autumnwood – Fewer xylary elements

(4) Autumnwood – Lower density

147. Identify A, B, C and D in the given diagram of mRNA -



(1) A-Methylated cap
B-Initiation codon
C-Termination codon
D-Poly A tail
(2) A-Poly A tail
B-Termination codon
C-Initiation codon
D-Methylated cap
(3) A-Methylated cap region
B-Non-coding
C-Coding
D-Poly A tail
(4) A-Methylated cap region
B-Coding
C-Non-coding
D-Poly A tail

148. DNA finger printing refers to :

(1) molecular analysis of profiles of DNA samples

(2) analysis of DNA sample using imprinting device

(3) techniques used for molecular analysis of different specimens of DNA

(4) techniques used for identification of fingerprints of individuals

149. The males of grasshoppers and bugs possess two sets of autosomes and _____.

(1) Only Y-chromosome

(2) Only X-chromosome

(3) X and Y-chromosome

(4) Neither X nor Y- chromosome

150. A normal woman whose father was colour blind marries a colourblind man. What percentage of girls born to these parents would be colourblind

(1) 100% (2) 75%

(3) 50% (4) 25%

Zoology -Section A

Section A Shall Consist Of 35 (Thirty-five) Questions In Each Subject .All Questions Are Compulsory.

151. Which nerve is purely motor -

(1) Abducens (2) Trigeminal

(3) Olfactory (4) Vagus

152. A species splits into two or more groups and these groups occupy the different ecological zones. This is known :-

(1) Allopatric speciation (2) Sympatric speciation

(3) Transformation speciation (4) None

153. Which of the following is vestigeal or absent in human being :-

(1) Jacobson organ (2) Foliate papillae

(3) Infra orbital gland (4) All the above

154. Frog and Toad are two closely related species but do not interbreed normally. It is an example of:-

(1) Mechanical isolation (2) Behavioural isolation

(3) Ecological isolation (4) Seasonal isolation

155. Shark liver oil and cod liver oil is a natural rich source of

(1) Fat (2) Vitamin A and C only

(3) Vitamin A, C and D (4) Protein

156. Inhibition of gastric and stimulation of gastric, Pancreatic and bile secretion are controlled by -

(1) Gastrin, secretin, Enterokinin and CCK

(2) Enterogasterone, gastrin, pancreozymin and CCK

(3) Gastrin, Enterogasterone, CCK and pancreozymin

(4) Secretin, Enterogasterone, Secretin and enterokinin

157. The abnormal frequency of bowel movement and increased liquidity of the faecal discharge is known as :

(1) Dysentry (2) Diarrhoea

(3) Constipation (4) Jaundice

158. In the wall of alimentary canal, the **muscularis layer** is formed by :

(1) Smooth muscles usually arranged into outer circular and Inner longitudinal muscle layer.

(2) Smooth muscles usually arranged into outer longitudinal and Inner circular muscle layer.

(3) Striated muscles usually arranged into outer circular and Inner longitudinal muscle layer.

(4) Striated muscles usually arranged into outer longitudinal and Inner circular muscle layer.

159. For most excitable cells, the threshold stimulus is-

(1) + 40 mV (2) – 55 to – 60 mV

(3) + 60 mV (4) – 70 mV

160. Enzyme acetyl cholinesterase is concerned with -

(1) Digestion of protein

(2) Synthesis of protein

(3) Digestion of polypeptide

(4) Conduction of nerve impulse

161. Anisocytosis is :-

(1) Change in the shape of RBC

(2) Change in the count of RBC

(3) Change in the size of RBC

(4) A kind of anemia due to deficiency of Fe

162. Which biocontrol agent is very common in root ecosystem & is effective aganist several plant pathogens?

(1) Baculoviruses

(2) Trichoderma

(3) Nucleopolyhedro virus

(4) Ladybird beetle & Dragonflies

163. 'Restriction' in restriction enzyme refers to-

(1) Cutting of DNA

(2) Cleaving of phosphodiester

(3) Prevention of the multiplication of bacteriophage in bacteria

(4) All of the above

164. Which of the following is correctly matched?

(1) Agrobacterium tumefaciens-Tumour

(2) Thermus aquaticus - Bt-gene

(3) pBR322 -Enzyme

(4) Ligase -Molecular scissors

165. In isolated DNA kept at 82–90°C

(1)
The two strands uncoil and separate

(2)
Fragmentation occurs

(3)
Thymine is replaced by uracil

(4)
The structure is stabilised

166. Which of the following combination of risk are associated with genetically modified food :-

(1) Toxicity

(2) Allergic reaction

(3) Antibiotic resistance in microorganism present in alimentary canal

(4) All the above

167. Which of the following statements is not correct?

(1) Insulin used for diabetic patients was earlier extracted from pancreas of slaughtered cattle and pigs which was more efficient than the genetically engineered insulin.

(2) PCR technique is applied to detect HIV in suspected AIDS patients and to detect mutations in genes in suspected cancer patients.

(3) Bone marrow transplantation requires periodic infusion of genetically engineered lymphocytes in ADA deficient patients.

(4) Bioremediation is the one of the application of biotechnology.

168. According to fluid mosaic model of bio membrane there are-

(1) 30% intrinsic and 70% extrinsic proteins

(2) 50% intrinsic and 50% extrinsic proteins

(3) 70% intrinsic and 30% extrinsic proteins

(4) there is no fixed ratio of these proteins

169. The membrane covering the vacuole is known as ?

(1) Desmosomes (2) Tonoplast

(3) Plasmodesmata (4) Tyloses

170. Which of the following is true of nucleolus?

(1) It takes part in spindle formation

(2) It is a membrane bound structure

(3) Larger nucleoli are present in dividing cells

(4) It is a site for active ribosomal RNA synthesis

171. The M-phase starts with the-

(1) G_1 (2) Karyokinesis

(3) Cytokinesis (4) Telophase

172. In cell division, spindle fibres are made up of protein :-

(1) Myoglobin (2) Tubulin
(3) Albumin (4) Myosin

173. Which could be used as a emergency contraceptives

(1) Implants (2) Tubectomy
(3) IUD's (4) Vaults

174. During Oogenesis in human, first maturation division (meiosis-I) starts _____**A**_____ and completes _____**B**_____.

(1) **A-**At puberty, **B-**During fertilization
(2) **A-**Before birth, **B-** During fertilization
(3) **A-**Before birth, **B-**Just prior to ovulation
(4) **A-**Before ovulation, **B-**After fertilization

175. During **parturition** process -

(1) Progesterone and Estrogen hormone level increases
(2) Progesterone and Estrogen hormone level decreases.
(3) Progesterone hormone level increases and Estrogen hormone level decreases
(4) Progesterone hormone level decreases and Estrogen hormone level increases

176. Body of foetus is covered by fine hairs by the end of :

(1) 24 Weeks (2) 12 Weeks
(3) 3 Weeks (4) 36 Weeks

177. The excretory organ in crustaceans like prawn is:

(1) Nephridia (2) Flame cells
(3) Malpighian tubules (4) Antennal glands

178. The **correct dimension** for human kidney are

(1) Length - 10 – 12 cm, Width - 5 – 7 cm, Thickness - 2 – 3 cm, Weight - 120 – 170 gm
(2) Length - 10 – 12 cm, Width - 2 – 7 cm, Thickness - 5 – 7 cm, Weight - 120 – 140 gm
(3) Length -12 – 14 cm, Width - 5 – 7 cm, Thickness - 2 – 3 cm, Weight - 120 – 140 gm
(4) Length -12 – 14 cm, Width - 2 – 3 cm, Thickness - 2 – 3 cm, Weight - 120 – 170 gm

179. Which the following play a significant role to produce a concentrate urine ?

(1) PCT and henle's loop
(2) Henle's loop and vasa recta
(3) Collecting duct and DCT
(4) Collecting duct and PCT

180. Which one of the following is correct pairing of a body part and the kind of muscle tissue that moves it ?

(1) **Iris** – Involuntary smooth muscle
(2) **Heart wall** – Involuntary unstriated muscle
(3) **Biceps of upper arm** – Smooth muscle fibres
(4) **Abdominal wall** – Smooth muscle

181. Muscle contains a red coloured oxygen storing pigment called-

(1) Haemoglobin (2) Myoglobin
(3) Sarcoplasmic reticulum (4) Sarcosome

182. Mucosa associated lymphoid tissue (MALT) found in all except:

(1) Respiratory tract (2) Digestive tract
(3) Urogential tract (4) Brain

183. The human immuno deficiency virus is

(1) an unenveloped, DNA genome containing retrovirus
(2) an unenveloped, RNA genome containing retrovirus
(3) an enveloped, DNA genome containing retrovirus
(4) an enveloped, RNA genome containing retrovirus

184. Which drug is being excessively taken by some sports persons now a days?

(1) Opioids (2) Barbiturates
(3) Cannabinoids (4) LSD

Zoology -Section B

Section B Shall Consist Of 15 (Fifteen) Questions In Each Subject. Candidate Needs To Attempt Any 10 (Ten) Questions Out Of 15 (Fifteen) In Each Subject.

186. Lipofusine granules are found in :-

(1) Cartilage (2) Nerve cell
(3) Red muscle (4) Cardiac muscle

187. The post-caval vein collects blood from

(1) Fore limbs
(2) Hind limbs and organs of the body cavity
(3) Body cavity organs
(4) Renal organs

188. Blood circulation take following course in heart of mammals –

(1) Left auricle – left ventricle – body – right auricle – right ventricle
(2) Right auricle – left ventricle
(3) Left auricle – left ventricle – lungs – right auricle – right ventricle
(4) None of them

189. Fire was used for cooking and protection first by

(1) Java Ape Man (2) Cro-Magnon Man
(3) Both (A) and (B) (4) None of these

190. Which one of the following is correctly matched?

(1) Leptotene - formation of bivalents
(2) Diplotene - chiasmata formation
(3) Pachytene - chiasmata terminalisation
(4) Zygotene - formation of bouquet

191. The functional unit in the synthesis of protein is

(1) Peroxisome (2) Dictyosome
(3) Lysosome (4) Polysome

192. Stirred-tank bioreactors have been designed for-

(1) Ensuring anaerobic conditions in the culture vessel
(2) Availability of oxygen throughtout the process
(3) Addition of preservatives to the product
(4) Purification of the product

193. Bt–cotton is resistant for :-

(1) Round–worm (2) Fluke–worm
(3) Ball–worm (4) Pin–worm

194. Gonadotropins are produced by:-

(1) Adenohypophysis (2) Neurohypophysis
(3) Testes and Ovary (4) Hypothalamus

195. Which of the following factors favour the formation of Oxyghaemoglobin in lungs ?

(1) High Po_2, High PCO_2, High Temperature
(2) Low PO_2, Low PCO_2, Low Temperature
(3) Low PO_2, High PCO_2, High Temperature
(4) High PO_2, Low PCO_2, Low Temperature

196. Which respiratory capacity is **correctly** matched with its formula and volume?

(1)

Respiratory Capacities	Formula	Volume
Functional Residual Capacity	ERV + TV	2300 mL

(2)

Respiratory Capacities	Formula	Volume
Vital Capacity	ERV + TV + IRV	4600 mL

(3)

Respiratory Capacities	Formula	Volume
Total lung Capacity	RV + IRV + ERV	5800 mL

(4)

Respiratory Capacities	Formula	Volume
Inspiratory Capacity	TV + ERV	1600 mL

197. The fundamental character of phylum chordata is-

(1) Presence of mammary gland
(2) Presence of vertebral column and jaw
(3) Paired appendages which may be fins or limbs
(4) Paired pharyngeal gill slits

198. Consider the following four statements **(a-d)** and select the **correct** option stating which **once** are **true (T)** and which once are **false (F)** :

(a) Ascidia and Hagfish are ectoparasites on some fishes and they have notochord present only in larval tail.

(b) Dog fish and Pristis are predaceous fishes and they have cartilaginous notochord and viviparous animals.

(c)Columba and Chelone are tetrapodas animals and they are cold blooded animals and they show skin cast

(d) Corvus and Pteropus have a four chambered heart, bony endoskeleton and they show internal fertilisation and direct developement.

(1) (a)-T, (b)- F, (c)-T, (d)-F

(2) (a)-T, (b)- F, (c)-T, (d)-F

(3) (a)-T, (b)- F, (c)-F, (d)-T

(4) (a)-F, (b)- T, (c)-F, (d)-T

199. Which substances are actively reabsorbed in nephron ?

(1) Glucose, H^+ (2) Amino acid, Na^+

(3) Urea, water (4) Na^+, water

200. Which of the following is a **correct** match of animals and its two feature ?

(1)

Animal	Feature
Nereis	True coelom, open type circulatory system present

(2)

Animal	Feature
Fasciola	Pseudocoelom, circulatory system absent

(3)

Animal	Feature
Ascaris	False coelom, closed type circulatory system present

(4)

Animal	Feature
Balanoglossus	Dioecious, open type circulatory system present

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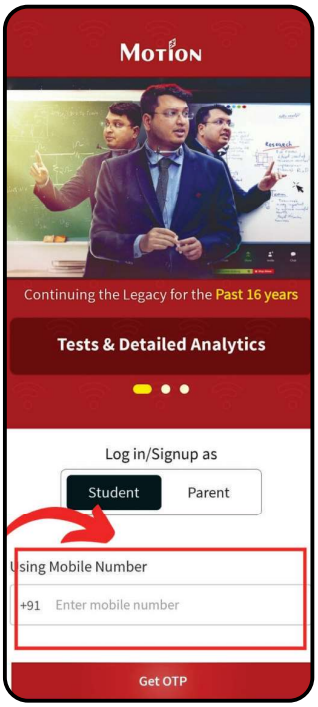

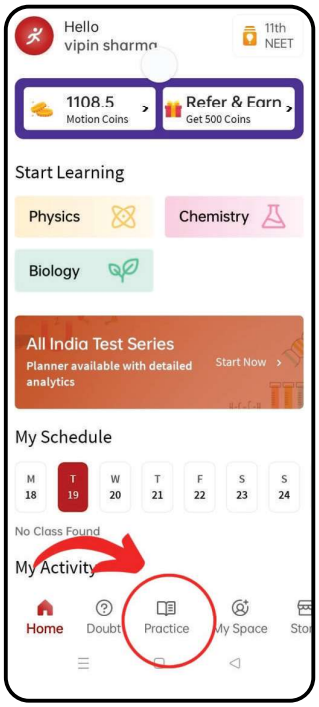

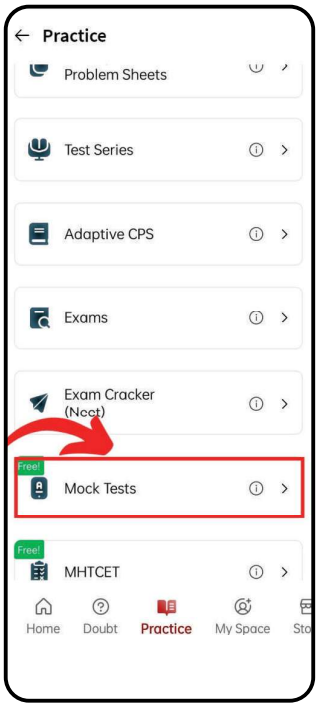

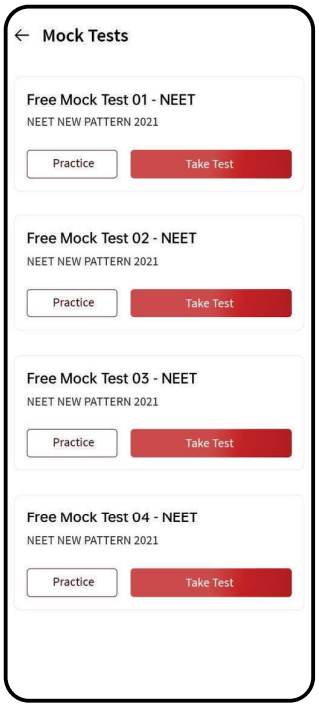

मोशन है, तो भरोसा है।