Code-A

Corporate Office **:** Aakash Tower, 8, Pusa Road, New Delhi-110005, Phone : 011-47623456

Time : 3:00 Hrs.

Pre NEET Mock Test-2

M. Marks : 720

(*for* NEET-2021)

(Complete Syllabus of Class XI & XII)

Instructions :

(i) There are two sections in each subject, i.e. Section-A & Section-B. You have to attempt all 35 questions from Section-A & only 10 questions from Section-B out of 15.

(ii) Each question carries 4 marks. For every wrong response 1 mark shall be deducted from the total score. Unanswered /unattempted questions will be given no marks.

(iii) Use blue/black ballpoint pen only to darken the appropriate circle.

(iv) Mark should be dark and completely fill the circle.

(v) Dark only one circle for each entry.

(vi) Dark the circle in the space provided only.

(vii) Rough work must not be done on the Answer sheet and do not use **white-fluid** or any other **rubbing material** on the Answer sheet.

PHYSICS

Choose the correct answer :

SECTION-A

1. The pitch of a screw gauge is 0.5 mm and there are 50 divisions on its circular scale. The screw gauge has least count of

   (1) 0.05 mm

   (2) 0.25 mm

   (3) 0.01 mm

   (4) 0.001 mm

2. The mean free path (λ) for an ideal gas at constant pressure with molecular diameter d in terms of absolute temperature T has relation

   (1) $\lambda \propto T$

   (2) $\lambda \propto \sqrt{T}$

   (3) $\lambda \propto \frac{1}{T}$

   (4) $\lambda \propto T^2$

3. The maximum wavelength of radiation that can produce photoelectric effect in a certain metal is 2000 Å. The maximum kinetic energy acquired by electron due to radiation of wavelength 1000 Å will be nearly

   (1) 3.4 eV

   (2) 6.2 eV

   (3) 1.2 eV

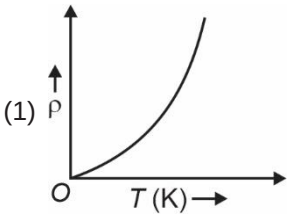
   (4) 12.4 eV

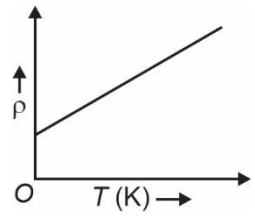
4. The electric field in a certain region is given by $\vec{E} = \left(5\hat{i}\right)$ kV/m. The potential difference ($V_B - V_A$) between two points A and B having co-ordinates (4, 0, 0) and (10, 3, 0) respectively, is equal to (co-ordinates x, y, z are in metre)

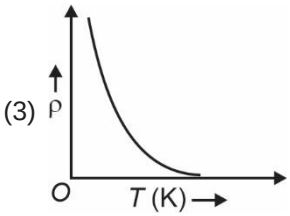
   (1) 12 kV (2) 18 kV

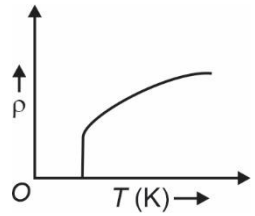
   (3) –42 kV (4) – 30 kV

5. Which of the following graphs best represents the variation of resistivity (ρ) with temperature (T) for manganin?

(1) 

(2) 

(3) 

(4) 

6. A wire of length L with Young's modulus Y is hanging from a fixed support. The length of wire becomes L_1 when mass M_1 is suspended and it becomes L_2 when mass M_2 is suspended at its free end. Then original length L is equal to

(1) $\frac{L_1M_2 + L_2M_1}{M_1 + M_2}$ (2) $\frac{L_1M_2 - L_2M_1}{M_2 + M_1}$

(3) $\frac{(L_1M_2 - L_2M_1)}{(M_2 - M_1)}$ (4) $\sqrt{L_1L_2}$

7. Two tuning forks A and B produce notes of frequencies 336 Hz and 340 Hz. An unknown note of guitar string when sounded with fork A produce certain beats. When same note is sounded with fork B, the beat frequency gets doubled. The unknown note of guitar string is (the frequency of guitar string is less than that of A)

(1) 332 Hz (2) 340 Hz

(3) 344 Hz (4) 348 Hz

8. A 15 μF capacitor is connected to 220 V, 50 Hz source. The rms value of current in the circuit is nearly

(1) 1.52 A (2) 1.04 A

(3) 0.92 A (4) 1.72 A

9. A ball is thrown vertically upwards with velocity of 10 m/s from the top of a tower. It returns back to ground after some time with speed of 60 m/s. The height of the tower is (g = 10 m/s^2)

(1) 375 m (2) 175 m

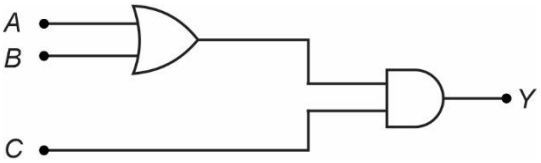
(3) 125 m (4) 225 m

10. What is de Broglie wavelength associated with an electron, accelerated through a potential difference of 64 volt?

(1) 0.451 nm (2) 0.361 nm

(3) 0.153 nm (4) 0.281 nm

11. For which of the following inputs, output is high (1)?



(1) A = 1, B = 1, C = 0 (2) A = 1, B = 0, C = 1

(3) A = 0, B = 1, C = 0 (4) A = 1, B = 0, C = 0

12. A short electric dipole has dipole moment of 2.4×10^{-10} C m. The electric potential due to the dipole at a point at a distance of 0.4 m from the centre of dipole situated on a line making an angle 60° with the dipole axis is

(1) 3.25 V (2) 4.55 V

(3) 6.75 V (4) 12.50 V

13. A solenoid has a core of a material with relative permeability 500. The winding of solenoid are insulated from core and carry current of 5 A. If the number of turns is 1000 per metre, what is intensity of magnetisation of the core?

(1) 2.495×10^6 A/m (2) 5.225×10^5 A/m

(3) 6.335×10^5 A/m (4) 5.325×10^6 A/m

14. When a diode is heavily doped

(1) Depletion region will be wide

(2) Depletion region will be very thin

(3) Diode material will be positively charged

(4) Avalanche voltage will be high

15. A capillary tube has radius of 0.05 cm. The tube is dipped in a container filled with water (Surface tension of water = 0.075 N m^{-1}). What is the height of water rise in capillary tube due to capillary action?

(1) 4 cm (2) 5 cm

(3) 3 cm (4) 6 cm

16. The energy equivalence of 2 g of a substance is

(1) 1.8×10^{10} J (2) 1.8×10^{12} J

(3) 1.8×10^{13} J (4) 1.8×10^{14} J

17. The solid which has negative temperature coefficient of resistance, is

(1) Mercury (2) Nichrome

(3) Manganin (4) Graphite

18. A ray is incident at an angle of incidence *i* on one face of a prism with angle of prism 6° and emerges from second face. If the prism is dipped in transparent liquid of refractive index 1.2 and angle of deviation is 2°, then what is the refractive index of prism material?

(1) 1.20 (2) 1.82

(3) 1.60 (4) 1.98

19. In Bohr's model of hydrogen atom, for dynamic stable orbit, relation between orbit radius (*r*) and speed of electron (*v*) is

(1) $r = \frac{e^2}{2\pi\varepsilon_0 mv^2}$

(2) $r = \frac{3e^2}{4\pi\varepsilon_0 mv^2}$

(3) $r = \frac{e^2}{8\pi\varepsilon_0 mv^2}$

(4) $r = \frac{e^2}{4\pi\varepsilon_0 mv^2}$

20. Assuming that light of wavelength 6000 Å is coming from a star. What is the limit of resolution of telescope whose objective has diameter of 122 cm?

(1) 3×10^{-7} rad (2) 6×10^{-7} rad

(3) 9×10^{-7} rad (4) 1.5×10^{-7} rad

21. A body weighs 120 N at a height equal to radius of the Earth. Its weight on the Earth surface will be

(1) 140 N (2) 72 N

(3) 390 N (4) 480 N

22. An electron has drift velocity of 4×10^{-4} m/s. If the mobility of electron is 3×10^{-2} $m^2 V^{-1} s^{-1}$, then applied electric field is

(1) 4×10^{-6} V m^{-1}

(2) 7.5×10^{-6} V m^{-1}

(3) 1.33×10^{-2} V m^{-1}

(4) 3.33×10^{-9} V m^{-1}

23. For transistor action, which of the following statements is correct?

(1) The collector side is heavily doped and has small cross-sectional area

(2) Transistor works as an amplifier when both emitter-base and collector-base junction is reverse biased

(3) In p-n-p transistor, current enters from emitter into base region

(4) Base current is approximately equal to collector current in a n-p-n transistor

24. The capacitance of a capacitor with dielectric as a medium is 60 μF. When dielectric is removed, its capacitance changes to 12 μF. The permittivity of dielectric medium is

(1) 4.4×10^{-11} C^2 N^{-1} m^{-2}

(2) 5×10^{-11} C^2 N^{-1} m^{-2}

(3) 5.00 C^2 N^{-1} m^{-2}

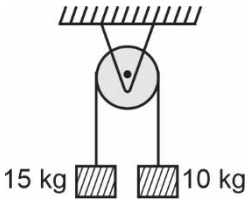
(4) 1.85×10^{-11} C^2 N^{-1} m^{-2}

25. Taking into account, the rules of significant figures, what is value of (436.32 g + 0.301 g + 227.2 g)?

(1) 663.82 g (2) 663.8 g

(3) 663.821 g (4) 664 g

26. Two bodies of masses 15 kg and 10 kg are tied to the ends of massless string. The inextensible string passes over a frictionless pulley as shown. The acceleration of 15 kg mass is (in terms of acceleration due to gravity *g*)



(1) $\frac{g}{6}$ (2) $\frac{g}{3}$

(3) $\frac{g}{4}$ (4) $\frac{g}{5}$

27. A cylinder contains oxygen gas at pressure of 260 kPa and temperature of 27°C, the density of gas is (R = 8.3 J mol^{-1} K^{-1})

(1) 0.2 kg/m^3

(2) 1.2 kg/m^3

(3) 3.34 kg/m^3

(4) 0.5 kg/m^3

28. An electromagnetic wave contains non zero energy density associated with it. It has both electric and magnetic fields associated with it. Then

(1) In free space with rms value of electric field as E, the average energy density associated with electric field is $\frac{\varepsilon_0 E^2}{2}$

(2) In free space with rms value of magnetic field as B, the average energy density associated with magnetic field is $\frac{B^2}{2\mu_0}$

(3) Contribution of electric field to average energy density is double to that by magnetic field

(4) Both (1) and (2) are correct

29. A closely wound solenoid is 60 cm long and has 5 layers of 300 turns each. The diameter of solenoid is 1.2 cm. If the current carried is 5 A, the magnitude of magnetic field inside solenoid near its centre is

(1) 1.57×10^{-2} T (2) 1.57×10^{-4} T

(3) 3.14×10^{-3} T (4) 3.14×10^{-2} T

30. In Young's double slit experiment, if the separation between slit plane and screen is doubled and wavelength of coherent light used in two slits is halved, then fringe width

(1) Becomes half (2) Becomes four times

(3) Becomes one fourth (4) Remains unchanged

31. In a metre bridge, the null point is found to be at distance of 33.33 cm from left end A. The resistance connected in right gap is 12 Ω. What is unknown resistance in left gap?

(1) 24 Ω (2) 18 Ω

(3) 36 Ω (4) 6 Ω

32. Daily food intake of a human adult is equivalent 10^7 joule. Its value in electron volt is

(1) 1.6×10^{-25} eV (2) $6.25 \times 10^{+25}$ eV

(3) 3.25×10^{-20} eV (4) $6 \times 10^{+20}$ eV

33. When a $^{235}_{92}U$ isotope is bombarded with a neutron it generates $^{133}_{51}Sb$, four neutrons and

(1) $^{94}_{38}Sr$ (2) $^{140}_{54}Xe$

(3) $^{99}_{41}Nb$ (4) $^{89}_{36}Kr$

34. Two cylinders A and B of equal volume are connected to each other via a stopcock. Cylinder A contains an ideal gas at temperature T and pressure P. Cylinder B is completely evacuated. The entire system is thermally insulated. Now stopcock is suddenly opened. Then

(1) The process is an isochoric process

(2) The intermediate states before attaining equilibrium do not satisfy gas equation

(3) Temperature in final state will decrease

(4) Internal energy of the gas increases

35. Electromagnetic radiation with an energy flux of 10 W/cm^2 falls on a reflecting surface at normal incidence. The surface has an area of 20 cm^2, what is average force exerted on surface during a 30 minute time span?

(1) 1.2×10^{-6} N (2) 2.4×10^{-6} N

(3) 1.33×10^{-6} N (4) 2.66×10^{-6} N

SECTION-B

36. Two solid spheres are made of copper. The radius of second sphere is 3 times that of the first. The quantities of heat required to raise temperature of each sphere by 2 K are in the ratio of

(1) $\frac{1}{9}$ (2) $\frac{9}{4}$

(3) $\frac{1}{18}$ (4) $\frac{1}{27}$

37. The average thermal energy for a diatomic gas molecule is (k_B is Boltzmann constant, T is absolute temperature)

(1) $\frac{3}{2}k_BT$ (2) $2\,k_BT$

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

38. A series LCR circuit is connected to an ac voltage source. When L is removed from circuit, the phase difference between current and voltage is $\frac{\pi}{4}$. If instead of L, C is removed from the circuit, the phase difference between current and voltage is again $\frac{\pi}{4}$. The power factor of the original circuit is

(1) 0.707 (2) 0.5

(3) 1.0 (4) 0.785

39. In the HCl molecule, separation between the nuclei of two atoms is about 1.46 Å. Mass of chlorine atom is about 35.5 times as massive as hydrogen atom and nearly all mass is concentrated at its nucleus. The distance of centre of mass from hydrogen atom is

(1) 0.67 Å (2) 0.73 Å

(3) 1.42 Å (4) 0.96 Å

40. In SHM, when displacement from mean position is maximum

(1) Velocity is minimum in magnitude

(2) Acceleration is maximum in magnitude

(3) Acceleration is minimum in magnitude

(4) Both (1) and (2)

41. What is Brewster's angle for air to glass transition? (Refractive index of glass 1.43)

(1) 30° (2) 40°

(3) 55° (4) 25°

42. Dimensions of pressure gradient are

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

(2) $[ML^{-2}T^{-2}]$

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

(4) $[MLT^{-4}]$

43. Colour code of a carbon resistor is given as below.

The value of resistance and tolerance respectively, are

(1) $62 \times 10^5\ \Omega$, 10%

(2) $63 \times 10^5\ \Omega$, 5%

(3) $62 \times 10^5\ \Omega$, 20%

(4) $12 \times 10^5\ \Omega$, 5%

44. A spherical conductor of radius 50 cm has charge of 3.6 μC distributed over its surface. What is magnitude of electric field at a point 150 cm from the centre of the conductor?

(1) 1.44×10^4 V/m

(2) 3.6×10^3 V/m

(3) 1.22×10^5 V/m

(4) 6.2×10^4 V/m

45. Find the torque about origin when a force of $6\hat{i}+3\hat{j}$ acts on a particle whose position vector is $3\hat{j}+5\hat{k}$.

(1) $21\hat{k}$ (2) $15\hat{i}-30\hat{j}+18\hat{k}$

(3) $-15\hat{i}+30\hat{j}-18\hat{k}$ (4) $15\hat{i}+18\hat{k}$

46. At a depth of 2 km in an ocean, what is force acting on a window of area 25 cm × 20 cm of a submarine at this depth, the interior of which is kept at sea level atmospheric pressure? (The density of sea water is 1030 kg m^{-3}, g = 10 m/s^2)

(1) 6.02×10^5 N (2) 1.02×10^8 N

(3) 1.03×10^6 N (4) 2.06×10^5 N

47. A wheel with 20 metallic spokes, each 0.5 m long, is rotated with a speed of 4 rev/s in a plane normal to horizontal component of earth's magnetic field B_H = 0.5 G. What is emf induced between axle and rim of the wheel?

(1) 1.57×10^{-4} V

(2) 3.14×10^{-3} V

(3) 7.85×10^{-4} V

(4) 6.28×10^{-3} V

48. Suppose a pure Si crystal has 5×10^{28} atom m^{-3}. It is doped with 1 ppm concentration of pentavalent Arsenic. Calculate the number of holes ($n_i = 2.5 \times 10^{16}\ m^{-3}$).

(1) $8 \times 10^9\ m^{-3}$

(2) $1.25 \times 10^{10}\ m^{-3}$

(3) $6.25 \times 10^{22}\ m^{-3}$

(4) $4.5 \times 10^{22}\ m^{-3}$

49. An object is placed 10 cm in front of a concave mirror of radius of curvature 10 cm, magnification of the image is

(1) –2 (2) –1

(3) 1 (4) 2

50. A man can swim with speed of 4 km/h in still water. He crosses 1 km wide river making strokes normal to river current. The river flows steadily at 3 km/h. How far down the river, he drifts when he reaches the other bank?

(1) 500 m (2) 600 m

(3) 750 m (4) 1000 m

CHEMISTRY

SECTION-A

51. For positive deviation from Raoult's law, which among the given relations is incorrect?
(1) $\Delta H_{mix} < 0$ (2) $\Delta S_{mix} > 0$
(3) $\Delta V_{mix} > 0$ (4) $\Delta G_{mix} < 0$

52. Consider the following statements
(a) Mixture of CO and N_2 is called synthesis gas
(b) CO reduces both Fe_2O_3 and ZnO to their respective metals
(c) CO is a π acid ligand
The correct statements are
(1) (a) and (b) only (2) (b) and (c) only
(3) (a) and (c) only (4) (a), (b) and (c)

53. Mass of zinc deposited at cathode by passing a current of 3.86 ampere for 100 minutes in molten zinc chloride is (atomic mass of Zn = 65.4 u)
(1) 10.5 g (2) 12.2 g
(3) 4.5 g (4) 7.8 g

54. For the reversible reaction, $A + 2B \rightleftharpoons 3C$ if equilibrium constant is 1×10^2 at 27°C then the value of $\Delta_r G°$ at the same temperature will be
(R = 2 cal $K^{-1} mol^{-1}$)
(1) – 8.21 kcal mol^{-1}
(2) – 2.76 kcal mol^{-1}
(3) – 4.31 kcal mol^{-1}
(4) 12.27 kcal mol^{-1}

55. For the reaction, $Br_2(g) \rightarrow 2Br(g)$, the correct option is
(1) $\Delta_r H < 0$ and $\Delta_r S > 0$
(2) $\Delta_r H > 0$ and $\Delta_r S > 0$
(3) $\Delta_r H < 0$ and $\Delta_r S < 0$
(4) $\Delta_r H > 0$ and $\Delta_r S < 0$

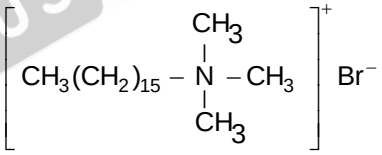
56. Consider the following statements
(a) Thin layer chromatography is a type of partition chromatography
(b) Silica gel and alumina are commonly used adsorbents in adsorption chromatography
(c) In paper chromatography, chromatography paper contains water trapped in it, which acts as stationary phase
The correct statement(s) is/are
(1) (a) and (b) only (2) (b) and (c) only
(3) (b) only (4) (a), (b) and (c)

57. If the rate constant of a reaction is 2.303×10^{-4} s^{-1} then the time required to reduce 1.6 M of the reactant to 0.4 M is (log 2 = 0.3)
(1) 50 min (2) 20 min
(3) 150 min (4) 100 min

58. The compound which contains two P–OH and two P–H bonds is
(1) $H_4P_2O_5$ (2) $H_4P_2O_6$
(3) $(HPO_3)_3$ (4) $H_4P_2O_7$

59. Reaction of benzoyl chloride with H_2/Pd-$BaSO_4$ is known as
(1) Etard reaction
(2) Swarts reaction
(3) Rosenmund reduction
(4) Clemmensen reduction

60. A metal crystallises as fcc crystal structure. If edge length of unit cell is 320 pm then the radius of the metal atom approximately will be
(1) 139 pm (2) 178 pm
(3) 160 pm (4) 113 pm

61. Which among the following is an anionic detergent?
(1) $C_{17}H_{35}COO^-Na^+$
(2) 
(3) $CH_3(CH_2)_{10}CH_2OSO_3^-Na^+$
(4) $CH_3(CH_2)_{16}COO(CH_2CH_2O)_nCH_2CH_2OH$

62. Spin only magnetic moment of Fe^{2+} is
(1) 1.73 BM (2) 3.87 BM
(3) 4.90 BM (4) 5.92 BM

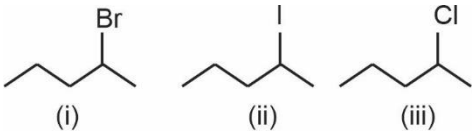
63. Consider the following statements
(a) Potassium carbonate can be synthesised by Solvay process
(b) Washing soda is used in softening of hard water
(c) Crystals of sodium hydroxide are deliquescent
The incorrect statement(s) is/are
(1) (a) only (2) (c) only
(3) (a) and (c) only (4) (a), (b) and (c)

64. Match the following and identify the correct option

(a)	Baking soda	(i)	$Ca(OH)_2$
(b)	Slaked lime	(ii)	CaO
(c)	Quick lime	(iii)	Na_2CO_3
(d)	Soda ash	(iv)	$NaHCO_3$

	(a)	(b)	(c)	(d)
(1)	(iii)	(ii)	(i)	(iv)
(2)	(iv)	(ii)	(i)	(iii)
(3)	(iii)	(i)	(ii)	(iv)
(4)	(iv)	(i)	(ii)	(iii)

65. The rate of dehydrohalogenation of the given compounds follows the order



(1) (iii) > (i) > (ii)
(2) (ii) > (iii) > (i)
(3) (ii) > (i) > (iii)
(4) (iii) > (ii) > (i)

66. Which of the following is the correct order of decreasing field strength of ligands according to spectrochemical series?
(1) $Br^- > H_2O > edta^{4-} > NH_3$
(2) $edta^{4-} > NH_3 > H_2O > Br^-$
(3) $NH_3 > edta^{4-} > H_2O > Br^-$
(4) $edta^{4-} > Br^- > H_2O > NH_3$

67. Incorrect statement among the following is
(1) Pig iron contains about 4% carbon
(2) Aniline can be used as froth stabiliser in froth floatation process
(3) Brass is an alloy of copper and zinc
(4) Zirconium is refined by zone refining method

68. Which among the following is not a disaccharide?
(1) Sucrose
(2) Maltose
(3) Lactose
(4) Galactose

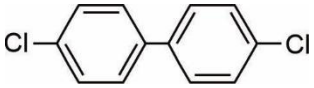
69. What is the change in oxidation number of chromium in the following reaction?

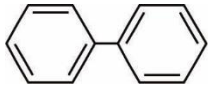
$$Cr_2O_3 + 2Al \xrightarrow{\Delta} Al_2O_3 + 2Cr$$

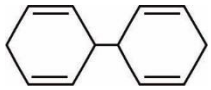
(1) +6 to +3 (2) +3 to 0
(3) +4 to 0 (4) 0 to +6

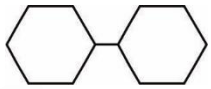
70. The enzymes which utilise ATP in phosphate transfer require which metal as co-factor?
(1) Ca (2) Na
(3) K (4) Mg

71. Chlorobenzene on reaction with sodium in presence of dry ether forms

(1) 

(2) 

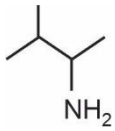
(3) 

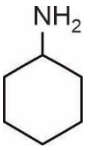
(4) 

72. Which colloidal sol is most easily precipitated by Al^{3+} ions?
(1) TiO_2 sol
(2) As_2S_3 sol
(3) $Al_2O_3 \cdot xH_2O$ sol
(4) Haemoglobin

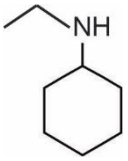
73. If 12 g of urea is dissolved in 500 g water then the freezing point of the solution will be
(K_f of water = 1.86 K kg mol^{-1})
(1) –1.74°C (2) –0.22°C
(3) –0.74°C (4) –1.21°C

74. The compound which will not give positive carbylamine test is

(1) 

(2) 

(3) 

(4) 

75. Which among the following is synthetic rubber?
(1) Buna-N (2) PHBV
(3) Orlon (4) Glyptal

76. Incorrect statement among the following is
(1) The most common oxidation state of titanium is +4
(2) V_2O_5 on reaction with alkalies forms VO_4^{3-}
(3) Interstitial compounds are chemically inert
(4) Density of iron is greater than nickel

77. Which of the following set of molecules will have zero dipole moment?

(1) Water, hydrogen sulphide, ozone, chlorine trifluoride

(2) Sulphur hexafluoride, carbon tetrachloride, boron trifluoride, phosphorus pentachloride

(3) Sulphur tetrafluoride, xenon tetrafluoride, ammonia, bromine pentafluoride

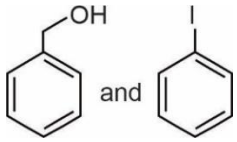
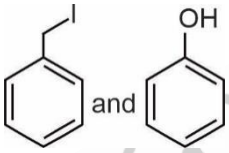
(4) Methane, carbon dioxide, chloroform, sulphur dioxide

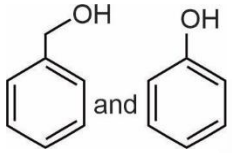
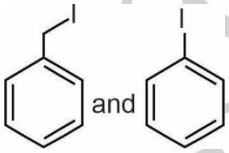
78. On electrolysis of dilute copper sulphate solution using platinum electrodes, the products obtained at cathode and anode respectively are

(1) H_2 and O_2 (2) Cu and O_2

(3) H_2 and SO_2 (4) O_2 and H_2

79. Benzyl phenyl ether ($PhCH_2OPh$) on cleavage with HI gives

(1)  (2) 

(3)  (4) 

80. The number of electrons, protons and neutrons in $^{169}_{69}Tm$ respectively are

(1) 69, 100, 69 (2) 69, 69, 100

(3) 100, 69, 69 (4) 69, 100, 100

81. Match the following and find the correct option

(a)	NO	(i)	Acidic
(b)	CO_2	(ii)	Basic
(c)	SnO	(iii)	Neutral
(d)	CrO	(iv)	Amphoteric

	(a)	**(b)**	**(c)**	**(d)**
(1)	(ii)	(i)	(iii)	(iv)
(2)	(iii)	(i)	(ii)	(iv)
(3)	(i)	(ii)	(iv)	(iii)
(4)	(iii)	(i)	(iv)	(ii)

82. Most stable carbocation among the following is

(1) $(Ph)_2\overset{\oplus}{C}HCH_2$ (2) $(Ph)_2\overset{\oplus}{C}CH_3$

(3) $Ph\overset{\oplus}{C}H_2$ (4) $(CH_3)_3C\overset{\oplus}{C}H_2$

83. Which among the following has maximum number of atoms?

(1) 14 g of N_2 (2) 8 g of CH_4

(3) 22 g of CO_2 (4) 15 g of C_2H_6

84. Non-essential amino acid among the following is

(1) Proline (2) Histidine

(3) Valine (4) Methionine

85. A gas is allowed to expand in a well insulated container against a constant external pressure of 2 atm from an initial volume of 4.25 L to a final volume of 6.25 L. The change in internal energy (ΔU) of the gas will be

(1) – 675 J (2) + 675 J

(3) 405.2 J (4) – 405.2 J

SECTION-B

86. IUPAC official name of element having atomic number 102 is

(1) Mendelevium (2) Bohrium

(3) Rutherfordium (4) Nobelium

87. According to molecular orbital theory, which among the following is diamagnetic species?

(1) B_2 (2) O_2

(3) NO (4) C_2

88. Identify the correct statement from the following.

(a) On commercial scale, CO_2 is obtained by heating limestone

(b) Graphite is used as a dry lubricant

(c) SiO_2 reacts with HF but does not react with NaOH

(d) In $[GeCl_6]^{2-}$, the hybridisation of central atom is sp^3d^2

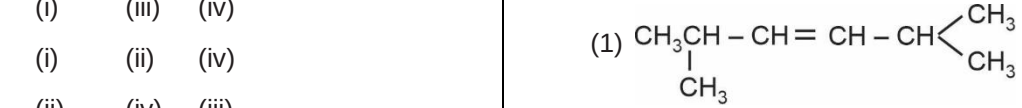
(1) (a) and (b) only

(2) (b) and (c) only

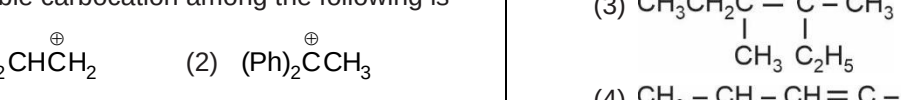
(3) (b) and (d) only

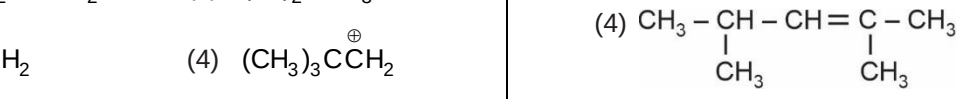
(4) (a), (b) and (d) only

89. Which compound on reductive ozonolysis gives propanone and isobutyraldehyde?

(1) 

(2) 

(3) 

(4) 

90. Reaction of acetaldehyde with ethylmagnesium bromide followed by hydrolysis will give
(1) Tertiary alcohol (2) Secondary alcohol
(3) Ester (4) Ether

91. 16 g of O_2 and 8 g of He is present in a closed container. If total pressure of the mixture of gases in the cylinder is 15 atm then the partial pressure of He in the cylinder will be
(1) 3 atm (2) 10 atm
(3) 6 atm (4) 12 atm

92. For Arrhenius equation, the intercept of the plot lnk vs $\frac{1}{T}$ is
(1) $-\frac{E_a}{R}$ (2) lnA
(3) A (4) $\frac{1}{\ln A}$

93. Solubility of AgCl in 0.1 M calcium chloride solution is (K_{sp} of AgCl = 1.8×10^{-10})
(1) 1.8×10^{-9} M (2) 9×10^{-10} M
(3) 1.8×10^{-8} M (4) 1.3×10^{-5} M

94. Benzal chloride on reaction with H_2O at 373 K forms
(1) Benzoic acid (2) Benzyl alcohol
(3) Benzaldehyde (4) Phenol

95. In which of the following reaction white precipitate is obtained?
(1) $FeCl_3(aq) + NH_4OH(aq) \rightarrow$
(2) $ZnSO_4(aq) + NH_4OH(aq) \rightarrow$
(3) $Cu^{2+}(aq) + NH_3(aq) \rightarrow$
(4) $AgCl(s) + NH_3(aq) \rightarrow$

96. Number of unpaired electrons present in $[Mn(CN)_6]^{3-}$ is
(1) Zero (2) 2
(3) 4 (4) 3

97. Which among the following is a tranquilizer?
(1) Luminal (2) Seldane
(3) Vancomycin (4) Ranitidine

98. Which among the following is a carbonate ore of metal?
(1) Bauxite (2) Siderite
(3) Sphalerite (4) Zincite

99. Products obtained by the reaction of CaC_2 and Al_4C_3 with heavy water respectively are
(1) CD_4 and C_2D_6 (2) C_3D_4 and C_2D_2
(3) C_2D_2 and CD_4 (4) C_2D_6 and CD_4

100. Most acidic compound among the following is
(1) C_6H_5COOH (2) HCOOH
(3) $BrCH_2COOH$ (4) CH_3COOH

BOTANY

SECTION-A

101. Viroids have
(1) DNA enclosed in capsid
(2) RNA of low molecular weight
(3) RNA enclosed in capsid
(4) DNA without protein coat

102. Which of the following pairs has/have same ploidy in a typical angiospermic plant?
a. Pollen grain and anther
b. Male gamete and pollen grain
c. Seed and endosperm
d. Embryo sac and ovule
(1) a and c (2) b and d
(3) b only (4) b, c and d

103. Who experimentally verified chromosomal theory of inheritance and proposed the term recombination?
(1) Sturtevant (2) T.H. Morgan
(3) Boveri (4) Sutton

104. Which of the following is a colonial alga?
(1) *Spirulina* (2) *Ectocarpus*
(3) *Spirogyra* (4) *Volvox*

105. The phenomenon of loss of water in liquid form from the tip of grass blades at night and in early morning is
(1) Root pressure
(2) Imbibition
(3) Plasmolysis
(4) Guttation

106. Select the **incorrect** statement.
(1) NPP is available biomass for the consumption to herbivores
(2) NPP is less than GPP
(3) GPP is primary productivity whereas NPP is secondary productivity
(4) GPP is rate of organic matter formation by producers

107. The stalk of ovule by which it remains attached to placenta is
(1) Hilum
(2) Micropyle
(3) Chalaza
(4) Funicle

108. In light reaction, plastoquinone
(1) Acts as electron acceptor and does not accepts H^+
(2) Is primary acceptor of electrons from PS II
(3) Transfers electrons between PS II to cyt b_6f
(4) Transfers electrons between cyt b_6f to PS I

109. Match the columns and select the **correct** option.

	Column I		**Column II**
a.	*Saccharomyces cerevisiae*	(i)	Making of curd
b.	*Monascus purpureus*	(ii)	Baking industry
c.	*Clostridium butylicum*	(iii)	Statins
d.	*Lactobacillus*	(iv)	Butyric acid

(1) a(iii), b(i), c(iv), d(ii)
(2) a(ii), b(iii), c(iv), d(i)
(3) a(iv), b(ii), c(iii), d(i)
(4) a(i), b(iii), c(iv), d(ii)

110. All of the following cause seed dormancy, **except**
(1) Phenols
(2) Gibberellins
(3) Impermeable seed coat
(4) ABA

111. Which of the given enzymes is capable of opening of DNA helix and polymerisation of nucleotides?
(1) DNA polymerase I
(2) RNA polymerase
(3) DNA polymerase II
(4) DNA polymerase III

112. Inferior ovary is found in
(1) Plum
(2) Tomato
(3) Mustard
(4) Ray florets of sunflower

113. Choose the **incorrect** one for G_0 stage
(1) Cells are metabolically active
(2) Cells that exit G_1 phase enter G_0 stage
(3) Cells in this stage undergo protein synthesis
(4) Cells that enter G_0 stage can never proliferate

114. Identify the **incorrect** statement for G_2 phase.
(1) DNA replication occurs
(2) Tubulin protein synthesises
(3) Golgi body duplicates
(4) Protein synthesis occurs

115. If the distance between two consecutive base pairs is 0.34 nm and the total number of base pairs of DNA double helix in haploid mammalian cell is 3.3×10^9 bp then length of DNA is approximately
(1) 1.12 m (2) 1.36 m
(3) 1.18 nm (4) 1.56 m

116. Which of the following regions of globe is commonly called 'Lungs of planet'?
(1) Himalaya (2) Western Ghat
(3) Indo-Burma (4) Amazon forest

117. Nitrogenase
(1) Catalyses conversion of N_2 to ammonia
(2) Activity is seen in nodules of cereals
(3) Is a Cu-Fe protein
(4) Fixes nitrogen in presence of oxygen

118. The primary treatment of sewage
(1) Produces activated sludge
(2) Is anaerobic biological process
(3) Is a physical process
(4) Involves anaerobic sludge digester

119. Select the **wrong** match.
(1) Sickle cell anaemia – Point mutation
(2) Haemophilia – X linked recessive disorder
(3) Phenylketonuria – Autosomal dominant disorder
(4) Colourblindness – X linked disorder

120. In a newly colonised habitat, which of the following population attributes contributes maximally?
(1) Emigration (2) Sex ratio
(3) Natality (4) Immigration

121. Identify the **incorrect** one for photorespiration
(1) RuBisCO shows carboxylase activity
(2) It does not produce ATP or $NADPH_2$
(3) Oxygen is utilised in chloroplast
(4) In first step one molecule of PGA and one molecule of phosphoglycolate is formed

122. Match the columns and select the **correct** option.

	Column I		Column II
a.	Calcium	(i)	Required for formation of chlorophyll
b.	Boron	(ii)	Found in middle lamella
c.	Molybdenum	(iii)	Uptake and utilisation of Ca^{++}
d.	Iron	(iv)	Component of nitrogenase

(1) a(ii), b(iii), c(iv), d(i)
(2) a(iv), b(ii), c(iii), d(i)
(3) a(iii), b(iv), c(ii), d(i)
(4) a(i), b(ii), c(iv), d(iii)

123. In eukaryotes which cell organelle is the site of glycosylation of proteins?
(1) RER (2) Peroxisome
(3) Golgi bodies (4) SER

124. Which of the given is an adventitious root?
(1) Roots of radish
(2) Roots of mustard
(3) Respiratory roots of *Rhizophora*
(4) Prop roots of banyan

125. Half inferior ovary is found in
(1) Peach (2) Guava
(3) China rose (4) Brinjal

126. Select the **odd** one for heartwood.
(1) Dark in colour
(2) Does not conduct water
(3) Gives mechanical support
(4) It is outermost secondary xylem

127. Ladybird is used to control
(1) Mosquitoes
(2) Aphids
(3) Root pathogen in plants
(4) Viruses that infect plants

128. In Krebs' cycle, at how many step(s) decarboxylation occur(s)?
(1) 1 (2) 3
(3) 2 (4) 4

129. If a couple has blood group AB and O then which of the given blood groups can be seen in their children?
(1) O and B (2) AB and O
(3) A and B (4) AB and B

130. Which plant hormone stimulates internodal elongation in plants?
(1) Auxin (2) ABA
(3) Ethylene (4) Gibberellins

131. Which of the following statements regarding DNA is **incorrect**?
(1) The two strands run antiparallelly
(2) Adenine pairs with thymine through three H-bonds
(3) Purine always pairs with pyrimidine
(4) Guanine pairs with cytosine through three H-bonds

132. In first phase of translation
(1) t-RNA joins with amino acid
(2) m-RNA binds with ribosome
(3) Ribosome binds with t-RNA
(4) t-RNA binds at initiator codon

133. Floridean starch is stored food material of
(1) *Porphyra* (2) *Fucus*
(3) *Spirogyra* (4) *Ectocarpus*

134. Strobili or cones are **not** found in
(1) *Equisetum* (2) *Selaginella*
(3) *Pinus* (4) *Marchantia*

135. Mendel selected how many characters and varieties respectively of pea plant for hybridisation experiments?
(1) 14, 7 (2) 22, 14
(3) 7, 14 (4) 7, 7

SECTION-B

136. Snow blindness is related to
(1) Inflammation of cornea by exposure of UV-B
(2) Damage of cornea by greenhouse gases
(3) Exposure of retina by CFCs
(4) Blindness of eye in colder areas due to IR rays

137. Match the following columns and select the **correct** option.

	Column I		Column II
a.	Leptotene	(i)	Bivalent formation
b.	Zygotene	(ii)	Crossing over
c.	Diplotene	(iii)	Condensation of chromatin
d.	Pachytene	(iv)	Dissolution of synaptonemal complex

(1) a(iii), b(i), c(iv), d(ii) (2) a(ii), b(iii), c(i), d(iv)
(3) a(i), b(iv), c(ii), d(iii) (4) a(iv), b(i), c(iii), d(ii)

138. Inclusion bodies
(1) Are bound by double membrane
(2) Are found in purple and green photosynthetic bacteria
(3) Store food material in eukaryotes
(4) Are found in nucleus

139. The transverse section of a plant shows following anatomical features:
a. Vascular bundles are arranged in a ring
b. Hypodermis is collenchymatous
Identify the plant part
(1) Monocot root
(2) Dicot stem
(3) Monocot stem
(4) Dicot root

140. Pollination occurs by insect in
(1) *Vallisneria*
(2) Maize
(3) Water lily
(4) *Zostera*

141. According to IUCN (2004), the total number of plants and animal species described is
(1) 7 million
(2) Slightly more than 1.5 million
(3) 50 million
(4) 20 million

142. In geometrical growth, rate of growth slows down leading to
(1) Lag phase (2) Exponential phase
(3) Log phase (4) Stationary phase

143. Montreal protocol was signed at Montreal (Canada) and became effective in the year
(1) 1987 (2) 1981
(3) 1976 (4) 1989

144. Read the below given food chain and select the **incorrectly** matched pair.
Crop $\rightarrow$ Grasshopper $\rightarrow$ Sparrow $\rightarrow$ Falcon
(1) Grasshopper – At second trophic level
(2) Crop – Are transducers
(3) Sparrow – Primary consumer
(4) Falcon – Top consumer

145. Terminalisation of chiasmata occurs during
(1) Diplotene
(2) Diakinesis
(3) Pachytene
(4) Zygotene

146. The reaction centre of PS II has an absorption peak at
(1) 700 nm
(2) 680 nm
(3) 720 nm
(4) 660 nm

147. Members of Ascomycetes asexually reproduce commonly by
(1) Conidia
(2) Zoospores
(3) Sporangiospores
(4) Budding

148. Actinomorphic flowers are found in
(1) Lily
(2) Bean
(3) Pea
(4) *Indigofera*

149. Identify the *ex-situ* conservation strategy among these.
(1) Wild life sanctuaries
(2) National park
(3) Biosphere reserve
(4) Wildlife safari park

150. Choose the **odd** one w.r.t. major greenhouse gases
(1) CH_4 (2) CO_2
(3) CFCs (4) SO_2

ZOOLOGY

SECTION-A

151. Select the option including only those examples which are examples of natural selection as well as evolution by anthropogenic action

(a) Industrial melanism

(b) Antibiotic resistant bacteria

(c) Pesticide resistant insects

(d) Man-created breeds of dogs

Choose the **correct** option:

(1) (b) and (c) only

(2) (b), (c) and (d)

(3) (a) and (b) only

(4) (a), (b) and (c)

152. Second polar body during oogenesis is formed

(1) At the time of copulation

(2) Before ovulation, within tertiary follicle

(3) When sperm enters in secondary oocyte during fertilization

(4) After zygote formation

153. Which of the following is produced by plants for defence action?

(1) Nicotine and Anthocyanins

(2) Strychnine and Nicotine

(3) Caffeine and Carotenoids

(4) Strychnine and Anthocyanins

154. *Hisardale* is a new breed of sheep developed in Punjab by crossing

(1) Bikaneri rams and Marino ewes

(2) Bikaneri ewes and Marino rams

(3) Nali ewes and Deccani rams

(4) Patanwadi rams and Nellore ewes

155. The stage of *Plasmodium* which enters in human blood on the bite of infected female *Anopheles* is

(1) Merozoite (2) Sporozoite

(3) Gametocyte (4) Trophozoite

156. S.L. Miller in 1953, created electric discharge in a closed flask containing

(1) CH_4, NH_3, H_2 and water vapour at 600°C

(2) CH_4, O_2, NH_3 and water vapour at 800°C

(3) CH_4, H_2, NH_3 and water vapour at 800°C

(4) CH_4, H_2 and NH_3 only at 800°C

157. Which of the following is not true w.r.t. copy number of the linked DNA in the vector?

(1) It is equal to the copy number of vector in host cell

(2) It is controlled by *ori* sequence

(3) It is controlled by selectable marker

(4) Depends on the sequence from where replication starts

158. Brush border columnar epithelium is found in inner lining of

(1) Pancreatic ducts

(2) PCT of nephron

(3) Small intestine

(4) Bronchioles

159. Match the following diseases with the causative organism and select the correct option

	Column-I		**Column-II**
a.	Common cold	(i)	*Streptococcus*
b.	Elephantiasis	(ii)	*Entamoeba*
c.	Dysentery	(iii)	*Wuchereria*
d.	Pneumonia	(iv)	Rhino viruses

	(a)	**(b)**	**(c)**	**(d)**
(1)	(iv)	(iii)	(ii)	(i)
(2)	(iii)	(iv)	(ii)	(i)
(3)	(iv)	(iii)	(i)	(ii)
(4)	(ii)	(iii)	(iv)	(i)

160. Which of the following statements are true for the phylum Chordata?

(a) In cephalochordates, notochord extends from head to tail

(b) Urochordates are exclusively marine

(c) Notochord is dorsal to nerve cord

(d) All vertebrates are jawed

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

(3) (c) and (d) (4) (a) and (c)

161. Goblet cells are present in

(1) Squamous epithelium

(2) Compound epithelium

(3) Transitional epithelium

(4) Columnar epithelium

162. Match the following

(a) Competitive inhibitor of succinic dehydrogenase	(i) Morphine
(b) Possess glycosidic bonds	(ii) Malonate
(c) Homopolymer of NAG	(iii) Chitin
(d) Secondary metabolite	(iv) Cellulose

Choose the correct option from the following

	(a)	(b)	(c)	(d)
(1)	(ii)	(iv)	(i)	(iii)
(2)	(i)	(ii)	(iii)	(iv)
(3)	(ii)	(iv)	(iii)	(i)
(4)	(iv)	(ii)	(iii)	(i)

163. Triploblastic and acoelomate animals are exemplified by
(1) Platyhelminthes
(2) Sponges
(3) Cnidarians
(4) Annelids

164. Select the set of conditions in urine which are indicative of Diabetes mellitus
(1) Proteinuria and Renal calculi
(2) Uremia and Proteinuria
(3) Ketonuria and Polyuria
(4) Polyuria without glycosuria

165. Identify the correct set of substances having glycosidic bond in their structure
(1) Glycerol and lecithin
(2) Triglyceride and cellulose
(3) Glycogen and Adenylic acid
(4) Chitin and cholesterol

166. Select the **incorrect** statement
(1) C-peptide is removed during maturation of proinsulin into insulin
(2) The functional insulin has A and B chains linked by only one disulphide bond
(3) Humulin is produced in *E.coli*
(4) Recombinant therapeutics do not induce unwanted immunological responses

167. The T wave in a standard ECG represents
(1) Depolarisation of ventricles
(2) Repolarisation of ventricles
(3) Repolarisation of atria
(4) Depolarisation of atria

168. Which of the following option includes all STIs?
(1) Syphilis, Genital herpes, Cancer
(2) Genital warts, Gonorrhoea, AIDS
(3) AIDS, Hepatitis-B, Malaria
(4) Toxoplasmosis, Gonorrhoea, Cancer

169. Which of the following is a correct statement?
(1) Glucagon is released in response to hyperglycemia
(2) Cortisol stimulates glycogenolysis
(3) Insulin is a hyperglycemic hormone
(4) Insulin acts on hepatocytes and adipocytes

170. In agarose gel electrophoresis, DNA fragments appear as orange coloured bands after staining with
(1) Acetocarmine, under UV radiation
(2) Ethidium bromide, under UV radiation
(3) Methylene blue, under UV radiation
(4) Ethidium bromide, under visible light

171. The transfer of zygote or embryo with upto 8 blastomeres and embryo with more than 8 blastomeres is respectively called
(1) IUI and ZIFT
(2) ZIFT and AI
(3) ZIFT and IUT
(4) GIFT and ZIFT

172. Which of the following events are correct for normal quiet inspiration?
(a) Diaphragm becomes dome shaped
(b) Ribs and sternum move downward and inward
(c) Intra pleural pressure becomes more negative
(d) Intra pulmonary pressure decreases

Choose the **correct** option
(1) (a) and (b)
(2) (a), (b) and (c)
(3) (c) and (d)
(4) (b), (c) and (d)

173. Match the following columns and select the correct option

Column-I	Column-II
(a) False ribs	(i) Flat, expanded process of scapula
(b) Glenoid cavity	(ii) Articulates with head of humerus
(c) Clavicle	(iii) Has two curvatures and articulates with a process of scapula
(d) Acromion	(iv) Do not articulate directly with sternum

	(a)	(b)	(c)	(d)
(1)	(iv)	(ii)	(iii)	(i)
(2)	(iii)	(ii)	(iv)	(i)
(3)	(iv)	(ii)	(i)	(iii)
(4)	(iii)	(ii)	(i)	(iv)

174. Which of the following is correct w.r.t. nervous system of *Periplaneta americana* ?

(1) Ventral part of body holds a bit of nervous system while rest is present in head

(2) Brain supplies nerves to antennae and compound eyes

(3) Brain is represented by sub-oesophageal ganglion

(4) If the head of cockroach is removed, it will immediately die as brain is situated in head region

175. Bt cotton is resistant to

(1) Cotton bollworm which belongs to order Lepidoptera

(2) Corn borer which belongs to order Lepidoptera

(3) Beetles which belong to order Coleoptera

(4) Cotton bollworm which belongs to order Coleoptera

176. Select the incorrect statement w.r.t. restriction enzymes

(1) They break phosphodiester bonds

(2) Each restriction endonuclease functions by inspecting the length of a DNA sequence

(3) Each restriction enzyme binds to its specific recognition sequence and cut two strands of the double helix of DNA

(4) Restriction enzymes do not cut between the same two bases on the opposite strands of DNA, thereby produce sticky ends

177. Wings of butterfly and wings of birds are examples of

(1) Homologous organs (2) Divergent evolution

(3) Analogous organs (4) Co-evolution

178. Which of the following is an incorrect statement w.r.t. transport of oxygen?

(1) Formation of oxyhaemoglobin mainly depends on pO_2

(2) High pCO_2 at tissue level favours the dissociation of oxyhaemoglobin

(3) Low pH at alveolar level favours the formation of oxyhaemoglobin

(4) Low pCO_2 at alveolar level favours the formation of oxyhaemoglobin

179. Select the neutral amino acid from the following

(1) Glutamic acid (2) Lysine

(3) Valine (4) Tyrosine

180. Match the organism with its use in biotechnology

(a) *Bacillus thuringiensis*	(i) Host cell for human insulin production
(b) *Thermus aquaticus*	(ii) *Taq* polymerase
(c) *Agrobacterium tumefaciens*	(iii) Insecticidal protein coding gene
(d) *E.coli*	(iv) Ti plasmid

Select the **correct** option from the following

	(a)	(b)	(c)	(d)
(1)	(iii)	(ii)	(iv)	(i)
(2)	(iii)	(ii)	(i)	(iv)
(3)	(ii)	(iii)	(i)	(iv)
(4)	(i)	(ii)	(iii)	(iv)

181. Match the following columns and select the correct option

Column-I	Column-II
(a) Tracheal system	(i) *Pila*
(b) Ciliated comb plates	(ii) *Echinus*
(c) Calcareous endoskeleton	(iii) *Pleurobrachia*
(d) Mantle and shell	(iv) *Periplaneta*

	(a)	(b)	(c)	(d)
(1)	(iv)	(iii)	(ii)	(i)
(2)	(i)	(iii)	(ii)	(iv)
(3)	(iii)	(ii)	(iv)	(i)
(4)	(iv)	(iii)	(i)	(ii)

182. An excessive loss of fluid from the body can activate all except

(1) Release of ADH from neurohypophysis

(2) Reabsorption of Na^+ and water from renal tubules in presence of aldosterone

(3) Release of renin from JG cells

(4) Release of ANF from atria of heart

183. Select the mismatch

(1) DNA ligases – Join ends of cut DNA molecules

(2) Exonucleases – Remove nucleotides from the ends of the DNA

(3) Nucleases – Separate the two strands of DNA

(4) DNA polymerase – Adds nucleotides to 3′ end of a DNA strand

184. Choose the correct statement w.r.t. human digestive system

(1) Mucosa is the outermost layer of the alimentary canal

(2) Ileum is the longest part of small intestine

(3) Vermiform appendix arises from ileum and is vestigial

(4) Peyer's patches are present in submucosa of ileum

185. Embryological support of evolution was given by

(1) Alfred Wallace

(2) Charles Darwin

(3) Oparin

(4) Ernst Haeckel

SECTION-B

186. Which of the following is responsible for LH surge?

(1) High concentration of progesterone

(2) Low concentration of GnRH

(3) High concentration of estrogen

(4) High concentration of prolactin

187. The recognition sequence of *Eco*RI is how many base pairs in length?

(1) 6 (2) 8

(3) 4 (4) 5

188. Which of the following converts trypsinogen into trypsin?

(1) HCl

(2) Enterokinase

(3) Castle's intrinsic factor

(4) Pepsin

189. Match the following columns and select the correct option

	Column-I		**Column-II**
(a)	Eosinophils	(i)	Phagocytic, agranular
(b)	Basophils	(ii)	Release histaminase
(c)	Neutrophils	(iii)	Secrete histamine, involved in inflammation
(d)	Monocytes	(iv)	Most abundant of total WBCs

	(a)	**(b)**	**(c)**	**(d)**
(1)	(ii)	(iii)	(iv)	(i)
(2)	(iii)	(ii)	(iv)	(i)
(3)	(ii)	(iii)	(i)	(iv)
(4)	(iii)	(i)	(iv)	(ii)

190. Match the following columns and select the **correct** option

	Column-I		**Column-II**
(a)	Thyroid gland	(i)	Acromegaly
(b)	Adrenal glands	(ii)	Cretinism
(c)	Pituitary gland	(iii)	Tetany
(d)	Parathyroid glands	(iv)	Aldosteronism

	(a)	**(b)**	**(c)**	**(d)**
(1)	(ii)	(iv)	(i)	(iii)
(2)	(iii)	(iv)	(i)	(ii)
(3)	(ii)	(i)	(iv)	(iii)
(4)	(iii)	(iv)	(ii)	(i)

191. Match the following columns and select the **correct** option

	Column-I		Column-II
(a)	Placenta	(i)	Secrete testosterone in presence of LH
(b)	Zona pellucida	(ii)	Secretes hPL
(c)	Bulbourethral glands	(iii)	Secreted by secondary oocyte
(d)	Leydig cells	(iv)	Homologous to Bartholin's glands

	(a)	(b)	(c)	(d)
(1)	(i)	(iv)	(ii)	(iii)
(2)	(iii)	(ii)	(iv)	(i)
(3)	(ii)	(iii)	(iv)	(i)
(4)	(iv)	(iii)	(i)	(ii)

192. Match the following columns and select the **correct** option

	Column-I		Column-II
(a)	Scales and paired fins absent	(i)	*Torpedo*
(b)	Claspers on pelvic fins of males	(ii)	Cyclostomes
(c)	4 pairs of gills covered with operculum	(iii)	Chondrichthyes
(d)	Electric organs	(iv)	Osteichthyes

	(a)	(b)	(c)	(d)
(1)	(iii)	(iv)	(i)	(ii)
(2)	(iv)	(ii)	(iii)	(i)
(3)	(i)	(iv)	(iii)	(ii)
(4)	(ii)	(iii)	(iv)	(i)

193. Match the following columns and select the **correct** option

	Column-I		Column-II
(a)	Bt cotton	(i)	Enzyme replacement therapy
(b)	Adenosine deaminase deficiency	(ii)	Silencing of specific mRNA
(c)	RNAi	(iii)	*In-vitro* DNA amplification
(d)	PCR	(iv)	Resistant to insect pest

	(a)	(b)	(c)	(d)
(1)	(iii)	(ii)	(i)	(iv)
(2)	(ii)	(iii)	(iv)	(i)
(3)	(i)	(ii)	(iii)	(iv)
(4)	(iv)	(i)	(ii)	(iii)

194. Match the following columns and select the correct option

	Column-I		Column-II
(a)	Macula	(i)	Filled with endolymph
(b)	Organ of Corti	(ii)	Attached to the tympanic membrane
(c)	Malleus	(iii)	Saccule and Utricle
(d)	Scala media	(iv)	Contain hair cells that act as auditory receptors

	(a)	(b)	(c)	(d)
(1)	(iii)	(iv)	(ii)	(i)
(2)	(i)	(iv)	(ii)	(iii)
(3)	(iv)	(iii)	(ii)	(i)
(4)	(iii)	(iv)	(i)	(ii)

195. The most abundant protein in the whole biosphere is

(1) Collagen

(2) RuBisCO

(3) Chitin

(4) Cellulose

196. Select the incorrect statement w.r.t immunity

(1) Active immunity is slow and takes time to give its full effective response

(2) Passive immunity generates on exposure to antigen

(3) Antitoxin is an example of passive immunity

(4) IgA through colostrum provides passive immunity to infant

197. Choose the odd one w.r.t. forebrain of humans
(1) Hippocampus (2) Amygdala
(3) Thalamus (4) Cerebral aqueduct

198. Select the **mismatch** w.r.t. cranial capacity
(1) *Homo habilis* – 650-800 cc
(2) *Homo erectus* – 900 cc
(3) Neanderthal man – 1400 cc
(4) *Homo sapiens sapiens* – 1650 cc

199. Which of the following is incorrect for implants?
(1) Their composition is similar to that of oral steroidal pills
(2) Their mode of action is similar to oral steroidal pills
(3) Their effective periods are much longer
(4) They are implanted in uterus by doctors or expert nurses

200. Transgenic animals are being produced for various purposes. Select the option which includes all the correct reasons with reference to above mentioned statement.
(a) Transgenic animals allow the study of how genes are regulated
(b) For investigation of new treatments for diseases
(c) For production of biological products
(d) For vaccine safety testing
(1) (a) and (b) only
(2) (c) and (d) only
(3) (b) and (c) only
(4) (a), (b), (c) and (d)

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