MOCK TEST PAPER 5

General Instructions: **Same as Mock Test Paper 1**

PHYSICS

Section A

1. Consider a drop of rain water having mass 1 g falling from a height of 1 km. It hits the ground with a speed of 50 m/s. Take g constant with a value 10 m/s^2. The work done by the (i) gravitational force and the (ii) resistive force of air is:
(a) (i) 1.25 J (ii) – 8.25 J **(b)** (i) 100 J (ii) 8.75 J
(c) (i) 10 J (ii) – 8.75 J **(d)** (i) – 10 J (ii) – 8.25 J

2. A long wire carrying a steady current is bent into a circular loop of one turn. The magnetic field at the centre of the loop is B. It is then bent into a circular coil of n turns. The magnetic field at the centre of this coil of n turns will be:
(a) nB **(b)** n^2B **(c)** 2nB **(d)** 2n^2B

3. A particle of mass m and charge q is placed at rest in a uniform electric field E and then released. The kinetic energy attained by the particle after moving a distance y is:
(a) qEy^2 **(b)** qE^2y **(c)** qEy **(d)** q^2Ey

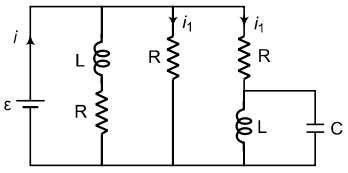
4. How much water, a pump of 2 kW can raise in one minute to a height of 10 m, take g = 10 m/s^2?
(a) 1000 litres **(b)** 1200 litres **(c)** 100 litres **(d)** 2000 litres

5. An electric dipole has the magnitude of its charge as q and its dipole moment is p. It is placed in a uniform electric field E. If its dipole moment is along the direction of the field, the force on it and its potential energy are respectively:
(a) 2q·E and minimum **(b)** q·E and p·E
(c) Zero and minimum **(d)** q·E and maximum

6. An air bubble in a glass slab with refractive index 1.5 (near normal incidence) is 5 cm deep when viewed from one surface and 3 cm deep when viewed from the opposite face. The thickness (in cm) of the slab is:
(a) 8 **(b)** 10 **(c)** 12 **(d)** 16

7. A spherical ball rolls on a table without slipping. Then the fraction of its total energy associated with rotation is:
(a) 2/5 **(b)** 2/7 **(c)** 3/5 **(d)** 3/7

8. Figure shows a circuit that contains three identical resistors with resistance R = 9.0 Ω each, two identical inductors with inductance L = 2.0 mH each, and an ideal battery with emf, ε = 18 V. The current "i" through the battery just after the switch closed is:



(a) 0.2 A **(b)** 2 A **(c)** 0 ampere **(d)** 2 mA

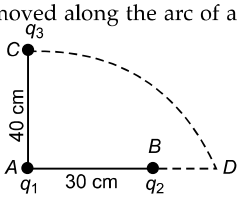
9. A certain mass of Hydrogen is changed to Helium by the process of fusion. The mass defect in fusion reaction is 0.02866 u. The energy liberated per u is:
[Given 1 u = 931 MeV]
(a) 2.67 MeV **(b)** 26.7 MeV
(c) 6.675 MeV **(d)** 13.35 MeV

10. The second overtone of an open organ pipe has the same frequency as the first overtone of a closed pipe L metre long. The length of the open pipe will be:
(a) L **(b)** 2L **(c)** L/2 **(d)** 4L

11. A boy standing at the top of a tower of 20 m height drops a stone. Assume g = 10 m/s^2, the velocity with which it hits the ground is:
(a) 10.0 m/s **(b)** 20.0 m/s **(c)** 40.0 m/s **(d)** 5.0 m/s

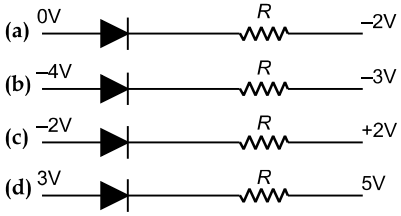
12. A uniform force of $(3\hat{i} + \hat{j})$ newton acts on a particle of mass 2 kg. Hence the particle is displaced from position $(2\hat{i} + \hat{k})$ metre to position $(4\hat{i} + 3\hat{j} - \hat{k})$ metre. The work done by the force on the particle is:
(a) 6 J **(b)** 13 J **(c)** 15 J **(d)** 9 J

13. Two charges q_1 and q_2 are placed 30 cm apart, shown in the figure. A third charge q_3 is moved along the arc of a circle of radius 40 cm from C to D. The change in the potential energy of the system is $q_3/4\pi\varepsilon_0 \times k$, where k is:

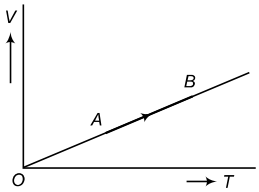


(a) 8q_2 **(b)** 8q_1 **(c)** 6q_2 **(d)** 6q_1

14. Which one of the following represents forward bias diode?



15. The volume (V) of a monoatomic gas varies with its temperature (T), as shown in the graph. The ratio of work done by the gas, to the heat absorbed by it, when it undergoes a change from state A to state B, is:



(a) 1/3 **(b)** 2/3 **(c)** 2/5 **(d)** 2/7

16. A particle moves under the effect of a force F = Cx from x = 0 to $x = x_1$. The work done in the process is:
(a) Cx_1^2 **(b)** $\frac{1}{2}Cx_1^2$ **(c)** Cx_1 **(d)** zero

17. A person sitting in an open car moving at constant velocity throws a ball vertically up into air. The ball will fall:
(a) Outside the car
(b) In the car ahead of the person
(c) In the car to the side of the person
(d) Exactly in the hand which threw it up

18. When a proton is accelerated through 1 V, then its kinetic energy will be:
(a) 1840 eV **(b)** 13.6 eV **(c)** 1 eV **(d)** 0.54 eV

19. If the de Broglie wavelengths for a proton and for an α particle are equal, then the ratio of their velocities will be:
(a) 4 : 1 **(b)** 2 : 1 **(c)** 1 : 2 **(d)** 1 : 4

20. When the potential energy of a particle executing simple harmonic motion is one-fourth of the maximum value during the oscillation, its displacement from the equilibrium position in terms of amplitude 'a' is:
(a) $a/4$ **(b)** $a/3$ **(c)** $a/2$ **(d)** $2a/3$

21. A small sphere of radius r falls from rest in a viscous liquid. As a result, heat is produced due to viscous force. The rate of production of heat when the sphere attains its terminal velocity, is proportional to:
(a) r^5 **(b)** r^2 **(c)** r^3 **(d)** r^4

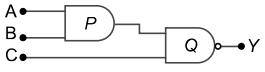
22. If the equations of two light waves are $y_1 = 8 \sin \omega t$ and $y_2 = 6 \sin (\omega t + \phi)$. Then, ratio of maximum and minimum intensity will be:
(a) 11:49 **(b)** 49:1 **(c)** 7:1 **(d)** 1:7

23. First law of thermodynamics is a special case of:
(a) Newton's law
(b) Law of conservation of energy
(c) Charle's law
(d) Law of heat exchange

24. A body is moving along a straight line on a rough horizontal surface (coefficient of friction = 0.2) with velocity 36 km per hour. The minimum distance in which it can be stopped is nearly:
(a) 50 m **(b)** 40 m **(c)** 25 m **(d)** 20 m

25. A satellite of mass m is orbiting the Earth (of radius R) at a height h from its surface. The total energy of the satellite in terms of g_0, the value of acceleration due to gravity at the Earth's surface, is:
(a) $mg_0R^2/2(R + h)$ **(b)** $-mg_0R^2/2(R + h)$
(c) $2mg_0R^2/(R + h)$ **(d)** $-2\ mg_0R^2/(R + h)$

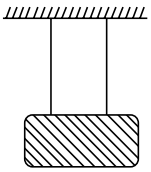
26. What is the output Y in the following circuit, when all the three inputs A, B, C are first 0 and then 1?



(a) 0, 1 **(b)** 0, 0 **(c)** 1, 0 **(d)** 1, 1

27. A solid cylinder of mass 3 kg is rolling on a horizontal surface with velocity 6 m/s. It collides with a horizontal spring of force constant 200 N/m. The maximum compression produced in the spring will be:
(a) 0.6 m **(b)** 0.8 m **(c)** 0.2 m **(d)** 0.5 m

28. Two wires of equal length and cross-section are suspended as shown. Their Young's modulii are Y_1 and Y_2 respectively. The equivalent Young's modulus will be:



(a) $Y_1 + Y_2$ **(b)** $\frac{Y_1 + Y_2}{2}$ **(c)** $\frac{Y_1Y_2}{Y_1 + Y_2}$ **(d)** $\sqrt{Y_1Y_2}$

29. Mark the correct option.
(a) When the branch of the circuit containing battery is open, then potential difference across the terminals of battery is same as emf.
(b) When two terminals of a battery are shorted, then potential difference across the terminals of battery is zero.
(c) If external resistance of the circuit changes, then potential difference across the terminals of the battery changes but emf remains same.
(d) All of the above

30. This question has Statement I and Statement II. Of the four choices given after the statement, choose the one that best describes the two statements.
Statement I: Higher the range, greater is the resistance of ammeter, additional shunt needs to be used across it.
Statement II: Ammeter ideally should have zero internal resistance
(a) Statement I is true, Statement II is true and Statement II is the correct explanation of Statement I
(b) Statement I is true, Statement II is true, but Statement II is not the correct explanation of Statement I
(c) Statement I is true, Statement II is false
(d) Statement I is false, Statement II is true

31. A stretched string of length l, fixed at both ends can sustain stationary waves of wavelength λ, given by: (n is an integer)
(a) $\lambda = n^2/2l$ **(b)** $\lambda = l^2/2n$ **(c)** $\lambda = 2l/n$ **(d)** $\lambda = 2ln$

32. When a disc rotates with uniform angular velocity, which of the following is not true?
(a) The sense of rotation remains same.
(b) The orientation of the axis of rotation remains same.
(c) The speed of rotation is non-zero and remains same.
(d) The angular acceleration is non-zero and remains same.

33. A Ge specimen is dopped with Al. The concentration of acceptor atoms is $\approx 10^{21}$ atoms m^{-3}. Given that the intrinsic concentration of electron-hole pir is $\approx 10^{19}\ m^{-3}$, the concentration of electrons in the specimen is:
(a) $10^{17}\ m^{-3}$ **(b)** $10^{15}\ m^{-3}$ **(c)** $10^{2}\ m^{-3}$ **(d)** $10^{4}\ m^{-3}$

34. A bullet loses 5% of its velocity in passing through a plank. The least number of planks required to reduce the velocity to 50% of the initial value is:
(a) 12 **(b)** 10 **(c)** 8 **(d)** 7

35. For the series LCR circuit under resonance condition, identify the wrong relation.
(a) $X_L = X_C = R$ **(b)** $|V_L| = |V_C|$
(c) $Z = R$ **(d)** $f_r = \frac{1}{2\pi\sqrt{LC}}$

Section B

36. Imagine a new planet having the same density as that of Earth but it is 3 times bigger than the Earth in size. If the acceleration due to gravity on the surface of Earth is g and that on the surface of the new planet is g', then
(a) $g' = g/9$ **(b)** $g' = 27g$ **(c)** $g' = 9g$ **(d)** $g' = 3g$

37. When atoms are bombarded with alpha particles, only a few in million suffer deflection, others pass out undeflected. This is because:
(a) The force of repulsion on the moving alpha particle is small.
(b) The force of attraction on the alpha particle to the oppositely charged electrons is very small.
(c) There is only one nucleus and large number of electrons.
(d) The nucleus occupies much smaller volume compared to the volume of the atom.

38. A water drop of 5×10^{-8} cubic metre is trapped between two horizontal glass plates of area 30 sq. cm. If the surface tension of water is 70 dyne per cm, the normal force required to pull apart the plates in newton is:
(a) 25.2 **(b)** 8.4 **(c)** 50.4 **(d)** 12.6

39. A ball is thrown vertically downwards from a height of 20 m with an initial velocity v_0. It collides with the ground, loses 50% of its energy in collision and rebounds to the same height. The initial velocity v_0 is (take, $g = 10\ ms^{-2}$)
(a) 14 ms^{-1} **(b)** 20 ms^{-1} **(c)** 28 ms^{-1} **(d)** 10 ms^{-1}

40. Two wires are held perpendicular to the plane of paper at 5 m distance. They carry currents of 2.5 A and 5 A in the same direction. Then the magnetic field strength (B) at a point midway between the wires will be:
(a) $(\mu_0/4\pi)$T **(b)** $(\mu_0/2\pi)$T **(c)** $(3\mu_0/2\pi)$T **(d)** $(3\mu_0/4\pi)$T

41. If the dimensions of A and B are different, then which of the following operations is valid
(a) $\frac{A}{B}$ **(b)** $e^{-A/B}$ **(c)** A – B **(d)** A + B

42. A particle of mass m is circulating in a circle of radius r having angular momentum L about centre. Then the centripetal force would be
(a) $\frac{L^2}{mr}$ **(b)** $\frac{L^2}{mr^2}$ **(c)** $\frac{L^2}{mr^3}$ **(d)** $\frac{L}{mr^2}$

43. ABCD is a thin iron sheet. A hole of radius r is made in it in the middle. If we heat up the sheet, what will happen to the size of hole?
(a) Radius will increase **(b)** Radius wil decrease
(c) Radius remains constant **(d)** Anything can happen

44. A simple pendulum has time period T. The bob is given negative charge and the surface below it is given a positive charge. The new time period will be
(a) less than T **(b)** greater than T
(c) equal to T **(d)** None

45. A wire of length L carrying a current I ampere is bent in the form of a circle. The magnitude of magnetic moment is
(a) $\frac{L^2I^2}{4\pi}$ **(b)** $\frac{LI}{4\pi}$ **(c)** $\frac{L^2I}{4\pi}$ **(d)** $\frac{LI}{4\pi}$

46. An LCR circuit is connected across a voltage source $V = 10\sin\left(50\ t\ \frac{\pi}{6}\right)$. If the equation of current in the circuit $I = 2\sin\left(50\ t\ \frac{\pi}{12}\right)$, the average power dissipated in the circuit is
(a) 10 Ω **(b)** ü √ **(c)** $\frac{10}{\sqrt{2}}$ **(d)** 5 Ω

47. An object of 5 cm height is placed 1 m apart from a concave spherical mirror which has a radius of curvature 20 cm. The size of the image is:
(a) 0.11 cm **(b)** 0.5 cm **(c)** 0.55 cm **(d)** 0.60 cm

48. In Young's double slit experiment, the phase difference between the two waves reaching at the location of third dark fringe is
(a) π **(b)** $\frac{3\pi}{2}$ **(c)** 5π **(d)** 3π

49. The electron of a hydrogen atom revolves around the proton in a circular n^{th} orbit of radius $r_n = \frac{\varepsilon_0 n^2 h^2}{\pi m e^2}$ with a speed $V_n = \frac{e^2}{2\varepsilon_0 nh}$. The current due to circulating charge is proportional to
(a) e^2 **(b)** e^3 **(c)** e^5 **(d)** e^6

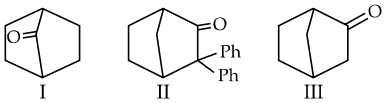
50. In the nuclear fusion reaction:
$_1H^2 + {}_1H^3 \rightarrow {}_2He^4 + n$,
given that the repulsive potential energy between the two nuclei is 7.7×10^{-14} J. The temperature at which the gases must be heated to initiate the reaction is nearly:
Boltzmann's constant, $k = 1.38 \times 10^{-23}\ JK^{-1}$]
(a) 10^7 K **(b)** 10^5 K **(c)** 10^3 K **(d)** 10^9 K

CHEMISTRY

Section A

51. Which of the following order is wrong?
(a) $NH_3 < PH_3 < AsH_3$ - Acidic strength
(b) Li < Be < B < C - 1st Ionization potential
(c) $Al_2O_3 < MgO < Na_2O < K_2O$ - Basic strength
(d) $Li^+ < Na^+ < K^+ < Cs^+$ - Ionic radii

52. Which among the given molecules can exhibit tautomerism?



I II III

(a) III only **(b)** Both I and III
(c) Both I and II **(d)** Both II and III

53. Which one of the following statements related to lanthanoids is incorrect?
(a) Europium shows +2 oxidation state.
(b) The basicity decreases as the ionic radius decreases from Pr to Lu.
(c) All the lanthanoids are much more reactive than aluminium.
(d) Ce(IV) solutions are widely used as oxidizing agent in volumetric analysis.

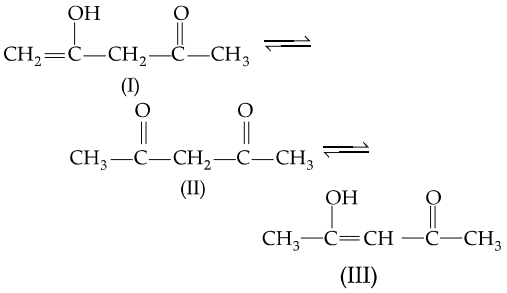
54. The correct order of atomic radii in group 13 elements is:
(a) B < Al < In < Ga < Tl **(b)** B < Al < Ga < In < Tl
(c) B < Ga < Al < Tl < In **(d)** B < Ga < Al < In < Tl

55. The correct order of the stoichiometries of AgCl formed when $AgNO_3$ in excess is treated with the complexes, $CoCl_3.6NH_3$, $CoCl_3.5NH_3$, $CoCl_3.4NH_3$ respectively is:

(a) 1 AgCl, 3 AgCl, 2 AgCl **(b)** 3 AgCl, 1 AgCl, 2 AgCl
(c) 3 AgCl, 2 AgCl, 1 AgCl **(d)** 2 AgCl, 3 AgCl, 1 AgCl

56. Which of the following is dependent on temperature?
(a) Molality **(b)** Molarity
(c) Mole fraction **(d)** Weight percentage

57. The order of stability of the following tautomeric compound is:



(I) (II) (III)

(a) I > II > III **(b)** III > II > I
(c) II > I > III **(d)** II > III > I

58. Which is the correct statement for the given acids?
(a) Phosphinic acid is a monoprotic acid while phosphonic acid is a diprotic acid.
(b) Phosphinic acid is a diprotic acid while phosphonic acid is a monoprotic acid.
(c) Both are diprotic acids.
(d) Both are triprotic acids.

59. Which of the following molecules has the maximum dipole moment?
(a) CO_2 **(b)** CH_4 **(c)** NH_3 **(d)** NF_3

60. Which of the following reagents will be able to distinguish between 1-butyne and 2-butyne?
(a) $NaNH_2$ **(b)** HCl **(c)** O_2 **(d)** Br_2

61. Standard enthalpy of vaporisation $\Delta vap\ H°$ for water at 100°C is 40.66 kJ mol^{-1}. The internal energy of vaporization of water at 100°C (in kJ mol^{-1}) is:
[assume water vapour to behave like an ideal gas.]
(a) +37.56 **(b)** –43.76 **(c)** +43.76 **(d)** +40.66

62. Which of the following statement is not correct for a nucleophile?
(a) Nucleophile is a lewis acid.
(b) Ammonia is a nucleophile.
(c) Nucleophiles attack low electron density sites.
(d) Nucleophiles are not electron seeking.

63. Match the compounds given in column I with the shape and hybridization given in column II and mark the correct option.

Column I		Column II	
(A)	XeF_6	**(i)**	Distorted octahedral, sp^3d^3
(B)	XeO_3	**(ii)**	Square planar, sp^3d^2
(C)	$XeOF_4$	**(iii)**	Pyramidal, sp^3
(D)	XeF_4	**(iv)**	Square pyramidal, sp^3d^2

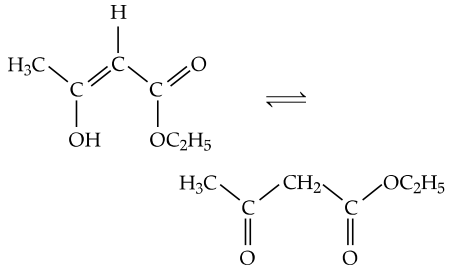
Code:

	A	B	C	D
(a)	(iv)	(iii)	(i)	(ii)
(b)	(iv)	(i)	(ii)	(iii)
(c)	**(i)**	(iii)	(iv)	(ii)
(d)	**(i)**	(ii)	(iv)	(iii)

64. MY and NY_3, two nearly insoluble salts, have the same K_{sp} values of 6.2×10^{-13} at room temperature. Which statement would be true in regard to MY and NY_3?
(a) The salts MY and NY_3 are more soluble in 0.5 M KY than in pure water.
(b) The addition of the salt of KY to solution of MY and NY_3 will have no effect on their solubilities.
(c) The molar solubilities of MY and NY_3 in water are identical.
(d) The molar solubility of MY in water is less than that of NY_3.

65. The hybridisation of S in SO_4^{2-} is same as
(a) I in ICl_4^- **(b)** S in SO_3
(c) P in PO_4^{3-} **(d)** N in NO^{3-}

66. The enolic form of ethyl acetoacetate given as below has:



(a) 18σ bonds and 2π bonds **(b)** 16σ bonds and 1π bond
(c) 9σ bonds and 2π bonds **(d)** 9σ bonds and 1π bond

67. What is the concentration of $[OH^-]$ in the final solution prepared by mixing 20.0 mL of 0.050 M HCl with 30.0 mL of 0.10 M $Ba(OH)_2$?
(a) 0.10 M **(b)** 0.40 M **(c)** 0.0050 M **(d)** 0.12 M

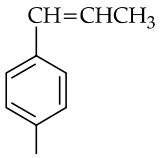
68. The freezing point depression constant for water is 1.86°C m^{-1}. If 5.00 g Na_2SO_4 is dissolved in 45.0 g H_2O, the freezing point is changed by –3.82°C. Calculate the van't Hoff factor for Na_2SO_4.
(a) 2.63 **(b)** 3.11 **(c)** 0.381 **(d)** 2.05

69. The attacking electrophile in Kolbe's reaction is:
(a) NaOH **(b)** CO_2
(c) H+ **(d)** Dichlorocarbene

70. The reaction of C_6H_5—CH=CH—CH_3 with HBr produces:

(a) $C_6H_5CH_2CH_2CH_2Br$

(b)



(c) $C_6H_5CH(Br)CH_2CH_3$ **(d)** $C_6H_5CH_2CH(Br)CH_3$

71. The ease of adsorption of the hydrated alkali metal ions on an ion-exchange resins follows the order:
(a) $Li^+ < K^+ < Na^+ < Rb^+$ **(b)** $Rb^+ < K^+ < Na^+ < Li^+$
(c) $K^+ < Na^+ < Rb^+ < Li^+$ **(d)** $Na^+ < Li^+ < K^+ < Rb^+$

72. Which of the following species contains three bond pairs and one lone pair around the central atom?
(a) H_2O **(b)** BF_3 **(c)** NH_2^- **(d)** PCl_3

73. Which one of the following molecular hydrides acts as a Lewis acid?
(a) NH_3 **(b)** H_2O **(c)** B_2H_6 **(d)** CH_4

74. An increase in equivalent conductance of a strong electrolyte with dilutions is mainly due to:
(a) increase in ionic mobility of ions.
(b) 100% ionization of electrolyte at normal dilution.
(c) increase in both, *i.e.*, number of ions and ionic mobility of ions.
(d) increase in number of ions.

75. During the kinetic study of the reaction, $2A + B \rightarrow C + D$, following results were obtained:

Exp.	A/mol L^{-1}	B/mol L^{-1}	Initial rate of formation of D/mol L^{-1} min^{-1}
I	0.1	0.1	6.0×10^{-3}
II	0.3	0.2	7.2×10^{-2}
III	0.3	0.4	2.88×10^{-1}
IV	0.4	0.1	2.40×10^{-2}

Based on the above data which one of the following is correct?

(a) Rate = $k[A]^2[B]$ **(b)** Rate = $k[A][B]$
(c) Rate = $k[A]^2[B]^2$ **(d)** Rate = $k[A][B]^2$

76. A 0.0020 m aqueous solution of an ionic compound $Co(NH_3)_5(NO_2)Cl$ freezes at –0.00732°C. Number of moles of ions which 1 mole of ionic compound produces on being dissolved in water will be: (K_f = –1.86°C/m)

(a) 2 **(b)** 3 **(c)** 4 **(d)** 1

77. The stability of carbanions in the following:

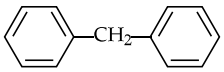
(i) $RC\equiv\overline{C}$ (ii) 

(iii) $R_2C=\overline{C}H$ (iv) $R_3C-\overline{C}H_2$

is in the order of:

(a) **(i)** > (ii) > (iii) > (iv) **(b)** (ii) > (iii) > (iv) > **(i)**
(c) (iv) > (ii) > (iii) > **(i)** **(d)** **(i)** > (iii) > (ii) > (iv)

78. The molecular formula of diphenyl methane

 is $C_{13}H_{12}$

How many structural isomers are possible when one of the hydrogen is replaced by a chlorine atom?

(a) 6 **(b)** 4 **(c)** 8 **(d)** 7

79. In a reversible reaction, the energy of activation of the forward reaction is 50 kcal. The energy of activation for the reverse reaction will be:

(a) <50 kcal
(b) 50 kcal
(c) either greater than or less than 50 kcal
(d) >50 kcal

80. Which of the following represents the correct order of acidity in the given compounds?

(a) $FCH_2COOH > CH_3COOH > BrCH_2COOH > ClCH_2COOH$
(b) $BrCH_2COOH > ClCH_2COOH > FCH_2COOH > CH_3COOH$
(c) $FCH_2COOH > ClCH_2COOH > BrCH_2COOH > CH_3COOH$
(d) $CH_3COOH > BrCH_2COOH > ClCH_2COOH < FCH_2COOH$

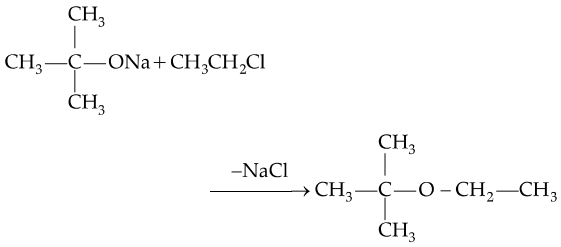
81. In a set of reactions propionic acid yielded a compound D.

$$CH_3CH_2COOH \xrightarrow{SOCl_2} B \xrightarrow{NH_3} C \xrightarrow[Br_2]{KOH} D$$

The structure of D would be:

(a) $CH_3CH_2CH_2NH_2$ **(b)** $CH_3CH_2CONH_2$
(c) $CH_3CH_2NHCH_3$ **(d)** $CH_3CH_2NH_2$

82. The reaction,



is called:

(a) Etard reaction.
(b) Gattermann-Koch reaction.
(c) Williamson synthesis.
(d) Williamson continuous etherification process.

83. Which of the following has zero dipole moment?

(a) CO_2 **(b)** NH_3 **(c)** NF_3 **(d)** H_2O

84. Which of the following is not permissible arrangement of electrons in an atom?

(a) $n = 4, l = 0, m = 0, s = -½$
(b) $n = 5, l = 3, m = 0, s = +½$
(c) $n = 3, l = 2, m = -3, s = -½$
(d) $n = 3, l = 2, m = -2, s = -½$

85. If the bond energies of H—H, Br—Br and H—Br are 433, 192 and 364 kJ mol^{-1} respectively, then $\Delta H°$ for the reaction

$H_2(g) + Br_2(g) \rightarrow 2HBr(g)$ is:

(a) –261 kJ **(b)** +103 kJ **(c)** +261 kJ **(d)** –103 kJ

Section B

86. Which of the following produces $H_2(g)$ and $O_2(g)$ at cathode and anode respectively upon electrolysis?

(a) H_2SO_4 (Concentrated) **(b)** K_2SO_4 (Dilute)
(c) $CuCl_2$ (aq) **(d)** $AgNO_3$ (aq)

87. Which of the following will not be soluble in sodium hydrogen carbonate?

(a) 2,4,6 -trinitrophenol **(b)** Benzoic acid
(c) o-Nitrophenol **(d)** Benzenesulphonic acid

88. The heat of neutralisation of a strong dibasic acid in dilute solution by NaOH is nearly

(a) –27.4 kcal/eq **(b)** 13.7 kcal/mol
(c) –13.7 kcal/eq **(d)** –13.7 kcal/mol

89. Choose the incorrect statements from the given options.

(a) To increase the solubility of CO_2 in soft drinks and soda water, the bottle is sealed under high pressure.
(b) At high altitudes the partial pressures of oxygen is less than that of the ground level.
(c) Aquatic species are more comfortable in warm water than in cold water.
(d) Scuba divers must cope with high concentrations of dissolved gases while breathing air at high pressure underwater.

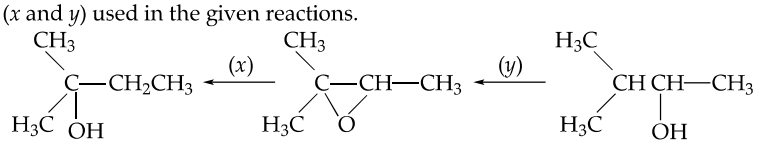
90. Consider the following reaction

$$B \xrightarrow{Z} X \xrightarrow{LiH} Y + LiBF_4$$

Choose the correct statement for the above sequences of reactions.

(a) Z is hydrogen
(b) X is B_2H_6
(c) Z and Y are F_2 and B_2H_6 respectively.
(d) Z is potassium hydroxide.

91. Identify the reagents (x and y) used in the given reactions.



(a) $x = LiAlH_4$, $y = NaBH_4$ **(b)** $x = LiAlH_4|AlCl_3$, $y = LiAlH_4$
(c) $x = LiAlH_4$, $y = LiAlH_4|AlCl_3$ **(d)** $x = H_2|Ni$, $y = H_2|Pt$

92. Given two statements:
Statement 1: CO is a stronger complexing reagent than NH_3.
Statement 2: CO forms π bonds by back donation of electrons from metal to carbon of CO.
(a) Statement 1 is true but statement 2 is false.
(b) Both, statement 1 and statement 2 are true.
(c) Statement 1 is false but statement 2 is true.
(d) Both, statement 1 and 2 are false.

93. Which of the following has the maximum entropy?
(a) 1 mole of liquid Nitrogen.
(b) 1 mole of hydrogen gas.
(c) 1 mole of mercury.
(d) 1 mole of diamond.

94. Given two statements:
Statement I: The paramagnetic octahedral complexes uses outer *d*-orbital.
Statement 2: It is thus called the spin paired complexes.
(a) Statement 1 is false but statement 2 is true.
(b) Statement 1 is true but statement 2 is false.
(c) Both the statements are false.
(d) Both the statements are true.

95. Acidic radicals caries charge:
(a) positive charge **(b)** negative charge
(c) both **(d)** none of these

96. Which of the following has zero standard molar enthalpy of formation at room temperature?
(a) $Br_2(g)$ **(b)** $Cl_2(g)$ **(c)** $H_2O(g)$ **(d)** $CH_4(g)$

97. The IUPAC name of complex, $K_3[Al(C_2O_4)_3]$ is:
(a) Potassium aluminooxalate.
(b) Potassium aluminium (III) trioxalate.
(c) Potassium trioxalatealuminate (III).
(d) Potassium tris (oxalate) aluminium.

98. Which of the following elements does not show the variable oxidation state?
(a) Fe **(b)** Mn **(c)** Cu **(d)** Zn

99. In which of the following, H_2SO_4 is not acting as oxidising agent?
(a) $CaF_2 + 2H_2SO_4 \rightarrow CaSO_4 + 2HF$
(b) $S + 2H_2SO_4 \rightarrow 3SO_2 + H_2O$
(c) $C + 2H_2SO_4 \rightarrow CO_2 + 2SO_2 + 2H_2O$
(d) $Cu + 2H_2SO_4 \rightarrow CuSO_4 + SO_2 + 2H_2O$

100. The correct order of magnetic moment (spin only value in B.M.) among is:
(a) $[MnCl_4]^{2-} > [Fe(CN)_6]^{4-} > [CoCl_4]^{2-}$
(b) $[Fe(CN)_6]^{4-} > [CoCl_4]^{2-} > [MnCl_4]^{2-}$
(c) $[MnCl_4]^{2-} > [CoCl_4]^{2-} > [Fe(CN)_6]^{4-}$
(d) $[Fe(CN)_6]^{4-} > [MnCl_4]^{2-} > [CoCl_4]^{2-}$

BOTANY

Section A

101. Which one of the following is common to multicellular fungi, filamentous algae and protonema of mosses?
(a) Multiplication by fragmentation.
(b) Diplontic life cycle.
(c) Members of kingdom plantae.
(d) Mode of nutrition.

102. A non-proteinaceous enzyme is:
(a) Lysozyme **(b)** Ribozyme
(c) Ligase **(d)** Deoxyribonuclease

103. Which enzyme(s) will be produced in a cell in which there is a non-sense mutation in the lac *y* gene?
(a) Lactose permease and transacetylase
(b) Lactose permease
(c) Transacetylase
(d) β-galactosidase

104. Ribophorins are found on the membrane of:
(a) Mitochondria
(b) Secondary lysosomes
(c) SER
(d) RER

105. An aggregate fruit is the one which develops from:
(a) Multicarpellary, apocarpous gynoecium.
(b) Complete inflorescence.
(c) Multicarpellary, superior ovary.
(d) Multicarpellary, syncarpous gynoecium.

106. A good producer of citric acid is:
(a) *Aspergillus* **(b)** *Pseudomonas*
(b) *Saccharomyces* **(d)** *Clostridium*

107. Select the incorrectly matched pair:
(a) *Aspergillus* – Conidia
(b) *Rhizopus* – Dikaryophase
(c) *Mucor* – Coenocytic mycelium
(d) *Penicillium* – Ascocarp

108. Cyclic photophosphorylation differs from non-cyclic photophosphorylation in that latter:
(a) involves only PS-I
(b) includes evolution of O_2
(c) involves formation of assimilatory power
(d) both **(b)** and **(c)**

109. At what stage of the cell cycle are histone proteins synthesized in an eukaryotic cell?
(a) During entire prophase.
(b) During telophase.
(c) During S-phase.
(d) During G_2 stage of prophase.

110. Wind pollinated flowers are:
(a) Small, producing large number of dry pollens.
(b) Large, producing abundant nectar and pollen.
(c) Small, producing nectar and dry pollen.
(d) Small, brightly coloured, producing large number of pollen grains.

111. Which of the following term is used to notify species that are specific in a region and not found anywhere else?
(a) Vulnerable species **(b)** Threatened species
(c) Keystone species **(d)** Endemic species

112. In prokaryotes _____RNA polymerase(s) can polymerise all types of RNA.
(a) only two types of **(b)** a single type of
(c) only three types of **(d)** four types of

113. Chromatophores take part in:
(a) Respiration **(b)** Photosynthesis
(c) Growth **(d)** Movement

114. Cytoskeleton is made up of:
(a) Cellulose deposits.
(b) Cellulose microfibrils.
(c) Proteinaceous filaments.
(d) Calcium carbonate granules.

115. Asexual buds produced in *Marchantia* are
(a) Multicellular, green and diploid.
(b) Green and haploid.
(c) Non-green, multicellular and stalked.
(d) Stalked, green and unicellular.

116. DNA is the predominant genetic material in most of organisms because:
(a) It possesses 5-methyl uracil.
(b) DNA provides scope of mutation at slow rate.
(c) The two strands of DNA when separated by heating comes together as they are parallel.
(d) Both **(a)** and **(b)**.

117. The protein coat around the core of HIV is made of:
(a) gP41 **(b)** p17 **(c)** p24 **(d)** gP120

118. Which of the following can be the restriction site?
(a) 5′GAAGAAG′-3′
(b) 3′GAATTC′-5′ 5′CTTAAG′-3′
(c) 5′GAAGAAG-3′ 5′GAAGAAG′-3′
(d) 3′CTTCTTC′-5′ 3′GTATG′-5′

119. Male gametophyte with least number of cells is present in:
(a) *Funaria* **(b)** *Lilium* **(c)** *Pinus* **(d)** *Pteris*

120. In leaves of C_4 plants, malic acid synthesis during CO_2 fixation occurs in:
(a) Guard cells **(b)** Epidermal cells
(c) Mesophyll cells **(d)** Bundle Sheath

121. Alexander von Humboldt described:
(a) Population Growth Equation.
(b) Ecological Biodiversity.
(c) Laws of limiting factor.
(d) Species area relationship.

122. Phosphorylation of glucose during glycolysis is catalysed by:
(a) Phosphoglucomutase **(b)** Phoshoglucoisomerase
(c) Hexokinase **(d)** Phosphorylase

123. Which of the following statement is incorrect for chloroplast?
(a) It contains its own DNA.
(b) It is a semiautonomous cell organelle.
(c) It contains 80S ribosome.
(d) It is a double membrane bound cell organelle.

124. Which among the following is INCORRECT with respect to the universal rules of biological nomenclature?
(a) The first word in a biological name represents the genus while the second name denotes the species.
(b) The specific epithet starts with a capital letter while the generic epithet starts with a small letter. It can be illustrated with the example of *Mangifera indica.*
(c) Biological names are either derived from Latin language or Latinised.
(d) Both the words in a biological name, when handwritten are separately underlined or printed in italics to indicate their Latin origin.

125. Which one of the following cell organelles is enclosed by a single membrane?
(a) Nucleus **(b)** Mitochondria
(c) Chloroplasts **(d)** Lysosomes

126. Test cross is crossing between:
(a) Genotype with dominant trait.
(b) Genotype with recessive trait.
(c) F_1 hybrid with double recessive.
(d) Two F_1 hybrids.

127. Which of the following is the most suitable indicator of SO_2 pollution in the environment?
(a) Lichens **(b)** Conifers **(c)** Algae **(d)** Fungi

128. Floridean starch is stored food in:
(a) *Gracilaria* and *Sargassum*
(b) *Dictyota* and *Laminaria*
(c) *Fucus* and *Gelidium*
(d) *Polysiphonia* and *Gracilaria*

129. Which of the following is not a feature of the plasmid?
(a) Single stranded
(b) Independent replication
(c) Circular structure
(d) Small, circular double-stranded

130. In meiosis crossing over is initiated at:
(a) Diplotene **(b)** Pachytene **(c)** Leptotene **(d)** Zygotene

131. Which one of the following is not a constituent of cell membrane?
(a) Glycolipids **(b)** Proline
(c) Phospholipids **(d)** Cholesterol

132. The prime source of taxonomic studies of various species of plants, animals and other organisms is:
(a) Collection of actual specimens
(b) Identification
(c) Description
(d) Nomenclature

133. Choose incorrect statement.
(a) Methionine is sulphur containing amino acid.
(b) Right end of a polysaccharide is reducing.
(c) Cellulose can hold iodine.
(d) Inulin is a fructose polymer.

134. Which of the following can act as an intragenic suppressor mutation to a frame shift mutation?
(a) Transition
(b) Missense mutation
(c) Another frame shift mutation
(d) Non sense mutation

135. Deoxyribonucleic acid is the genetic material in majority of organisms. Choose the correct enzymes which are used to release this genetic material from bacterial, fungal and plant cells, respectively.
(a) lysozyme, cellulase, chitinase
(b) bacteriocin, cellulase, protease
(c) lysozyme, chitinase, cellulase
(d) lyase, chitinase, protease

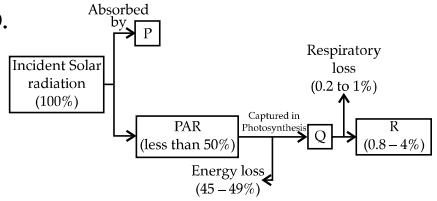
Section B

136. Which of the following statements is incorrect?
(a) Ovules are enclosed by ovary wall in gymnosperms.
(b) Stems are usually unbranched in both Cycas and Cedrus.
(c) Horsetails are Pteridophytes:
(d) Selaginella and Salvinia both are heterosporous.

137. In ginger, vegetative propagation occurs through:
(a) Rhizome **(b)** Offsets **(c)** Bulbils **(d)** Runners

138. The zone of atmosphere in which ozone layer is present is:
(a) Troposphere **(b)** Stratosphere
(c) Mesosphere **(d)** Ionosphere

139.



With reference to above schematic representation of energy flow in an ecosystem, select the P, Q and R.

	P	Q	R
(a)	Gases	NPP	GPP
(b)	Water vapours	GPP	NPP
(c)	Dust particle	NPP	GPP
(d)	Clouds	Secondary productivity	Primary productvity

140. What pledge was taken by the World Summit on Sustainable Development held in 2002 in Johannesburg, South Africa?
(a) Collection and preservation of seeds of different genetic strains of commercially important plants.
(b) A significant reduction in the current rate of biodiversity loss.
(c) Declaration of more biodiversity hotspots.
(d) Increase in agricultural production.

141. Which of the following growth regulators is a methionine derivative?
(a) Abscisic acid **(b)** Auxin
(c) Cytokinin **(d)** Ethylene

142. Which of the following is incorrectly matched?
(a) Age pyramid – Population
(b) Stratification – Ecosystem
(c) Aerenchyma – Sclerenchyma
(d) Parthenium – Threat to biodiversity

143. Given below are two statements:
Statement: In PS I the reaction centre chlorophyll a has an absorption peak at 700 nm, hence is called P700.
Statement: The water splitting complex is associated with the PS II, which is located on the outer side of the membrane of the thylakoid.
In the light of the above statements, choose the correct answer from the options given below:
(a) Both Statement I and Statement II are incorrect.
(b) Statement I is correct but Statement II is incorrect.
(c) Statement I is incorrect but Statement II is correct.
(d) Both Statement I and Statement II are correct.

144. In which of the following options is the ploidy level dissimilar?
(a) Integuments and nucellus
(b) Root tip and shoot tip
(c) Secondary nucleus and endosperm
(d) Antipodals and synergids

145. Which of the following is usually considered a limiting factor of the primary productivity in any ecosystem?
(a) Carbon **(b)** Nitrogen
(c) Phosphorus **(d)** Sulphur

146. Match the following column I with column II and choose the correct option

Column I	Column II
(A) Phytotron	**(i)** Heteroplast
(B) Heterosis	(ii) Capability of somatic cells to produce complete organism
(C) Cybrid	(iii) Controlled condition chamber for tissue culture
(D) Totipotency	(iv) Hybridisation

	(A)	(B)	(C)	(D)
(a)	**(i)**	(ii)	(iii)	(iv)
(b)	(iii)	(iv)	(i)	(ii)
(c)	(iv)	(iii)	(ii)	(i)
(d)	**(i)**	(iv)	(iii)	(ii)

147. Study the following table carefully regarding the characters studied by Mendel in pea plant. Select the correct options for 1, 2 and 3.

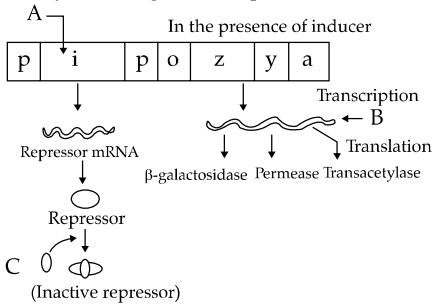
Trait studied	Dominant	Recessive
Flower color	1	White
Seed shape	Round	Wrinkled
2	Green	3
Flower position	Axial	Terminal

	1	2	3
(a)	Violet	**Pod** color	Yellow
(b)	Green	**Seed** color	Yellow
(c)	Violet	**Seed** color	Yellow
(d)	Green	**Pod** color	Yellow

148. Cheese is one of the oldest food item. Varied varieties of cheese are formed with different micro-organisms. Which of the following pair is incorrectly matched?
(a) Swiss cheese – *Propionibacterium chrysogenum*
(b) Cheddar cheese – *Lactococcus lactis ssp.*
(c) Roquefort cheese – *Penicillium roqueforti*
(d) Mozzarella cheese – *Streptococcus salivarius ssp.*

149. Read the statements given below:
(i) *Atropa belladonna* is a hallucinogenic plant and it is also known as deadly nightshade.
(ii) Opium is a plant belongs to the family Papaveraceae.
(iii) Cannabis is a plant which is used for the production of heroine and morphine.
(iv) *Erythroxylum coca* plant is a tropical shrub and it is native to certain regions of Peru, Bolivia and Ecuador.
How many of the above statements are true?
(a) 4 **(b)** 3 **(c)** 2 **(d)** 1

150. Complete the following schematic representation of Lac Operon by choosing correct option for A, B and C.



	A	B	C
(a)	Inhibitory gene	lac mRNA	Inducer
(b)	Inducing gene	lac rRNA	Inactivator
(c)	Structural gene	lac tRNA	Inhibitor
(d)	Regulatory gene	lac mRNA	Inducer

ZOOLOGY

Section A

151. Which of the following features is not present in the Phylum Arthropoda?
(a) Jointed appendages **(b)** Chitinous exoskeleton
(c) Metameric Segmentation **(d)** Parapodia

152. The nerve centres which control the body temperature and the urge for eating are contained in:
(a) Cerebellum **(b)** Thalamus
(c) Hypothalamus **(d)** Pons

153. Which part of poppy plant is used to obtain the drug "Smack"?
(a) Roots **(b)** Latex **(c)** Flowers **(d)** Leaves

154. A jawless fish which lays eggs in freshwater and whose ammocoetes larvae after metamorphosis return to the ocean is:
(a) *Eptatretus* **(b)** *Myxine*
(c) *Neomyxine* **(d)** *Petromyzon*

155. Destruction of the anterior horn cells of the spinal cord would result in the loss of:
(a) Sensory impulses
(b) Voluntary motor impulses
(c) Commissural impulses
(d) Integrating impulses

156. Which of the following is a pair of viral diseases?
(a) Typhoid, Tuberculosis
(b) Ringworm, AIDS
(c) Common Cold, AIDS
(d) Dysentery, Common Cold

157. Select the incorrect statement.
(a) Schizocoelom first originated in phylum Annelida.
(b) Blastopore is the pore of blastocoel.
(c) Solenocytes are the main excretory structures in platyhelminthes.
(d) The embryonated egg of *Ascaris* represents an egg with a juvenile.

158. The human hindbrain comprises three parts, one of which is:
(a) Cerebellum **(b)** Hypothalamus
(c) Spinal cord **(d)** Corpus callosum

159. A patient is suspected to be suffering from Acquired Immuno Deficiency Syndrome [AIDS]. Which diagnostic technique will you recommend for its detection?]
(a) ELISA **(b)** MRI
(c) Ultrasound **(d)** WIDAL

160. The supportive skeletal structures in the human external ears and in the nose tip are examples of:
(a) Ligaments **(b)** Areolar tissue
(c) Bone **(d)** Cartilage

161. Medical termination of pregnancy [MTP] is considered safe up to how many weeks of pregnancy?
(a) Eight weeks **(b)** Twelve weeks
(c) Eighteen weeks **(d)** Six weeks

162. Lung surfactant is secreted by:
(a) Terminal bronchioles **(b)** Kupffer cells
(c) Type I pneumocytes **(d)** Type II pneumocytes

163. Which one of the following characteristic feature is common to both humans and adult frogs?
(a) Nucleated RBCs
(b) Ureotelic mode of excretion
(c) Four chambered heart
(d) Internal fertilization

164. Which of the following male accessory glands help in the lubrication of the penis?
(a) Prostate gland **(b)** Bartholin's gland
(c) Seminal vesicles **(d)** Bulbourethral gland

165. The term used to refer to the use of bio-resources by multinational companies and other organisations without proper authorisation from the countries and people concerned without compensatory payment is:
(a) Biopiracy **(b)** Bioprospecting
(c) Bioexploitation **(d)** Bio-infringement

166. If parents have blood groups A and B and both are heterozygous for their respective blood groups then, which blood group can be seen in offsprings?
1. AB **2.** O 3. A 4. B
(a) Only 1 **(b)** Only 2
(c) Only 3 and 4 **(d)** All 1, 2, 3 and 4

167. The function of ciliated epithelium is/are:
(a) Secretion and absorption.
(b) To move particles/mucus in specific direction.
(c) To facilitate diffusion.
(d) To provide protection against chemical stresses.

168. Which one has the highest number of species?
(a) Birds **(b)** Angiosperms
(c) Fungi **(d)** Insects

169. Chronic cigarette smoking leads to:
(a) Pneumonia **(b)** Emphysema
(c) Pleurisy
(d) More than one option is correct

170. Labia majora is homologous to _____ of males. Choose the option that fills in the blank correctly.
(a) Clitoris **(b)** Penile urethra
(c) Prepuce **(d)** Scrotum

171. If Meselson and Stahl's experiment is continued for four generations in bacteria, then the ratio of N^{15}/N^{15} : N^{15}/N^{14} : N^{14}/N^{14} containing DNA after fourth generation will be
(a) 1 : 1 : 0 **(b)** 1 : 4 : 0 **(c)** 0 : 1 : 3 **(d)** 0 : 1 : 7

172. Myelin sheath is produced by:
(a) Schwann cells and Oligodendrocytes.
(b) Astrocytes and Schwann cells.
(c) Oligodendrocytes and Osteoclasts.
(d) Osteoclasts and Astrocytes.

173. The permissible use of the technique amniocentesis is for:
(a) Detecting sex of the unborn foetus.
(b) Artificial insemination.
(c) Transfer of embryo into the uterus of a surrogate mother.
(d) Detecting any genetic abnormality.

174. If both the ovaries are removed surgically, the level of which hormone is decreased in blood?
(a) Gonadotropin **(b)** Oxytocin
(c) Prolactin **(d)** Estrogen

175. A man whose father was colour blind marries a woman who had a colour blind mother and normal father. What percentage of male children of this couple would be colour blind?
(a) 25% **(b)** 0% **(c)** 50% **(d)** 75%

176. The tube within the tube plan is not present in:
(a) *Taenia* **(b)** *Pheretima* **(c)** *Leech* **(d)** *Ascaris*

177. Approximately seventy per cent of carbon dioxide absorbed by the blood will be transported to the lungs:
(a) As bicarbonate ions.
(b) In the form of dissolved gas molecules.
(c) By binding to RBC.
(d) As carbamino-haemoglobin.

178. Identify the human development stage shown below as well as the related right place of its occurrence in a normal pregnant woman and select the right option for the two together.

	Developmental stage	Site of occurrence
(a)	Late morula	Middle part of Fallopian tube
(b)	Blastula	End part of Fallopian tube
(c)	Blastocyst	Uterine wall
(d)	8-celled morula	Starting point of Fallopian tube

179. Which one of the following is now being commercially produced by biotechnological procedures?
(a) Nicotine **(b)** Morphine **(c)** Quinine **(d)** Insulin

180. Read the following statements:
Statement A: Fovea is a thinned out portion of retina where only cones are present.
Statement B: Blind spot lacks photoreceptor cells, hence the name.
Choose the correct option.
(a) Only A is correct
(b) Both statements are correct
(c) Only B is correct
(d) Both statements are incorrect

181. Joint present between atlas and axis vertebrae is:
(a) Gliding **(b)** Pivot **(c)** Saddle **(d)** Hinge

182. Which of the following is correct for a genic mode of sex determination?
(a) It is seen in higher eukaryotes.
(b) XX will always give female in this case.
(c) Gene locus determines gender.
(d) It makes use of parthenogenesis for producing male offspring.

183. Few pairs of hormones are listed in the box given below. How many of them are antagonistic to each other?

Epinephrine – Norepinephrine
Insulin – Glucagon
Calcitonin – Parathormone
Relaxin – Inhibin
Calcitonin – Melatonin

(a) Two **(b)** Three **(c)** Four **(d)** Five

184. There are several parts in the ear of human beings and each of them has specific location and functions. Identify the incorrect match.
(a) Pinna and auditory canal → External Ear → Collects sound waves and channel them to tympanic membrane.
(b) Eustachian tube → Anterior part of middle ear → Equalises air pressure on internal side of the tympanic membrane.
(c) Malleus, Incus, Stapes → Middle Ear → Increases the efficiency of transmission of sound waves to the inner ear.
(d) Cochlea → Inner ear → Transforms sound waves into electrical impulses which further sent to the brain.

185. ATP binding site is present in:
(a) Actin **(b)** Troponin
(c) Tropomyosin **(d)** Myosin

Section B

186. Select incorrect statement with respect to *Homo habilis*.
(a) They were the first human like beings, the hominids.
(b) The brain capacities were between 650–800cc.
(c) They probably did not eat meat.
(d) They used hides to protect their body and buried their dead.

187. What is the function of the atrioventricular (AV) valve in the frog's heart, and where is it located?
(a) It prevents the backflow of blood from the ventricle into the atria and is located between the atria.
(b) It regulates the flow of blood between the heart and the lungs.
(c) The AV valve ensures unidirectional blood flow in the systemic circulation.
(d) It is responsible for separating oxygenated and deoxygenated blood in the ventricle.

188. Which of the following structures is homologous to the wing of a bird?
(a) Wing of a moth **(b)** Hind limb of a rabbit
(c) Flipper of a whale **(d)** Dorsal fin of a shark

189. In _____ disease, osteoclasts become abnormal and more active than osteoblasts which further cause abnormal bone resorption.
(a) Osteoporosis **(b)** Tetanus
(c) Paget's disease **(d)** Itai–itai disease

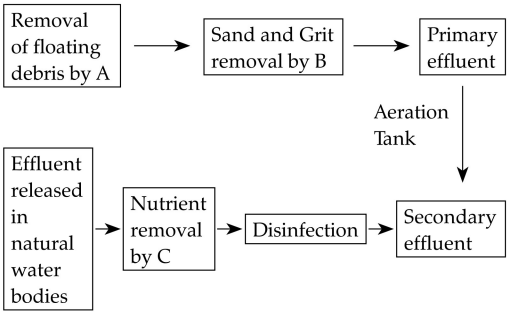
190. Which of the following is in direct contact with brain in humans?
(a) Cranium **(b)** Dura mater
(c) Arachnoid **(d)** Pia mater

191. What is the increase in number of RBCs called?
(a) Erythropoiesis **(b)** Polycythemia
(c) Erythrocytopenia **(d)** Erythroblastosis

192. A person died due to the lack of oxygen delivery to the various region of his brain. What may be the possible reason of his death?
(a) Hypoxia **(b)** Anoxia
(c) Pleurisy **(d)** Tachypnea.

193. Which of the following is not a function of CCK-PZ?
(a) Stimulation of Brunner's glands.
(b) Contraction of gall bladder.
(c) Stimulation of pancreas to release digestive enzymes.
(d) Stimulate the release of bile.

194. Study the following flow chart depicting the process of sewage treatment. Identify the missing parts A, B and C.



(a) A - Sedimentation, B - Sequential filtration, C - Granulation
(b) A - Scrubber, B - Sequencial filtration, C - Diffusion
(c) A - Sequential filtration, B - Sedimentation, C - Precipitation
(d) A - Membrane bioreactor, B - Trickling filter, C - Adsorption

195. The enzyme nuclease hydrolyses which bonds of polynucleotide chain of DNA?
(a) hydrogen bonds **(b)** phosphodiester bonds
(c) glycosidic bonds **(d)** peptide bonds

196. In Miller and Urey's experiment, the gases methane, hydrogen and ammonia are taken in ratio respectively:
(a) 2 : 1 : 2 **(b)** 2 : 2 : 1 **(c)** 1 : 2 : 2 **(d)** 1 : 2 : 1

197. Which value is calculated by applying the below given formula?

$$\frac{\text{Number of Recombinants}}{\text{Total number of Progeny}} \times 100$$

(a) Cross over value **(b)** Chromosome value
(c) Genic value **(d)** Genomic value

198. The following table shows certain plasmodium species and types of malaria caused by them. Which of the following two options are not correctly matched?

	Plasmodium species	**Types of Malaria**
(i)	*Plasmodium falciparum*	Malignant malaria
(ii)	*Plasmodium malariae*	Benign Tertian malaria
(iii)	*Plasmodium vivax*	Quartan malaria
(iv)	*Plasmodium ovale*	Mild Tertian malaria
(v)	*Plasmodium knowlesi*	Uncomplicated malaria

(a) **(i)** and (iii) **(b)** (ii) and (iii)
(c) **(i)** and (ii) **(d)** (ii) and **(v)**

199. The interval between infection and appearance of disease symptoms is called:
(a) inoculation **(b)** penetration
(c) infection period **(d)** incubation period

200. Human Genome Project is considered as megaproject because of several reasons. Which of the following reason is incorrectly explained?
(a) The human genome is said to have 4×10^9 bp and if the cost of sequencing is US $3 per bp then the total cost would be US $12 billion approximately.
(b) If the sequences were to be stored in a book, with every page having 1000 letters and each book is of 1000 pages, approximately 3300 books would be needed to store the complete information of DNA sequence from a single human cell.
(c) For storing the large and enormous amount of data, high speed computers are required.
(d) Advanced computational devices required for data retrieval and analysis.