Time : 3 Hrs. **Mock Test - 10** MM : 720

Complete Syllabus of Class XI & XII

GENERAL INSTRUCTIONS :

1. This paper consisting 180 objective type questions from Physics, Chemistry and Biology (Botany & Zoology).
2. For each correct response 4 marks will be awarded, whereas for each incorrect response 1 mark will be deducted from the total score.
3. No deduction from the total score will be made if no response is indicated.
4. More than one answer will be negatively marked.
5. Use Blue/Black ball point pen only to darken the appropriate circle.
6. Mark should be dark and should completely fill the circle in the answer sheet.
7. Do not use white-fluid or any other rubbing material on answer sheet. No change in the answer once marked.
8. Rough work must not be done on the answer sheet.
9. Student cannot use log tables and calculators of any other material in the examination hall.

PHYSICS

Choose the correct answer :

1. A body projected vertically with a speed of 27 m/s. Then find the distance travelled by the body in 3rd second of its motion. (g = 10 m/s^2)

   (1) 5 m (2) 4 m

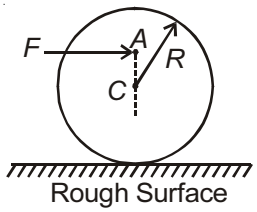
   (3) 2.9 m (4) 4.9 m

2. The speed v reached by a car of mass m, driven with constant power P, is given by

   (1) $v = \frac{3Px}{m}$ (2) $v = \sqrt{\frac{3Px}{m}}$

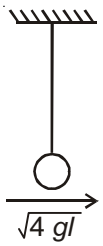
   (3) $v = \left[\frac{3Px}{m}\right]^{1/3}$ (4) $v = \left(\frac{3Px}{m}\right)^2$

3. In the figure shown, force F is acting 4 cm above the centre of a solid sphere then in which direction friction will act at the point of contact? (F = 10 N, AC = 4 cm, R = 10 cm)



   (1) Forward direction
   (2) Backward direction
   (3) No friction will act
   (4) Cannot be determined with these informations

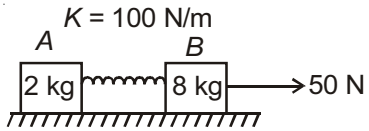
4. A bob suspended from a string is given $\sqrt{4gl}$ speed at the lowest point, where l is the length of the string, then find at which height from the lowest position it will leave the circular track?



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

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

5. Block A and B are kept on smooth surface and attached through a spring having spring costant K = 100 N/m. At t = 0 force applied on the block B is 50 N, then find acceleration of centre of mass of the system at t = 5 s



(1) 4 m/s^2 (2) 5 m/s^2

(3) 3 m/s^2 (4) 6 m/s^2

6. A transverse wave is described by the equation

$$y = A\sin\left[2\pi\left(ft - \frac{x}{\lambda}\right)\right]$$

The maximum particle velocity is equal to four times the wave velocity if

(1) $\lambda = \frac{\pi A}{4}$ (2) $\lambda = \frac{\pi A}{2}$

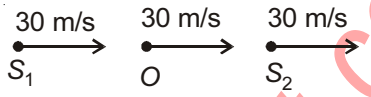
(3) $\lambda = \pi A$ (4) $\lambda = 2\pi A$

7. A body connected at the end of a spring executes SHM with a time period t_1, while the corresponding period for another spring is t_2. If the period of oscillation with the two spring in series is T, then

(1) $T = t_1 + t_2$ (2) $T^2 = t_1^2 + t_2^2$

(3) $\frac{1}{T} = \frac{1}{t_1} + \frac{1}{t_2}$ (4) $\frac{1}{T^2} = \frac{1}{t_1^2} + \frac{1}{t_2^2}$

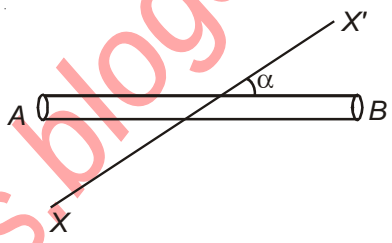
8. Consider two sound sources S_1 and S_2 having same frequency 100 Hz and the observer O located between them. All the three are moving with same velocity in same direction. The beat frequency as heard by the observer is



(1) Zero (2) 2

(3) 3 (4) 4

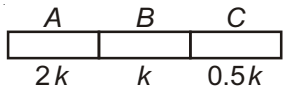
9. The moment of inertia of a uniform rod of length $2l$ and mass m about an axis XX' passing through its centre and inclined at an angle α is



(1) $\frac{ml^2}{3}\sin^2\alpha$ (2) $\frac{ml^2}{12}\sin^2\alpha$

(3) $\frac{ml^2}{6}\cos^2\alpha$ (4) $\frac{ml^2}{2}\cos^2\alpha$

10. Three cylindrical rods A, B and C of equal lengths and equal diameters are joined as shown in the figure. Their thermal conductivities are $2k$, k and $0.5k$ respectively. In steady state, if the free end of rods A and C are 100°C and 0°C respectively. What will be the equivalent thermal conductivity?



(1) $\frac{6}{7}k$ (2) $\frac{7}{6}k$

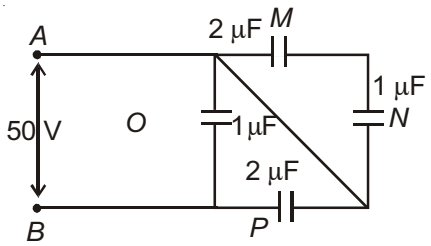
(3) $\frac{7}{2}k$ (4) $\frac{2}{7}k$

11. Three concentric shells A, B, C of radius r, $2r$ and $3r$ have surface charge density σ, -2σ and σ respectively. What is the potential at B?

(1) $\frac{-2\sigma r}{\varepsilon_0}$ (2) $\frac{-\sigma r}{\varepsilon_0}$

(3) $\frac{-\sigma r}{2\varepsilon_0}$ (4) $\frac{\sigma r}{\varepsilon_0}$

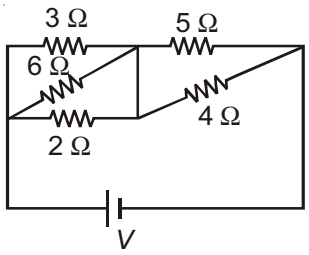
12. In the circuit shown, a potential difference of 50 V is applied across *AB*. The charge stored in capacitor *P* is



(1) 25 μC (2) 50 μC

(3) 75 μC (4) 100 μC

13. The resistor in which maximum heat will be produced is



(1) 6 Ω (2) 2 Ω

(3) 5 Ω (4) 4 Ω

14. Same current *i* is flowing in three infinitely long wires along positive *X*, *Y* and *Z* directions. The magnetic field at a point (0, 0, –*a*) would be

(1) $\frac{\mu_0 i}{2\pi a}(\hat{j}-\hat{i})$ (2) $\frac{\mu_0 i}{2\pi a}(\hat{i}+\hat{j})$

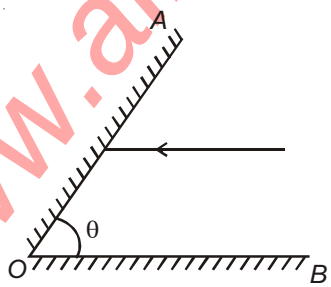
(3) $\frac{\mu_0 i}{2\pi a}(\hat{i}-\hat{j})$ (4) $\frac{\mu_0 i}{2\pi a}(\hat{i}+\hat{j}+\hat{k})$

15. A current of 2 A is increasing at a rate of 4 A/s through a coil of inductance 2 H. The energy stored in the inductor per unit time is (when current was 2 A)

(1) 2 J/s (2) 1 J/s

(3) 16 J/s (4) 4 J/s

16. Two plane mirror are inclined at angle θ as shown in figure. A ray parallel to *OB* strikes the other mirror at *P* and finally emerges parallel to *OA* after two reflections. Then θ is equal to



(1) 90° (2) 60°

(3) 45° (4) 30°

17. The de-Broglie wavelength of an electron is same as that of a photon of wavelength λ. If mass of electron is *m*, then its kinetic energy is

(1) $\frac{h^2}{2m\lambda^2}$ (2) $\frac{h^2\lambda^2}{2m}$

(3) $\frac{h^2 2m}{\lambda^2}$ (4) $\frac{h^2 m}{2\lambda^2}$

18. If the shortest wavelength of Lyman series of H atom is *X*, then the wavelength of first member of Balmer series of H atom will be

(1) $\frac{9X}{5}$ (2) $\frac{36X}{5}$

(3) $\frac{5X}{9}$ (4) $\frac{5X}{36}$

19. Radon 220 will eventually decay to Bismuth-212 as

$_{80}Rn^{220} \rightarrow {}_{84}Po^{216} + {}_{2}He^{4}$, $t_{1/2}$ = 55 second

$_{84}Po^{216} \rightarrow {}_{82}Pb^{212} + {}_{2}He^{4}$, $t_{1/2}$ = 0.016 second

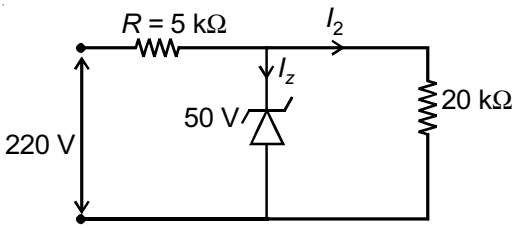
$_{82}Pb^{212} \rightarrow {}_{83}Bi^{212} + {}_{-1}e^{0}$, $t_{1/2}$ = 10.6 hour

If a certain mass of radon-220 is allowed to decay in a certain container, after five minutes the elements with the greatest mass will be

(1) Radon (2) Polonium

(3) Lead (4) Bismuth

20. From the Zener diode circuit shown in the figure, the current through Zener diode is



(1) 34 mA (2) 30 mA

(3) 33 mA (4) 31.5 mA

21. A change of 8 mA in the emitter current brings a change of 7.9 mA in the collector current. The value of α is nearly

(1) 0.96 (2) 0.92

(3) 0.99 (4) 0.97

22. At a point dip angle is 39°. Now dip circle is rotated so that the plane in which needle moves makes an angle of 30° with magnetic meridian. Apparent dip observed is

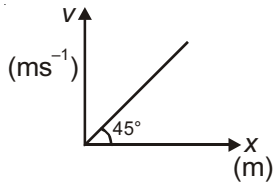
(1) Exactly 39°

(2) 30°

(3) More than 39°

(4) Less than 39°

23. Velocity-position graph of a particles is shown. Acceleration of particle at x = 5 m is



(1) 1 ms^{-2} (2) 3 ms^{-2}

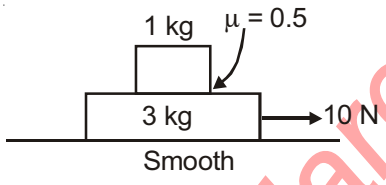
(3) 5 ms^{-2} (4) 2 ms^{-2}

24. A solid ball of density half that of water falls from a height of 10 m, then enters water. To what depth it will go in it? (g = 10 ms^{-2}, avoid viscous forces)

(1) 5 m (2) 10 m

(3) 20 m (4) 30 m

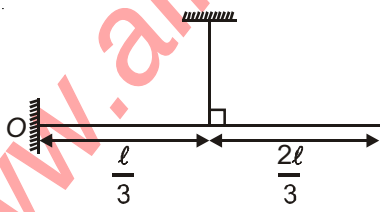
25. Frictional force on 1 kg block will be



(1) 2.5 N (2) 5 N

(3) 2 N (4) 4 N

26. A rod of mass m and length ℓ hinged in a vertical wall and kept horizontal by massless vertical thread as shown. Tension in thread is



(1) mg (2) $\frac{mg}{2}$

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

27. The escape velocity from the surface of earth is v_e. A body is projected with speed nv_e (n > 1), with what constant velocity it will move at large distance?

(1) $(n-1)v_e$ (2) $(\sqrt{n^2-1})v_e$

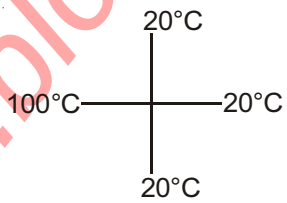
(3) $(n+1)v_e$ (4) $(\sqrt{n^2+1})v_e$

28. A wooden block of mass 50 kg and density 0.5 g/cc floats in water. How much mass can be placed on the block to make it just sink?

(1) 100 kg (2) 50 kg

(3) 70 kg (4) 30 kg

29. Four identical rods of same material are connected as shown. The temperature of junction will be



(1) 40°C (2) 60°C

(3) 50°C (4) 55°C

30. Two particles start SHM in same phase with time period 4 s and 2 s. They will be in same phase again at time

(1) 2 s (2) 6 s

(3) 9 s (4) 8 s

31. $y = \frac{3}{(2x-10t)^2+7}$ represents a moving pulse where x, y are in metre, t in second. Then

(1) Pulse is moving along + x-axis with speed 5 ms^{-1}

(2) Pulse is moving along – x-axis with speed 5 ms^{-1}

(3) Speed of pulse is 25 ms^{-1}

(4) Maximum displacement of pulse is 3 m

32. Point charges 4 μC, –1 μC and 4 μC are kept on y-axis $y = 2a$, $y = 3a$ and $y = 4a$

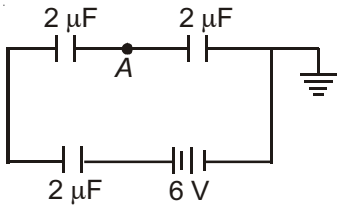
(1) Only –1 μC is in equilibrium

(2) None of the charges are in equilibrium

(3) All the charges are in equilibrium

(4) All the charges are in stable equilibrium

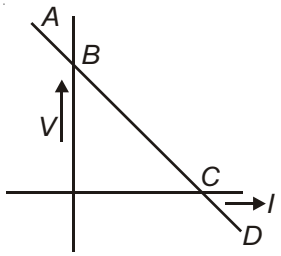
33. Three capacitors each of capacitance 2 μF are connected to a cell of 6 V as shown in the figure. The potential at point *A* will be



(1) 2 V (2) –2 V

(3) 3 V (4) –3 V

34. Graph between terminal voltage and current flowing through the same cell is shown



(1) Portion *AB* indicates charging of cell

(2) Portion *BC* indicate discharging of cell

(3) Portion *CD* is practically possible

(4) All of these

35. If number of turns of coil in galvanometer is doubled, then

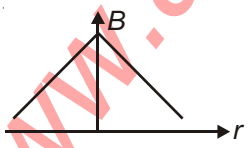
(1) Both current sensitivity and voltage sensitivity is doubled

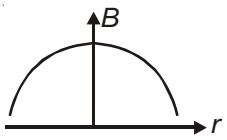
(2) Current sensitivity is doubled and voltage sensitivity remains same

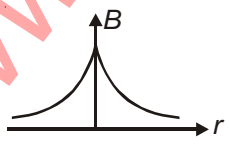
(3) Current sensitivity remains same and voltage sensitivity doubles

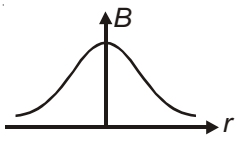
(4) Both current sensitivity and voltage sensitivity is halved

36. The magnetic field due to current carrying circular coil on its axis varies with distance as

(1) 

(2) 

(3) 

(4) 

37. Apparent dip at a place are $\cot^{-1}2$ and $\cot^{-1}2\sqrt{3}$ in two mutually perpendicular planes of dip circle. The true dip θ at the place will be

(1) $\theta = \cot^{-1}(2)$

(2) $\theta = \cot^{-1}(2\sqrt{3})$

(3) $\theta = \cot^{-1}(4)$

(4) $\theta = \cot^{-1}(3)$

38. In electromagnetic wave, what is wrong about $\vec{E}$ and $\vec{B}$?

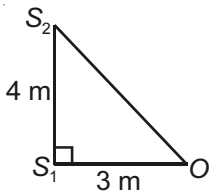
(1) $\vec{E}$ and $\vec{B}$ are mutually perpendicular

(2) $\vec{E}$ and $\vec{B}$ oscillate in same phase

(3) $\vec{E}$ and $\vec{B}$ oscillate in opposite phase

(4) Direction of propagation of electromagnetic wave is the direction of $(\vec{E} \times \vec{B})$

39. Two coherent sources S_1 and S_2 are 4 m apart and S_1 is 3 m from screen as shown. What should be maximum wavelength of the sources so that distructive interference occurs at *O*?



(1) 2 m (2) 4 m

(3) 0.5 m (4) 0.25 m

40. $\int F dv = A\frac{d^2P}{dx^2}$, where *F* is force, *v* is velocity, *P* = pressure, *x* is position. Dimension of *A* will be

(1) L^5T^{-1} (2) $L^{-5}T$

(3) L^2T^{-2} (4) $L^{-2}T^2$

41. There is a vertical cylinder of uniform cross-sectional area having small hole at bottom. When water is filled 1 m deep it empties in 3 minutes. If water is filled 4 m deep it empties in time

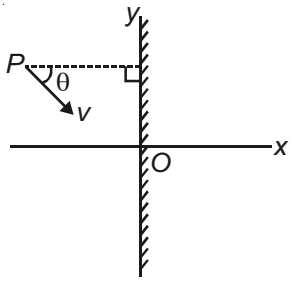
(1) 6 minutes

(2) 12 minutes

(3) 24 minutes

(4) None of these

42. A plane mirror is kept on *y*-axis as shown. Particle *P* starts with $v = 10\ ms^{-1}$, $\theta = 60°$ then,



(1) *x* component of velocity of image is $5\hat{i}\ ms^{-1}$

(2) *y* component of velocity of image is $5\sqrt{3}\,\hat{j}\ ms^{-1}$

(3) Relative velocity of image w.r.t. object is $10\sqrt{3}\ ms^{-1}$

(4) With respect to object image will move on a straight line parallel to *x*-axis with speed 10 m/s

43. A photosensitive plate is irradiated by source at distance 1 m from plate. Photoelectric current is 0.1 A. Now in above content, which of the following is correct?

(1) If frequency of light is increased maximum K.E. of photoelectron increases

(2) If frequency is increased, stopping potential increases

(3) If intensity of light is increased photoelectric current does not remain same

(4) All of these

CHEMISTRY

46. Which of the following has the smallest number of molecules?

(1) 11.2 L of CO_2 at STP

(2) 22 g CO_2

(3) 22.4 ml H_2 at STP

(4) 0.1 mole of CO_2

47. The number of spectral lines obtained in the any particular spectrum series of hydrogen atom is given by

(1) $\frac{n(n-1)}{2}$ (2) $\Sigma n_2 - n_1$

(3) $n_2 + n_1$ (4) $n_2 - n_1$

48. Which of the following is favoured at low pressure?

(1) $H_2(g) + I_2(g) \rightleftharpoons 2HI(g)$

(2) $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$

(3) $PCl_5(g) \rightleftharpoons PCl_3(g) + Cl_2(g)$

(4) $N_2(g) + O_2(g) \rightleftharpoons 2NO(g)$

49. Which of the following may be zero in isothermal process?

(1) ΔH (2) ΔE

(3) ΔT (4) All of these

44. Which of the following statements is/are correct?

(1) Mass number of a nucleus is equal to or more than atomic number

(2) Rest mass of stable nucleus is less than sum of rest masses of its separated nucleons

(3) Photon is elementary particle

(4) Both (1) & (2)

45. Which of the following statements is/are correct?

(1) *p* type semiconductor is positively charged

(2) *n* type semiconductor is negatively charged

(3) Zener diode works as voltage regulator in reverse bias

(4) LED works in reverse bias

50. In which solution the solubility of AgCl is minimum?

(1) Water (2) 5 M $AgNO_3$

(3) 1 M KCl (4) 2 M NaCl

51. Maximum amount of heat is released in the reaction

(1) NaOH + H_2SO_4 (1 eq)

(2) NaOH + HCl (1 eq)

(3) KOH + HNO_3 (1 eq)

(4) KOH + HF (1 eq)

52. 1 litre 0.1 M $(NH_4)_2CO_3$ solution is diluted by adding 2 litre of water in it, then pH of resulting solution will

(1) Increase

(2) Decrease

(3) Remain same

(4) May increase or decrease

53. Which of the following is intensive property?

(1) E_{cell} (2) E°_{cell}

(3) Specific heat (4) All of these

54. A solid contains three elements A, B and C present at each corner, alternate face centre and alternate edge centre respectively, then formula of solid would be

(1) ABC_2 (2) AB_2C

(3) A_2BC (4) ABC

55. The van't Hoff factor 'i' is related to the degree of dissociation/association 'x' of benzoic acid in aqueous solution as

(1) $i = 1 + \frac{x}{2}$ (2) $i = \left(1 - \frac{x}{2}\right)$

(3) i = 1 + x (4) i = 1 – x

56. What is amount of Cl_2 evolved when current of 2 ampere is passed for 30 minutes in an aqueous solution of NaCl?

(1) 1.32 g (2) 4.52 g

(3) 2.56 g (4) 3.25 g

57. In a unit cell of NaCl lattice, there are

(1) 6 Na^+ ions (2) 6 Cl^- ions

(3) 4 NaCl units (4) 3 Na^+ ions

58. Reduction potential of hydrogen electrode having pH = 2 is

(1) 0.00 V (2) – 0.118 V

(3) – 0.059 V (4) 0.118 V

59. The pH of a solution containing 0.30 M sodium acetate and 0.03 M acetic acid is (pK_a for CH_3COOH = 4.74)

(1) 5.74 (2) 6.74

(3) 3.74 (4) 2.74

60. Correct statement is

(1) Argyrol is used as eye lotion

(2) Colloidal solution of gold in water is called purple of cassius

(3) Colloidal solution of graphite in water is called aquadag

(4) All of these

61. $3A \longrightarrow 2B$, rate of appearance of B is equal to

(1) $-\frac{3}{2}\frac{d[A]}{dt}$ (2) $-\frac{2}{3}\frac{d[A]}{dt}$

(3) $-\frac{1}{3}\frac{d[A]}{dt}$ (4) $+2\frac{d[A]}{dt}$

62. For the following concentration cell

$Ag(s)|\,Ag^+(C_1)\,||\,Ag^+(C_2)|\,Ag(s)$

The cell reaction is spontaneous in forward direction if

(1) $C_1 = C_2$

(2) $C_1 > C_2$

(3) $C_1 < C_2$

(4) In concentration cell, the reaction is spontaneous in forward direction at any concentration of anode and cathode solution

63. In silicate, silicon is

(1) sp^3 hybridised (2) sp^2 hybridised

(3) sp hybridised (4) dsp^3 hybridised

64. The lanthanide contraction is due to

(1) Increasing screening effect of *s*-electron

(2) Increasing screening effect of *p*-electron

(3) Poor screening effect of *f*-electron

(4) Increasing screening effect of *f*-electron

65. Which of the following statement is correct?

(1) Synergic effect increases the stability of complex

(2) $\Delta_t = \frac{4}{9}\Delta_0$

(3) $[Ni(NH_3)_6]^{2+}$ is an outer orbital complex

(4) All of these

66. When KOH is added to $KMnO_4$, green colour obtained is due to

(1) Mn_2O_7 (2) MnO_2

(3) MnO_4^{2-} (4) Mn^{2+}

67. The correct order of acidic nature is

(1) HClO < HBrO < HIO

(2) HIO < HBrO < HClO

(3) HIO < HClO < HBrO

(4) HBrO < HIO < HClO

68. The volume of 1.5 equivalent of O_2 at STP is

(1) 8.4 litre (2) 11.2 litre

(3) 22.4 litre (4) 33.6 litre

69. The highest ionisation energy among the following element is

(1) F (2) N

(3) C (4) Be

70. In borax, how many water molecules are present in crystalline form?

(1) 8 (2) 10

(3) 6 (4) 2

71. ΔG° vs T plot in the Elingham diagram slopes downward for the reaction

(1) $C + \frac{1}{2}O_2 \rightarrow CO$

(2) $Mg + \frac{1}{2}O_2 \rightarrow MgO$

(3) $Ag + \frac{1}{2}O_2 \rightarrow Ag_2O$

(4) $CO + \frac{1}{2}O_2 \rightarrow CO_2$

72. Basic nature of NH_4^+, NH_3 and NH_2^- is in the order

(1) $NH_4^+ < NH_3 < NH_2^-$

(2) $NH_3 < NH_4^+ < NH_2^-$

(3) $NH_2^- < NH_4^+ < NH_3$

(4) $NH_2^- < NH_3 < NH_4^+$

73. $[Cr(NH_3)_6]\,[CoCl_6]$ and $[Co(NH_3)_6]\,[CrCl_6]$ is

(1) Linkage isomers

(2) Co-ordination isomers

(3) Ionisation isomers

(4) Hydration isomers

74. $LaH_{2.79}$ is an example of

(1) Ionic hydride (2) Covalent hydride

(3) Interstitial hydride (4) Polymeric hydride

75. $CH_3–CH=CH_2 + Cl_2 \xrightarrow{500°C} \underset{\text{(major)}}{A}$.

The product A is

(1) $CH_3–\underset{Cl}{CH}–\underset{Cl}{CH_2}$

(2) $\underset{Cl}{CH_2}–\underset{Cl}{CH_2}–CH_2$

(3) $\underset{Cl}{CH_2}–CH=CH_2$

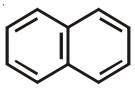
(4) $CH_3–CH=\underset{Cl}{CH}$

76. Select the non-aromatic compound

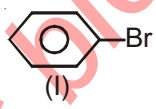
(1) 

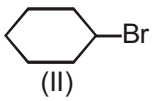
(2) 

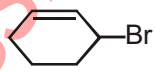
(3) 

(4) 

77. Order of hydrolysis of the following in increasing order is


(I)


(II)


(III)

$(CH_3)_3C–Br$
(IV)

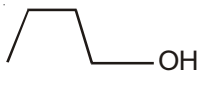
(1) I < II < III < IV

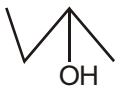
(2) I < II < IV < III

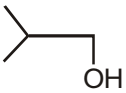
(3) I < IV < II < III

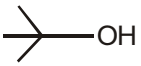
(4) IV < III < II < I

78. The stability of carbocation formed will be in the order


(I)


(II)


(III)


(IV)

(1) IV > II > III > I (2) II > IV > I > III

(3) III > II > IV > I (4) I > II > III > IV

79. 
P.

The product P is

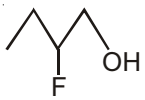
(1) Benzaldehyde

(2) Acetophenone

(3) Benzylalcohol

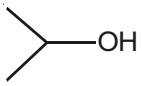
(4) Phenylethanol

80. Which alcohol is least reactive towards dehydration?

(1) 

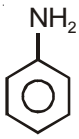
(2) 

(3) 

(4) 

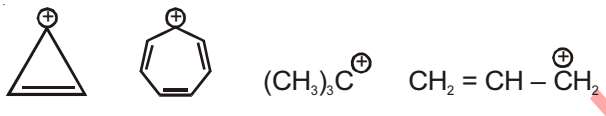
81. Nitrogen of which of the following molecules cannot be tested by Lassaigne's test?

(1) $CH_3–NO_2$

(2) 

(3) $NH_2–NH_2$

(4) All of these

82. 

(I) (II) (III) (IV)

The correct order of stability is

(1) (II) > (I) > (III) > (IV)

(2) (III) > (II) > (I) > (IV)

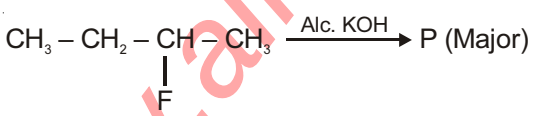
(3) (I) > (II) > (III) > (IV)

(4) (II) > (III) > (I) > (IV)

83. Which of the following halogen is not tested by Lassaigne test?

(1) F (2) Cl

(3) Br (4) I

84. 

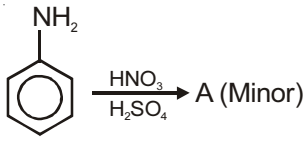
What is 'P'?

(1) $CH_3 – CH = CH – CH_3$

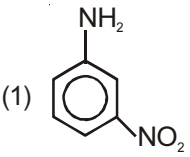
(2) $CH_3 – CH_2 – CH = CH_2$

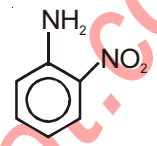
(3) $CH_3CH_2CH_2CH_3$

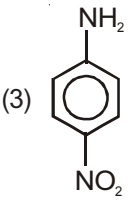
(4) 

85. 

Product 'A' is

(1) 

(2) 

(3) 

(4) Cannot predicted

86. The correct order of basic nature in aqueous medium is

(1) $(C_2H_5)_2NH > (C_2H_5)_3N > C_2H_5NH_2$

(2) $(C_2H_5)_2NH > C_2H_5NH_2 > (C_2H_5)_3N$

(3) $(CH_3)_2NH > CH_3NH_2 > (CH_3)_3N$

(4) Both (1) & (3)

87. Polystyrene is not a

(1) Thermoplastic

(2) Step-growth polymer

(3) Homopolymer

(4) Addition polymer

88. At pH equal to isoelectric point of any amino acid solution, it will

(1) Have some molecules net anionic

(2) Have some molecules net cationic

(3) Have all molecules neutral

(4) Be definitely essential amino acid

89. Glucose and galactose are

(1) Anomers

(2) C_2 epimers

(3) C_4 epimers

(4) C_3 epimers

90. Which of the following is biodegradable polymer?

(1) Nylon-2-nylon-6

(2) PMMA

(3) Nylon-6, 6

(4) Nylon-6

BOTANY

91. Nucleosome core in chromatin of human beings has
    (1) Proteins and DNA
    (2) Octamer of histone protein along with H_1
    (3) Lysine and arginine rich proteins
    (4) Histone as well as non-histone proteins

92. *lac*-operon is regulated operon system in which the structural genes remain switched off unless and until an inducer is present in the medium. The inducer
    (1) Is an amino acid
    (2) Can bind with repressor to stop the expression of structural genes
    (3) Is substrate of one of the structural gene
    (4) Is any carbohydrate molecule

93. Primary treatment of sewage is different from secondary treatment as former
    (1) Does not require aeration
    (2) Involves microbial digestion of organic matter
    (3) Is a biological process
    (4) Does not remove grit and large pieces of organic matter

94. Milkweed is protected from its herbivores like cattle or goats as it
    (1) Produce Cyanoalanine
    (2) Shows Chemical defence mechanism
    (3) Produce Lectins
    (4) Shows Morphological defence mechanism

95. Hydrosere as well as lithosere successions lead to
    (1) Very low water conditions
    (2) Hydric conditions
    (3) Mesic conditions
    (4) Very high water conditions

96. Which of the following step was not taken in Delhi for reducing vehicular pollution?
    (1) Application of stringent pollution level norms
    (2) Use of unleaded and high sulphur petrol
    (3) Phasing out of old vehicles
    (4) Use of catalytic converters

97. All of the following organisms cause disease in plants as well as animals, **except**
    (1) *Mycoplasma* (2) Viroids
    (3) Fungi (4) Bacteria

98. Hyphae of fungi is long, slender thread like structure. It is commonly filled with multinucleated cytoplasm if the organism is concerned with
    (1) Phycomycetes (2) Ascomycetes
    (3) Basidiomycetes (4) Deuteromycetes

99. In mosses, the sex organs are present on
    (1) Gametophore
    (2) Protonema stage of gametophyte
    (3) Sporophyte
    (4) Filamentous gametophyte

100. Mango and coconut plants
    (1) Are drupe fruits
    (2) Have simple dry fruits
    (3) Produce multiseeded fruits
    (4) Have edible endocarp

101. *Withania somnifera, Aloe vera* and *Atropa belladona* are
    (1) The members of Solanaceae
    (2) Ornamental plants
    (3) The members of liliaceae
    (4) Medicinal plants

102. In conjoint type of vascular bundles, the xylem and phloem are situated at the same radius. Such vascular bundles
    (1) Usually have the phloem located only on outer side of xylem
    (2) Are present in roots and leaves
    (3) Are present in roots and stems
    (4) Usually have the internal phloem

103. Centrioles are submicroscopic, microtubular, subcylindrical structures, which usually occur in the form of two granules. In centriole
    (1) Triplet fibrils of tubulin are tilted at an angle of 90°
    (2) The centre is occupied by a triplet fibril
    (3) A cart wheel structure can be observed
    (4) '9 + 2' organisation is present

104. The phase of cell cycle during which RNA polymerase is functionally active is
    (1) S-phase
    (2) G_1-phase
    (3) G_2-phase
    (4) More than one option is correct

105. Calculate the Ψ_W for a fully plasmolysed cell if Ψ_S and Ψ_P are 5 & 3 atm respectively

(1) –8 atm

(2) –2 atm

(3) +5 atm

(4) +8 atm

106. Sodium, silicon, cobalt and selenium are

(1) Essential elements for all plants

(2) Not functional elements

(3) Essential elements in most plants

(4) Beneficial elements

107. Which of the following activity is helpful in the development of proton motive force in chloroplast?

(1) PQ pump

(2) Photolysis of water towards stroma side

(3) Synthesis of NADPH towards lumen side

(4) More than one option is correct

108. Auxins help

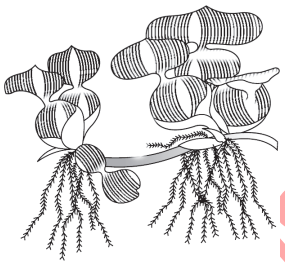
(1) In xylem differentiation

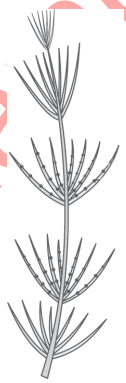
(2) In bolting

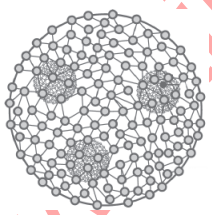
(3) To inhibit the rooting

(4) To inhibit parthenocarpy

109. Identify the organisms given below

A. 

B. 

C. 

(1) A- *Lemna* ; B- *Chara*; C-*Volvox*

(2) A- *Eichhornia* ; B-*Chara*; C-*Volvox*

(3) A- *Eichhornia* ; B-*Equisetum*; C-*Volvox*

(4) A- *Chara* ; B-*Equisetum*; C-*Porphyra*

110. Fill the labels A, B and C correctly for the given reaction occuring in mitochondrial matrix

$$\text{Pyruvic acid} + 4\boxed{A} + \boxed{B} + 2H_2O + ADP + Pi \longrightarrow 3\boxed{C} + 4NADH + 4H^+ + FADH_2 + ATP$$

(1) A- NAD^+; B- FAD^+ ; C- CO_2

(2) A- $NADH_2$; B- FAD^+ ; C- NH_3

(3) A- $NADP^+$; B- FAD^+ ; C- GTP

(4) A- FAD^+; B- NAD^+ ; C- CoA

111. Identify the structures labelled A and B in the given figures.

(1) A - Antheridiophore; B- Gemma cup

(2) A - Archegoniophore; B- Antheridiophore

(3) A - Antheridiophore; B-Archegoniophore

(4) A- Gemma cup; B-Antheridiophore

112. Select an **incorrect** match

(1) Pusa Komal – Cow pea

(2) Pusa Sadabahar – Chilli

(3) Pusa Swarnim – Brassica

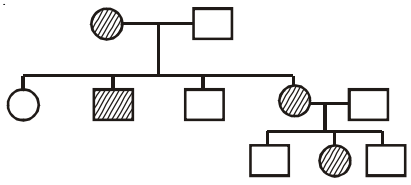
(4) Himgiri – Cauliflower

113. Major reason behind the loss of diversity is

(1) Habitat loss (2) Co-extinction

(3) Overexploitation (4) Allen species

114. Given below is the pedigree chart,



Select the disorder that can be explained using this

(1) Myotonic dystrophy (2) Porcupine skin

(3) Kuru syndrome (4) Hypertrichosis

115. Select an **incorrect** match

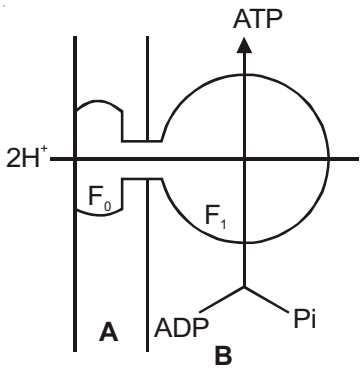
(1) Montreal protocol – To reduce emission of ODS

(2) Kyoto protocol – Wetland conservation

(3) World summit – South Africa

(4) Earth summit – Rio de Janeiro

116. Identify the locations labelled A and B in the given figure.



(1) A – Thylakoid membrane, B – Stroma

(2) A – Stroma, B – Thylakoid membrane

(3) A – Inner mitochondrial membrane, B – Matrix

(4) A – Matrix, B–Inner mitochondrial membrane

117. Caruncle is a hygroscopic structure found in castor. It develops from

(1) Nucellus (2) Funiculus

(3) Chalaza (4) Integument

118. Match the following

	Column-I		Column-II
a.	Filiform apparatus	(i)	Nucellus
b.	Definitive nucleus	(ii)	PEN
c.	Pseudofertilization	(iii)	Synergids
d.	Apospory	(iv)	Central cell

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

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

119. How many pure breeding varieties of *Pisum sativum* were selected by father of genetics?

(1) 7 (2) 5

(3) 4 (4) 14

120. How many types of gametes are expected from a plant having aaBbCCDDEe genotype?

(1) 4

(2) 8

(3) 10

(4) 2

121. An organism having AA + XXY chromosomal constitution is expected to be a _____ in humans, while it is expected to be a _____ in *Drosophila*

(1) Normal male, normal female

(2) Turner's syndrome, normal female

(3) Down's syndrome, normal male

(4) Klinefelter's syndrome, normal female

122. Prokaryotic mRNA is different from eukaryotic mRNA in

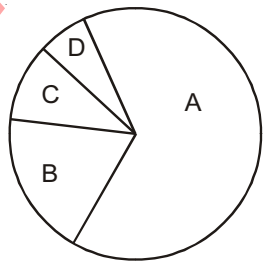
(1) Having polycistronic structure

(2) Having monocistronic structure

(3) Having a polyadenylate tail at 3' end

(4) Having requirement of ribozymes for maturation

123. Find correct set of labels A, B, C and D showing percent contribution of different greenhouse gases to total global warming



(1) A - NO_2 (60%); B - CO_2 (20%); C - CH_4 (14%); D - CFC (6%)

(2) A - CH_4 (60%); B - CO_2 (20%); C - CFC (14%); D - N_2O (6%)

(3) A - CFC (60%); B - CO_2 (20%); C - CH_4 (14%); D - N_2O (6%)

(4) A - CO_2 (60%); B - CH_4 (20%); C - CFC (14%); D - N_2O (6%)

124. In accordance with ICBN, the taxon Parietales represent one of the following categories of taxonomic hierarchy *i.e.,*

(1) Tribe (2) Class

(3) Order (4) Family

125. According to three kingdom system of classification, bacteria and slime moulds are included into

(1) Monera (2) Plantae

(3) Protista (4) Animalia

126. *Albugo* belongs to

(1) Ascomycetes (2) Deuteromycetes

(3) Phycomycetes (4) Basidiomycetes

127. Select the **correct** match
(1) Mn – Photolysis of water
(2) Fe – Cell plate formation
(3) Mg – Catalase activity
(4) Ca – PEPCase activity

128. Select **incorrect** statement w.r.t. bryophytes
(1) Haplontic life cycle pattern
(2) Sporophyte is fully or partially dependent upon gametophyte
(3) They are non-vascular archegoniates
(4) Homosporous forms with sporic meiosis

129. Independent, photosynthetic, free living gametophyte is found in
(1) *Cedrus* (2) *Dryopteris*
(3) *Ginkgo* (4) *Pinus*

130. Cylindrical of flat modified main stem with several internodes for assimilatory function is
(1) Phyllode (2) Phylloclade
(3) Cladode (4) Hypsophyll

131. A. Triangular pyramid of population explains the positive growth.
B. DFC is major conduit of energy flow in an aquatic ecosystem.
C. Cattle and cattle egret relation is commensalism.
D. Dodo, steller's sea cow and thylacine are among recent extinctions.
(1) A, C and D are correct
(2) B and C are incorrect
(3) A and D are incorrect
(4) B and D are correct

132. Select incorrect statement w.r.t. the anatomy of barley stem
(1) Parenchymatous ground tissue is extended from hypodermis to centre
(2) Hypodermis is made of thick walled living mechanical tissue
(3) Vascular bundles are conjoint, collateral and closed with endarch xylem
(4) Pith is absent

133. Type of solute to be entered in vascular tissue is controlled by
(1) Epidermis (2) Hypodermis
(3) Endodermis (4) Pericycle

134. What is true for plasma membrane?
(1) It is symmetrical structure
(2) Lipids show flip-flop movement
(3) Extrinsic proteins are more abundant on the outer surface
(4) Percentage of carbohydrates is higher than proteins

135. What is the amount of DNA in metaphase stage of a diploid somatic cell, if a microspore of the same plant has 30 pg DNA?
(1) 30 pg (2) 60 pg
(3) 15 pg (4) 120 pg

ZOOLOGY

136. In a resting membrane Na^+ will diffuse from
(1) Inside to outside
(2) Outside to inside
(3) Outside to inside through voltage gated Na^+ ion channel
(4) Inside to outside through diffusion ion channels

137. The patient is pot-bellied and pigeon chested and has protruding tongue. He is physically stunted and mentally retarded. The body temperature, heart rate and blood pressure are lower than normal. The symptoms mentioned are of which disease?
(1) Dwarfism
(2) Cretinism
(3) Rickets
(4) Cortisol

138. What would happen if we feed the tadpole larvae with thiourea?
(1) They metamorphose into tiny frogs prematurely before their body growth is complete
(2) They would continue to grow without metamorphosis and become giant tadpoles
(3) They metamorphose into the terrestrial adult form
(4) They would die

139. Monoclonal antibodies are made outside the body by hybrid cell cultures, known as hybridomas. The hybrid cells are formed by the fusion of
(1) B-cells and T-cells
(2) B-cells and myeloma cells
(3) T-cells and myeloma cells
(4) B-cells and helper T-cells

140. About 65 mya, the dinosaurs suddenly disappeared from the earth. What could be the possible reason for this mass extinction?

A. It is very likely that a comet or meteorite hit the earth around that time

B. Global cooling

C. Most of them evolved into birds

(1) B only (2) A only

(3) A and B (4) A, B and C

141. Which of the following is the source of two anticancer drugs, vincristin and vinblastin, used in the treatment of cancer?

(1) Leaves of periwinkle

(2) *Taxus brewifolia*

(3) Evening primrose

(4) *Oenothera lamarckiana*

142. In the flying fish *Exocoetus*, the ———— fin is large and modified to use for gliding several metres into the air as the fish leaps out of water.

(1) Anal (2) Dorsal

(3) Caudal (4) Pectoral

143. Which of the following tissue covers moist surfaces such as buccal cavity, pharynx, oesophagus and cornea of the eye?

(1) Stratified cuboidal epithelium

(2) Stratified squamous non-keratinised epithelium

(3) Pseudostratified epithelium

(4) Stratified squamous keratinised epithelium

144. The neurons present in the retina of eye are

(1) Bipolar (2) Unipolar

(3) Multipolar (4) Pseudounipolar

145. If the ligament below the knee cap is struck by the doctors rubber headed hammer, then there is knee jerk reflex. It is

(1) Polysynaptic reflex

(2) Withdrawl reflex

(3) Monosynaptic reflex

(4) Bisynaptic reflex

146. Ankle joint is

(1) Gliding joint (2) Hinge joint

(3) Ellipsoid joint (4) Saddle joint

147. In *Torpedo* (electric ray), the electric organs are

(1) Modified dorsal fin supplied with nerves

(2) Modified musculature between the eyes and nostrils supplied with nerves

(3) Modified pectoral fin

(4) Spine like structures present in pelvic fin

148. Ampulla of Lorenzini, present in *Scoliodon* are

(1) Neuromast organs, to detect the vibrations or currents in water

(2) Olfactory receptors

(3) Electric organs

(4) Thermoreceptors

149. In which of the following the larva has bilateral symmetry but the adult has radial symmetry?

(1) Mollusca (2) Echinodermata

(3) Arthropoda (4) Annelida

150. Apoenzyme is

(1) Always a protein (2) Cofactor

(3) Coenzyme (4) Often a vitamin

151. Which of the following is **incorrect** match?

(1) *Spongilla* – Fresh water sponge

(2) *Euplectella* – Venus flower basket

(3) *Cliona* – Dead man's finger

(4) *Euspongia* – Bath sponge

152. A depression found in sphenoid bone that lodges pituitary gland is

(1) Sella turcica

(2) Phasmid

(3) Foraman transversarium

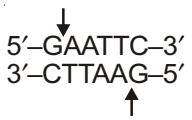
(4) Foramen magnum

153. Gammaglobulins are synthesized in

(1) Lymph nodes (2) Liver

(3) Bone marrow (4) Kidney

154. Which of the restriction endonuclease recognises the following palindromic sequence in DNA to form sticky ends?



(1) Eco RI (2) Bam HI

(3) Hind II (4) Cla I

155. Urea cycle removes, which two wastes from the blood?

(1) CO_2 and urea (2) CO_2 and ammonia

(3) Urea and ammonia (4) Urea and uric acid

156. The use of copper, in copper releasing IUDS is

(1) It change the reproductive cycle in human female

(2) Copper ions decrease phagocytosis of sperms in the uterus

(3) Copper ions released suppress sperm motility and the fertilization capacity of sperms

(4) Copper ions released inhibit oogenesis

157. Melatonin is synthesized from which of the following amino acids?

(1) Tyrosine (2) Tryptophan

(3) Argenine (4) Serine

158. Identify the class of chordrates having following features

i. Only left ovary is functional.

ii. Only right systemic aorta is present.

iii. Lungs are with air sac.

(1) Reptiles (2) Amphibia

(3) Aves (4) Mammals

159. The maximum volume of air a person can breathe in after a forced expiration is

(1) Inspiratory capacity

(2) Functional residual capacity

(3) Vital capacity

(4) Total lung capacity

160. Which of the following statement is **incorrect** about development of *Periplaneta americana*?

(1) On an average female produces 9-10 oothecae each containing 14-16 eggs

(2) The development is paurometabolous

(3) The nymph grows by mounting about 2-3 times to reach adult form

(4) The next to last nymphal stage has wing pads but only adult cockroach has wings

161. An increase in blood pressure and volume, stimulates the release of

(1) Renin from JGA

(2) Aldosterone from adrenal gland

(3) Atrial natriuretic factor

(4) ADH and NaCl reabsorption by the collecting duct

162. Which of the following statement is **incorrect**?

(1) Eleventh and twelfth pair ribs are called as floating ribs

(2) Saddle joint is present between the carpal and metacarpal of thumb

(3) Hinge joint in between atlas and axis

(4) Ball and socket joint is present between humerus and pectoral girdle

163. Cardiac index is

(1) Amount of blood pumped by the heart per minute

(2) Cardiac output in relation to unit surface area of the body

(3) Heart rate

(4) Amount of blood entering the heart

164. The Michaelis constant K_m is

(1) Numerically equal to $\frac{1}{2}V_{max}$

(2) Dependent on the enzyme concentration

(3) Numerically equal to the substrate concentration that gives half maximal velocity

(4) Increase in the presence of non-competitive inhibitor

165. Which of the following is a structural as well as enzymatic protein?

(1) Actin (2) Troponin

(3) Myosin head (4) Tropomyosin

166. *Hisardale* is a new breed of sheep developed in Punjab by using which of the following method of animal breeding?

(1) Inbreeding

(2) Outcrossing

(3) Cross breeding

(4) Interspecific breeding

167. Which of the following can be taken as the function of testes in male?

(1) Production of sperms

(2) Production of secondary follicles

(3) Secretion of hormones

(4) Both (1) & (3)

168. Which of the following glands present with the female pudendum are homologous to the bulbo-urethral glands of the male?

(1) Paraurethral glands

(2) Greater vestibular glands

(3) Glands of skene

(4) Lesser vestibular glands

169. Follicular stimulating hormone acts on which of the following cells to secrete an androgen binding protein (ABP)?

(1) Granulosa cells of ovary

(2) Sertoli cells of testes

(3) Leydig's cells of testes

(4) Follicular cells of ovary

170. Which of the following can't be taken as the character of the cleavage?

(1) Occurs in parthenogenetic egg

(2) Occurs in zygote

(3) Size of blastomere decreases

(4) Nucleocytoplasmic ratio decreases

171. Which of the following extraembryonic membrane in the human is small and non-functional except for furnishing blood vessels to the placenta?

(1) Zona pellucida (2) Vitelline membrane

(3) Allantois (4) Yolk sac

172. Which of the following protein digesting enzyme is activated by an enzyme enterokinase, secreted by the intestinal mucosa ?

(1) Pepsinogen (2) Procarboxy peptidase

(3) Trypsinogen (4) Chymotrypsinogen

173. Which of the following is the effective method of contraception and also protects against the STDs?

(1) 'Saheli' (2) IUDs

(3) Sterilisation (4) Condoms

174. After *in vitro* fertilization (IVF), the embryo with 4 blastomere is transferred into

(1) Cervix part of uterus

(2) Body part of uterus

(3) Fundus part of uterus

(4) Oviduct

175. Which of the following wave in ECG indicates the beginning of ventricular systole ?

(1) P wave (2) Q wave

(3) R wave (4) S wave

176. Decline in number of which of the following type of cells can be related to AIDS?

(1) NK cells

(2) Cytotoxic T cells

(3) Helper T cells

(4) Both (1) & (2)

177. A Nematode *Meloidogyne incognitia* infects the root of tobacco plants and causes a great reduction in yield. A novel strategy was adapted to prevent this infection that was based on the principle of

(1) Restriction modification system in bacteria

(2) RNA interference

(3) DNA interference

(4) Sense RNA technology

178. The ancestor of cave dwellers had normal eyesight but due to living in continuous dark condition, animals lost the power of vision. This statement signifies

(1) Theory of natural selection

(2) Lamarck's theory of evolution

(3) Mutation theory of Hugo de Vries

(4) Artificial selection

179. Which among the following ancestors of man are linked to leaving behind coloured cave paintings?

(1) Java ape man

(2) Cromagnon man

(3) *Ramapithecus*

(4) Handy man

180. Which of the following test is performed to confirm typhoid infection in man?

(1) Widal test

(2) Dick test

(3) Tourniquet test

(4) Schick's test

Mock Test - 10

ANSWERS

1.	(3)	37.	(3)	73.	(2)	109.	(2)	145.	(3)
2.	(3)	38.	(4)	74.	(3)	110.	(1)	146.	(2)
3.	(3)	39.	(2)	75.	(3)	111.	(3)	147.	(2)
4.	(4)	40.	(1)	76.	(3)	112.	(4)	148.	(4)
5.	(2)	41.	(1)	77.	(2)	113.	(1)	149.	(2)
6.	(2)	42.	(4)	78.	(1)	114.	(1)	150.	(1)
7.	(2)	43.	(4)	79.	(2)	115.	(2)	151.	(3)
8.	(1)	44.	(4)	80.	(1)	116.	(3)	152.	(1)
9.	(1)	45.	(3)	81.	(3)	117.	(4)	153.	(1)
10.	(1)	46.	(3)	82.	(1)	118.	(1)	154.	(1)
11.	(3)	47.	(4)	83.	(1)	119.	(4)	155.	(2)
12.	(4)	48.	(3)	84.	(2)	120.	(1)	156.	(3)
13.	(4)	49.	(4)	85.	(2)	121.	(4)	157.	(2)
14.	(1)	50.	(2)	86.	(4)	122.	(1)	158.	(3)
15.	(3)	51.	(4)	87.	(2)	123.	(4)	159.	(3)
16.	(2)	52.	(3)	88.	(3)	124.	(3)	160.	(3)
17.	(1)	53.	(4)	89.	(3)	125.	(3)	161.	(3)
18.	(2)	54.	(4)	90.	(1)	126.	(3)	162.	(3)
19.	(3)	55.	(2)	91.	(3)	127.	(1)	163.	(2)
20.	(4)	56.	(1)	92.	(3)	128.	(1)	164.	(3)
21.	(3)	57.	(3)	93.	(1)	129.	(2)	165.	(3)
22.	(3)	58.	(2)	94.	(2)	130.	(2)	166.	(3)
23.	(3)	59.	(1)	95.	(3)	131.	(1)	167.	(4)
24.	(2)	60.	(4)	96.	(2)	132.	(2)	168.	(2)
25.	(1)	61.	(2)	97.	(2)	133.	(3)	169.	(2)
26.	(3)	62.	(3)	98.	(1)	134.	(2)	170.	(4)
27.	(2)	63.	(1)	99.	(1)	135.	(4)	171.	(3)
28.	(2)	64.	(3)	100.	(1)	136.	(2)	172.	(3)
29.	(1)	65.	(4)	101.	(4)	137.	(2)	173.	(4)
30.	(4)	66.	(3)	102.	(1)	138.	(2)	174.	(4)
31.	(1)	67.	(2)	103.	(3)	139.	(2)	175.	(2)
32.	(3)	68.	(1)	104.	(4)	140.	(4)	176.	(3)
33.	(1)	69.	(1)	105.	(1)	141.	(1)	177.	(2)
34.	(4)	70.	(1)	106.	(4)	142.	(4)	178.	(2)
35.	(2)	71.	(1)	107.	(1)	143.	(2)	179.	(2)
36.	(4)	72.	(1)	108.	(1)	144.	(1)	180.	(1)