Aakash
Medical | IIT-JEE | Foundations
(Divisions of Aakash Educational Services Pvt. Ltd.)
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Time : 3 Hrs. **MM : 720**

MOCK TEST
for
NEET-2017

GENERAL INSTRUCTIONS :

1. NEET-2017 shall be a single 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. Questions are to be answered on the specially designed machine-gradable sheet using Blue/Black Ball Point Pen only.
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 or any other material in the examination hall.

PHYSICS

Choose the correct answer :

1. Pressure of gas is given by $P = \frac{nRT}{V} e^{-\frac{\alpha}{RTV}}$ where, T = temperature, V = volume, R = universal gas constant and n = number of moles. The dimensions of α are

   (1) $\left[ML^5 T^{-2}\right]$ (2) $\left[ML^5 T^{-2} mol^{-1}\right]$

   (3) $\left[M^{-1}L^5 T^{-3}\right]$ (4) $\left[ML^4 T^{-3} mol^{-1}\right]$

2. To measure the resistance of cylindrical wire whose resistivity is 1.7×10^{-8} Ω m, the length of wire is measured as 10 cm. The scale used to measure length has a least count 1 mm, the radius of wire is measured as 1.00 mm with the help of micrometer whose least count is 0.02 mm. Find the percentage error in the computation of resistance.

   (1) 2% (2) 3%

   (3) 5% (4) 7%

3. A particle moves so that the displacement x at time t is given by $x^2 = 1 + t^2$. What is its acceleration?

   (1) $\frac{1}{x}$

   (2) $\frac{t^2}{x^3}$

   (3) $\frac{1}{x} - \frac{t^2}{x^3}$

   (4) $\frac{t^2}{x^3} + \frac{t}{x^3}$

4. A projectile is given an initial velocity of $(\hat{i} + 2\hat{j})$ m/s, where $\hat{i}$ is along ground and $\hat{j}$ is along the vertical. If g = 10 m/s^2, the equation of its trajectory is

(1) $4y = 2x - 25x^2$ (2) $y = x - 5x^2$

(3) $y = 2x - 5x^2$ (4) $4y = 2x - 5x^2$

5. An aeroplane has to go from a city *A* to another city *B* 500 km away. *B* is at north of *A*. The wind is blowing towards east at a speed of 20 m/s. The air speed of aeroplane is 40 m/s. The direction in which the pilot should head the plane to reach the point *B* is

(1) North-West direction (2) 30° East of North

(3) 30° West of North (4) 60° West of North

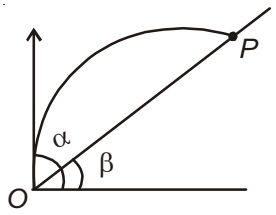
6. A shot is fired from *O* at an angle α with horizontal. If the shot hits the object *P* on an inclined plane horizontally then the relation between α and β is

(1) $2\tan\alpha = \tan\beta$

(2) $\tan\alpha = \frac{1}{4}\tan\beta$

(3) $\tan\alpha = 4\tan\beta$

(4) $\tan\alpha = 2\tan\beta$



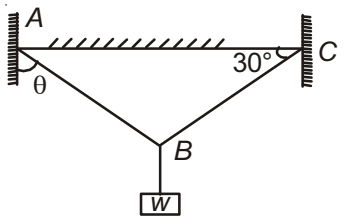
7. The value of θ, for which tension in the string *AB* is minimum, is

(1) 30°

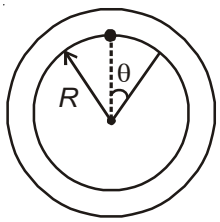
(2) 60°

(3) 45°

(4) 90°



8. In a smooth circular tube of radius *R*, a particle of mass *m* is released from top. The angular position with vertical where particle will leave the contact with inner surface and starts revolving in the contact of outer surface will be



(1) $\sin^{-1}\left(\frac{2}{3}\right)$ (2) $\tan^{-1}\left(\frac{1}{3}\right)$

(3) $\cos^{-1}\left(\frac{2}{3}\right)$ (4) $\tan^{-1}\left(\frac{1}{2}\right)$

9. A block of mass *m* having charge *q* is sliding down an inclined plane of inclination θ and coefficient of friction μ. When uniform electric field *E* is applied parallel to the base of inclined plane, the block slides down with constant velocity. The value of *E* is

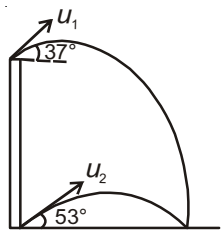
(1) $\frac{mg}{q}\left(\frac{\tan\theta - \mu}{1 + \mu\tan\theta}\right)$

(2) $\frac{mg}{q}\left(\frac{\tan\theta + \mu}{1 - \mu\tan\theta}\right)$

(3) $\frac{mg}{q}\left(\frac{\mu}{\tan\theta}\right)$

(4) $\frac{mg}{q}\left(\frac{\tan\theta}{\mu}\right)$

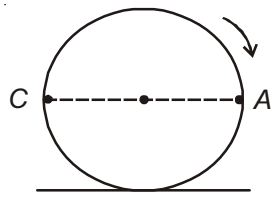
10. Shots are fired simultaneously from the top and the bottom of a vertical cliff with elevation 37° and 53° respectively as shown. If they strike the ground simultaneously, then the relation between u_1 and u_2 is



(1) $3u_1 = 4u_2$ (2) $4u_1 = 3u_2$

(3) $u_1 = u_2$ (4) $u_1 = \frac{u_2}{2}$

11. A sphere is rolling without slipping on a fixed horizontal plane surface with a constant speed. In the figure, *A* and *C* are the points on same line. Then



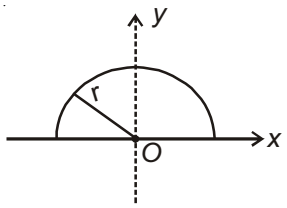
(1) Velocities of *A* and *C* are different but accelerations are same

(2) Velocities of *A* and *C* are same but accelerations are different

(3) Velocities and accelerations both are same for *A* and *C* position

(4) Velocities and accelerations both are different for *A* and *C* position

12. Gravitational field intensity at the centre *O* of the semicircular ring (of mass *m* and radius *r*) shown here is



(1) $\frac{2Gm}{\pi r^2}\hat{j}$ (2) $\frac{-2Gm}{\pi r^2}\hat{j}$

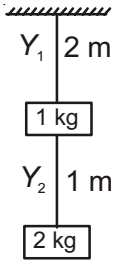
(3) $\frac{2Gm}{r^2}\hat{j}$ (4) $\frac{-2Gm}{\pi r^2}\hat{i}$

13. An object of specific gravity ρ is hung from a massless string. The tension in string is *T*. The object is immersed in water so that one half of its volume is submerged. The new tension in the string is

(1) $\left(\frac{2\rho+1}{2\rho}\right)T$ (2) $\left(\frac{2\rho-1}{2\rho}\right)T$

(3) $\left(\frac{\rho-1}{\rho}\right)T$ (4) $\left(\frac{\rho+1}{\rho}\right)T$

14. Two blocks of masses 1 kg and 2 kg are suspended with the help of two wires having same area of cross section. If the ratio of Young's modulus of the wires is $\frac{Y_1}{Y_2}=\frac{1}{2}$, then the ratio of extensions produced in wires is



(1) 8 : 1 (2) 4 : 1

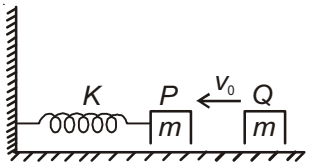
(3) 6 : 1 (4) 2 : 1

15. One mole of an ideal monatomic gas undergoes process in which $P \propto \frac{1}{T}$, then molar heat capacity of gas is

(1) $\frac{3R}{2}$ (2) $\frac{5R}{2}$

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

16. A block *Q* of mass *m* moving with velocity v_0 collides with another block *P* of same mass as shown in figure. There is no friction between floor and blocks. After collision, *Q* sticks to *P*. Find the maximum compression in spring.



(1) $2v_0\sqrt{\frac{2m}{K}}$ (2) $\frac{v_0}{2}\sqrt{\frac{m}{K}}$

(3) $v_0\sqrt{\frac{2m}{K}}$ (4) $\frac{v_0}{2}\sqrt{\frac{2m}{K}}$

17. Equation of motion of particle performing SHM is $\frac{d^2x}{dt^2}+\pi^2x=0$. If the amplitude of oscillation is *a*, then the distance covered by particle in 2.5 seconds is (particle begins at mean position)

(1) 2*a* (2) 3*a*

(3) 5*a* (4) 9*a*

18. The cylindrical tube of a spray pump has a cross section of 8 cm^2, other end of which has 40 fine holes each of area 10^{-8} m^2. If the liquid flows inside the tube with a speed of 0.15 m min^{-1}, then the speed with which the liquid is ejected through the holes is

(1) 0.5 m/s (2) 0.55 m/s

(3) 5 m/s (4) 50 m/s

19. A train approaching a hill at a speed of 40 km/h sounds a whistle of frequency 580 Hz, when it is at a distance of 1 km from hill. A wind with a speed of 40 km/h is blowing in the direction of motion of the train. Find the frequency of echo heard by the driver. (Velocity of sound in air = 1200 km/h)

(1) 600 Hz (2) 620 Hz

(3) 500 Hz (4) 560 Hz

20. 1 kg of ice at 0°C is mixed with 1 kg of steam at 100°C. What will be the ratio of mass of steam and water in final composition of the system when thermal equilibrium is reached?

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

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

21. A mass m moves with a velocity v and collides inelastically with another identical mass at rest. After collision first mass moves with velocity $\frac{v}{\sqrt{3}}$ in a direction perpendicular to the initial direction of motion. Find the speed of the second mass after collision.

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

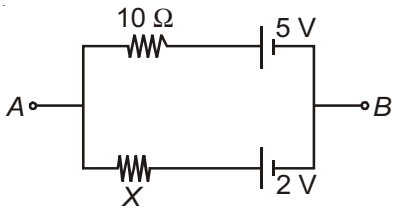
(3) v (4) $\frac{v}{\sqrt{3}}$

22. Moment of inertia of an annular ring of mass M and of inner radius R_1 and outer radius R_2 about the axis tangential and parallel to the diameter of ring is

(1) $\frac{M}{4}\left(R_1^2+R_2^2\right)$ (2) $\frac{M}{4}\left(5R_1^2+R_2^2\right)$

(3) $\frac{M}{2}\left(R_1^2+R_2^2\right)$ (4) $\frac{M}{4}\left(R_1^2+5R_2^2\right)$

23. In the given circuit, if potential difference between A and B is $V_A - V_B = 4$ V, then the value of X will be



(1) 20 Ω (2) 25 Ω

(3) 30 Ω (4) 40 Ω

24. An electric field of 20 N/C exists along the x-axis in space. If A(4 m, 2 m) and B(6 m, 5 m) are the points in space, then the value of potential difference ($V_B - V_A$) between these points is

(1) – 120 V

(2) – 40 V

(3) – 80 V

(4) 60 V

25. A 5 μF capacitor is charged to 12 V. The positive plate of this capacitor is now connected to the negative terminal of a 12 V battery and vice-versa. The heat developed in the process is

(1) 1.44 mJ (2) 1.56 mJ

(3) 1.72 mJ (4) Zero

26. Some amount of a radioactive substance (half life = 10 days) is spread inside a room and consequently the level of radiation becomes 64 times permissible level for normal occupancy of the room. After how many days the room will be safe for occupation?

(1) 20 days (2) 40 days

(3) 50 days (4) 60 days

27. The surface of a metal of work function 2 eV is illuminated by light whose electric field component is $E = 100\left[\sin(1.5\times10^{15}\,s^{-1})t\right]$. Find the approximate maximum kinetic energy of photoelectrons emitted from the surface.

(1) 2 eV (2) 4.2 eV

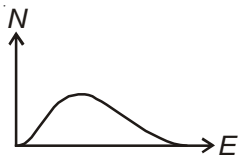
(3) 1 eV (4) Zero

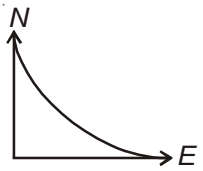
28. The ratio of de-Broglie wavelength of molecules of hydrogen and helium which are at temperature 27°C and 127°C is

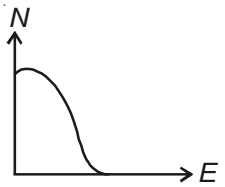
(1) $\sqrt{\frac{4}{3}}$ (2) $\sqrt{\frac{8}{3}}$

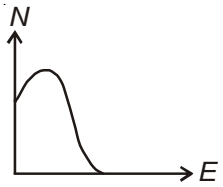
(3) $\sqrt{\frac{3}{4}}$ (4) $\sqrt{\frac{1}{3}}$

29. The energy spectrum of β-particle number (N) as a function of β-particle energy (E) emitted from a radioactive source is

(1) 

(2) 

(3) 

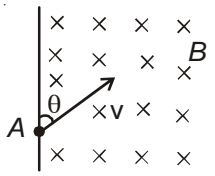
(4) 

30. Two concentric coils x and y of radii 16 cm and 10 cm respectively lie in the same vertical plane containing the North-South direction. Coil x has 20 turns and carries a current of 16 A. Coil y has 25 turns and carries current of 18 A. The sense of current in x is anticlockwise and in y, clockwise. For an observer looking at the coil facing west, the resultant magnitude of magnetic moment due to these coils is

(1) 2.3π Am^2 (2) 3π Am^2

(3) 3.7π Am^2 (4) 5 Am^2

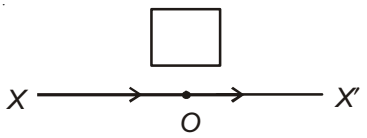
31. A charged particle (of mass m and charge $-q$) enters in uniform transverse magnetic field at point A, as shown in figure. Time for which the particle remains in the magnetic field region is



(1) $\frac{2\theta m}{qB}$ (2) $\frac{\theta m}{qB}$

(3) $\frac{(2\pi - 2\theta)m}{qB}$ (4) $\frac{(2\pi m)}{qB}$

32. An electron moves along the line XOX' which lies in the same plane as that of the square loop of conducting wire as shown. The direction of induced current is



(1) Clockwise as electron moves from X to X'

(2) Anticlockwise as electron moves from X to O

(3) Clockwise as electron moves from O to X'

(4) Both (2) & (3)

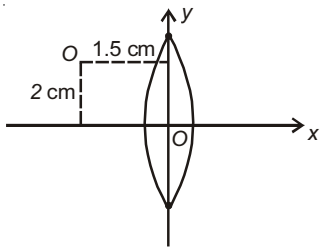
33. What will be the reading of a hot wire voltmeter if it is connected across the terminals of a generator whose voltage wave form is represented by

$V = 200 \sin \omega t + 100 \sin 3\omega t + 50 \sin 5\omega t$?

(1) 100 V (2) 162 V

(3) 150 V (4) 200 V

34. In the given figure the focal length of convex lens is 1 cm. An object is at (–1.5 cm, 2 cm). The distance of image from x-axis is



(1) 6 cm (2) 4 cm

(3) 2 cm (4) 1 cm

35. The number of possible interference maximum for YDSE in which slit separation is twice the wavelength of monochromatic light is

(1) 3 (2) 4

(3) 5 (4) 7

36. A potential barrier of 0.3 V exists across a p–n junction. Width of depletion region is 1 μm. If an electron with speed 5×10^5 m/s approaches this p–n junction from n-side, then what will be its approximate speed on entering the p-side?

(1) 2×10^5 m/s (2) 10^5 m/s

(3) 3×10^3 m/s (4) 3.8×10^5 m/s

37. If 200 MeV energy is released per fission of uranium atom, then the number of fission per second required to release one kilowatt power is

(1) 3.125×10^5 (2) 3.125×10^{13}

(3) 1.245×10^{19} (4) 1.245×10^{13}

38. A plane wavefront of wavelength λ is incident on a single slit of width b. What is the angular width for secondary maxima?

(1) $\frac{\lambda}{2b}$ (2) $\frac{\lambda}{b}$

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

39. A thin prism of angle 7° and refractive index 1.5 is combined with another prism of angle θ and refractive index 1.7. If the emergent ray goes undeviated, then the value of θ is

(1) 11° (2) 9°

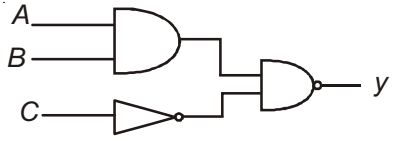
(3) 7° (4) 5°

40. The energy of electron in the n^{th} orbit is $E_n = -\frac{13.6}{n^2}$ eV, when zero potential is at infinity. What will be its value if zero potential is considered of first orbit?

(1) $\left(\frac{-13.6}{n^2} + 27.2\right)$eV (2) $\left(\frac{-13.6}{n^2} + 13.6\right)$eV

(3) $\left(\frac{-13.6}{n^2} - 27.2\right)$eV (4) $\frac{-13.6}{n^2}$ eV

41. In the given circuit the output y becomes zero for the inputs



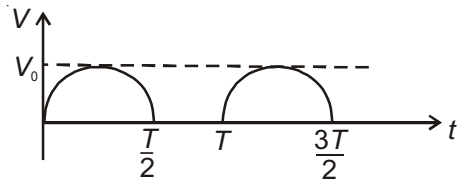
(1) $A = 1, B = 0, C = 0$

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

(3) $A = 0, B = 0, C = 0$

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

42. The output waveform of half wave rectifier is



The rms value of output is

(1) $\frac{V_0}{2}$ (2) V_0

(3) $\frac{V_0}{\sqrt{2}}$ (4) $\sqrt{2}V_0$

43. In gamma ray emission from a nucleus

(1) Only the proton number changes

(2) Both the neutron number and the proton number change

(3) There is no change in the proton number and the neutron number

(4) Only the neutron number changes

44. When an astronomical telescope is focussed on a distant star, the distance of the eyepiece from the objective is 60 cm. When focussed on a distant object, the eyepiece must be shifted away by 10 cm. If the focal length of eyepiece is 5 cm, what will be the distance of the object from the objective? (Assume that the eye is focussed for infinity)

(1) 30 cm (2) 105.3 cm

(3) 215.5 cm (4) 357.5 cm

45. A plane electromagnetic wave of frequency 25 MHz travels in a free space along the *x*-direction. At a particular point in space and time, $\vec{E} = 6.3\hat{j}$ V/m.

The value of $\vec{B}$ at that point is

(1) $2.1\times10^{-8}\hat{k}$ T

(2) $1.2\times10^{-8}\hat{k}$ T

(3) $1.2\times10^{-8}\hat{i}$ T

(4) $2.1\times10^{-8}\hat{j}$ T

CHEMISTRY

46. Weight of O_2 required to react with 1.35 g of Al completely to form Al_2O_3 will be

(1) 1.5 (2) 1.2

(3) 3.2 (4) 0.8

47. Number of H^+ ions given by one molecule of H_3PO_2 when dissolved in water is

(1) 1 (2) 2

(3) 3 (4) Zero

48. Which of the following transition in Be^{3+} gives same frequency given by n = 4 to n = 2 in He^+?

(1) n = 2 to n = 1 (2) n = 6 to n = 3

(3) n = 8 to n = 4 (4) n = 3 to n = 2

49. Total number of orbitals present in g-subshell will be

(1) 5 (2) 7

(3) 8 (4) 9

50. Which of the following can have same valency as its group number?

(1) Cr (2) Fe

(3) Ni (4) Co

51. What is the hybridization of oxygen atom in furan?

(1) sp^3 (2) sp

(3) sp^2 (4) sp^3d

52. CO_2 is isostructural with

(1) SO_2 (2) NO_2

(3) KO_2 (4) BeF_2

53. The value of V_c (critical volume) is

(1) b (2) 2b

(3) 3b (4) 4b

54. Which of the following will have the maximum heat of neutralization in magnitude?

(1) 1 mole NaOH + 1 mole HCl

(2) 1 mole NaOH + 1 mole HF

(3) 1 mole NaOH + 1 mole CH_3COOH

(4) 1 mole KOH + 1 mole HCl

55. For the reaction, A + B $\rightleftharpoons$ C, the value of $K_c = 10^3$ and ΔG_f° of A, B and C are –100, –200 and –500 kJ/mol respectively, then the temperature will be (approx.)

(1) 2483.4 K (2) 3482 K

(3) 2883.4 K (4) 3883.4 K

56. If the value of K_p for the reaction A(s) $\rightleftharpoons$ B(g) + C(g) is 16 atm^2. The value of pressure at equilibrium of B (g) and C (g) will be

(1) $P_B = P_C = 3$ atm (2) $P_B = P_C = 4$ atm

(3) $P_B = 2P_C = 10$ atm (4) $P_C = 2P_B = 8$ atm

57. How many moles of I^- ion are required to react with 1 mole of MnO_4^- in acidic medium?
(1) 3 (2) 4
(3) 2 (4) 5

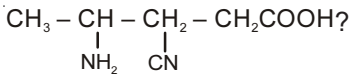
58. Allotropes of hydrogen are
(1) Ortho and Meta (2) Ortho and Para
(3) Para and Meta (4) Ortho, Para and Meta

59. Which of the following alkaline earth metal does not impart colour to the flame?
(1) Mg (2) Be
(3) Sr (4) Both (1) & (2)

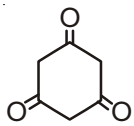
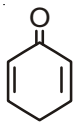
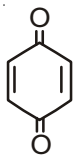
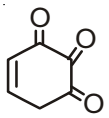
60. $H_2C_2O_4$ (oxalic acid) and H_2SO_4 (conc.) on reaction give two gases. The gases are
(1) CO and CO_2 (2) CO and SO_3
(3) CO_2 and SO_3 (4) SO_2 and SO_3

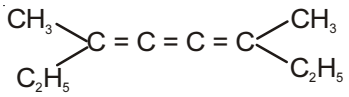
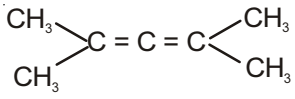
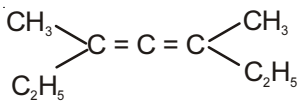
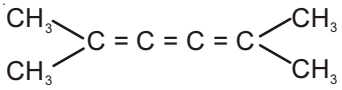
61. B_2H_6 on reaction with NH_3 can give
(1) $B_2H_6 \cdot 4NH_3$ (2) Borazine
(3) B_2N_3 (4) All of these

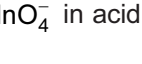
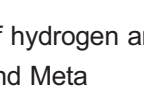
62. What is the IUPAC name of



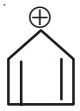
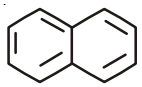
(1) 3 - Cyano - 2 - aminopentanoic acid
(2) 3 - Cyano - 4 - aminopentanoic acid
(3) 2 - Amino - 3 - cyanopentanoic acid
(4) 4 - Amino - 3 - cyanopentanoic acid

63. Which of the following cannot show tautomerism?
(1) 
(2) 
(3) 
(4) 

64. Which is optically active?
(1) 
(2) 
(3) 
(4) 

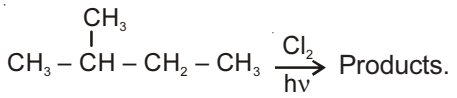
65. Strongest acid out of the following is
(1) 
(2)
(3) 
(4)

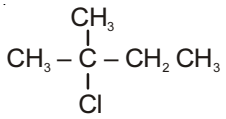
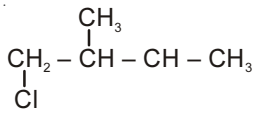
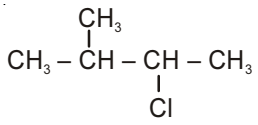
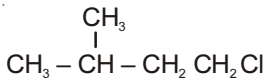
66. Electrophilic substitution reaction takes place mainly in
(1) Methane (2) Ethyne
(3) Benzene (4) Cyclopropane

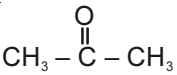
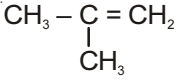
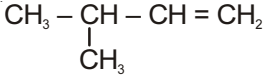
67. Which of the following is non-benzenoid aromatic?
(1) 
(2) 
(3) 
(4) 

68. In qualitative analysis, if both "N" and "S" are present in an organic compound, the colour appears at the end is
(1) Brown (2) Blood red
(3) Black (4) Prussian blue

69. Major product of the following reaction is



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

70. HCHO and  are the ozonolysis products of
(1) 
(2) 
(3) $CH_3 - CH_2\,CH = CH_2$
(4) $CH_3 - CH = CH - CH_3$

71. Reducing agent present in classical smog is

(1) SO_3 (2) SO_2

(3) NO_2 (4) NO

72. The distance between two octahedral voids in ccp unit cell is

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

(3) $a\sqrt{\frac{3}{2}}$ (4) All of these

73. If the value of lowering in vapour pressure of a liquid is 100 mm Hg when a non-electrolyte solute is added to it. What will be the value of elevation in boiling point if vapour pressure of pure liquid is 700 mm Hg and K_b = 10 K kg/mol? (Molar mass of solvent = 167 g)

(1) 5 K (2) 10 K

(3) 15 K (4) 20 K

74. If $E^{\circ}_{Cl_2/2Cl^-} = 1.36\ V$, then what will happen if solution is diluted?

(1) There will be no change in reduction potential

(2) Oxidation potential will increase

(3) Reduction potential will increase

(4) Reduction potential will decrease

75. $100\ g \xrightarrow{t_1} 50\ g \xrightarrow{t_2} 25\ g \xrightarrow{t_3} 12.5\ g$

What will be the value of $t_1 + t_2 + t_3$ if rate constant of the reaction is k = 10 mol/L/s and half-life is 10 s?

(1) 30 s (2) 12.5 s

(3) 15 s (4) 17.5 s

76. Which of the following will have maximum coagulating power for argyrol sol?

(1) Cl^- (2) SO_4^{2-}

(3) Ca^{2+} (4) Al^{3+}

77. Leaching is done for the concentration of

(1) Cu_2S (2) Ag_2S

(3) PbS (4) ZnS

78. The ratio of sigma bonds present in cations and anions in ionic PCl_5 is

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

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

79. Interhalogen compounds are more reactive than respective halogens, except

(1) I_2 (2) Br_2

(3) Cl_2 (4) F_2

80. Which of the following is correct regarding stability of oxidation state?

(1) $Ni^{2+} > Pt^{2+}$ (2) $Cr^{2+} < Cr^{3+}$

(3) $Mn^{2+} > Mn^{3+}$ (4) All of these

81. Which of the following is paramagnetic?

(1) $[Co(NH_3)_6]Cl_3$ (2) $K_4[Fe(CN)_6]$

(3) $K_3[Fe(CN)_6]$ (4) $Ni(CO)_4$

82. Which of the following will show maximum number of isomers?

(1) $[Mn(NH_3)_5\ Cl\ ]\ Br$

(2) $K_4\ [Fe(CN)_5Cl\ ]$

(3) $[Mn(NH_3)_4(CN)_2]\ Cl$

(4) $[CoCl_3(NH_3)_3]$

83. The product of the following reaction

$C_6H_5Cl \xrightarrow[\text{(Room temp.)}]{KOH\ (aq)} \text{Product}$

(1) C_6H_5OH (2) $C_6H_4(OH)Cl$

(3) $C_6H_4(OH)_2$ (4) No reaction

84. CH_3CH_2CHO can be converted to $CH_3CH_2CH_3$ by

(1) Zn-Hg/HC

(2) HI/Red P

(3) N_2H_4/KOH and glycol

(4) All of these

85. $CH_3-\overset{O}{\overset{\|}{C}}-CH_3 \xrightarrow[H^+]{NH_2OH} A \xrightarrow{H_2/Pt} CH_3-\underset{NH_2}{\underset{|}{CH}}-CH_3$

Here, A

(1) Is an amide

(2) Is $CH_3-\overset{NH}{\overset{\|}{C}}-CH_3$

(3) Shows tautomerism

(4) Shows geometrical isomerism

86. $CH_3CH_2CH_2CH_2COOH \xrightarrow[H_2SO_4]{HN_3} A \xrightarrow{HNO_2}$

$B \xrightarrow[443\ K]{\text{Conc. } H_2SO_4} C \xrightarrow{HCl} D$

Which of the following is correct about D?

(1) D is optically active

(2) D is meso compound

(3) D is acyl chloride

(4) D is chloro alkene

87. Glucose and fructose can be distinguished by
(1) Tollen's reagent
(2) Fehling's solution
(3) Lucas test
(4) Br_2 (aq)

88. The common between isoprene and chloroprene is
(1) Both form addition polymer
(2) Both undergo 1, 4 – addition
(3) Both polymerize to form synthetic rubber
(4) Both (1) & (2)

89. Which of the following can act as an antacid?
(1) NaOH
(2) $MgCO_3$
(3) $Al(OH)_3$
(4) Both (2) & (3)

90. Reimer-Tiemann reaction
(1) Follows electrophilic addition reaction
(2) Involves the addition of **:** CH_2
(3) Follows electrophilic substitution and gives product which is stabilized due to H-bonding
(4) Involves acidic medium to form electrophile

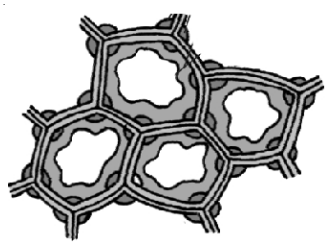
BIOLOGY

91. A marriage between colour-blind and sickle cell anemic female and normal visioned but sickle cell anemic male may produce
(1) Normal visioned sickle cell anemic sons
(2) 50% colour-blind sons and all sickle cell anemic daughters
(3) Normal visioned sickle cell anemic daughters
(4) Colour-blind daughters and colour-blind sons

92. Considering 20 chromosomes in oosphere of castor plant, find out the number of chromosomes present in caruncle, tube nucleus, PEC and nucellus respectively
(1) 40, 20, 60, 40 (2) 20, 20, 60, 40
(3) 40, 20, 60, 20 (4) 20, 20, 20, 40

93. In which of the following character photosynthetic mechanism of *Zea mays* is different from *Lycopersicum esculentum*?
(1) Show low CO_2 fixation rate under high light conditions
(2) RuBisCO catalyses a wasteful oxygenation reaction
(3) Pumping mechanism increases the concentration of CO_2 at enzyme site
(4) Has RuBisCO activity inside the bundle sheath cells

94. Choose the **incorrect** statement w.r.t. following diagram.



(1) Cell wall possesses uneven thickenings of cellulose, pectin and hemicellulose
(2) It is a living mechanical tissue
(3) It occurs in layers below epidermis in root of dicotyledonous plants
(4) It usually has high refractive index

95. Which of the following partially heterotrophic member (s) capture, kill and eat up members of animal species?
(a) *Cuscuta* (b) Bladderwort
(c) *Panthera tigiris* (d) *Dactylaria*
Mark **correct** option :
(1) (a) & (b) (2) (a) & (d)
(3) Only (b) (4) (a), (b) & (c)

96. In *Antirhinum majus*, when a cross is made between dwarf plant with pink flowers and homozygous tall plant with red flowers, what proportions of phenotypes in the offspring could be tall-white and tall-pink respectively?
(1) 50%, 50% (2) 0%, 50%
(3) 0%, 100% (4) 50%, 100%

97. Consider the following :
(a) Oxidative phosphorylation
(b) Lack NADP reductase
(c) Cyclic flow of electrons
(d) Oxygen evolving complex
Which of the given characters/structures are concerned with stroma lamellae present in chloroplasts?
(1) (a), (b) & (c) (2) (b), (c) & (d)
(3) (b) & (c) (4) (a), (c) & (d)

98. In animals, the organism, if unable to migrate, might avoid the stress by entering a stage of suspended development, known as :

(a) Hibernation (b) Aestivation

(c) Conform (d) Diapause

Mark **correct** option

(1) (a) & (b) (2) (d) only

(3) (a), (b) & (d) (4) (b) & (c)

99. During the ecological succession, in the successive seral stages there is a/an

(1) Increase in niche specialisation

(2) Decrease in total biomass

(3) Development of mesic to dry conditions

(4) Reduction in species diversity

100. Which of the following biochemical reactions in living systems are induced by RNA catalysts?

(1) Presence of 16 S rRNA enhances the rate of peptide bond formation in bacteria

(2) Activation of amino acids in translation

(3) Endonucleolytic cleavage of splice junctions of hnRNA by snRNA

(4) Both (1) & (3)

101. Thalamus is **not** fused with the wall of ovary in

(1) Guava, Mustard (2) Apple, Plum

(3) China rose, Rose (4) Sunflower, Buttercup

102. Consider the following events :

(a) Begins with the simultaneous splitting of centromere

(b) Bivalent chromosomes align on the equatorial plate

(c) Interkinesis

(d) Homologous chromosomes separate and move to opposite poles

Correct sequence of events in meiosis is

(1) (c), (b), (d) & (a) (2) (b), (d), (c) & (a)

(3) (c), (d), (b) & (a) (4) (b), (a), (c) & (d)

103. Find out the **incorrectly** matched pair.

(1) Historic Convention on Biological Diversity – Held in Rio de Janeiro

(2) Great Indian Bustard Project – Desert National Park (Rajasthan)

(3) Nagarjunasagar Sirisailam (A.P.) – Largest Rhino Project in India

(4) World Summit on Sustainable Development – Held in Johannesburg

104. How many of the plants, given in box, are characterized by development of false septum inside the ovary?

Candytuft, *Dianthus*, *Aloe*, Garlic, Makoi, *Gossypium,* Lily, Mustard

(1) Three (2) Four

(3) Two (4) Five

105. In some members of Rosaceae, Leguminoseae and Solanaceae, pollen grains maintain viability for months due to

(1) Sporopollenin (2) Tectum

(3) Specific proteins (4) Pectocellulosic intine

106. How many of the following statement(s) is/are **correct**?

(a) The loudness of a sound that a person can withstand without discomfort is about 150 dB.

(b) Fertiliser factory may cause air pollution, thermal pollution and eutrophication.

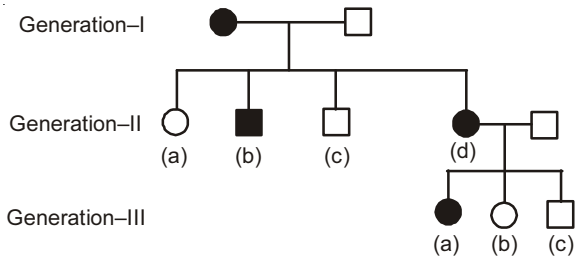
(c) Water will become septic if the dissolved oxygen level drops to zero.

(d) Plants growing near the boundary wall act as barriers for sound pollution and act as dust catchers.

(1) Two (2) Three

(3) Four (4) One

107. Study the pedigree chart given below and mark the correct option:



(1) It may be inheritance of a Y-linked trait

(2) Affected individuals cannot be homozygous dominant for a Mendelian character

(3) It is inheritance of chromosome aberration like myotonic dystrophy

(4) Generation II (b) – X^cY; Generation III (b) – XX^c

108. Reducing agent NADH + H^+ is oxidized to NAD^+ by pyruvic acid in

(1) Alcoholic fermentation

(2) Electron transport chain

(3) Lactic acid fermentation

(4) EMP pathway

109. Smooth endoplasmic reticulum, vacuoles, lysosomes and peroxisomes are

(1) Components of endomembrane system

(2) Semi-autonomous organelles

(3) Single membrane bound organelles

(4) Involved in translation process

110. If the growing point of _____ is exposed to long days and the leaves to short days no flowers appear but in the opposite case plant duly flowers.

(1) Soyabean (2) Tobacco

(3) *Xanthium* (4) Sugarbeet

111. Which of the following option **correctly** represents the position of oldest formed layer of secondary phloem in a dicot stem?

(1) Just inside the vascular cambium

(2) Just inside the crushed primary phloem

(3) Just outer side of medulla

(4) Just outerside of vascular cambium

112. Plant growth regulator synthesized in large amount by tissue undergoing senescence and ripening fruits is bioassayed by

(1) Triple response test

(2) Root growth inhibition test

(3) *Avena* curvature test

(4) Chlorophyll preservation test

113. *Fucus* and *Polysiphonia* reproduce sexually by

(1) Motile male and non-motile female gametes

(2) Heterogametes

(3) Non-motile male and female gametes

(4) Motile male and female gametes

114. Which of the following components are matched **incorrectly**?

(1) CMP 11 – Paris – 2012

(2) COP 3 – Kyoto – 1997

(3) CMP 3 – Bali – 2007

(4) COP 15 – Copenhagen – 2009

115. Sporophyte is not free living but attached to the photosynthetic dorsiventral thalloid gametophyte and derives nourishment from it in the life cycle of

(1) *Funaria* (2) *Pteris*

(3) *Ginkgo* (4) *Marchantia*

116. Choose the **wrongly** matched pair

(1) Deoxyribonucleoside triphosphate – Provide energy for polymerisation in DNA replication

(2) Nucleosome – In *Chlamydomonas* and *Nostoc*

(3) QB bacteriophage – Mutate and evolve faster

(4) *Lac* operon – Under negative and positive regulation

117. The walls are embedded with silica and thus indestructible in

(1) Primitive relatives of animals

(2) Saprobic protists

(3) Chief producers of oceans

(4) Whirling whips

118. Read the following statements :

(a) Particulate matter can be removed by catalytic convertors

(b) BOD is a measure of oxygen required by aerobic chemoautotrophs for the biochemical degradation of organic materials in water

(c) All the interstate buses in Delhi were converted to run on CNG at the end of 2002

(d) The Water (Prevention and Control of Pollution) Act was passed in 1974

Find the **correct** option (here 'T', true and 'F', false)

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

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

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

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

119. Viroids resemble to tobacco mosaic virus in possessing

(1) Free RNA molecules

(2) Ability to multiply in animal cells

(3) Protein coat

(4) Ribonucleotides

120. Arrange the following steps of DNA fingerprinting in a correct sequence :

(a) Hybridisation using labelled VNTR probe

(b) Digestion of DNA by restriction endonucleases

(c) Autoradiography

(d) Transferring of separated DNA fragments to synthetic membrane

Find out the **correct** option.

(1) $(d) \rightarrow (b) \rightarrow (c) \rightarrow (a)$

(2) $(b) \rightarrow (d) \rightarrow (a) \rightarrow (c)$

(3) $(b) \rightarrow (d) \rightarrow (c) \rightarrow (a)$

(4) $(b) \rightarrow (a) \rightarrow (d) \rightarrow (c)$

121. Which of the following filamentous organisms possesses chlorophyll-a and non-cellulosic cell wall?
(1) *Ulothrix* (2) *Alternaria*
(3) *Spirogyra* (4) *Anabaena*

122. Select the **wrongly** matched pair.
(1) Temperate broad leaf forest – *Quercus*
(2) Well developed xylem – *Hydrilla*
(3) Clay soil – High water holding capacity
(4) Ecological equivalents – Owl and cat

123. Lateral bud is capable of giving rise to new offsprings in
(1) *Bryophyllum* (2) Sweet potato
(3) *Adiantum* (4) Ginger

124. Most obvious and technically complicated feature of all living organisms is
(1) Self consciousness
(2) Ability to sense their surroundings
(3) Metabolism
(4) Intrinsic growth

125. Which of the following pair is **wrongly** matched?
(1) Cisternae – Site of formation of glycoprotein and glycolipids in Golgi complex
(2) Stroma – Enzymes of Calvin cycle
(3) Thylakoids – Flattened membranous sacs in chloroplast
(4) Cristae – Homologous to mesosomes

126. Effect of root pressure is observable at
(1) Night when evaporation is high
(2) Special openings of veins near the tip of grass stem
(3) Early morning when absorption is high
(4) Evening when transpiration and absorption both low

127. If one can induce parthenocarpy through the application of growth substances, which fruit would you select to induce parthenocarpy?
(1) Garden pea (2) Pomegranate
(3) Guava (4) Coconut

128. Reservoir is located in earth's crust in nutrient cycles like
(1) P, C (2) S, P
(3) C, N (4) N, P

129. Which one of the following pairs of elements helps to maintain cation-anion balance in cells?
(1) K^+, Cl^- (2) Cu^{2+}, Fe^{3+}
(3) NO_2^-, HPO_4^{2-} (4) Zn^{2+}, Mn^{2+}

130. Breeding and development of cultivars resistant to diseases reduce the dependence on use of
(1) Bacteriocides and biofertilisers
(2) Biofertilisers and bioweedicides
(3) Fungicides and nematicides
(4) Both (1) & (3)

131. Find out the pairs, which are **correctly** matched.

	Column–I		**Column–II**
a.	*Streptococcus*	(i)	Organic farming
b.	*Glomus*	(ii)	Statins
c.	*Monascus purpureus*	(iii)	Solubilisation of phosphate
d.	*Azospirillum*	(iv)	VAM
		(v)	Clot buster

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

132. The protoplasts of two plants are brought in contact and made to fuse by means of
(1) Cellulase and PEG
(2) Sodium nitrate
(3) Pectinase and protease
(4) Polyvinyl alcohol and 2, 4 – D

133. During aerobic respiration of glucose in a plant cell, most of the ATPs are synthesized as a result of
(1) Oxidative phosphorylation in cytoplasm and mitochondria
(2) Substrate level phosphorylation in cytoplasm
(3) Oxidative phosphorylation in mitochondria
(4) Oxidative and substrate level phosphorylation in cytoplasm

134. Choose the **correct** statement.
(1) In yeast, asci are arranged in ascocarps
(2) Common mushrooms and toadstools are edible fungi
(3) *Agaricus*, *Spirogyra* and *Neurospora* cannot reproduce by zoospores
(4) *Albugo candida* and *Puccinia graminis* grow on wheat plant as parasites

135. Most algal genera are haplontic, **except**
(1) *Volvox* (2) *Ectocarpus*
(3) *Chlamydomonas* (4) *Spirogyra*

136. Hind II, the first type II restriction endonuclease, is coded by E.C. number 3.1.21.4. The digit 3 in this number indicates that
(1) It is a hydrolase enzyme
(2) It cleaves the phosphodiester sequence three nucleotides away from the palindromic recognition site
(3) It denatures the DNA by breaking the three hydrogen bonds between guanine and cytonsine bases
(4) Its endonuclease action does not involve water molecules

137. An overdose of proton pump inhibitors will affect the activity of
(1) Enterokinase (2) Trypsin
(3) Pepsin (4) Steapsin

138. Select the odd one out w.r.t. DNA from the given options.
(1) Thymidine (2) Thymine
(3) Thymosine (4) Thymidylic acid

139. Regression of a well developed corpus luteum and its involution in a healthy nonpregnant female is caused by decrease in the concentration of _____ hormone which is in _____ phase of menstrual cycle
(1) LH, Secretory (2) FSH, Luteal
(3) LH, Proliferative (4) LH, Menstrual

140. During gametogenesis, the first set of haploid cells to be formed in testes and ovaries are (A), (B) and (C) respectively. Select the option which fills the blanks (A), (B) and (C) correctly.
(1) Primary spermatocyte, primary oocyte and first polar body
(2) Secondary spermatocyte, secondary oocyte and second polar body
(3) Secondary spermatocyte, secondary oocyte, and first polar body
(4) Secondary spermatocyte, primary oocyte, first polar body

141. All annelids and arthropods are similar to each other w.r.t. all the features, **except**
(1) Presence of schizocoelom
(2) Presence of metamerism
(3) Protostomic mode of development
(4) Presence of haemocoel

142. Consider the following statements and choose the correct option from the choices given below
(a) Mitochondrial DNA isolated from African populations has least variations or mutations.
(b) Africa is called cradle of human evolution.
(1) Only (a) is correct
(2) Only (b) is correct
(3) Both (a) & (b) are correct
(4) Both (a) & (b) are incorrect

143. Consider the following statements (a–d) about cockroach and choose the correct option w.r.t. true and false statements.
(a) Elytra are metathoracic wings, used as wing covers
(b) Two thoracic and eight abdominal spiracles are present in cockroach
(c) The 10^{th} segment of female cockroach bears unjointed anal styles which are absent in males
(d) In male cockroach, a characteristic mushroom gland is present in 6^{th} – 7^{th} abdominal segments

	(a)	(b)	(c)	(d)
(1)	T	T	T	T
(2)	F	F	F	T
(3)	T	T	F	T
(4)	T	F	F	T

144. Select the odd one out w.r.t. type of epithelium in the excretory tract
(1) Renal pelvis (2) Ureters
(3) Urinary bladder (4) Urethra

145. Cytochrome oxidase enzyme has ____ as the inorganic cofactor while _____ as its prosthetic group.
Choose the correct option which fills the blanks.
(1) Zn^{2+}, NAD (2) Fe^{2+}, Haem
(3) Cu^{2+}, NAD (4) Haem, NADP

146. Avascular and hence easily transplantable parts of human eye include
(1) Lens (2) Ciliary bodies
(3) Choroid (4) All of these

147. Consider the following statements w.r.t. sexual dimorphism in animals.
(a) In *Pristis*, males have pelvic claspers which are absent in females
(b) Female amphibians have copulatory pads on first digit of forelimbs during breeding season
(c) Female *Ascaris* is longer than the males and lacks cloaca
(d) Male cockroaches have anal styles which are absent in females.
How many statements out of the above are correct?
(1) One (2) Two
(3) Three (4) Four

148. In case of a female who suffers from anovulation but has normal physiological conditions available for carrying out fertilization and embryonic development; the preferred ART should be
(1) ZIFT (2) GIFT
(3) ET (4) ICSI

149. Which of the following methods of gene transfer is considered as an indirect transfer method?
(1) Biolistics
(2) Electroporation
(3) Ca^{2+} mediated gene transfer
(4) Retrovirus mediated gene transfer

150. Genetic disorder leading to progressive degeneration of muscles and corresponding reduction in their strength is
(1) Poliomyelitis (2) Hashimoto's disease
(3) Muscular dystrophy (4) Muscular tetany

151. Select the **incorrect** statement w.r.t. AIDS.
(1) The gp 120 of the virus binds with CD-4 receptors of target cells.
(2) HIV multiples in the macrophages which are also called HIV factories
(3) The destruction of cytotoxic T cells by HIV causes appearance of syndrome
(4) Being HIV positive and having AIDS are two separate conditions as appearance of syndrome does not occur for a long time after virus entry.

152. In a population of (100) individuals, (9) have attached ear lobes which is a recessive character. What is the number of heterozygotes for this characteristic in the population?
(1) 42 (2) 36
(3) 49 (4) 7

153. Person with AB positive blood group
(1) Can donate the blood to a recipient with A positive blood group
(2) Can donate the blood to a recipient with B positive blood group
(3) Can accept blood from persons with AB as well as other groups of blood.
(4) Both (1) & (2) are correct

154. Interferons are included in
(1) Physical barriers (2) Physiological barriers
(3) Cellular barriers (4) Cytokine barriers

155. When parietal cells are stimulated, they secrete
(1) HCl and intrinsic factor
(2) HCl and pepsinogen
(3) HCO_3^- and intrinsic factor
(4) HCl and HCO_3^-

156. Establishment of biological body clock by releasing melatonin hormone is the function of
(1) Pituitary gland's adenohypophysis
(2) Pineal gland
(3) Hypothalamus
(4) Pituitary gland's neurohypophysis

157. The failure of opening of Ca^{2+} ion channels on the membrane of a neuron will result in
(1) Lack of generation of impulses
(2) Lack of transmission of impulse on axolemma
(3) Lack of repolarization of axolemma
(4) Lack of release of neurotransmitter from axon terminals.

158. Which of the following options is **correct** w.r.t. deglutition mechanism, digestion and absorption?
(1) Deglutition is totally an involuntary process, controlled by autonomic plexus
(2) Uvula prevents the entry of food in the glottis
(3) Epiglottis prevents the entry of food in nasopharynx
(4) Fructose is transported exclusively by facilitated diffusion; therefore, it cannot be absorbed against a concentration gradient.

159. Which of the following groups includes all protostomic metamerically segmented schizocoelomates?
(1) *Pila*, *Macrobrachium*, *Araneus*
(2) *Buthus*, *Loligo*, *Ascaris*
(3) *Pheretima*, *Periplaneta*, *Apis*
(4) *Octopus*, *Rattus*, *Echinus*

160. A tissue is a group of cells performing common functions and having common origin. Which of the following cells in the human tissues do not have mesodermal origin?
(1) Fibroblasts (2) Mast cells
(3) Macroglia (4) Microglia

161. Choose the **correct** match w.r.t. *Periplaneta americana*.
(1) Malpighian tubules – Excretory structures at the junction of foregut and midgut
(2) Hepatic caeca – 6-8 blind tubules at the junction of gizzard and midgut to produce digestive enzymes
(3) Salivary glands – Two secretory parts and four receptacles opening in pharynx
(4) Both (2) & (3) are correct

162. The type of cell junction which adheres a cell firmly to the laminin proteins in its basal lamina is

(1) Tight junction (2) Adhering junction

(3) Desmosome (4) Hemidesmosome

163. Which of the following is not a component of NADP?

(1) A vitamin

(2) Adenine

(3) Haem as a prosthetic group

(4) Phosphate

164. Consider the following statements w.r.t. gel electrophoresis

(a) The gel for isolation of DNA fragments on the basis of their sizes, is made of agarose, a mucopolysaccharide.

(b) DNA fragments are separated according to their charge only, the sizes of fragments not affecting the process.

(c) Separation of DNA fragments is according to their sizes as they move through sieves in the agarose gel.

(d) DNA fragments move towards cathode on the basis of the charge on them.

Which of the following sets contains only **incorrect** statements?

(1) (a), (b) & (d) (2) (b) & (d)

(3) (b) only (4) (a), (b), (c) & (d)

165. Synarthrose type of joints are

(1) Completely immovable as exist between skull bones

(2) Slightly compressible as in intervertebral discs

(3) Freely movable *e.g.*, between mandible and mandibular archs

(4) Slightly compressible as in pubic symphysis

166. Consider the following statements w.r.t. functioning of the heart

(a) When venous return increases, it stretches or lengthens the ventricular muscle fibres so force of contraction increases.

(b) End diastolic volume determines the 'Pre-load' on ventricular musculature.

(c) Force of contraction of ventricular wall and hence cardiac output are directly proportional to pre - load.

(d) The heart beat rate is inversely proportional to systemic blood pressure according to Marey's law.

How many of the above statements are correct?

(1) One (2) Two

(3) Three (4) Four

167. The cations which play an important role in formation of a coagulum of fibrin proteins in the walls of damaged blood vessels are

(1) Mg^{2+} (2) Ca^{2+}

(3) Na^{+} (4) K^{+}

168. Syphilis, a bacterial STD caused by *Treponema*, is

(1) Preventable by using non-medicated IUDs

(2) Communicable from an infected mother to the developing foetus across the placenta

(3) Characterized by painful chancres on external genitals which have necrotic bases

(4) Incurable at all stages in an affected human

169. If a gene encoding for 'ADA' enzyme is incorporated in lac z' sequence of pUC 18 plasmid, the resultant recombinant bacteria in which plasmids are inserted will be

(1) Having functional lac z' gene coding for galactosidase

(2) White is color on 'X-gal' containing selection medium

(3) Blue is color on 'X-gal' containing selection medium

(4) Both (1) & (3)

170. Select the **incorrect** match w.r.t. different parts of the brain and their respective function.

(1) Amygdala – Defense castle of body

(2) Medulla oblongata – Emesis reflex

(3) Cerebellum – Intelligence, logical reasoning and wernicke's association area

(4) Cerebrum – Broca's motor speech area

171. Partial pressure of 104 mm of Hg in the alveoli oxygenates the capillary blood. When 1000 ml of this oxygenated blood is pumped to the striated muscle tissue undergoing strenuous exercise, the total amount of oxygen it will release into muscles is _____ with the oxy-Hb curve shifting to _____ side. Select the option which fills blanks correctly.

(1) 15 ml, Left (2) 5 ml, Left

(3) 150 ml, Right (4) 50 ml, Right

172. Comparison of the peaks obtained when the antibody titre of blood is plotted against time reveals a much higher peak during secondary immune response in comparison to primary immune response. It can be attributed to

(1) Anamnestic response generated by memory cells

(2) Excess build up of epitopes in the body during a secondary response

(3) Combined action of non-specific and specific immune system reactions

(4) Faster activation of both CD-4 and CD-8 Tcells

173. Consider the following statements w.r.t. origin of life on earth

(a) Earliest autotrophs were oxygenic photoautotrophs.

(b) Chemical origin of life occurred in absence of molecular oxygen in warm little ponds.

Select the correct option

(1) Only (a) is correct

(2) Only (b) is correct

(3) Both (a) & (b) are correct

(4) Both (a) & (b) are incorrect

174. Dehydration causes increase in the osmolarity of body fluids triggering

(1) Release of ADH from hypothalamus, reducing urine elimination

(2) Stimulation of macula densa cells of DCT to stop renin-angiotensin-aldosterone system

(3) Enhanced tubular secretion of Na^+, retaining water in the nephrons

(4) All of these are correct

175. Inbreeding depression, which is a result of continuous mating between related individuals, results in reduced fertility and productivity. It can be overcome by many breeding options but the most preferable method for animals that are below average in productivity in milk production, growth rate in beef cattle is

(1) Outcrossing (2) Crossbreeding

(3) Interspecific mating (4) Outbreeding

176. Moulting hormone ' ecdysone' of cockroach, which controls its paurometabolous development is secreted by

(1) Corpora cardiaca glands

(2) Corpora allata gland

(3) Prothoracic glands

(4) Conglobate gland

177. Select the **incorrect** statement w.r.t. ringworm infection in humans.

(1) Ringworm infections thrives in parts of body having high moisture and high temperature conditions.

(2) Ringworm in groin area is called *Tinea cruis*.

(3) Ringworm is caused by nematode parasites or round worms which have circular bodies in cross section.

(4) Ringworm spread through direct contact or by sharing clothes and towels with infected individuals.

178. How many of the following are examples of macrophages?

(a) Microglia (b) Kupffer cells

(c) Alveolar macrophages (d) Histiocytes

(e) Macroglia (f) PMNL

(1) Three (2) Four

(3) Five (4) Six

179. The "cry" gene inserted in 'Bt cotton' which made it tolerant to attack of 'corn borer' pest was

(1) Cry I Ab (2) Cry II Ab

(3) Cry I Ac (4) Cry II Ac

180. The ideal cloning vector for delivering ADA cDNA into SCID affected human is

(1) Retrovirus

(2) Ti Plasmid

(3) Bacterial artificial chromosome

(4) Yeast episomal plasmid

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