1. A 12.75 eV electron beam is used to bombard gaseous hydrogen at room temperature. Then, wavelengths emitted are in :-

(1) either paschen, lyman or balmer series
(2) either brackett, pfund or lyman series
(3) either paschen, brackett or balmer series
(4) either lyman, balmer or brackett series

2. The isotopic mass of $^{7}_{3}$Li is 7.016005 u and those of H-atom and neutron are respectively, 1.007825 u and 1.008665 u. Then, the binding energy of the Li-nucleus is -

(1) 5.6 MeV (2) 39.2 MeV
(3) 0.042 MeV (4) 8.8 MeV

3. A proton accelerated through a potential V has de-Broglie wavelength λ. Then the de-Broglie wavelength of an α-particle, when accelerated through the same potential V is :

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

4. A metal surface is illuminated by light of two different wavelengths 248 nm and 310 nm. The maximum speeds of the photoelectrons corresponding to these wavelengths are u_1 and u_2 respectively. If the ratio $u_1 : u_2 = 2 : 1$ and hc = 1240 eV nm, the work function of the metal is nearly :-

(1) 3.7 eV (2) 3.2 eV
(3) 2.8 eV (4) 2.5 eV

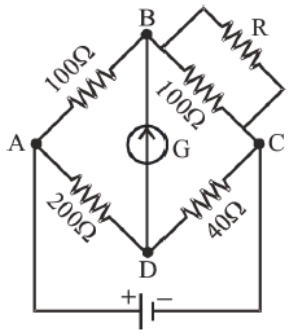
5. Energy of a photon is 1 MeV, then its momentum will be :-

(1) 0.53×10^{-21} kg ms^{-1}
(2) 0.33×10^{-17} kg ms^{-1}
(3) 1.4×10^{-11} kg ms^{-1}
(4) 3.33×10^{-24} kg ms^{-1}

6. A transparent film (μ = 1.45) of thickness 0.02 mm is placed on one of the slits of a Young's double slit experiment which uses monochromatic light of wavelength 620 nm. How many fringes will cross through the center if the film is removed?

(1) 16 (2) 14.5
(3) 2 (4) 9

7. The given Wheatstone bridge is showing no deflection in the galvanometer joined between the points B and D (figure). Calculate the value of R.

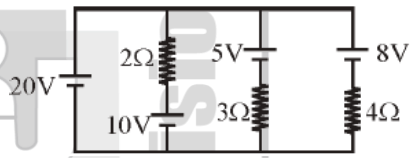


(1) 25 Ω (2) 50 Ω
(3) 40 Ω (4) 100 Ω

8. An electric bulb is marked 100 W, 230 V. If the supply voltage drops to 115 V, what is the heat produced by the bulb in 20 min?

(1) 20000 J (2) 25000 J
(3) 30000 J (4) 35000 J

9. In the given circuit which resistor consumes max power :-



(1) 2Ω
(2) 3Ω
(3) 4Ω
(4) All consumes equal/over

10. If potential difference across a capacitor is changed from 15 V to 30 V, work done is W. The work done, when potential difference is changed from 30 V to 60 V, will be :

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

11 In an experiment to find the resistance of galvanometer by half deflection method, a 5V battery and a high resistance of 4.9kΩ are connected in circuit. In absence of any shunt resistance, galvanometer reads 20 divisions when current flow in circuit. To reduce the deflection by half, the value of shunt resistance used is 98Ω. The figure of merit of galvanometer is given as :

(1) 5μA/division (2) 20μA/division
(3) 25μA/division (4) 50μA/division

12. A glass slab of thickness 3 cm is placed on ink mark on a piece of paper. For a person looking at the mark at a distance 5.0 cm above it, the distance of mark will appear to be 4.0 cm. The refractive index of the slab will be :

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

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

13. A compound microscope consists of an objective lens of focal length 2 cm and an eye piece of focal length 6.25 cm separated by a distance of 15 cm. How far from the objective should an object be placed in order to obtain the final image at the least distance of distinct vision (25 cm)?

(1) 2.5 cm (2) 1.67 cm

(3) 2 cm (4) 3.3 cm

14. A glass convex lens (μ_g = 1.5) has a focal length of 8 cm when placed in air. What would be the focal length of the lens, when it is immersed in water ($\mu_w = \frac{4}{3}$)?

(1) 2 m (2) 4 cm

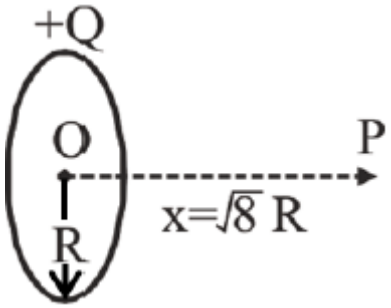
(3) 16 cm (4) 32 cm

15. A concave mirror of focal length 60 cm forms a real image of size 5 times size of a real object, then distance between mirror and object is -

(1) 48 cm (2) 80 cm

(3) 56 cm (4) 72 cm

16. What is electric field at x = $\sqrt{8}$ R distance away from centre at axis of charged ring (Q, R) :-



(1) $\frac{\sqrt{2}}{27}\frac{KQ}{R^2}$ (2) $\frac{\sqrt{3}}{27}\frac{KQ}{R^2}$

(3) $\frac{\sqrt{8}KQ}{27R^2}$ (4) $\frac{KQ}{R^2}$

17. Eight equal charges q are placed at each corner of a cube of side 'a'. Work done in carrying a charge –q from its centre to infinity is.

(1) Zero (2) $\frac{3\sqrt{2}q^2}{\pi \in_0 A}$

(3) $\frac{\sqrt{2}q^2}{\pi \in_0 a}$ (4) $\frac{4q^2}{\sqrt{3}\pi \in_0 a}$

18. A proton is projected with a speed of 2×10^6 m/sec at angle 60° to x-axis. If a uniform magnetic field of 0.104 Tesla is applied along y-axis, the path of proton is

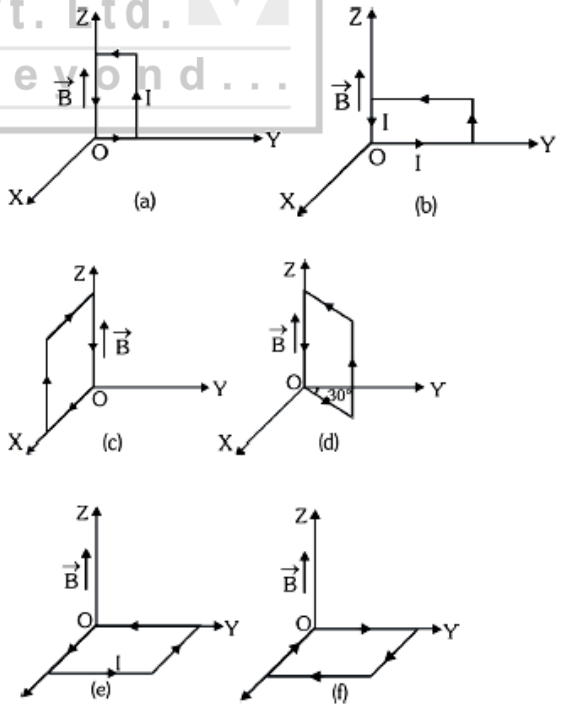
(1) A circle of radius 0.2m and time period $\pi \times 10^{-7}$ sec.

(2) A circle of radius 0.1m and time period $2\pi \times 10^{-7}$ sec

(3) A helix of radius 0.1m and time period $2\pi \times 10^{-7}$ sec

(4) A helix of radius 0.2m and time period $4\pi \times 10^{-7}$ sec

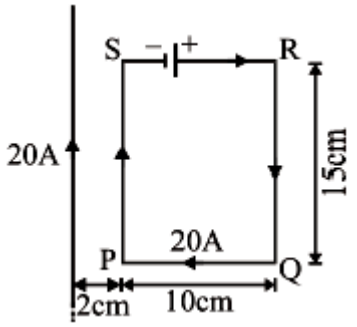
19. A uniform magnetic field is established along the positive z-direction. A rectangular loop, carrying a current I, is suspended in this magnetic field. Which case corresponds to stable equilibrium?



(1) e and f (2) a, d, f

(3) all (4) only e

20. The resultant force on the current loop PQRS due to a long current carrying conductor will be :-



(1) 10^{-4} N (2) 3.6×10^{-4} N

(3) 1.8×10^{-4} N (4) 5×10^{-4} N

21. A circuit, consisting of an inductance and a resistance in series, is joined to a 250 volt supply (A.C.). It draws a current of 10 ampere. If the power used in the circuit is 1500 watt, calculate the wattless current.

(1) $\frac{10\sqrt{7}}{4}A$ (2) 8 A

(3) 10 A (4) $10\sqrt{2}A$

22. In Electro magnetic wave, E = 50 sin (ωt-kx). If $\mu = 4\mu_0$ and $\varepsilon = \varepsilon_0$, then average power per unit area is -

(1) 1.65 W/m^2 (2) 165 W/m^2

(3) 16.5 W/m^2 (4) 0.165 W/m^2

23. A pure semiconductor crystal has 5×10^{22} atoms per cm^3. It is doped by 1 ppm concentration of pentavalent element. The number of holes in doped semiconductor is

(given that $n_i = 1.5 \times 10^{10}$ cm^3)

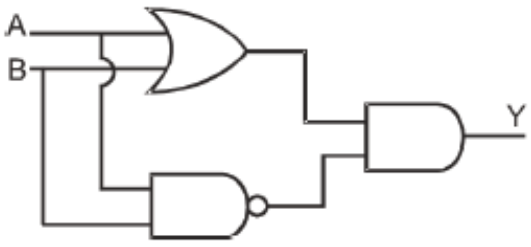
(1) 4.5×10^3 m^{-3}

(2) 2.25×10^9 m^{-3}

(3) 4.5×10^9 m^{-3}

(4) 5×10^6 m^{-3}

24. The following configuration of gates is equivalent to:-



(1) NAND (2) OR

(3) XOR (4) NOR

25. The linear mass density of a vibrating string is 1.3×10^{-4} kg/m. A transverse wave is propagating on the string and is described by the equation y = 0.021 sin (x + 30t), where x and y are measured in meter and t in second. The tension in the string is approximately :-

(1) 0.12 N (2) 0.48 N

(3) 1.20 N (4) 4.80 N

26. A tuning fork produces four beats per second with two open organ pipe having length 30 cm and 31 cm. Find the frequency of T.F.

(1) 120 Hz (2) 124 Hz

(3) 240 Hz (4) 244 Hz

27. In nuclear power plant, the energy released depends on the mass of uranium sample (m), length of oscillator (ℓ) and frequency (f) of oscillation as, $E = m^x \ell^y f^z$, then x + y + z = ?

(1) 1 (2) 5

(3) 2 (4) None of these

28. From the point of view of significant figures,

Which of the following is/are correct?

(i) 11.3 cm + 4 cm = 15.3 cm

(ii) 4.53 m - 1.2 m = 3.3 m

(iii) 5.45 kg - 3.2 kg = 2.25 kg

(iv) 84.8 cm + 48.6 cm = 133 cm

(1) (ii) only

(2) (i), (ii) and (iv) only

(3) (i), (iii) only

(4) (ii) and (iv) only

29. When a mass m is attached to a spring it extends by 0.2 m. The mass 'm' is given a slight additional extension and released, then find the time period (take $g = \pi^2$).

(1) $\frac{2}{5}$ sec (2) $\frac{2}{\sqrt{5}}$ sec

(3) $\frac{5}{2}$ sec (4) $\frac{5}{\sqrt{2}}$ sec

30. Velocity of a car accelerating uniformly increases from 20 m/s to 80 m/s in passing through a distance 200 m, then time taken is :-

(1) 2 sec (2) 4 sec

(3) 8 sec (4) 12 sec

31. A bomber plane moves horizontally with a speed of 500 m/s and a bomb released from it, strikes the ground in 10 sec. Angle with horizontal at which it strikes the ground will be ($g = 10\ m/s^2$)

(1) $\tan^{-1}\left(\frac{1}{5}\right)$ (2) $\tan^{-1}\left(\frac{1}{2}\right)$

(3) $\tan^{-1}(1)$ (4) $\tan^{-1}(5)$

32. If V_{rms} of O_2 molecule is equal to V_{rms} of H_2 molecule at 20 K, the temperature of O_2 is :-

(1) 320°C (2) 47 K

(3) 300 K (4) 47°C

33. A steel tape gives correct measurement at 20°C. A piece of wood is being measured with the steel tape at 0°C. The reading is 25 cm on the tape, the real length of the given piece of wood must be:

(1) 25 cm (2) <25 cm

(3) >25 cm (4) can not say

34. **Assertion (A):** In a conical pendulum, angular momentum about its vertical axis remains constant

Reason (R): Net torque about vertical axis of conical pendulum is not zero.

In the light of the above statements, choose the most appropriate answer from the options given below:

(1) Both (A) and (R) are true and (R) is the correct explanation of (A).

(2) Both (A) and (R) are true but (R) is NOT the correct explanation of (A).

(3) (A) is true but (R) is false.

(4) (A) is false but (R) is true.

35. A pan filled with hot food cools from 94°C to 86°C in 2 minutes when the room temperature is 20°C. How long will it take to cool from 71°C to 69°C?

(1) 10 s (2) 12 s

(3) 24 s (4) 42 s

36. The molar heat capacity in a process of a diatomic gas, if it does a work of $\frac{Q}{4}$ when a heat of Q is supplied to it, is :-

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

(3) $\frac{10}{3}R$ (4) $\frac{6}{7}R$

37. A chain of mass m and length ℓ is held on a frictionless table in such a way that its $\frac{2\ell}{5}$ part is hanging below the edge of table. Find work done to pull up on the table the hanging part of chain.

(1) $\frac{2mg\ell}{25}$ (2) $\frac{mg\ell}{50}$

(3) $\frac{mg\ell}{15}$ (4) $\frac{4mg\ell}{15}$

38. A stone of mass 4 kg is whirled in a horizontal circle by attaching it to a 169 m long string. The string can withstand a maximum tension of 4N. The maximum speed of revolution of the stone such that the string does not break is

(1) 10 m/s (2) 13 m/s

(3) 16 m/s (4) 12 m/s

39. If for a liquid in a glass vessel, force of cohesion is twice of force of adhesion, then :

(A) The meniscus will be convex

(B) The liquid will wet the glass

(C) The angle of contact will be obtuse

(D) There will be capillary descent in a glass capillary dipped in liquid

Correct options is/are :

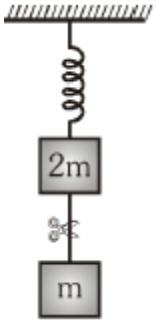
(1) Only (B)

(2) All (A), (B), (C), (D)

(3) Only (A), (C)

(4) Only (A), (C), (D)

40. System shown in figure is in equilibrium and at rest. The spring and string are massless, now the string is cut. The acceleration of mass 2m and m just after the string is cut, will be :-



(1) $\frac{g}{2}$ upwards, g downwards

(2) g upwards, $\frac{g}{2}$ downwards

(3) g upwards, $2g$ downwards

(4) $2g$ upwards, g downwards

41 If two bodies A and B of equal masses M are situated in air at a distance d and gravitational force between them is F. Now 50% mass is transferred from body A to B and distance between them is reduced to $\frac{d}{2}$. If space around them is now filled with a liquid of specific density 3. The gravitational force now will be :-

(1) F (2) 3F

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

42. A body crosses the topmost point of a vertical circle with critical speed. Its centripetal acceleration, when the string is horizontal will be :-

(1) 6g (2) 3g

(3) 2g (4) g

43. Ball 1 collides with another identical ball at rest. For what value of coefficient of restitution e, the velocity of second ball becomes two times that of 1 after collision ?

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

(3) $\frac{1}{4}$ (4) $\frac{1}{6}$

44. A meter stick is balanced on a knife edge at its centre. When a 10 g coin is put on top of the stick at 12 cm mark, the stick is found to be balance at 45 cm. Then mass of metal stick is-

(1) 24 g (2) 66 g

(3) 90 g (4) 100 g

45. In experiment to calculate coefficient of viscosity of liquid by measuring terminal velocity, it was observed that a ball of mass $\left(\frac{\pi}{2}\right)$ gm and having radius 0.5 cm takes 5 second to fall steadily through a height of 50 cm inside a long column of liquid of density 1.2 gm/cc. The coefficient of viscosity will be given as :

(1) 4.9 poise (2) 9.8 poise

(3) 12.6 poise (4) 16 poise

46. Which of the following is the correct IUPAC name of the recently discovered element of carbon family:

(1) Unnilquadium (2) Ununquadium

(3) Ununseptium (4) Unniloctium

47. Arrange Ce^{+3}, La^{+3}, Pm^{+3} and Yb^{+3} in increasing order of their ionic radii.

(1) $Yb^{+3} < Pm^{+3} < Ce^{+3} < La^{+3}$

(2) $Ce^{+3} < Yb^{+3} < Pm^{+3} < La^{+3}$

(3) $Yb^{+3} < Pm^{+3} < La^{+3} < Ce^{+3}$

(4) $Pm^{+3} < La^{+3} < Ce^{+3} < Yb^{+3}$

48. The correct order of IE_2 is :-

(1) Ne > F > O > N

(2) O > F > Ne > N

(3) Ne > O > F > N

(4) O > Ne > F > N

49. Match the column?

Column – I (species)		Column – II (Hybridisation)	
A.	I_3^-	P.	sp^3
B.	XeO_3F_2	Q.	sp
C.	SiO_2	R.	sp^3d
D.	$BeCl_2$	S.	sp^3d^2
		T.	sp^2

(1) A - R, B - R, C - Q, D - Q

(2) A - R, B - S, C - P, D - Q

(3) A - P, B - S, C - T, D - S

(4) A - R, B - R, C - P, D - Q

50. In which of the following molecules both removal and addition of electrons leads to a decrease in bond order?

(1) F_2 (2) O_2

(3) N_2 (4) B_2

51. Which of following order of lattice energy is incorrect?

(1) $Al_2O_3 > Na_2O$ (2) $MgF_2 < CaF_2$

(3) LiF > NaF (4) LiF > LiI

52. The correct order of the strength of H bonds is :-

(1) $HF > H_2O > NH_3$

(2) $NH_3 > H_2O > HF$

(3) $H_2O > NH_3 > HF$

(4) $HF > NH_3 > H_2O$

53. **Assertion:** $[CoCl_3\ (NH_3)_3]$ does not give white precipitate with $AgNO_3$ solution.

Reason: $[CoCl_3\ (NH_3)_3]$ complex is optically inactive.

(1) Both (A) and (R) are correct but (R) is not the correct explanation of (A)

(2) (A) is correct but (R) is not correct

(3) (A) is not correct but (R) is correct

(4) Both (A) and (R) are correct and (R) is the correct explanation of (A)

54. The number of possible isomers of an octachedral complex $[Co(C_2O_4)_2\ (NH_3)_2]^-$ is :

(1) 1 (2) 2

(3) 3 (4) 4

55. The IUPAC name of $[Cr(NH_3)_4Cl_2]NO_3$ is.

(1) Tetraaminedichloridochromium nitrate

(2) Tetraamminedichloridochromium(III) nitrate

(3) Dichloridotetraamminechromium (III) nitrate

(4) Tetraaminodichloridochromium (II) nitrate

56. Highest oxidation state +7 shown by which actinoids?

(1) Np, Pu (2) Pa, U

(3) Am, Cm (4) Cf, Es

57. Composition of borax bead is :

(1) $NaBO_2 + B_2O_3$

(2) $B_2O_3 + NaOH$

(3) $Na_2B_4O_7.4H_2O$

(4) $Na_2B_4O_7$

58. The correct order of boiling points of hydrides of group 16 elements is :

(1) $H_2S < H_2Se < H_2Te < H_2O$

(2) $H_2O < H_2S < H_2Se < H_2Te$

(3) $H_2S < H_2Te < H_2Se < H_2O$

(4) $H_2Se < H_2S < H_2Te < H_2O$

59. A salt gives violet vapours when treated with concentrated H_2SO_4, it contains

(1) Cl^- (2) I^-

(3) Br^- (4) NO_3^-

60. During the testing of basic radicals the group reagent for group II is:

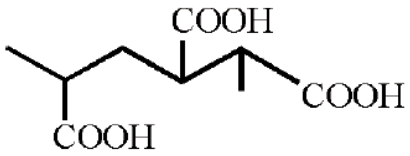
(1) dil HCl

(2) NH_4OH in presence of NH_4Cl

(3) H_2S in presence of HCl

(4) H_2S in presence of NH_4OH and NH_4Cl

61. IUPAC name of the following compound is:-



(1) 2-(1-carboxy ethyl)-4-methyl pentanoic acid

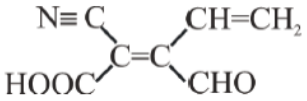
(2) 3, 5-Dicarboxy-2-methyl hexanoic acid

(3) 2, 4, 5-Hexane tri carboxylic acid

(4) 2, 3, 5-Hexane tri carboxylic acid

62. Identify incorrect statement :-

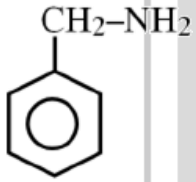
(1) Butane 2,3-diol shows optical isomerism

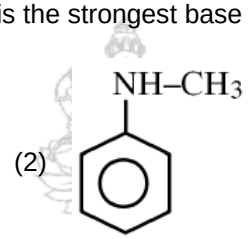
(2)  has Z configuration

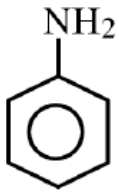
(3) Ortho nitrophenol has more boiling point than para nitrophenol due to intermolecular H-bonding

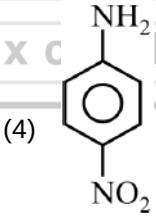
(4) Cis pent-2-ene has more dipole moment than trans pent-2-ene

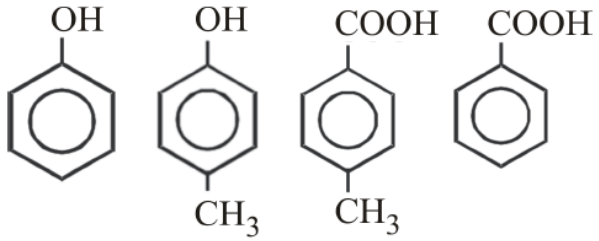
63. Which of the following is the strongest base :-

(1) 

(2) 

(3) 

(4) 

64. 

(a) (b) (c) (d)

Compare acidic strength

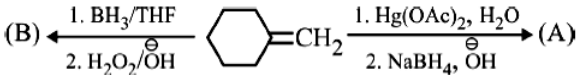
(1) a > c > d > b

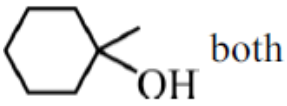
(2) d > a > c > b

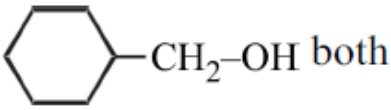
(3) d > c > a > b

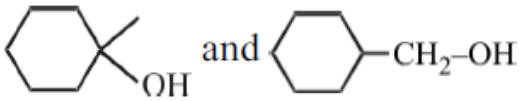
(4) d > c > b > a

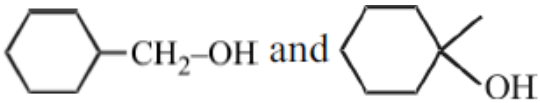
65. (A) and (B) are respectively

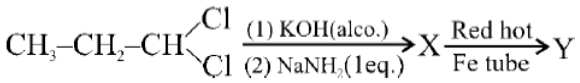


(1)  both

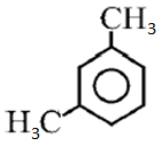
(2)  both

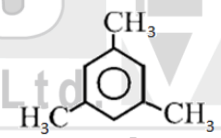
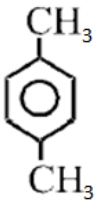
(3) 

(4) 

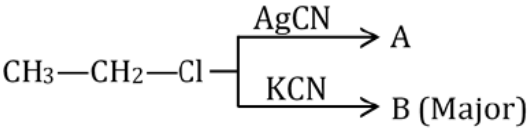
66. 

Y is :-

(1)  (2) 

(3)  (4) 

67. A and B are respectively :-



(1) CH_3 —CN, CH_3 —NC

(2) CH_3 —NC, CH_3 —CN

(3) CH_3 —CH_2CN, CH_3CH_2NC

(4) CH_3 —CH_2NC, CH_3 —CH_2 —CN

68. Correct order of leaving group in SN^2 Reaction:-

(1) $I^- > Br^- > Cl^- > F^-$

(2) $Br^- > Cl^- > F^- > I^-$

(3) $Cl^- > Br^- > F^- > I^-$

(4) $I^- > Br^- > F^- > Cl^-$

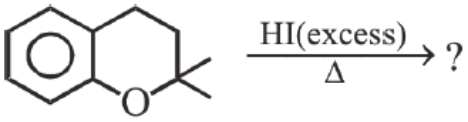
69. In the free radical halogenation of alkanes chain propagating step is :

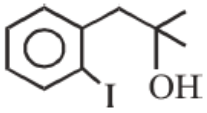
(1) $Cl_2 \xrightarrow{hv} 2\dot{Cl}$

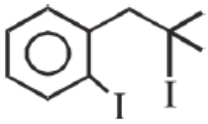
(2) $CH_4 + \dot{Cl} \longrightarrow CH_3Cl + \dot{H}$

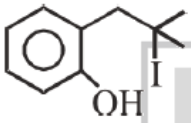
(3) $CH_4 + \dot{Cl} \longrightarrow \dot{C}H_3 + HCl$

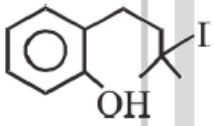
(4) $\dot{C}H_3 + \dot{Cl} \longrightarrow CH_3Cl$

70.  $\xrightarrow[\Delta]{HI(excess)}$?

(1) 

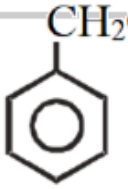
(2) 

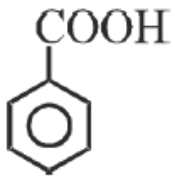
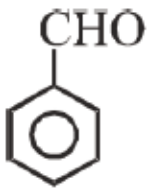
(3) 

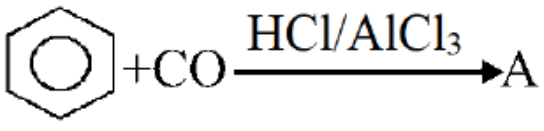
(4) 

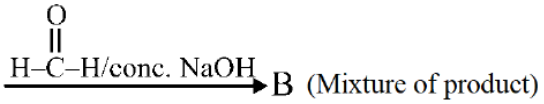
71. Phenol $\xrightarrow[\Delta]{Zn}$ (A) $\xrightarrow[Anhydrous\ AlCl_3]{CH_3Cl}$ (B) $\xrightarrow[H^+]{KMnO_4}$ (C)

The product (C) is :

(1)  (2) 

(3)  (4) 

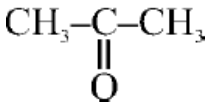
72. 



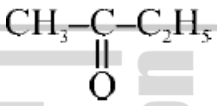
Final product B is :-

73. $CH_3-Br \xrightarrow[dry\ ether]{Mg} X \xrightarrow[(2)\ H_2O]{(1)\ CH_3-CN} Y$

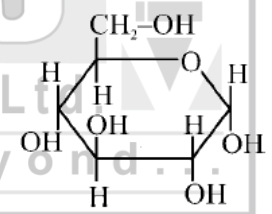
(1) $(CH_3)_3\ C-OH$

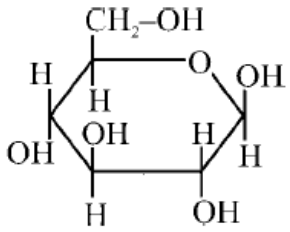
(2) 

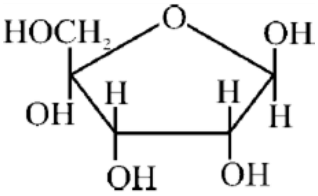
(3) $(CH_3)_3\ C-NH_2$

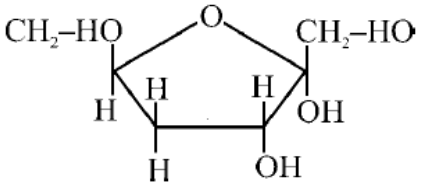
(4) 

74. Which of the following is structure of β-D-Glucopyranose?

(1) 

(2) 

(3) 

(4) 

75. In Dumas method for estimation of Nitrogen, 0.3 g of an organic compound gave 50 m ℓ of N_2 collected at 300 K temperature and 715 mm pressure. The % of nitrogen in the compound is (aqueous tension at 300 K = 15 mm) :-

(1) 22.5% (2) 24.3%

(3) 17.4% (4) 14.7%

76. Which of the following set of quantum numbers does not exist?

	n	1	m	s
(1)	3	0	0	+1/2
(2)	2	1	–1	–1/2
(3)	4	4	–2	+1/2
(4)	3	2	–2	–1/2

77. Charge required to reduce 2.7 g of aluminium ion from its molten solution is :

(1) 28950 C (2) 14475 C

(3) 21712 C (4) 9650 C

78. Given the standard electron potentials,

Al^{+3}/Al = –1.66 V Cu^{+2}/Cu = +0.34 V

K^{+}/K = –2.93 V Zn^{+2}/Zn = –0.76 V

Mg^{+2}/Mg = –2.36 V

The correct order of these metals in their increasing order of reducing power is :

(1) Zn < Cu < Mg < K < Al

(2) K < Mg < Mg < Al < K

(3) Cu < Zn < Mg < Al < K

(4) Cu < Zn < Al < Mg < K

79. 5% (w/v) solution of urea is isotonic with 2% (w/v) solution of a non-electrolyte substance the molar mass of the substance is :

(1) 180 g/mol (2) 24 g/mol

(3) 120 g/mol (4) 30 g/mol

80. The density of CO_2 gas at 127°C and 2 atm pressure is :

(1) 1.98 gL^{-1} (2) 1.68 gL^{-1}

(3) 3.62 gL^{-1} (4) 2.68 gL^{-1}

81. For the given reaction

$P_4 + 3O_2 \rightarrow P_4O_6$

If 62 g of P_4 is reacted with excess of oxygen the percentage yield is 80%. Then the amount of product formed is :

(1) 42.6 g (2) 110 g

(3) 88 g (4) 28.4 g

82. If equivalent weight of a metal oxide is 24 then, the equivalent weight of its chloride will be :

(1) 15.5 (2) 51.5

(3) 35.5 (4) 71

83. If the longest wavelength in Balmer series of He^{+} is 9X/5 cm. then the shortest wavelength of H-atom in Lyman series is :

(1) X/4 cm (2) X/2 cm

(3) 5X/3 cm (4) X cm

84. Solubility of $Al(OH)_3$ in decimolar KOH solution is (K_{sp} of $Al(OH)_3 = 1.90 \times 10^{-33}$)

(1) 1.90×10^{-32} M

(2) 1.90×10^{-30} M

(3) 1.48×10^{-8} M

(4) 1.48×10^{-30} M

85. Ammonium carbonate decomposes as

NH_2COONH_4 (s) ⇌ $2NH_3$ (g) + CO_2(g)

For this reaction, $K_p = 108 \times 10^{-6}$ atm^3. If we start with 1 mole of the ammonium carbonate, then the total pressure at equilibrium would be :

(1) 0.058 atm (2) 0.048 atm

(3) 0.09 atm (4) 0.03 atm

86. Which of the statements about solutions of electrolytes is not correct :

(1) Conductivity of solution depends on size of ions.

(2) Conductivity depends on viscosity of solution.

(3) Conductivity does not depend upon solvation of ions present in solution

(4) Conductivity of solution increases with temperature

87. **Statement-I :-** Acidic/basic nature of a solution of a salt of weak acid and weak base depends on K_a & K_b value of the acid and base forming it.

Statement-II:- Degree of hydrolysis of weak acid and weak base type salts depends on the concentration of salt.

(1) Both statement I and II are incorrect

(2) Statement I is correct but statement II is incorrect

(3) Statement I is incorrect but statement II is correct

(4) Both statement I and II are correct

88. A first order reaction is 90% complete in 40 min calculate the half life of the reaction :

(1) 13.03 min (2) 12.03 min

(3) 11.03 min (4) 10.03 min

89. Identify incorrect statement :

(1) Factor $e^{-Ea/RT}$ corresponds to fraction of molecules having kinetic energy greater than E_a

(2) Catalyst increases or decreases the rate of reaction without itself undergoing permanent chemical change

(3) A catalyst does not alter Gibbs energy (ΔG) of a reaction

(4) Most of the chemical reactions are accelerated by increase in temperature

90. **Assertion (A):** Solubility of most salts in water increases with rise of temperature.

Reason (R): For most of the ionic compounds $\Delta_{sol}H^0$ is positive and dissociation process is endothermic.

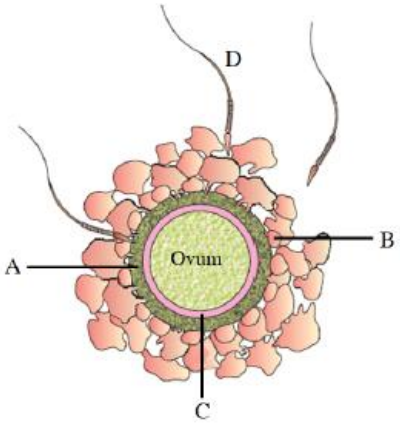
(1) Both (A) and (R) are correct but (R) is not the correct explanation of (A)

(2) (A) is correct but (R) is not correct

(3) (A) is incorrect but (R) is correct

(4) Both (A) and (R) are correct and (R) is the correct explanation of (A)

91. A diagram of human ovum is given below and structures are labelled as A, B, C and D. Identify the structure which is secreted by secondary oocyte and choose the correct option about that structure.



(1) B, Corona radiata which is a non cellular layer
(2) A, Zona pellucida which is a cellular layer
(3) C, Zona pellucida which is a non-cellular layer
(4) A, Zona pellucida which is a non-cellular layer

92. Select the correct sequence of taxonomic categories of mango in ascending order :-

(1) Mangifera → Anacardiaceae → Dicotyledonae → Sapindales → Angiospermae
(2) Mangifera → Anacardiaceae → Sapindales → Dicotyledonae → Angiospermae
(3) Angiospermae → Dicotyledonae → Sapindales → Anacardiaceae → Mangifera
(4) Angiospermae → Sapindales → Anacardiaceae → Dicotyledonae → Mangifera

93. Match the following :

Column-I		Column-II	
(a)	Parasitic fungi on mustard	(i)	Neurospora
(b)	Rust or smut disease	(ii)	Puccinia and Ustilago
(c)	Used in genetic experiments	(iii)	Morels and Truffles
(d)	Delicacies	(iv)	Albugo
(e)	Bread mould	(v)	Rhizopus

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

94. Analyse the following characteristics and identify the group of organisms :-

(A) They reproduce sexually by the fusion of non-motile gametes
(B) They show complex developmental changes after fertilization
(C) Majority of organisms are marine with greater concentration found in warmer areas.
(D) They have chlorophyll-a, d and phycoerythrin as major pigments

(1) Phaeophyaceae (2) Chlorophyaceae
(3) Rhodophyaceae (4) Dinoflagellates

95. The scientist who proved that bacteria use H S and CO to synthesize carbohydrate is:

(1) Van Niel
(2) Ruben
(3) Joseph Priestley
(4) Julius Robert Mayer

96. By the use of bell jar setup which of the following concept(s) regarding photosynthesis was/were proposed?

(a) Plants restore to the air whatever breathing animals and burning candle remove
(b) Photosynthesis mainly occur in blue and red wavelength of light
(c) Oxygen released during photosynthesis come from H_2O
(d) Sunlight is essential to the plant process that some how purifies the air
(e) Glucose formed during photosynthesis is usually stored as starch

(1) (a) & (d) (2) only (a)
(3) (a), (b), (c) & (d) (4) (b), (c) & (e)

97. How many plants in the given list can produce 3C compound after carboxylation of RuBP?

Pineapple, Maize, Rice, Mustard, Sorghum, Opuntia, Tomato, Wheat.

(1) 8 (2) 7
(3) 3 (4) 4

98. First member and acceptor of citric acid cycle is :-

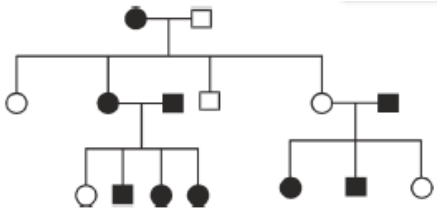
(1) Citric acid
(2) Oxaloacetic acid
(3) Acetyl Co-A
(4) Pyruvic acid

99. Which Hormone promotes flowering and synchronising fruiting in pineapple

(1) Ethylene (2) 2,4-D

(3) GA_3 (4) Gas

100. Consider the following Pedigree.



Above pedigree show the inheritance of

(1) Myotonic dystrophy

(2) Sickle cell anaemia

(3) Colour blindness

(4) Phenylketonuria

101. Consider the following statements:

A. Flame cells are excretory structures of flat worms

B. Green glands are excretory organs of annelids

C. Columns of Bertini are conical projections of renal pelvis into renal medulla between the renal pyramids

(1) A and B correct (2) B and C incorrect

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

102. If Henle's loop were absent from mammalian nephron which of the following is to be expected

(1) There will be no urine formation

(2) There will be hardly any change in the quality and quantity of urine formed

(3) The urine will be more concentrated

(4) The urine will be more dilute

103. Which of the following statement is correct?

(A) In lily flowers, the calyx and corolla are not distinct.

(B) A flower having either only stamen or only carpels is bisexual.

(C) If a flower cannot be divided into two similar halves by any vertical plane passing through the centre it is known as asymmetric flower.

(D) If flower can be divided into two similar halves only in one particular vertical plane it is bilateral symmetry.

(1) A and C (2) B and D

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

104. Half inferior ovary is a feature of-

(1) Petunia and lily

(2) Peach and Rose

(3) Plum and Mango

(4) Mustard and Rose

105. **Assertion:-** Dicot stem shows secondary growth

Reason:- In dicot stem each vascular bundle is of open type.

(1) A and R both correct but R is not correct explanation of A.

(2) A and R both correct and R is correct explanation of A.

(3) A is correct and R is incorrect.

(4) A is incorrect and R is correct.

106. The stele does not include?

(1) Pericycle (2) Vascular bundle

(3) Pith (4) Cortex

107. Which one of the following statement is incorrect for interphase stage?

(1) Period of great metabolic activity

(2) Also called preparatory phase

(3) Absence of replication of DNA

(4) It covers 95% of the total duration of cell cycle

108. Which of the following is not associated with anemophilous flower?

(1) Single ovule in each ovary

(2) Flowers packed into inflorescence

(3) Numerous pollen grains

(4) Wet pollen grains

109. Read the following statements:-

(a) It produces disorder more often in females than in males

(b) All female offsprings will exhibit disorder, if father possesses the same

(c) Do not transmitted to son, if mother does not exhibit disorder

Which of the following gene will have the above stated features?

(1) X-linked recessive gene

(2) X-linked dominant gene

(3) Autosomal dominant gene

(4) Autosomal recessive gene

110. Find out the correct statements from the followings:-

(a) In lac-operon, polycistronic structural gene is regulated by a common promoter and regulatory gene

(b) In lac-operon one regulatory gene (the i gene) is present, here the term i refers to the inducer

(c) Lactose is the substrate for the enzyme beta-galactosidase.

(d) The y-gene of lac-operon codes for transacetylase

(e) The z-gene codes for beta-galactosidase

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

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

111. Which step proved to be the main challenging obstacle in the production of human insulin by genetic engineering?

(1) Splitting A & B polypeptide chains

(2) Addition of C-peptides to pro-insulin

(3) Getting insulin assembled into mature form

(4) Removal of D-peptide from immature insulin

112. Product of which organism is used during organ transplantation:

(1) Trichoderma polysporum

(2) Aspergillus niger

(3) Yeast

(4) Acetobacter

113. From the given table which one of the following option is true for m-RNA, t-RNA and r-RNA :-

	m-RNA	t-RNA	r-RNA
(1)	Highly stable	Soluble RNA	Act as an enzyme
(2)	Adapter RNA	Largest RNA	Single stranded
(3)	Have message for protein synthesis	Adapter RNA	Play bio-catalytic role
(4)	Soluble RNA	Highly stable	Double stranded

114. Find out the incorrect match :

(1) Adipose → mainly beneath the skin

(2) Dense irregular C.T.→ Tendon and ligament

(3) Dense irregular C.T.→ Skin

(4) Fibroblast → Produces fibres

115. Commonly used vector in human genome project :-

(1) YAC and MAC

(2) YAC and BAC

(3) YAC, BAC and MAC

(4) only YAC

116. Limitations of ecological pyramids are :

(a) It does not take into account the same species belonging to two or more trophic level

(b) It assures a simple food chain

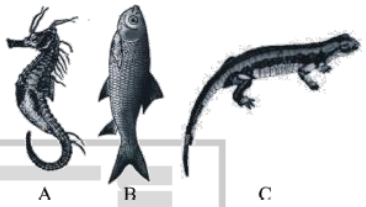
(c) Saprophytes are not given any place

(d) It does not accommodate a food web

(1) Two (2) One

(3) Four (4) Three

117. Refer the figures A, B and C and choose the correct option which shows animals that regulate buoyancy with the help of air bladder:-



(1) A and B (2) A and C

(3) B and C (4) B only

118. During Connell's elegant field experiment that was performed at rocky sea coasts of Scotland:-

(1) Both barnacles Balanus & Chathamalus were removed experimentally from coast.

(2) Only Balanus was removed leading to decrease in area covered by Chathamalus.

(3) Only Chathamalus was removed leading to increase in area covered by Balanus

(4) Superior barnacle Balanus dominates the intertidal area and excludes the smaller barnacle, Chathamalus from the zone.

119. Bryophytes resemble algae on the following basis:-

(1) Differentiation of the plant body into root stem and heterotrophic mode of nutrition

(2) Thallus like plant body lack of vascular tissue absence of root and autotrophic mode of nutrition

(3) Thallus like plant body presence of roots and heterotrophic mode of nutrition

(4) Filamentous body presence of vascular tissue and autotrophic mode of nutrition

120. **Assertion:** Chromatin is also called as nucleoprotein fibres.

Reason: Chromatin contains DNA, histone protein, non-histone protein and RNA.

(1) A and R both correct but R is not correct explanation of A.

(2) A and R both correct and R is correct explanation of A.

(3) A is correct and R is incorrect.

(4) A is incorrect and R is correct.

121. Correctly match column-I with column-II

	Column-I		Column-II
(I)	Plasmid	(A)	Selectable marker
(II)	Amp^r	(B)	Extra chromosomal DNA
(III)	Ti-plasmid	(C)	Restriction endonuclease
(IV)	EcoR1	(D)	Agrobacterium tumifaciens

(1) I-B, II-A, III-D, IV-C

(2) I-A, II-B, III-D, IV-C

(3) I-C, II-B, III-C, IV-D

(4) I-C, II-D, III-B, IV-A

122. How many ATP are gained by complete oxidation of one molecule of Acetyl CoA :

(1) 15 ATP (2) 12 ATP

(3) 24 ATP (4) 30 ATP

123. Which of the following is correct for predators?

(A) They keep prey populations under control.

(B) They maintain prey species diversity at community level.

(C) They exhibit a low level of assimilation efficiency, low respiratory loss with prudent nature.

(1) only B, C (2) only A, B

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

124. When certain exotic species are introduced in to a geographical region they become invasive and start spreading fast because :

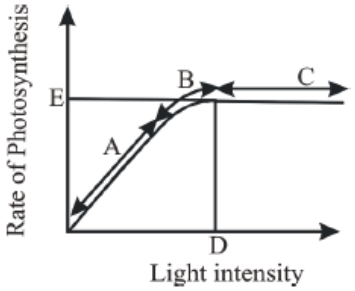
(1) Exotic species have high biotic potential

(2) Geographical conditions are favourable for exotic species

(3) Exotic species can grow in least fertile area

(4) Invaded land does not have its natural predators.

125. How many statement are correct regarding the relationship of rate of photosynthesis with intensity of light as depicted in the graph given below?



(i) At low light intensity, chlorophyll acts as a limiting factor.

(ii) In segment 'C' of the curve, light intensity is not a limiting factor.

(iii) Light compensation point is observed in segment 'C' of the curve

(iv) At high light intensity, rate of photosynthesis is saturated, as light is no more utilized in photosynthesis

(1) Four (2) Two

(3) One (4) Three

126. Which organic compound is present in more amount in protoplasm?

(1) Carbohydrate (2) Lipid

(3) Water (4) Protein

127. If a pBR322 vector is cut by EcoRI enzyme then which of its marker gene shows insertional inactivation?

(1) tet^R gene (2) amp^R gene

(3) RoP gene (4) None of these

128. Read the following statements and choose the correct answer :-

(a) Wild allele is one which was originally present in population & recessive in nature.

(b) Any two factors which have same locus on homologous chromosomes are allelomorphs

(c) Recessive allele is also called as mutant allele

(d) F_1 plants of reciprocal crosses were always similar in Mendel's experiment

(1) All are correct

(2) a, c & d are correct

(3) b, c & d are correct

(4) Only d is correct

129. Regarding to genotype Tt select out the incorrect statement :-
(1) It is allelic gene pair
(2) Can be present on non-homologous chromosomes
(3) They share common locus of homologues
(4) They share same character

130. Bilateral symmetry is seen in
(1) Echinodermata, Ctenophora and Cnidaria
(2) Mollusca, Porifera and Echinodermata
(3) Porifera, Annelida and Arthropoda
(4) Platyhelminthes, Aschelminthes, Chordata

131. Lac operon in prokaryotes :-
(a) is regulated negatively
(b) is inducible operon
(c) cannot be regulated positively
(1) Both (a) and (b) are correct
(2) only (c) is correct
(3) Only (b) is incorrect
(4) Both (b) and (c) are incorrect

132. The Okazaki fragment in DNA chain-growth :-
(A) Related with lagging strand.
(B) Polymerise in 5' to 3' direction
(C) Okazaki fragments are joined by topoisomerase enzyme.
Which statements are true?
(1) only A (2) A and B
(3) A, B, C (4) B and C

133. Generally the size of pollen grain is about :-
(1) 25-50 µm (2) 50-100 µm
(3) 100-150 µm (4) 10-20 µm

134. Which of the following are indirect benefits we receive from ecosystem services?
(A) Pollination
(B) Purify air & water
(C) Climate moderation
(D) Flood control
(1) A and B (2) B and C
(3) C and D (4) All

135. Which of the following animals are true coelomate with bilateral symmetry?
(1) Adult echinoderm (2) Aschelminthes
(3) Platyhelminthes (4) Annelids

136. Digestion in coelenterate is :
(1) Intercellular (2) Intra cellular
(3) Extra cellular (4) Both (2) and (3)

137. How many terms are related with kingdom Protista Zygote, Embryo, Cilia, Pili, Pellicle, Water bloom, Nitrogen fixation, Photosynthesis, Pseudopodia, tissue, Heterocyst
(1) 6 (2) 5
(3) 8 (4) 7

138. Choose the incorrect statement
(1) Viruses are obligate parasites
(2) Virus causes potato spindle tuber disease
(3) Prions cause Cr-Jacob disease (CJD) in humans
(4) Lichens are very good pollution indicators

139. **Statement-I:** Echinoderms are triploblastic and coelomate animals.
Statement-II: An excretory system is absent in Echinoderms.
(1) Both statement I & II are correct
(2) Both statement I & II are incorrect
(3) Only statement I is correct
(4) Only statement II is correct

140. Read the following characteristics in column-I and match them with column-II and column-III and find out the correct option

	Column-I	Column-II	Column-III
(1)	Umbrella shaped, free swimming body	Aurelia	Porifera
(2)	Dioecious with Muscular pharynx	Ancylostoma	Aschehelminthes
(3)	Visceral hump with muscular foot	Cucumaria	Echinodermata
(4)	Proboscis gland with external fertilization	Balanoglossus	Urochordata

141. The abdomen and Thoracic segments in male cockroach are :-
(1) 10 and 11 segments respectively
(2) 3 and 10 segments respectively
(3) 10 and 3 segments respectively
(4) 10 and 9 segments respectively

142. Read the following statements and find out the incorrect statement(s) :-

a. The binding of CO_2 with haemoglobin is related to the partial pressure of CO_2 . pO_2 is a major factor which could affect this binding.

b. When pCO_2 is low and pO_2 is high as in the alveoli, more binding of CO_2 occurs, whereas when the pCO_2 is high and pO_2 is low as in the tissues, dissolution of CO_2 from Carbaminohaemoglobin takes place.

c. At the tissue site, where partial pressure of CO_2 is high due to catabolism, CO_2 diffuses into blood (RBCs and plasma) and forms HCO_3^- and H^+. At the alveolar site where pCO_2 is low, the reaction proceeds in the opposite direction leading to the formation of CO_2 and H_2O.

d. Oxygen dissociation curve is highly useful in studying the effect of factor like pCO_2, H^+ concentration, etc., on binding of O_2 with haemoglobin.

(1) a and b (2) b and c
(3) c and d (4) b only

143. How many pairs of cranial nerves found in frog?

(1) 9 pair (2) 31 pair
(3) 10 pair (4) 12 pair

144. Dense connective tissue is :-

(1) Cartilage (2) Bone
(3) Ligament (4) Areolar tissue

145. **Statement-I:** Fibrins are formed by the conversion of inactive fibrinogens in the plasma by the enzyme thrombin.

Statement-II: Calcium ions play a very important role in clotting.

(1) Both Statement I and Statement II are incorrect
(2) Statement I is correct but Statement II is incorrect
(3) Statement I is incorrect but Statement II is correct
(4) Both Statement I and Statement II are correct

146. The number and arrangement of stamens in a Papilionaceous taxon is

(1) A_{10} (2) Aa
(3) $A_{(9)+1}$ (4) A_5

147. Which of the following is not the part of decomposition?

(1) Fragmentation (2) Humification
(3) Catabolism (4) Weathering

148. Which of the following sets of events occurs in time interval after the end of second heart sound and before on set of first heart sound :-

(1) Auricular diastole, ventricular systole
(2) Auricular diastole, ventricular diastole
(3) Auricular diastole, ventricular diastole, auricular systole
(4) Auricular diastole, ventricular diastole, auricular systole & ventricular systole

149. In tissues where there are high _____ and low _____ levels, more CO_2 binds to haemoglobin.

(1) Oxygen, carbon dioxide
(2) Carbon dioxide, Oxygen
(3) Nitrogen, Oxygen
(4) Oxygen, Nitrogen

150. Select the incorrect pair

(1) Overcome apical dominance – Cytokinin
(2) Apical dominance – Auxin
(3) Triple response on stem – Ethylene
(4) Femaleness in cucumber – Auxin

151. Choose the correct and wrong statements-

a. Multipolar neurons have one axon and two or more dendrites and found in the cerebral cortex.

b. Bipolar neurons have two axons and two dendrons.

c. Myelinated nerve fibres are enveloped with Schwann cells only.

d. Unmyelinated nerve fibre is enclosed by Schwann cells.

(1) a, d - correct, b, c - wrong
(2) a, d - wrong, b, c - correct
(3) a, b, - correct, d, c-wrong
(4) a, d - correct, a, c-wrong

152. Single shield shaped cotyledon of maize seed is called:-

(1) Coleorhiza (2) Coleoptile

(3) Scutellum (4) Epiblast

153. Afferent nerve fibres carries impulses from-

(1) Effector to CNS

(2) Receptor to CNS

(3) CNS to muscle

(4) CNS to receptor

154. Which statement about translation is correct.

(1) Translation occurs within the nucleus of eukaryotes.

(2) Ribosomes recognize and bind to codons in DNA to synthesize proteins.

(3) In bacteria, translation occurs in cytoplasm

(4) There is a different ribosome to recognize each unique codon.

155. In which direction(s), leading and lagging strands synthesized during DNA replication?

(1) 5' → 3' on the leading strand and 3' → 5' on the lagging strand

(2) 3' → 5' on the leading strand and 5' → 3' on the lagging strand.

(3) 5' → 3' on both the leading and lagging strand.

(4) 3' → 5' on the leading and lagging strand.

156. Match Column-I with Column -II and select the correct option :

Column-I (Chemical nature)		Column-I (Hormone)	
a.	Iodothyronine	i.	Estradiol
b.	Steroid	ii.	Epinephrine
c.	Amino acid derivative	iii.	Insulin
d.	Protein	iv.	Thyroxine

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

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

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

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

157. Inflammation of joints called Gout, occurs due to :

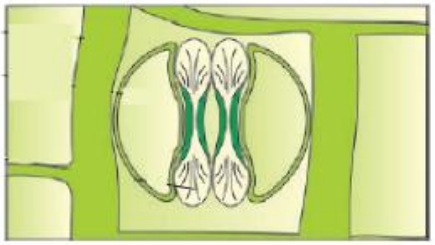
(1) Auto immunity

(2) Low Ca in body fluid

(3) Accumulation of uric acid crystal in joints

(4) Decrease level of estrogen

158.



Given Diagram represent stomata of

(1) Mango (2) Ficus

(3) Gram (4) Grasses

159. Which of the following factor has a negative effect on the population growth rate?

(1) Immigration and mortality

(2) Emigration and natality

(3) Emigration and mortality

(4) Immigration and natality

160. Which of the following statements are correct regarding skeletal muscle?

(A) Fascicles are held together by collagenous connective tissue layer called fascia.

(B) Sarcoplasmic reticulum of muscle fibre is a storehouse of potassium ion.

(C) Actin filaments are thinner as compared to myosin filament, are commonly called thick and thin filament respectively.

(D) The portion of myofibril between two successive Z-lines is considered as functional unit of contraction called sarcomere.

Choose the most appropriate answer from options given below:

(1) B and C only (2) A, C and D only

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

161. During the development of anther, the microsporangia develop further and become .....

(1) Megasporangia

(2) Male gametophyte

(3) Female gametophyte

(4) Pollen sacs

162. Red and tall hybrid plant, when crossed with recessive white-dwarf plant (RrTt × rrtt). What will be ratio of respective four combinations red tall, red-dwarf, white-tall and white-dwarf plants in F_1 - generation :-

(1) 9 : 3 : 3 : 1 (2) 15 : 1 : 0 : 0

(3) 9 : 3 : 4 : 0 (4) 4 : 4 : 4 : 4

163. Amniocentesis is aimed at

(1) Collection of amniotic fluid containing foetal cells to be tested for genetic disorders

(2) Sex determination of foetus for further termination of pregnancy

(3) Removal of chorionic villi from placenta

(4) Collection of tissue from umbilical cord containing foetal cells

164. Select the correct answer about figure A, B and C given below :

(A) (B) (C)

(1) A - Datura, B - Opium, C - Cannabis sativa

(2) A - Opium, B - Datura, C - Cannabis sativa

(3) A - Opium plant, B - Cannabis sativa, C - Datura

(4) A - Cannabis sativa, B - Datura C – Opium

165. Diseases are broadly grouped into infectious and non-infectious diseases. In the list given below, identify the infectious diseases.

(i) cancer (ii) Influenza

(iii) Allergy (iv) Small pox

(1) i and ii (2) ii and iii

(3) iii and iv (4) ii and iv

166. **Assertion :-** Lichens can be used as industrial pollution indicator.

Reason :- Lichens forces the moth to change as dark winged or white winged in industrial area.

(1) A and R both correct but R is not correct explanation of A.

(2) A and R both correct and R is correct explanation of A.

(3) A is correct and R is incorrect.

(4) A is incorrect and R is correct.

167. Which type of immunity is responsible for graft rejection?

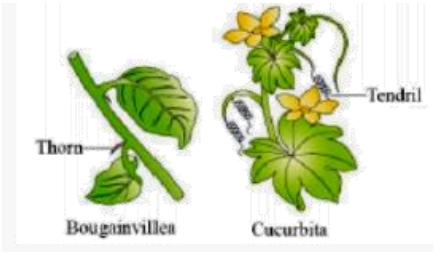
(1) Cell mediated immunity

(2) Antibody mediated immunity

(3) Humoral immunity

(4) Innate immunity

168. Which type of evolution is shown by given structures?



(1) Parallel evolution

(2) Convergent evolution

(3) Divergent evolution

(4) Retrogressive evolution

169. Centromere divides during :-

(1) Pachytene (2) Anaphase-II

(3) Prophase (4) Metaphase

170. **Statement I:** The normal *E. coli* cells do not carry resistance against ampicillin, chloramphenicol, tetracycline or kanamycin etc.

Statement II: The presence of a chromogenic substrate gives blue coloured colonies if the plasmid in the bacteria does not have an insert.

(1) Statement I and II both are correct.

(2) Statement I and II both are incorrect.

(3) Only Statement I is correct.

(4) Only Statement II is correct.

171. Read the following statements (A to D)

(A) The root hairs are unicellular elongations of epidermal cells.

(B) The root hairs help in preventing water loss due to transpiration.

(C) The trichomes in the shoot system are usually multicellular

(D) On the root the epidermal hairs are called trichomes.

Which of the following statements are correct?

(1) A and B

(2) B and C

(3) A and C

(4) B, C and D

172. In human normally the stroke volume per cardiac cycle is :-

(1) 5000 ml (2) 120 ml

(3) 70 ml (4) 200 ml

173. **Assertion:** Human have ability to increase the strength of inspiration and expiration with the help of additional muscles.

Reason: On an average a healthy human breathes 12-16 time/minute.

(1) A and R both correct but R is not correct explanation of A.

(2) A and R both correct and R is correct explanation of A.

(3) A is correct and R is incorrect.

(4) A is incorrect and R is correct.

174. **Statement-I :-** Electrons from NADH produced in the mitochondrial matrix during citric acid cycle are oxidised by an NADH dehydrogenase.

Statement-II :- In TCA cycle, citrate is isomerised to isocitrate.

Choose the correct answer.

(1) Statement I is correct but II is incorrect.

(2) Statement I is incorrect but II is correct.

(3) Both Statement I & II are correct.

(4) Both Statement I & II are incorrect.

175. Thymosin is responsible for :

(1) Raising the blood sugar level

(2) Raising the blood calcium level

(3) Differentiation of T-lymphocytes

(4) Decrease in blood RBC

176. Match list-I with list-II

List-I Trophic level		List-II Examples	
(A)	Fourth	(i)	Birds, Fishes
(B)	First	(ii)	Zooplankton, Cow
(C)	Third	(iii)	Man, Lion
(D)	Second	(iv)	Grass, Trees

Choose the correct answer from the options given below :-

(1) A-iii, B-i, C-ii, D-iv

(2) A-i, B-ii, C-iii, D-iv

(3) A-iii, B-iv, C-i, D-ii

(4) A-iii, B-iv, C-ii, D-i

177. Genetic engineering has been successfully used for producing :

(1) transgenic Cow-Roise which produces high fat milk for making ghee

(2) animals like bulls for farm work as they have super power

(3) transgenic mice for testing safety of polio vaccine before use in humans

(4) (Bt-cotton) for studying new treatments for certain cardiac diseases

178. Identify the correct match from the columns I, II and III

Column– I		Column– II		Column– II	
(A)	Corpus luteum	(a)	Fallopian tube	(i)	Estrogen
(B)	Granulosa cells	(b)	Sperm	(ii)	Collection of ovum
(C)	Proximal centroid	(c)	Ovary	(iii)	Promote the cleavage
(D)	Fimbriae	(d)	Developing follicle	(iv)	Progesterone

(1) A → d → i; B → c → iv, C → b → iii, D → a → ii

(2) A → c → i; B → d → iii, C → d → ii, D → b → iv

(3) A → c → iv; B → d → i, C → b → iii, D → a → ii

(4) A→ b→ iv; B → c → iii, C →a →ii, D → d → i

179. **Assertion:** In gymnosperm the male and female gametophytes do not have independent free living existence.

Reason: All gymnosperm exclusively show heterosporous nature.

(1) A and R both correct but R is not correct explanation of A.

(2) A and R both correct and R is correct explanation of A.

(3) A is correct and R is incorrect.

(4) A is incorrect and R is correct.

180. Choose the correct pair :-

(1) Malleus, incus, stapes → ear ossicles

(2) Sacral, Coccygeal, lumbar → fused vertebrae

(3) Ileum, ischium, pubis → coxal bones

(4) Skull, scapula, sternum → axial skeleton

Syllabus

FT – 3

Day & Date : 30 May, 2026
Time : 10: 00 AM to 1: 00 PM
Physics : FULL COURSE
Chemistry : FULL COURSE
Biology : FULL COURSE

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