1. A spherical ball rolls on a table without slipping. Then the fraction of its total energy associated with rotation is –

(1) 2/5 (2) 2/7

(3) 3/5 (4) 3/7

2. A stone is dropped from a height h. Simultaneously, another stone is thrown up from the ground which reaches a height 4 h. The two stones cross each other after time

(1) $\sqrt{\frac{h}{8g}}$ (2) $\sqrt{8gh}$

(3) $\sqrt{2gh}$ (4) $\sqrt{\frac{h}{2g}}$

3. A ball of mass 0.1 kg is suspended by a string. It is displaced through an angle of 60° and left. When the ball passes through the mean position, the tension in the string is

(1) 19.6 N (2) 1.96 N

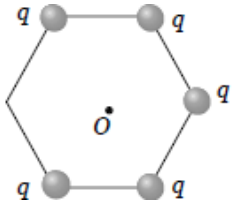
(3) 9.8 N (4) Zero

4. The center of mass of a non-uniform rod of length L whose mass per unit length $\lambda = \frac{Kx^2}{L}$, where K is a constant and x is the distance from one end is

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

(3) $\frac{K}{L}$ (4) $\frac{3K}{L}$

5. Five point charges each having magnitude 'q' are placed at the corner of hexagon as shown in fig. Net electric field at the centre 'O' is $\vec{E}$. To get net electric field at 'O' be $6\vec{E}$, charge placed on the remaining sixth corner should be



(1) 6 q (2) – 6 q

(3) 5 q (4) – 5 q

6. At time t, the position of a body moving along the x-axis is $x = t^3 - 6t^2 + 9t$ m .The deceleration of the body at 1s is

(1) 6 ms^{-2} (2) 4ms^{-2}

(3) 8ms^{-2} (4) None

7. At some point the gravitational potential and also the gravitational field due to earth is zero. The point is

(1) On earth's surface

(2) Below earth's surface

(3) At a height R_e from earth's surface (R_e = radius of the earth)

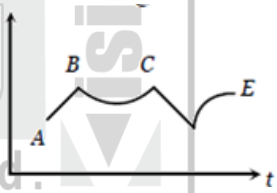
(4) At infinity

8. If the breaking force for a given wire is F, then the breaking force of two wires of same magnitude will be

(1) F (2) 4F

(3) 8F (4) 2F

9. Figure shows the displacement of a particle going along the X-axis as a function of time. The force acting on the particle is zero in the region



(1) AB, CD (2) BC, AD

(3) CD, AD (4) DE, BC

10. An electromagnetic wave of frequency 1×10^{14} Hz is propagating along z-axis. The amplitude of the electric field is 4 V/m. If $\varepsilon_0 = 8.8 \times 10^{-12}$ $C^2/N\text{-}m^2$, then the average energy density of electric field will be :-

(1) 35.2×10^{-12} J/ m^3

(2) 35.2×10^{-10} J/ m^3

(3) 35.2×10^{-11} J/ m^3

(4) 35.2×10^{-13} J/ m^3

11. A faulty thermometer has its lower fixed point marked as −10°C and upper fixed point marked as 110° and upper fixed point marked as 110°. If the temperature of the body shown in this scale is 62°, the temperature shown on the Celsius scale is

(1) 72° C (2) 82° C

(3) 60° C (4) 42° C

12. A gas is enclosed in a closed pot. On keeping this pot in a train moving with high speed, the temperature of the gas

(1) Will increase

(2) Will decrease

(3) Will remain the same

(4) Will change according to the nature of the gas

13. A gas expands adiabatically such that its temperature $T \propto \frac{1}{\sqrt{V}}$, the value of C_P/C_V of gas is

(1) 1.30 (2) 1.50

(3) 1.67 (4) 2.00

14. In a steady state of thermal conduction, temperature of the ends A and B of a 20 cm long rod are 100°C and 0°C respectively. What will be the temperature of the rod at a point at a distance of 6 cm from the end A of the rod

(1) −30°C (2) 70°C

(3) 5°C (4) None of the above

15. A pendulum has time period T in air. When it is made to oscillate in water, it acquired a time period $T' = \sqrt{2T}$. The density of the pendulum bob is equal to (density of water = 1)

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

(3) $2\sqrt{2}$ (4) None of these

16. When a body moves with some friction on a surface

(1) It loses kinetic energy but momentum is constant

(2) It loses kinetic energy but gains potential energy

(3) Kinetic energy and momentum both decrease

(4) Mechanical energy is conserved

17. The moment of inertia of a body about a given axis is 1.2 kg × m^2. Initially, the body is at rest. In order to produce a rotational KE of 1500 joule, an angular acceleration of 25 rad/sec^2 must be applied about that axis for a duration of –

(1) 4 s (2) 2 s

(3) 8 s (4) 10 s

18. The resistance of the filament of a lamp increases with the increase in temperature. A lamp rated 100 W, 220 V is connected across 220 V power supply. If the voltage drops by 10% then the power of lamp will be

(1) 90 W

(2) 81 W

(3) Between 90 W and 100 W

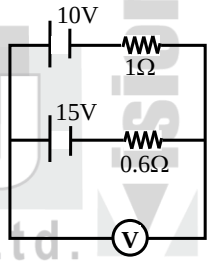
(4) Between 81 W and 90 W

19. Five very long, straight wires are bound together to form a small cable. Currents carried by the wires are I_1 = 20A, I_2 = −6A, I_3 = 12A, I_4 = −7A, I_5 =18A. The magnetic induction at a distance of 10 cm from the cable is

(1) 34 μT (2) 74 mT

(3) 34 mT (4) 74 μT

20. A 10 V battery with internal resistance 1Ω and a 15 V battery with internal resistance 0.6 Ω are connected in parallel to a voltmeter (see figure). The reading in the voltmeter will be close to :



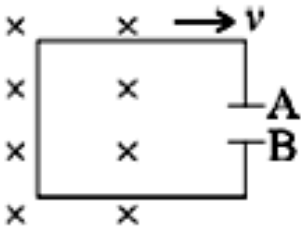
(1) 11.9 V

(2) 13.1 V

(3) 12.5 V

(4) 24.5 V

21. A conducting loop having a capacitor is moving outward from the magnetic field then which plate of the capacitor will be positive



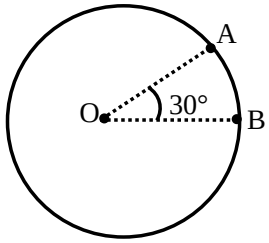
(1) Plate – A

(2) Plate – B

(3) Plate – A and Plate – B both

(4) None

22. A uniform wire of resistance 36 Ω is bent in the form of a circle. The effective resistance between A and B is (O is the centre of circle):



(1) 2.75 Ω (2) 3 Ω

(3) 33 Ω (4) 36 Ω

23. If maximum velocity with which an electron can be emitted from a photo cell is 4×10^8 cm / sec, the stopping potential is

(mass of electron = 9×10^{-31}kg)

(1) 30 volt

(2) 45 volt

(3) 59 volt

(4) Information is insufficient

24. Assuming that the potential energy of spring is zero when it is stretched by x_0, then its potential energy change when it is compressed by $\frac{x_0}{2}$ is.

(1) $\frac{3}{8}kx_0^2$ (2) $-\frac{3}{4}kx_0^2$

(3) $-\frac{3}{8}kx_0^2$ (4) $\frac{1}{8}kx_0^2$

25. Is the ionisation energy of an isolated free atom different from the ionisation energy E_g for the atoms in a crystalline lattice

(1) Yes

(2) No

(3) May be

(4) None of these

26. A concave mirror and a converging lens (glass with μ = 1.5) both have a focal length of 3 cm when in air. When they are in water $\left(\mu=\frac{4}{3}\right)$, their new focal lengths are

(1) f_{Lens} = 12 cm, f_{Mirror} = 3cm

(2) f_{Lens} = 3 cm, f_{Mirror} = 12cm

(3) f_{Lens} = 3 cm, f_{Mirror} = 3cm

(4) f_{Lens} = 12 cm, f_{Mirror} = 12cm

27. There is an equiconvex glass lens with radius of each face as *R* and ${}_a\mu_g = 3/2$ and ${}_a\mu_w = 4/3$. If there is water in object space and air in image space, then the focal length is

(1) 2*R* (2) *R*

(3) 3 *R*/2 (4) R^2

28. In a Young's double slit experiment, I_o is the intensity at the central maximum and β is the fringe width. The intensity at a point *P* distant *x* from the centre will be

(1) $I_o \cos\frac{\pi x}{\beta}$

(2) $4I_o \cos^2\frac{\pi x}{\beta}$

(3) $I_o \cos^2\frac{\pi x}{\beta}$

(4) $\frac{I_o}{4}\cos^2\frac{\pi x}{\beta}$

29. In Young's double slit experiment, the 8th maximum with wavelength λ_1 is at a distance d_1 from the central maximum and the 6th maximum with a wavelength λ_2 is at a distance d_2. Then (d_1/d_2) is equal to

(1) $\frac{4}{3}\left(\frac{\lambda_2}{\lambda_1}\right)$ (2) $\frac{4}{3}\left(\frac{\lambda_1}{\lambda_2}\right)$

(3) $\frac{3}{4}\left(\frac{\lambda_2}{\lambda_1}\right)$ (4) $\frac{3}{4}\left(\frac{\lambda_1}{\lambda_2}\right)$

30. Light of wavelength 500nm is used to form interference pattern in Young's double slit experiment. A uniform glass plate of refractive index 1.5 and thickness 0.1mm is introduced in the path of one of the interfering beams. The number of fringes which will shift the cross wire due to this is

(1) 100 (2) 200

(3) 300 (4) 400

31. A screen is placed $50\,cm$ from a single slit, which is illuminated with 6000Å light. If distance between the first and third minima in the diffraction pattern is $3\,mm$, the width of the slit is

(1) $0.1\,mm$ (2) $0.2\,mm$

(3) $0.3\,mm$ (4) $0.4\,mm$

32. If the momentum of an electron is changed by Δp, then the de-Broglie wavelength associated with it changes by 0.50%. The initial momentum of the electron will be

(1) $\frac{\Delta p}{200}$ (2) $\frac{\Delta p}{199}$

(3) $199\,\Delta p$ (4) $400\,\Delta p$

33. The correct match between the entries in table are

	Column I (Radiation)		Column II (Wavelength)
(i)	Microwaves	(a)	100 m
(ii)	γ-rays	(b)	10^{-15} m
(iii)	AM radiowaves	(c)	10^{-10} m
(iv)	X-rays	(d)	10^{-3}m

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

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

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

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

34. A closed pipe and an open pipe have their first overtones identical in frequency. Their lengths are in the ratio

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

(3) 3 : 4 (4) 4 : 5

35. A body of mass m is projected at an angle of 45^o with the horizontal. If air resistance is negligible, then total change in momentum when it strikes the ground is

(1) $2mv$

(2) $\sqrt{2}\,mv$

(3) mv

(4) $mv/\sqrt{2}$

36. A capacitor is kept connected to the battery and a dielectric slab is inserted between the plates. During this process

(1) No work is done

(2) Work is done at the cost of the energy already stored in the capacitor before the slab is inserted

(3) Work is done at the cost of the battery

(4) Work is done at the cost of both the capacitor and the battery

37. The capacity of a parallel plate condenser is 15μF, when the distance between its plates is 6 cm. If the distance between the plates is reduced to 2 cm, then the capacity of this parallel plate condenser will be

(1) 15μF (2) 30μF

(3) 45μF (4) 60μF

38. The capacity of a parallel plate capacitor with no dielectric substance but with a separation of 0.4 cm is 2μF. The separation is reduced to half and it is filled with a dielectric substance of value 2.8. The final capacity of the capacitor is

(1) 11.2μF (2) 15.6μF

(3) 19.2μF (4) 22.4μF

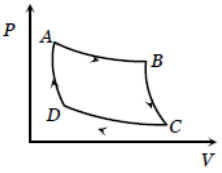
39. Carnot cycle (reversible) of a gas represented by a Pressure-Volume curve is shown in the diagram Consider the following statements

I. Area ABCD = Work done on the gas

II. Area ABCD = Net heat absorbed

III. Change in the internal energy in cycle = 0

Which of these are correct



(1) I only (2) II only

(3) II and III (4) I, II and III

40. Ratio among linear expansion coefficient (α), areal expansion coefficient (β) and volume expansion coefficient (γ) is

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

(3) 4 : 3 : 2 (4) None of these

41. When a capillary tube is dipped in water it rises upto 8 cm in the tube. What happens when the tube is pushed down such that its end is only 5 cm above the outside water level

(1) The radius of the meniscus increases and therefore water does not overflow

(2) The radius of the meniscus decreases and therefore water does not overflow

(3) The water forms a droplet on top of the tube but does not overflow

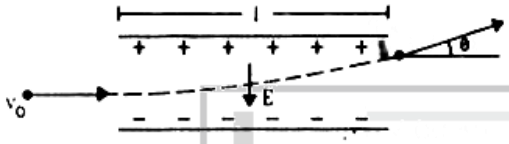
(4) The water start overflowing

42. Photoelectric emission is observed from a metallic surface for frequencies v_1 and v_2 of the incident light rays ($v_1 > v_2$). If the maximum values of kinetic energy of the photoelectrons emitted in the two cases are in the ratio of 1: k, then the threshold frequency of the metallic surface is

(1) $\frac{v_1 - v_2}{k-1}$ (2) $\frac{kv_1 - v_2}{k-1}$

(3) $\frac{kv_2 - v_1}{k-1}$ (4) $\frac{v_2 - v_1}{k}$

43. A uniform electric field E is created between two parallel, charged plates as shown in figure. An electron enters the field symmetrically between the plates with a speed υ_0. The length of each plate is l. Find the angle of deviation of the path of the electron as it comes out of the field.



(1) $\tan^{-1} \frac{eEl}{m\upsilon_0^2}$ (2) $\tan^{-1} \frac{eEl}{m\upsilon_0}$

(3) $\tan^{-1} \frac{eEl}{3m\upsilon_0}$ (4) $\tan^{-1} \frac{eEl}{2m\upsilon_0^2}$

44. In a compound microscope magnification will be large, if the focal length of the eye piece is

(1) Large

(2) Smaller

(3) Equal to that of objective

(4) Less than that of objective

45. The bob of a simple pendulum (mass m and length l) dropped from a horizontal position strikes a block of the same mass elastically placed on a horizontal frictionless table. The K.E. of the block will be

(1) 2 mgl (2) mgl/2

(3) mgl (4) 0

46. Match the column I with II.

Column I		Column II	
P	$CO_3^{-2} \xrightarrow{dil.H^+}$	A	H_2S
Q	$S^{-2} \xrightarrow{dil.H^+}$	B	SO_2
R	$SO_3^{-2} \xrightarrow{dil.H^+}$	C	CO_2
S	$S_2O_3^{-2} \xrightarrow{dil.H^+}$	D	S + SO_2

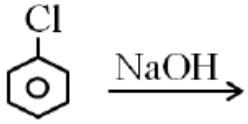
(1) P-C, Q-D, R –A, S-B

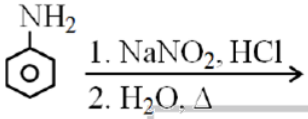
(2) P- B, Q-A, R –D, S - C

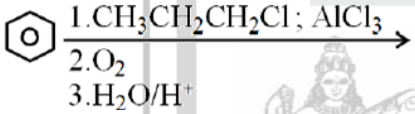
(3) P- C, Q- A, R –B, S- D

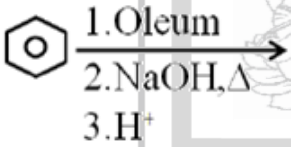
(4) P-B, Q- D, R – A, S- C

47. Which of the following method can't form phenol-

(1) 

(2) 

(3) 

(4) 

48. Which of the following reaction is an example of nucleophilic addition reaction-

(1) $CH_3CHO + HCN \rightarrow$

(2) $CH_3CHO + NaHSO_3 \rightarrow$

(3) CH_3CHO + Ethylene glycol $\xrightarrow{HCl}$

(4) All of these

49. Incorrect reaction is

(1) $PhN_2Cl \xrightarrow{KI} Ph-I$

(2) $PhN_2Cl \xrightarrow{Cu/HBr} Ph-Br$

(3) $PhN_2Cl \xrightarrow[(Fluoroboric\ acid)]{HBF_4} Ph-F$

(4) $PhN_2Cl \xrightarrow[warm]{H_2O} PhOH$

50. Which of the following order of Metallic Radius is incorrect?

(1) Sc > Ti > V > Cr (2) Mn > Cr > Fe

(3) Zn > Mn > Cu (4) Ni < Cu < Zn

51. Which of the following gaseous mixtures is used by divers inside the sea?

(1) $O_2 + He$ (2) $O_2 + N_2$

(3) $O_2 + Ar$ (4) $O_2 + Xe$

52. **Assertion:** Aromatic carboxylic acid can't shows Friedel – craft reaction.

Reason: Carboxylic acid is deactivating group and catalyst aluminium chloride bonded with carboxylic group.

(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)

53. Which of the following is not considered as an organometallic compound?

(1) Ferrocene (2) Cis-Platin

(3) Zeise's salt (4) Grignard Reagent

54. $\left[E^{o}_{M^{+3}|M} \text{ of } \underset{-1.66V}{Al} \quad \underset{+1.26V}{T\ell} \right]$

Choose correct option regarding Al and Tℓ

(1) Al > Tℓ Electropositive nature

(2) Aℓ > Tℓ, Reducing nature

(3) Al < Tℓ Electropositive nature

(4) Both 1 and 2

55. Which of the following statements are not correct

(A) NaCl being an ionic compound is a good conductor of electricity in the solid state.

(B) In canonical structures there is a difference in the arrangement of atoms.

(C) Hybrid orbitals form stronger bonds than pure orbitals

(D) VSEPR theory can explain the square planar geometry of XeF_4.

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

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

56. From the following pairs of ions which one is not an iso-electronic pair.

(1) N^{-3}, F^{-1} (2) Mg^{+2}, Al^{+3}

(3) Mn^{+2}, Fe^{+3} (4) Mn^{+2}, Fe^{+2}

57. **Assertion (A):** Through the central atom of both NH_3 and H_2O Molecules are sp^3 Hybridised yet H-N-H bond angle is greater than that of H-O-H

Reason (R): This is because nitrogen atom has one lone pair and oxygen atom has two lone pairs.

(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)

58. Choose incorrect match.

Column – I		Column – II	
(1)	PbF_4, SnF_4	A	Ionic in nature
(2)	$[SiF_6]^{-2}$	B	sp^3d^2 Hybridisation
(3)	GeO	C	Acidic
(4)	SiO_2	D	Amphoteric

59. Which of the following is incorrect order.

(1) $NH_3 > PH_3 > AsH_3 > SbH_3$ Basic strength

(2) Na < Al < Mg < S, IE_1

(3) F < Cl < Li Atomic size

(4) Se < S < O, $\Delta_{eg}H$ (with Negative sign)

60. For the given reaction

$CH_4(g) + 2O_2(g) \rightarrow CO_2(g) + 2H_2O\ (g)$

Wrong statement will be:

(1) One mole of $CH_4(g)$ reacts with two moles of $O_2(g)$ to give one mole of $CO_2(g)$ and two moles of $H_2O(g)$

(2) 1g of $CH_4(g)$ reacts with 2g of $O_2(g)$ to give 1g of $CO_2(g)$ and 2f of $H_2O(g)$

(3) One molecule of $CH_4(g)$ reacts with 2 molecules of $O_2(g)$ to give one molecular of $CO_2(g)$ and 2 molecules of $H_2O(g)$.

(4) At STP 22.4 L of $CH_4(g)$ reacts with 44.8 L of $O_2(g)$ to give 22.4 L of $CO_2(g)$ and 44.8 L of $H_2O(g)$

61. For which of the following reaction, $\Delta H \neq \Delta E$ will be:

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

(2) $N_2(g) + O_2(g) \rightarrow 2NO(g)$

(3) $C(s) + O_2(g) \rightarrow CO_2(g)$

(4) $N_2(g) + 3H_2(g) \rightarrow 2NH_3(g)$

62. Which of the following statement is correct?

(1) According to Heisenberg's uncertainty principle, $\Delta v.\Delta x \leq \frac{h}{4\pi m}$

(2) Be^{2+} and Na^+ are isoelectronic

(3) The Balmer series of lines in the hydrogen spectrum appear in the visible region of electromagnetic spectrum.

(4) The four quantum numbers of valence electron of potassium are 4, 0, 1, $\frac{1}{2}$

63. How many moles of sodium sulphite are oxidised by three moles of potassium permanganate in acidic medium

(1) 7.5 (2) 1.5

(3) 4.5 (4) 1.25

64. **Assertion:** The ratio of orbital angular momentum and angular momentum for 3p electron is $\sqrt{2}:3$.

Reason: Orbital angular momentum is $\sqrt{\ell(\ell+1)}\frac{h}{2\pi}$ and angular momentum is $\frac{nh}{2\pi}$.

(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)

65. How many statements among the following are correct?

(A) Vapour pressure of water increases with the temperature.

(B) The conjugate acid – base pair differ by only one proton.

(C) Ionic product of water (K_w) does not change with temperature.

(D) HF is a stronger acid than CH_3COOH.

(1) 4 (2) 3

(3) 1 (4) 2

66. If 20 ml of 0.25 N strong acid and 30 mL of 0.2 N of strong base are mixed, then the resulting solution is

(1) 0.25 N, basic

(2) 0.2 N, acidic

(3) 0.25 N, acidic

(4) 0.02 N, basic

67. Consider the following statements and select the correct option that whether the given statement is true(T) or false (F)

(A) The cell potential of mercury cell does not remain constant during its life.

(B) Over potential is the extra potential that has to be applied for the electrochemical reaction which are kinetically slow.

(C) Fuel cell is a type of galvanic cell which converts the energy of combustion of fuels like hydrogen, methane etc. directly into electrical energy.

(D) EMF of cell is cell potential when no current is drawn through the cell.

(1) TFTF (2) FTTF

(3) FTTT (4) FTFT

68. The degree of dissociation of silver nitrate in its aqueous solution in which its observed molecular weight is 140 g/mol, will be

(1) 32.7 % (2) 21.4 %

(3) 47.2 % (4) 37.1 %

69. The activation energy is lowered by 8.314 kJ/mol for the catalysed reaction at 500 K. the ratio of the rate of the catalysed reaction to that of the un catalysed reaction at 500 K is (given $e^2 = 7.38$)

(1) 15 (2) 7.38

(3) 8.37 (4) 4.69

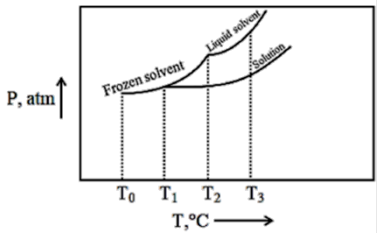
70. Consider the reaction 2A + B → Products.

When concentration of B alone was doubled the half life did not change. When the concentration of A alone was doubled, the rate increased by two times. The unit of rate constant for this reaction is:

(1) L mol^{-1} sec^{-1} (2) mol L^{-1} sec^{-1}

(3) s^{-1} (4) Unit less

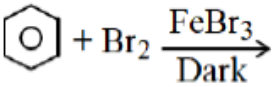
71. What is the freezing point of the solution represented by the phase diagram.



(1) T_1 (2) T_2

(3) T_3 (4) T_0

72. Match the column

Column – I		Column – II	
a	$CH_3-CH=CH_2 \xrightarrow[CCl_4]{Br_2}$	p	Electrophilic addition reaction
b	$CH_3-CH-CH_3 \xrightarrow[Heat]{Br_2}$	q	Free radical substitution reaction.
c		r	Electrophilic substitution reaction
d	$CH_3-CH=CH_2 \xrightarrow[peroxide]{HBr}$	s	Free radical addition reaction

(1) a → p, b → q, c→ r, d → s

(2) a → q, b → p, c→ r, d → s

(3) a → p, b → q, c→ s, d → r

(4) a → r, b → s, c→ p, d → q

73. Which is incorrect?

(1) Pent –2-ene can show Geometrical isomerism

(2) 1, 3- Butadiene does not show Geometrical isomerism

(3) $CH_3-\overset{O}{\overset{\|}{C}}-H$ can show structural isomerism

(4) Heat of hydrogenation of trans –but-2-ene is more than that of isobutene

74. $\overset{x}{CH_2}=\overset{y}{CH}-\overset{z}{CH}=CH_2$ compare bond length x, y and z.

(1) x = y = z (2) y > x = z

(3) x = z > y (4) y > x > z

75. **Statement I:** Organic compound containing Nitrogen produce Prussian blue colour during Lassigne test

Statement II: $CH_3-CH_3 \xrightarrow[\Delta]{O_2/(CH_3COO)_2Mn}$ CH_3–COOH.

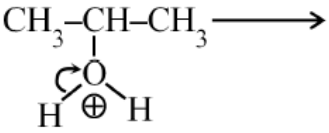
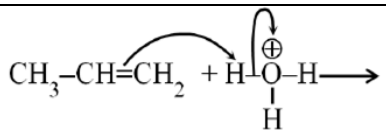
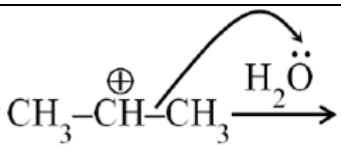
(1) Both Statement I and Statement II are incorrect.

(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.

76. Steps of Mechanism for the formation of isopropyl alcohol from propene by dil. H_2SO_4 are given below-

P	
Q	
R	

Correct sequence for mechanism is -

(1) P→Q→R (2) Q→R→P

(3) P→R→Q (4) Q→P→R

77. Number of lone pairs of electrons on Xe-atoms in XeF_2, XeF_4 *and* XeF_6 molecules are respectively:

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

(3) 2, 3, 1 (4) 3, 2, 0

78. Choose correct statement regarding molecular orbitals

(A) Sigma (σ) Molecular orbitals are symmetrical around the bond axis while pi(π) molecular orbitals are not symmetrical.

(B) Molecular orbitals of diatomic molecules are designated as σ(sigma)/ π(pi) / δ(delta), etc.

(C) Molecular orbitals obtain form $2P_x$ and $2P_y$ orbitals are symmetrical around the bond axis because the presence of positive lobes above and negative lobes below the molecular plane.

(1) A, B and C

(2) B and C only

(3) A and B only

(4) A and C only

79. The correct order of solubility for the given salts CuCl (K_{sp} = 1.7 × 10^{-6}), $PbCO_3$, (K_{sp} = 7.4 × 10^{-14}) and SnS (K_{sp} = 1.0 × 10^{-25}) is:

(1) CuCl > SnS > $PbCO_3$

(2) CuCl > $PbCO_3$ > SnS

(3) $PbCO_3$ > SnS > CuCl

(4) SnS > $PbCO_3$ > CuCl

80. For a certain reaction P(g) ⇌ Q(g), at equilibrium the partial pressure of Q is found to be one half of the partial pressure of P. the value of ΔG° of the reaction is:

(1) –RT ℓn2 (2) RT ℓn2

(3) –RT ℓog2 (4) RT ℓog2

81. **Assertion:** Equilibrium constant of the reaction can be calculated from the corresponding E° value of the cell.

Reason: Higher the value of E°_{cell}, smaller is the value of equilibrium constant.

(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)

82. The vapour pressure of pure liquids A and B are 450 and 700 mm Hg respectively at 300 K. if total vapour pressure of solution of A and B is 600 mm Hg then find mole fraction of B in vapour phase

(1) 0.3 (2) 0.4

(3) 0.6 (4) 0.7

83. Correct about cyclobutadiene is

(1) it does not exist at room temperature

(2) It shows dimerization

(3) it is not aromatic

(4) All

84. $\underset{(1\ mol)}{X} \xrightarrow[(ii)\ H_2O/Zn]{(i)\ O_3} 3H\text{–}\overset{O}{\overset{\|}{C}}\text{–}\overset{O}{\overset{\|}{C}}\text{–}H$

(1) CH≡CH

(2) 

(3) CH ≡ C – C ≡ C – C ≡ CH

(4) Both (2) & (3)

85. $B \xleftarrow{H_2O/H^+} \overset{B_2H_6/THf}{\underset{H_2O_2/OH^-}{=}} A$

A & B are

(1) Chain isomers

(2) Position isomers

(3) Functional isomers

(4) Metamers

86. Least reactive Alkyl bromide towards SN^1 reaction-

(1) $CH_3CH_2CH_2CH_2Br$

(2) $(CH_3)_2$ CH CH_2 Br

(3) CH_3 CH_2 CH(Br)CH_3

(4) $(CH_3)_3C$ Br

87. A + B $\rightarrow$ Sec. Alcohol

Compound A (Grignard's reagent) react with compound B (carbonyl compound) then followed by protonation form sec- butyl alcohol. Identify A and B.

(1) A =$CH_3CH_2CH_2MgBr$ B = HCHO

(2) A =CH_3CH_2MgBr B = CH_3 CHO

(3) A =CH_3MgBr B = CH_3CH_2CHO

(4) Both 2 and 3 are Possible

88. Match the following:

Column I		Column II	
a	$[Cr(en)_2Cl_2]^+$	p	Optical isomerism
b	$[Fe(CN)_6]^{-3}$	q	d^2sp^3 – hybridisation
c	$[Fe(NH_3)_6]^{+2}$	r	Paramagnetic
d	$[CoF_6]^{-3}$	s	sp^3d^2 - hybridization

(1) (a)→p,q,r (b) q,r (c)→r,s (d) r,s

(2) (a)→p,r,s (b) r,s (c)→q (d) r,s

(3) (a)→q,r (b) r,s (c)→r,s (d) r,s

(4) (a)→p,q,r (b) q,r (c) q,r (d) r,s

89. Which of the following pairs of cations can not be separated by using NH_3 solution?

(1) Pb^{+2}, Zn^{+2}

(2) Pb^{+2}, Cu^{+2}

(3) Zn^{+2}, Cu^{+2}

(4) Al^{+3}, Ag^+

90. Which of the following Reaction is/are correct

(1) $BCl_3 + H_2O \rightarrow [B(OH)_4]^-$

(2) $AlCl_3 + H_2O \xrightarrow{H^+} [Al(H_2O)_6]^{3+}$

(3) $2Al_{(s)} + 6HCl_{(aq)} \rightarrow 2Al^{+3}(aq) + 6Cl^-(aq) + 3H_2(g)$

(4) all of these

91. The leaf base in some leguminous plants may become swollen and is called
(1) Petiole (2) Bract
(3) Pulvinus (4) Perianth

92. Choose the incorrect match among the following.
(1) Staminode — Sterile stamen
(2) Syncarpous — Condition found in-Lotus and rose
(3) Papilionaceous corolla — Found in members of Fabaceae family
(4) Polyadelphous — Stamens are united into more than two bundles

93. Select the odd one out w.r.t. population attribute?
(1) Death rate
(2) Birth rate
(3) Sex ratio
(4) Age of individual

94. In leaves, the ground tissue consist of thin walled chloroplast containing cells and is called
(1) Mesophyll Cells
(2) Guard cells
(3) Bulliform cells
(4) Subsidiary cell

95. There are few chromosomes with non-staining secondary 'constriction at a constant location. This gives the appearance of small fragments called
(1) Microbodies (2) Satellite
(3) Inclusion bodies (4) Centriole

96. In five kingdom classification system
(a) Eukaryotes are confined to three kingdoms only.
(b) Organisms with heterotrophic mode of nutrition are confined to two kingdoms only."
(c) Organisms with cellular body "organisation are confined to kingdom Monera only.
(d) Organisms with cell wall are found in kingdom Protista and Plantae only.
Select the incorrect statements.
(1) Only (a) and (b)
(2) Only (a)and (c)
(3) Only (b), (c) and (d)
(4) All (a), (b), (c) and (d)

97. Which of the following plastids contains fat soluble carotenoid pigments like carotene and xanthophylls?
(1) Aleuroplast (2) Amyloplast
(3) Elaioplast (4) Chromoplast

98. If 40 sperms are formed, then how many secondary spermatocytes have completed the meiosis?
(1) 10 (2) 20
(3) 30 (4) 40

99. Each branch of axon at its distal end terminates as a bulb-like structure called
(1) Synaptic vesicle (2) Dendrite
(3) Nissl's granule (4) Synaptic knob

100. Which of the following hormones is not produced by pars distalis?
(1) ACTH (2) MSH
(3) FSH (4) PRL

101. **Statement A:** If an alien DNAs inserted at PstI site of cloning vector pBR322 then the recombinants are amp^R and tet^R.
statement B: All restriction enzymes cut the DNA strand a little away from the centre of the palindrome sites but between the same two bases on the opposite strands.
(1) Both statements A and B are correct
(2) Both statements A and B are incorrect
(3) Only statement A is correct
(4) Only statement B is correct

102. Which one of the following processes of alcohol production is not involved in wine production?
(1) Malting (2) Mashing
(3) Fermentation (4) Distillation

103. Read the following statements carefully and select the correct option:
A. Phylogenetic classification is based on possible evolution of different traits
B. The artificial system of classification gives information about both natural and phylogenetic relationships
(1) Only A is correct
(2) Only B is correct
(3) Both (A) and (B) are correct
(4) Both (A) and (B) are incorrect

104. An Interaction In which the parasitic bird lays its eggs in its host's nest and lets host incubate them Is

(1) Proto-cooperation (2) Mutualism

(3) Commensalism (4) Brood parasitism

105. Major conduit of energy flow in terrestrial ecosystem is

(1) Grazing food chain

(2) Predator food chain

(3) Parasitic food chain

(4) Detritus food chain

106. Epidermal cells are _____with a small amount of cytoplasm lining the cell wall and a _____ vacuole.

(1) parenchymatous, small

(2) collenchymatous, small

(3) parenchymatous, large

(4) collenchymatous, large

107. Mitosis differs from meiosis as the former

(1) Produce variations

(2) Perform DNA replication only once in each cycle

(3) Shows that all chromosomes form a single metaphase plate

(4) Reduce chromosome number to half

108. More than 95% duration of a typical cell cycle is constituted by

(1) G_0 phase (2) M phase

(3) S phase (4) Interphase

109. **Assertion (A):** Lac operon is a repressible operon.

Reason (R): The product of repressor binds to the operator and prevents expression of the gene.

(1) If both **A** and **R** are true and **R** is the correct explanation of **A**

(2) If both **A** and **R** are true and **R** is not the correct explanation **A**

(3) If **A** is true but **R** is false

(4) If **A** is false but **R** is true

110. Select the incorrect match.

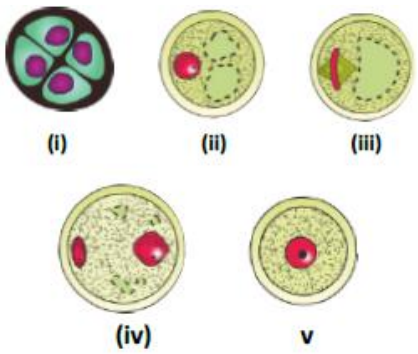
(1) Diatoms — Lack cell wall except In spores

(2) Dinofiagellates — Cellulosic cell wall

(3) Euglena — Wall-less protist

(4) Slime moulds — Spores have Cellulosic cell wall

111. Few events of male gametophyte development in angiosperm are shown in figure given below. Arrange the diagram in progressive order of their occurrence and select the correct order from options given below:



(1) i, ii, iii, iv, v (2) i, v, iv, iii, ii

(3) i, ii, iv, iii, v (4) i, v, ii, iii, iv

112. The core of eukaryotic cilla and flagella is made Up of

(1) Central hub and ten peripheral doublets

(2) Hook, filament and basal body

(3) Nine doublets of microtubules in periphery and a pair of microtubules at centre

(4) Microfilaments and their arangement is in 9+ 0 array

113. The fungi used to make bread and beer

(1) Is a club fungus

(2) Do not reproduce asexually

(3) Lacks cell wall

(4) is unicellular

114. Number of carbon atoms remains the same in substrate and product in all of the following reactions, except

(1) Pyruvic acid → Lactic acid

(2) Pyruvic acid → Ethanol

(3) Phosphoenolpyruvate → Pyruvic acid

(4) Phosphoglyceric acid → Phosphoenolpyruvate

115. **Assertion (A):** Not all sexual acts lead to fertilization and pregnancy

Reason (R): Fertilisation can only occur if the ovum and sperms are transported simultaneously to the ampullary region.

(1) If both **A** and **R** are true and **R** is the correct explanation of **A**

(2) If both **A** and **R** are true and **R** is not the correct explanation **A**

(3) If **A** is true but **R** is false

(4) If **A** is false but **R** is true

116. Which of 'the following are correct w.r.t. linked Genes w and y in Drosophila?

(1) They may violate the law of independent assortment during meiosis

(2) They are present on different chromosomes

(3) They segregate during meiosis and produce 50% recombinants

(4) They are not present in male Drosophila

117. In a flowering plant, the largest number of haploid cells occur in:

(1) Ovule (2) Microsporangia

(3) Root tip (4) Stele

118. Pick out the correct statements :-

(a) In phenylketonuria, affected individual lacks an enzyme that converts the amino acid phenyl alanine into proline.

(b) Down's syndrome results in the gain of extra copy of chromosome 21.

(c) Thalassemia is an autosome-linked recessive blood disease.

(d) Haemophilia is a sex linked recessive disease.

(e) Sickle cell anaemia is a quantitative problem.

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

(3) b, d, e (4) a, b, d

119. In most of bacteria or prokaryotes, structural gene in a transcription unit

(1) Has exons interrupted by introns

(2) Codes for only one polypeptide

(3) Has only introns

(4) Code for more than one different polypeptides

120. In Amazonian rain forest, which of the following Groups has maximum species diversity?

(1) Mammal (2) Birds

(3) Reptiles (4) Amphibians

121. Monoadelphous stamens are found in

(1) Pea (2) Groundnut

(3) Citrus (4) China rose

122. Radial arrangements of vascular bundle in an alternate manner is mainly found in which parts of flowering plants?

(1) Stems

(2) Roots

(3) Leaves

(4) Both stems and leaves

123. **Statement I:** The Grazing food chain begins with dead organic matter.

Statement II: DFC consist of decomposers which are heterotrophic organisms, mainly fungi and bacteria.

(1) Statement I is true, Statement II is false.

(2) Statement I is false, Statement II is true.

(3) Both Statement I and Statement II are false.

(4) Both Statement I and Statement II are true.

124. Identify the following statements as true (T) or false (F) and choose the correct option.

(1) Only in eukaryotes, in addition to the genomic DNA, small circular DNA outside the genomic DNA is present.

(2) In bacteria, membranous extensions into the cytoplasm called chromatophores contain pigments.

(3) In bacterial flagellum, the basal body is the longest portion and extends from the cell surface to the outside.

	A	B	C
(1)	T	T	F
(2)	T	F	F
(3)	F	F	T
(4)	F	T	F

125. Dough used for making dosa and idli is fermented by

(1) Yeast

(2) Aspergillus

(3) Trichoderma

(4) Bacteria

126. Which of the following statements is correct?

(1) Female mosquito is a parasite

(2) Herbivores are considered as predators

(3) Sparrow eating seeds exemplify parasitism

(4) Lichens represent commensalism

127. Which of the following algae is unicellular?

(1) Chlamydomonas (2) Volvox

(3) Eudorina (4) Macrocystis

128. All of the given are asexual spores, except

(1) Zoospores

(2) Conidia

(3) Oospore

(4) Sporangiospores

129. Match the following columns and select the correct option.

	Column I		Column II
(a)	Phenylketonuria	(i)	Increase in number of
(b)	β-Thalassemia	(ii)	Decrease in number of allosome than normal
(c)	Down's	(iii)	Lack an enzyme That syndrome converts phenylalanine into tyrosine
(d)	Turner's syndrome	(iv)	Gene present on chromosome 11

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

130. What are correct for decomposer?
(a) They converts solar energy into chemical energy
(b) They have first trophic level
(c) They help to converts detritus into humus
(d) They are saprophyte
(1) b, c (2) a, b
(3) c, d (4) a, d

131. Which of the following trait expresses itself only in homozygous condition?
(1) Constricted pod shape
(2) Green pod colour
(3) Yellow seed colour
(4) Violet flower colour

132. Statins used for lowering blood cholesterol level are extracted from
(1) Algae (2) bacteria
(3) Viruses (4) yeast.

133. In a prokaryotic cell __(i)__ provides template and __(ii)__ reads the genetic code during translation.
Select the correct option to fill in the blanks (i) and (ii).

	(i)	(ii)
(1)	rRNA	tRNA
(2)	mRNA	tRNA
(3)	rRNA	mRNA
(4)	mRNA	rRNA

134. Select the incorrect statement(s) from the following and choose the option accordingly-
(a) Species richness is a function of the area of a region
(b) Sacred groves have only rare and threatened species.
(c) Zoological parks are in-situ conservation strategy for biodiversity.
(1) All (a), (b) and (c) (2) (b) only
(3) (b) and (c) only (4) (c) only

135. The exoskeleton of arthropods is made up of a complex polysaccharide, which is a
(1) Heteropolymer
(2) Homopolymer
(3) Storage polysaccharide in plants
(4) Fructose derivative

136. **Statement I:** Mother's milk is considered very essential for the newborn infant.
Statement II: The yellowish fluid colostrums secreted by mother during the initial days of lactation has abundant antibodies (IgA) to protect the infant.
(1) Statement I is true, Statement II is false.
(2) Statement I is false, Statement II is true.
(3) Both Statement I and Statement II are false.
(4) Both Statement I and Statement II are true.

137. Which of the following statements regarding drugs are correct?
(i) Heroin, commonly called smack, is obtained by acetylation of morphine.
(ii) Cocaine is obtained from the latex of Papaver somniferum.
(iii) Marijuana interferes with the transmission of dopamine.
(iv) Morphine is an effective sedative and pain killer.
(1) (i) and (ii) (2) (i) and (iv)
(3) (ii) and (iii) (4) (iii) and (iv)

138. Choose the incorrect statement w.r.t. secondary metabolites.
(1) Abrin and ricin are lectins
(2) Rubber and drugs are useful to human welfare
(3) Codeine is an alkaloid
(4) Anthocyanins are pigments

139. 'P' type of antibodies can cross the placenta while 'Q' type is abundant in colostrum. Identify 'P" and 'Q" among the following and choose the correct option.

	P	Q
(1)	IgA	IgG
(2)	IgG	IgM
(3)	IgA	IgE
(4)	IgG	IgA

140. How many of the following animals given below in the box show bilateral symmetry in their adult stages?

Bombyx, Ophiura, Pristis, Echinus, Rana, Sepia

(1) Three (2) Two

(3) Four (4) Five

141. Read the following features w.r.t. their presence in Petromyzon and select the Incorrect one.

(1) Spawning in fresh water

(2) Cartllaginous vertebral column

(3) Open circulatory system

(4) Sucking type of mouth parts

142. Match column-I with column-II w.r.t. evolution of man.

	Column-I		Column-II
a.	Homo erectus	i.	Buried their dead
b.	Neanderthal man	ii.	Large brain around 900 cc
c.	Australopithecines	iii.	Arose during ice age
d.	Homo sapiens	iv	Hunted with stone weapons

Select the correct option.

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

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

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

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

143. Select the odd one among the following w.r.t. structures present within testis.

(1) Rete testis

(2) Seminiferous tubules

(3) Testicular lobules

(4) Vas deferens

144. Pars intermedia of the pituitary gland secretes only one hormone called:

(1) Growth hormone

(2) Melanocyte stimulating hormone

(3) Prolactin

(4) Thyroid stimulating hormone

145. Most of the major organ systems in humans are formed in a developing foetus by the end of

(1) 4^{th} week of gestation

(2) 1^{st} trimester

(3) 24 weeks of pregnancy

(4) 2^{nd} trimester

146. Which of the following surgical methods is advised as a terminal method to prevent any more pregnancies for a female partner?

(1) IVF (2) Implant vertebrae

(3) Tubectomy (4) IUDs

147. In RNA*i*, the genes are silenced using

(1) ss-RNA (2) ss-DNA

(3) ds-DNA (4) ds-RNA

148. Consider the following four statements (A - D) and select option all the correct ones only:

A. Gluconeogenesis and lipolysis stimulated by cortisol.

B. Cortisol stimulate erythropoiesis

C. Catecholamines stimulate lipolysis and glycogenesis

D. Androgenic steroid secreted by adrenal medulla and help in pubic hair growth

(1) Statements (A) and (B)

(2) Statements (A) and (D)

(3) Statements (B) and (C)

(4) Statements (A) and (C)

149. **Assertion (A):** ELISA is widely used for the detection of infection disease like Typhoid.

Reason (R): ELISA is based on the principle of antigen-antibody interaction.

(1) If both **A** and **R** are true and **R** is the correct explanation of **A**

(2) If both **A** and **R** are true and **R** is not the correct explanation **A**

(3) If **A** is true but **R** is false

(4) If **A** is false but **R** is true

150. In the middle of each 'I' band, which of the following is present?

(1) M line (2) H zone

(3) A band (4) Z line

151. Choose the incorrect match.

(1)	Total thickness of diffusion membrane	Less than a millimetre diffusion membrane
(2)	Solubility of CO_2 in blood	20-25 times higher than that of O_2
(3)	Percentage of CO_2 Carried in a dissolved state through plasma	Equal to the percentage of eosinophils in total WBCs
(4)	Volume of functional residual capacity	More than the volume of expiratory capacity

152. The number of wrist bones in a forelimb of an adult man is equal to the number of

(1) Cranial bones

(2) Thoracic vertebrae

(3) Sternum and palm bones

(4) Ear ossicles and false ribs

153. Which of the following is a popular brand of contraceptive not used by females

(1) Mala-D (2) Saheli

(3) Nirodh (4) Lippes loop

154. During gel electrophoresis, the smallest DNA fragment is observed towards the

(1) Wells where sample is loaded

(2) Cathode

(3) Negative electrode

(4) Anode

155. Which among the following is a living fossil?

(1) Locust (2) King crab

(3) Dog fish (4) Hookworm

156. Embryological support for evolution was proposed by

(1) Louis Pasteur

(2) Ernst Haeckel

(3) Alfred Wallace

(4) Thomas Malthus

157. Fish with stout and strong fins could move on land and go back to water about 'P' mya. Which of the following also occur around 'P' mya?

(1) Evolution of jawless fish

(2) Existence of few plants and sea weeds

(3) Formation of invertebrates

(4) Disappearance of dinosaurs

158. Which of the following converge and open into the renal pelvis through medullary pyramids in the calyces?

(1) Proximal convoluted tubules

(2) Distal convoluted tubules

(3) Loops of henle

(4) Collecting ducts

159. **Assertion (A):** The regions inside the seminiferous tubules contain Leydig cell.

Reason (R): Leydig cells synthesise and secrete androgens.

(1) If both **A** and **R** are true and **R** is the correct explanation of **A**

(2) If both **A** and **R** are true and **R** is not the correct explanation **A**

(3) If **A** is true but **R** is false

(4) If **A** is false but **R** is true

160. Select the correct feature for the formed element in human which plays a significant role in transports of respiratory gases.

(1) Devoid of nucleus in mature form

(2) Involved in inflammatory reactions

(3) Contains blue colored pigment

(4) Least abundant of all the cells in blood

161. Consider the given statements.

a. Mary Mallon was a typhoid carrier who spread typhoid for several years through food

b. 'Rheumatoid arthritis is an autoimmune disease

c. Interferons provide cytokine barriers to infected cells

d. HIV is an enveloped virus enclosing RNA genome

Choose the correct set with correct statements.

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

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

162. Testis of cockroach located in -
(1) 1-3 abdominal segments
(2) 2-5 abdominal segments
(3) 4-6 abdominal segments
(4) 2-4 abdominal segments

163. During a cardiac cycle, each ventricle pumps out approximately 70 mL of blood which is called
(1) Cardiac output
(2) End systolic volume
(3) End diastolic volume
(4) Stroke volume

164. On an average, a female cockroach produces how many oothecae?
(1) 14-16 (2) 9-10
(3) 2500-3000 (4) 90-100

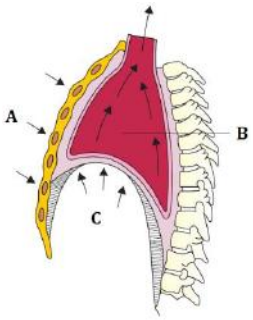
165. The segment of circular dsDNA of the bacterium which causes Crown gall disease in plants is
(1) Ti plasmid
(2) Agrobacterium
(3) Bacteriophage
(4) T-DNA

166. **Statement I:** In electrophoresis, the larger the fragment size of DNA the faster it moves.
Statement II: The DNA fragments separate (resolve) according to their shape through sieving effect provided by the agarose gel.
(1) Statement I is true, Statement II is false.
(2) Statement I is false, Statement II is true.
(3) Both Statement I and Statement II are false.
(4) Both Statement I and Statement II are true.

167. Select the incorrect match w.r.t. circulatory system in humans.
(1) Plasma – Lipids Cl^-, Ca^{+2}
(2) Spleen – Graveyard of RBCs
(3) Eosinophils – allergic reactions
(4) Chordae tendinae – atrium of heart

168. Select the correct option to complete the analogy.
Graafian follicle : Follicular phase :: Corpus luteum : _____
(1) Luteal phase
(2) Proliferative phase
(3) Menstrual phase
(4) Bleeding phase

169. In given diagram, identify what is depicted by A, B & C choose the correct options.



(1) A → Ribs & sternum returned to original position, B → volume of thorax ↑, C → Diaphragm contracted
(2) A → Ribs & sternum returned to original position, B→ Volume of thorax↓, C → Diaphragm related & arched upwards
(3) A → Ribs & sternum returned to original position, B ⟹ volume of thorax ↑, C → Diaphragm relaxed.
(4) A → Ribs & sternum raised, B → volume of thorax ↓, C → Diaphragm contracted

170. Choose the correct statement.
(1) Carbonic anhydrase increases the reaction speed with about 6,00,000 molecules of H_2CO_3 being formed every minute from H_2O and CO_2.
(2) Glucose is converted into pyruvic acid through 10 different enzyme catalysed reactions
(3) Hydrolysis of starch into glucose is an inorganic chemical reaction
(4) Rate of chemical processes are not influenced by temperature among other factors

171. Which of the following is nota flight adaptation in birds?
(1) Streamlined body plan
(2) Pneumatic bones
(3) Additional chambers in digestive tract
(4) Presence of wings

172. Find the incorrect option.
(1) Flocs are mesh like structures formed by masses of bacteria with fungi
(2) Baculoviruses do not attack non-target insects
(3) The Ladybird, and Dragonflies are useful to get rid of mosquitoes and aphids, respectively.
(4) The tank of biogas plant is 10-15 feet deep

173. Bacterial cells are treated with a specific concentration of divalent cations to

(1) Isolate a desired DNA fragment for creation of RDT

(2) Increase the efficiency with which DNA enters the bacterium through pores in its cell wall

(3) Culture the host cells in a medium at large scale

(4) Extract a desired product

174. The source of complementary RNA in RNAi process could be mobile genetic elements which are also called

(1) Transposons (2) Dicer gene

(3) RNA intermediate (4) Crygenes

175. Choose the structure of hindbrain which consists of fibre tracts that interconnect different regions of the brain.

(1) Carpora quadrigemina

(2) Cerebral aqueduct

(3) Limbic lobe

(4) Pons

176. Select the incorrect statement w.r.t. urine formation.

(1) The first step in urine formation is the filtration of blood

(2) The muscular cells of Bowman's capsule called melanocytes are arranged in an intricate manner

(3) Tubular secretion helps in the maintenance of ionic and acid-base balance of body fluids

(4) GFR in a healthy individual is approximately 125 mL/min.

177. Sporopollenin is present in:

(1) Exine (2) Intine

(3) Endothecium (4) Tapetum

178. Read the following five statements (A-E) and answer as asked next to them -

(A) The anther is a tetralobed structure consisting of two pollen sacs.

(B) Each cell of sporogenous tissue is capable of giving rise to a microspore tetrad.

(C) Sporopollenin is one of the most, resistant inorganic material known.

(D) Flower is a modified stem.

(E) The inner most layer of microsporangium is tapetum and it nourishes the developing pollen grains.

How many of the above statements are correct:-

(1) Four (2) One

(3) Two (4) Three

179. Systematics differs from taxonomy as the former includes

(1) Identification (2) Phylogeny

(3) Classification (4) Nomenclature

180. Select the incorrect match from the following.

(1)	T.W. Engelmann	Observed accumulation of bacteria in blue and red regions of light spectrum
(2)	Joseph Priestley	Showed that sunlight Is essential for plant processes
(3)	Ingenhousz	Showed that only green parts of plants release oxygen
(4)	Julius von Sachs	Provided evidence For production of glucose when plants grow

Syllabus

FT – 10

Day & Date : 12 June, 2026
Time : 10: 00 AM to 1: 00 PM
Physics : FULL COURSE
Chemistry : FULL COURSE
Biology : FULL COURSE