



CLASSROOM CONTACT PROGRAMME

(Academic Session : 2024 - 2025)

PRE-MEDICAL : ENTHUSIAST COURSE ALL PHASE

IMPORTANT NOTE : Students having 8 digits **Form No.** must fill two zero before their Form No. in OMR. For example, if your **Form No.** is 12345678, then you have to fill **0012345678**.

Test Booklet Code

This Booklet contains 24 pages.

E17

Do not open this Test Booklet until you are asked to do so.

Important Instructions :

1. The Answer Sheet is inside this Test Booklet. When you are directed to open the Test Booklet, take out the Answer Sheet and fill in the particulars on ORIGINAL Copy carefully with **blue/black** ball point pen only.
2. The test is of **3 hours** duration and this Test Booklet contains **180** questions. Each question carries **4** marks. For each correct response, the candidate will get **4** marks. For each incorrect response, **one mark** will be deducted from the total scores. The maximum marks are **720**.
3. Use **Blue/Black Ball Point Pen only** for writing particulars on this page/marking responses on Answer Sheet.
4. Rough work is to be done in the space provided for this purpose in the Test Booklet only.
5. On completion of the test, the candidate **must hand over the Answer Sheet (ORIGINAL and OFFICE Copy) to the Invigilator** before leaving the Room/Hall. The candidates are allowed to take away this Test Booklet with them.
6. The candidates should ensure that the Answer Sheet is not folded. Do not make any stray marks on the Answer Sheet. Do not write your Form No. anywhere else except in the specified space in the Test Booklet/Answer Sheet.
7. Use of white fluid for correction is **NOT** permissible on the Answer Sheet.
8. Each candidate must show on-demand his/her Allen ID Card to the Invigilator.
9. No candidate, without special permission of the Invigilator, would leave his/her seat.
10. The candidates should not leave the Examination Hall without handing over their Answer Sheet to the Invigilator on duty and sign (with time) the Attendance Sheet **twice**. **Cases, where a candidate has not signed the Attendance Sheet second time, will be deemed not to have handed over the Answer Sheet and dealt with as an Unfair Means case.**
11. Use of Electronic/Manual Calculator is prohibited.
12. The candidates are governed by all Rules and Regulations of the examination with regard to their conduct in the Examination Room/Hall. All cases of unfair means will be dealt with as per the Rules and Regulations of this examination.
13. **No part of the Test Booklet and Answer Sheet shall be detached under any circumstances.**
14. The candidates will write the Correct Test Booklet Code as given in the Test Booklet/Answer Sheet in the Attendance Sheet.

Name of the Candidate (in Capitals) : _____

Form Number : in figures _____

: in words _____

Centre of Examination (in Capitals) : _____

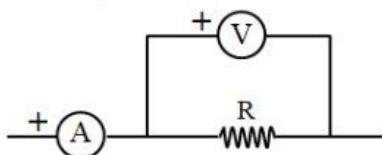
Candidate's Signature : _____ Invigilator's Signature : _____

YOUR TARGET IS TO SECURE GOOD RANK IN PRE-MEDICAL 2025

SUBJECT : PHYSICS

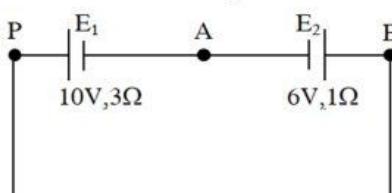
Topic : FULL SYLLABUS

1. In the figure, a part of circuit is shown, where an ammeter A, voltmeter V and a resistance R are connected. If the ammeter reading is 0.6A and voltmeter reading is 3V, then value of R is :



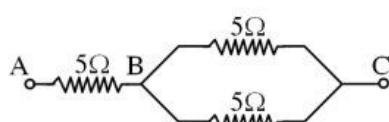
- (1) Equal to 5Ω
- (2) Greater than 5Ω
- (3) Less than 5Ω
- (4) Between 4Ω & 5Ω

2. A cell E_1 of emf 10V and internal resistance 3Ω is arranged with another cell E_2 of emf 6V and internal resistance 1Ω as shown in the diagram. The potential difference between points A and B is :



- (1) 3 V
- (2) 4 V
- (3) 5 V
- (4) 7 V

3. Three similar resistances, each of 5Ω are arranged as shown. If the power rating of each resistor is 20W, the maximum power rating of the combination ABC is :



- (1) 15 W
- (2) 20 W
- (3) 30 W
- (4) 40 W

4. The ratio of electric force and gravitational force between a proton and an electron is :-

- (1) 2.4×10^{39}
- (2) 1.8×10^{36}
- (3) 2.2×10^{42}
- (4) 5.6×10^{32}

5. For uniform electric field \vec{E} along the x-axis the equipotential surfaces is :

- (1) Plane perpendicular to the x-axis
- (2) Plane parallel to the y-z plane.
- (3) Both (1) and (2)
- (4) Neither (1) nor (2)

6. **Statement-I** :- In an external electric field, the positive and negative charges of a non-polar molecules are displaced in opposite direction.

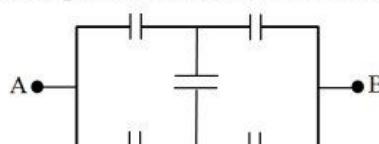
Statement-II :- In the absence of external electric field, the different permanent dipoles of polar molecules are oriented randomly due to thermal agitations, so total dipole moment is zero.

- (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.

7. If the source of light used in a Young's double slit experiment is changed from yellow to blue :-

- (1) Consecutive fringe lines will come closer
- (2) The central bright fringe will become a dark fringe
- (3) The fringe will become brighter
- (4) The intensity of minima will increase

8. Each capacitor shown in figure is $4\mu F$. Then the equivalent capacitance between A and B is :-



- (1) $2\mu F$
- (2) $4\mu F$
- (3) $8\mu F$
- (4) $1\mu F$

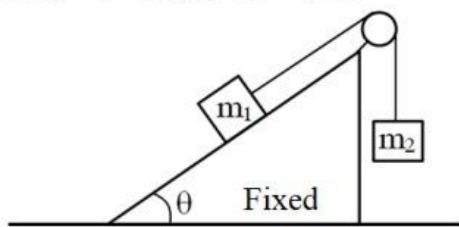
9. One motor is capable to raise 300 kg water in 5 min out of 100 m deep well, while other motor is capable to raise 50 kg water in 2 min out of same well. Find ratio of power of two motors :

(1) 2 (2) 4 (3) 2.4 (4) 16

10. A bullet of 50 g, moving with velocity 'v' collides head-on with the stationary bob of a pendulum and rebounds back with velocity 100 m/s. The length of the pendulum is 2m and mass of the bob is 1 kg. The minimum value of 'v' so that the pendulum describes a circle.

(1) 50 m/s (2) 100 m/s
 (3) 150 m/s (4) 200 m/s

11. In the shown figure, $m_1 = 10 \text{ kg}$ & $m_2 = 6 \text{ kg}$. All surfaces are smooth, string is light & pulley is frictionless. If system is at rest then force exerted by inclined plane on m_1 is :



(1) 100 N (2) 80 N
 (3) 60 N (4) 50 N

12. Train A and train B are running on parallel tracks in opposite directions with speed of 1 km/hr and 2 km/hr respectively. A person is walking in train A in the direction of its motion with a speed of 0.2 km/hr relative to train A, speed of this person as observed from train B will be :

(1) 2.8 km/hr (2) 1.2 km/hr
 (3) 3.2 km/hr (4) 2.4 km/hr

13. A car accelerates uniformly from rest up to speed 30 km/hr for time t , then moves with constant speed for time $2t$. Average speed in the journey (in km/hr)

(1) 25 km/hr (2) 30 km/hr
 (3) 20 km/hr (4) 15 km/hr

14. If T is surface tension, the work done in breaking a big drop of radius R into n drops of equal radius is :

(1) $TRn^{2/3}$
 (2) $(n^{2/3} - 1)TR^2$
 (3) $4\pi R^2(n^{1/3} - 1)T$
 (4) $\pi R^2(n^{1/3} - 1)T$

15. A metal cube with a side length of 0.2 m experiences a tangential shear force of 1000 N. If the modulus of rigidity (shear modulus) is $2 \times 10^9 \text{ Pa}$ then shear strain will be :

(1) 0.25×10^{-4} (2) 0.50×10^{-5}
 (3) 1.25×10^{-5} (4) 1.5×10^{-5}

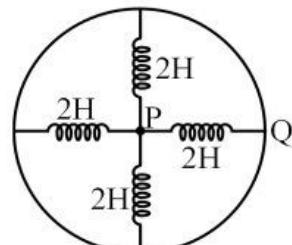
16. A ball of mass 0.5 kg is attached to a string of length 1m. The ball is rotated on a horizontal circular path about its vertical axis. The maximum tension that the string can bear is 450 N. The maximum possible value of angular velocity of the ball in rad/sec is :-

(1) 90 (2) 30
 (3) 900 (4) 1200

17. The magnetic field in an EM-wave is given by $B_z = 3 \times 10^{-6} \cos(\omega t + kx)T$. The wave travels in a vacuum, then find peak value of electric field.

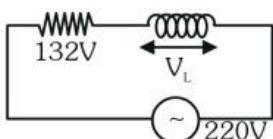
(1) 450 V/m (2) 900 V/m
 (3) 90 V/m (4) 1150 V/m

18. The equivalent inductance between P & Q is (Take complete incompling)



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

19. For following circuit, V_L will be :-



- (1) 396 V (2) 185 V
 (3) 176 V (4) $\sqrt{220 \times 132}$

20. A charge particle is moving with an acceleration $(\hat{i} - 6\alpha\hat{j})$ in a uniform magnetic field $(+3\hat{i} + 2\hat{j})$ T. Then the value of α will be :-

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

21. Two long parallel copper wires carry current of 5Amp each in the opposite directions if the wires are separated by a distance of 0.5 m then the force between the two wires on their per unit lengths is :-

- (1) 10^{-5} N/m attractive
 (2) 10^{-5} N/m repulsive
 (3) 2×10^{-6} N/m Attractive
 (4) 2×10^{-5} N/m repulsive

22. A doubly ionised He^{+2} ion atom travel at right angle to a uniform magnetic field 0.4 T with the velocity 10^5 m/s describing a circle of radius r. A proton travelling with the same speed in same direction in the same field will describe a circle of radius :-

- (1) $r/4$ (2) $r/2$ (3) r (4) $2r$

23. A monoatomic gas undergoes an adiabatic process, where its initial volume is 16 m^3 and pressure is 1 atm. If final volume is 2 m^3 find final pressure P_2 (in atm)

- (1) 16 (2) 32 (3) 8 (4) 64

24. Two rods A and B of identical dimensions are at temperature 30°C . If A is heated up to 180°C and B is heated up to $T^\circ\text{C}$, then new lengths are same. If the ratio of the coefficient of linear expansion of A and B is 4 : 3, then the values of T is :-

- (1) 230° (2) 270° (3) 200° (4) 250°

25. One Kg of diatomic gas at a pressure of $8 \times 10^4 \text{ N/m}^2$. The density of gas is 4 kg/m^3 . What is the energy of the gas due to thermal motion :-

- (1) $3 \times 10^4 \text{ J}$ (2) $5 \times 10^4 \text{ J}$
 (3) $6 \times 10^4 \text{ J}$ (4) $7 \times 10^4 \text{ J}$

26. A gas mixture consists of 2 moles of oxygen and 4 moles of argon at temperature T. Assuming the gas to be ideal and oxygen bonds to be rigid, the total internal energy (in terms of RT) of the mixture is :-

- (1) 11 (2) 15 (3) 20 (4) 13

27. In a seconds pendulum mass of the bob is 30 g. If it is replaced by 90 g mass, then its time period will be :-

- (1) 1 sec (2) 2 sec (3) 4 sec (4) 3 sec

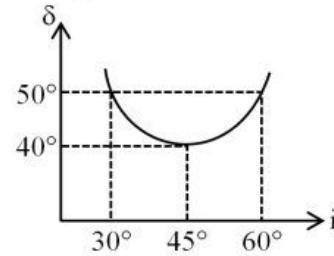
28. Two waves are represented by equation $y_1 = 4\sin(2\pi t - x)$ and $y_2 = 8\sin(6\pi t - 3x)$. The ratio of their intensities $\left(\frac{I_1}{I_2}\right)$ is :

- (1) 1 : 36 (2) 1 : 6 (3) 1 : 2 (4) 1 : 1

29. A progressive wave is given by $y = 20 \sin[6\pi(100t - 0.01x)]$. Find the distance of separation between adjacent crest and trough. (where x is in metres and t is in second)

- (1) 66.6 m (2) 100 m
 (3) 33.33 m (4) 16.67 m

30. A plot of angle of deviation versus angle of incidence for a triangular prism is shown below. The angle of incidence for which inside prism light ray travels parallel to the base



- (1) 30° (2) 60°
 (3) 45° (4) Data insufficient

31. An object is placed at a distance of 20 cm from the pole of a concave mirror of focal length 10 cm. The position of image formed will be :

(1) +20 cm (2) +10 cm
 (3) -20 cm (4) -10 cm

32. List-I contains dimensional formula and list-II contains physical quantities, match them correctly.

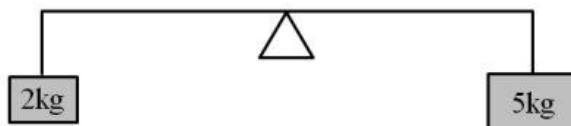
	List-I	List-II
(P)	$[ML^2T^{-2}]$	(1) Energy
(Q)	$[ML^2T^{-3}]$	(2) Force
(R)	$[M^0L^0T^{-1}]$	(3) Power
(S)	$[MLT^{-2}]$	(4) Frequency
		(5) Torque

- (1) (P) - (1,5) ; (Q) - (3) ; (R) - (4) ; (S) - (2)
 (2) (P) - (2) ; (Q) - (4) ; (R) - (3) ; (S) - (1)
 (3) (P) - (1) ; (Q) - (4) ; (R) - (2) ; (S) - (3)
 (4) (P) - (3) ; (Q) - (2) ; (R) - (1) ; (S) - (4)

33. If A and B are two physical quantities having different dimensions then which of the following can not be a meaningful quantity?

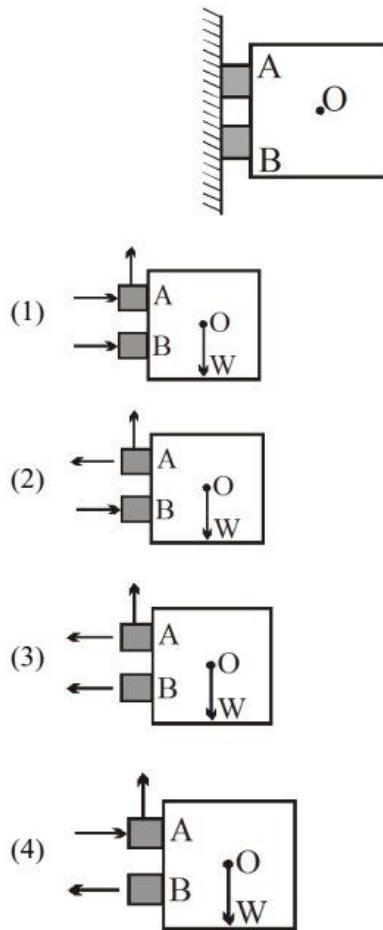
(1) $A + \frac{A^3}{B}$ (2) $\exp\left(-\frac{A}{B}\right)$
 (3) AB^2 (4) $\frac{A}{B^4}$

34. A light rod of length 1 m is pivoted at its centre and two masses of 5 kg and 2 kg are hung from the ends as shown in figure. Find the initial angular acceleration of the rod assuming that it was horizontal in the beginning.



- (1) 3.4 rad/s^2 (2) 4.3 rad/s^2
 (3) 8.4 rad/s^2 (4) 4.8 rad/s^2

35. A vertical rectangular door with its centre of gravity at O (see figure) is fixed on two hinges A and B along one vertical length side of the door. The entire weight of the door is supported by the hinge A. Then the free body force diagram for the door (the arrows indicate the direction of the forces) is :-



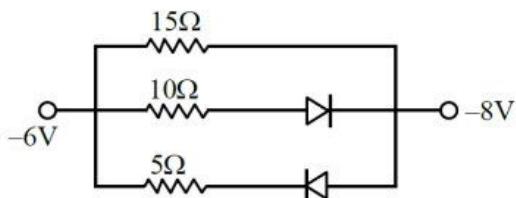
36. If the areal velocity of one planet is 2 times the areal velocity of other planet, then find the ratio of their radii of circular motion around the sun.

- (1) 2 : 1 (2) 4 : 1 (3) 3 : 1 (4) 8 : 1

37. Gravitational potential difference between a point on surface of planet and another point 10m above is 4J /kg. Considering gravitational field to be uniform, how much work is done by an external agent in moving a mass of 2.0 kg from the surface to a point 5.0 m above the surface slowly.

- (1) 2 J (2) 4 J (3) 8 J (4) $\frac{1}{2} \text{ J}$

38. The value of net resistance of the network as shown in the given figure is :



- (1) $\left(\frac{5}{2}\right) \Omega$ (2) $\left(\frac{15}{4}\right) \Omega$
 (3) 6Ω (4) $\left(\frac{30}{11}\right) \Omega$

39. The threshold wavelength of lithium is 8000 \AA . When light of wavelength 9000 \AA is made to be incident on it, then the photo electrons :-

- (1) Will not be emitted
 (2) Will be emitted
 (3) Will sometimes be emitted and sometimes not
 (4) Data insufficient

40. In Bohr model of hydrogen, the force on electron depends on the principal quantum number as :

- (1) $F \propto \frac{1}{n^2}$ (2) $F \propto \frac{1}{n^4}$
 (3) $F \propto \frac{1}{n^5}$ (4) $F \propto \frac{1}{n}$

41. **Statement-1:** When light is passed through a sample of hydrogen atoms in ground state, then wavelengths of absorption lines are same as wavelengths of lines of Lyman series in emission spectrum.

Statement-2 : In ground state hydrogen atom will absorb only those radiation which will excite to higher energy level.

- (1) Statement-1 is true, statement-2 is true and statement-2 is correct explanation for statement-1.
 (2) Statement-1 is true, statement-2 is true and statement-2 is NOT the correct explanation for statement-1.
 (3) Statement-1 is true, statement-2 is false.
 (4) Statement-1 is false, statement-2 is true.

42. N divisions on the main scale of a vernier calipers coincide with $(N + 1)$ divisions of the vernier scale. If each division of main scale is 'a' units, then the least count of the instrument is :-

- (1) $\frac{a}{N} \text{ unit}$
 (2) $\frac{N}{N+1} \times a \text{ unit}$
 (3) $a \text{ unit}$
 (4) $\frac{a}{N+1} \text{ unit}$

43. A screw gauge gives the following reading when used to measure the diameter of a wire.

Main scale reading : 0 mm.

Circular scale reading : 52 divisions

Given that 1 mm on main scale corresponds to 100 divisions of the circular scale.

The diameter of wire from the above date is :-

- (1) 0.026 cm
 (2) 0.005 cm
 (3) 0.52 cm
 (4) 0.052 cm

44. Two rain drops reach the earth with different terminal velocities having ratio 9 : 4. Then, the ratio of their volume is :-

- (1) 3 : 2
 (2) 4 : 9
 (3) 9 : 4
 (4) 27 : 8

45. In half deflection method, a high resistance box is connected in series with the battery so that

- (1) The deflection of the galvanometer is brought within the scale.
 (2) Power losses are minimized.
 (3) High resistance values are easily available.
 (4) None of the above

SUBJECT : CHEMISTRY

Topic : FULL SYLLABUS

- 46.** Correct order of radii is
 (1) N < Be < B
 (2) F⁻ < O⁻² < N⁻³
 (3) Na < Li < K
 (4) Fe⁺³ < Fe⁺² < Fe⁺⁴
- 47.** Electronic configuration of valence shell of four elements A, B, C and D are :-
 (A) ns² np¹ (B) ns² np²
 (C) ns² np³ (D) ns² np⁴
 Correct increasing order of their second ionisation energies is :-
 (1) A < B < C < D (2) A < B < D < C
 (3) B < A < D < C (4) B < A < C < D
- 48.** The electron gain enthalpies (in kJ mol⁻¹) of three halogens, X, Y and Z are respectively -349, -333 and -325. Then X, Y and Z are respectively :-
 (1) F, Cl and Br (2) Cl, F and Br
 (3) Cl, Br and F (4) Br, Cl and F
- 49.** Which among the following species does not have angular shape?
 I. IC₂⁺ II. NH₂⁻
 III. CO₂ IV. H₂O.
 (1) I, III (2) only III
 (3) I, IV (4) only I
- 50.** The bond order O₂⁺ is the same as in :-
 (1) N₂⁻ (2) CN⁻ (3) CO (4) NO⁺
- 51.** In which of the following compound, covalent along with ionic bond is not present :
 (1) NH₄Cl (2) KMnO₄
 (3) NaNO₃ (4) AlCl₃
- 52.** Which of the following involves pπ-dπ bonding?
 (1) SO₃⁻² (2) PO₄⁻³ (3) XeOF₄ (4) All
- 53.** Total number of molecules or ions which have any bond angle of 120°.
 I₃⁻, BCl₃, PCl₅, CO₃⁻², CH₃⁻, SF₆, XeF₂, SO₃
 (1) 3 (2) 4 (3) 5 (4) 6
- 54.** Select the compounds/species those can be exists :
 H₂S, OF₆, BF₄⁻, PH₅, XeF₅, CCl₆⁻², PCl₅
 (1) 3 (2) 4 (3) 5 (4) 2
- 55.** How many electron pair (bond pair or lone pair) affects dipole moment in PH₃?
 (1) 4 (2) 0 (3) 3 (4) 1
- 56.** Match List I with List II.
- | List-I
(Complex) | | List-II
(Type of isomerism) | |
|---------------------|--|--------------------------------|------------------------|
| A. | [Co(NH ₃) ₅ (NO ₂)] Cl ₂ | I. | Solvate isomerism |
| B. | [Co(NH ₃) ₅ (SO ₄)] Br | II. | Linkage isomerism |
| C. | [Co(NH ₃) ₆] [Cr(CN) ₆] | III. | Ionization isomerism |
| D. | [Co(H ₂ O) ₆] Cl ₃ | IV. | Coordination isomerism |

Choose the **correct** answer from the options given below :

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

- 57.** Which of the following is not optically active ?
 (1) [Co(en)₃]³⁺
 (2) [Cr(OX)₃]³⁻
 (3) cis - [CoCl₂(en)₂]⁺
 (4) trans - [CoCl₂(en)₂]⁺

58. **Assertion :** KMnO_4 is purple in colour due to charge transfer.

Reason : There is no electron present in d-orbitals of Manganese in MnO_4^- .

(1) Both **Assertion** and **Reason** are true but **Reason** is NOT a correct explanation of **Assertion**.

(2) **Assertion** is true but **Reason** is false.

(3) **Assertion** is false but **Reason** is true.

(4) Both **Assertion** and **Reason** are true and **Reason** is the correct explanation of **Assertion**.

59. **Assertion (A) :-** MnO_4^- titrations in presence of HCl are unsatisfactory.

Reason (R) :- HCl oxidised into Cl_2 .

(1) Both (A) & (R) are true & (R) is correct explanation of (A)

(2) Both (A) & (R) are true but (R) is not correct explanation of (A)

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

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

60. Which element has least heat of atomization (in kJ/mol) :-

(1) Co (2) Ni (3) Cu (4) Zn

61. **Assertion :** PbI_4 , BiCl_5 , FeI_3 , CuI_2 are not exist.

Reason : Higher oxidation state of metal ions are strong oxidising agent which give redox reaction with Iodide ion.

(1) Both **Assertion** and **Reason** are true but **Reason** is NOT the correct explanation of **Assertion**.

(2) **Assertion** is true but **Reason** is false.

(3) **Assertion** is false but **Reason** is true.

(4) Both **Assertion** and **Reason** are true and **Reason** is the correct explanation of **Assertion**.

62. Which of the following alcohol is not oxidised by PCC :

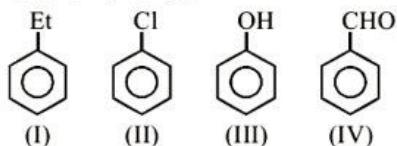
(1) n-butyl alcohol

(2) sec-butyl alcohol

(3) iso-butyl alcohol

(4) ter-butyl alcohol

63. Arrange the following in there correct order of reactivity towards electrophilic substitution reaction (ESR) ?



(1) I > II > III > IV

(2) III > I > IV > II

(3) III > II > I > IV

(4) III > I > II > IV

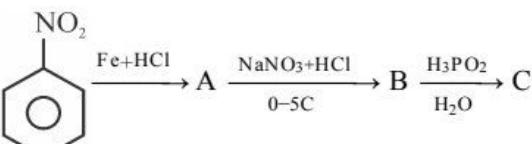
64. Phenol $\xrightarrow[\text{dust}]{\text{Zn}} \text{X} \xrightarrow[\text{Anhyd. AlCl}_3]{\text{CH}_3\text{Cl}} \text{Y} \xrightarrow[\text{H}^+]{\text{Alk. KMnO}_4} \text{Z}$
the product Z is:

(1) benzaldehyde

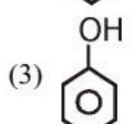
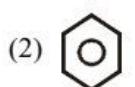
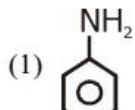
(2) benzoic acid

(3) benzene

(4) toluene

65. 

C is :-



(4) None

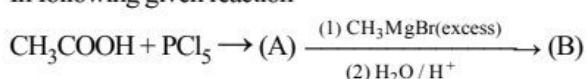
66. Select the **wrong** pair

- (1) Cellulose – Polymer of β -D – Glucose
- (2) Lactose – β – D – Galactose and β – D – Glucose
- (3) Sucrose – β – D – Glucose and α – D – Fructose
- (4) Starch – α – D – Glucose polymer

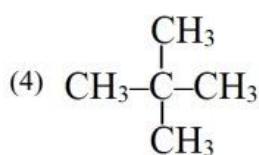
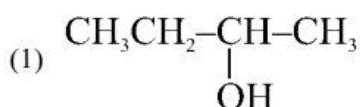
67. Which of the following statements is correct for glucose :-

- (1) It gives positive test with schiff's reagent
- (2) It react's with NaHSO_3 and NH_3
- (3) It gives Positive test with 2, 4-DNP
- (4) It gives positive test with fehling solution

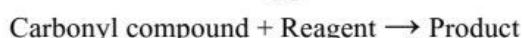
68. In following given reaction



Product B would be :-

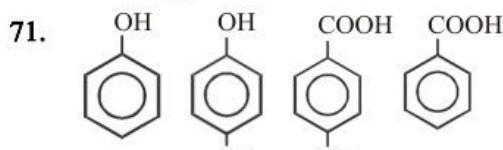
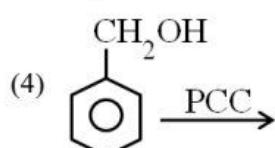
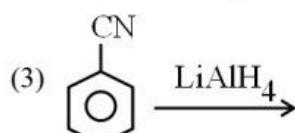
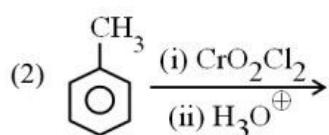
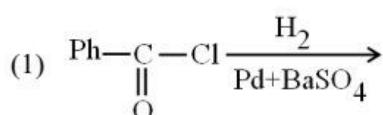


69. Which of the following product is not correct :

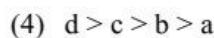
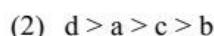


S.N.	Reagent	Product
(1)	NH_3	Imine
(2)	NH_2OH	Oxime
(3)	$\text{NH}_2-\text{NH}-\text{C}_6\text{H}_3(\text{NO}_2)_2-\text{NH}_2$	2,4-Dinitrophenyl hydrazone
(4)	$\text{NH}_2-\text{C}(=\text{O})-\text{NH}_2$	Semicarbazone

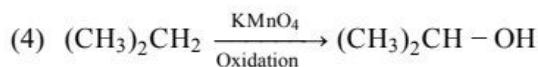
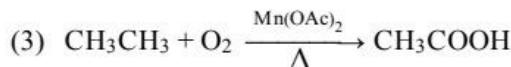
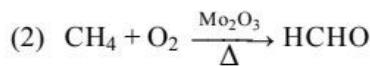
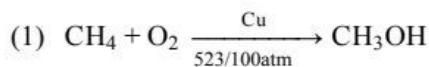
70. Which of the following reaction can not be used for preparation of benzaldehyde ?



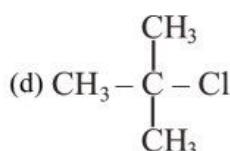
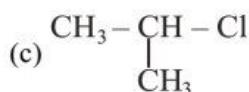
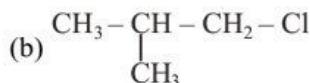
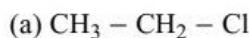
Compare acidic strength



72. Incorrect reaction is -



73. Arrange following compounds in order of reactivity towards S_N2 mechanism :-



(1) $a > b > c > d$

(2) $a > c > b > d$

(3) $d > c > b > a$

(4) $d > b > c > a$

74. Consider following table—

Column-I

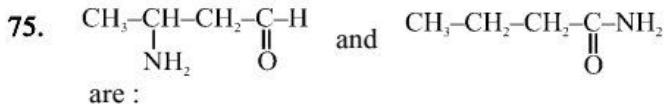
- (A) Best and latest technique for isolation, purification and separation of organic compounds
 (B) In Lassaigne's test for 'N'
 (C) In Lassaigne's test for 'S'
 (D) Aniline is purified from water by
 (E) Glycerol is purified from spent lye

Column-II

- (i) Chromatography
 (ii) Vacuum distillation
 (iii) Violet coloured complex is formed
 (iv) Prussian blue coloured complex is formed
 (v) Steam distillation

The correct match is—

- (A) (B) (C) (D) (E)
 (1) (i) (ii) (iii) (iv) (v)
 (2) (iv) (v) (iii) (ii) (i)
 (3) (i) (iv) (iii) (v) (ii)
 (4) (v) (iii) (iv) (ii) (i)



- (1) Functional group isomers
 (2) Position isomers
 (3) Chain isomers
 (4) Geometrical isomers

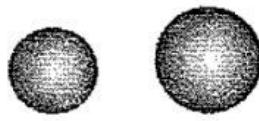
76. Neutron was discovered by the experiment of :

- (1) Artificial disintegration of Beryllium ($^4Be^9$) by α -particles.
 (2) Artificial disintegration of nitrogen ($^7N^{14}$) by α -particles.
 (3) Rutherford scattering of α -particle by heavy nuclei.
 (4) Becquerel with radioactivity

77. Given that the mass of electron is 9.1×10^{-31} kg and velocity of electron is 2.2×10^6 ms $^{-1}$. If the uncertainty in its velocity is 0.1%, the uncertainty in position would be :-

- (1) 26 nm (2) 32 nm (3) 48 nm (4) 50 nm

78. The probability density plots of 1s and 2s orbitals are given in figure:



1s 2s

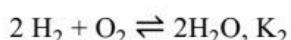
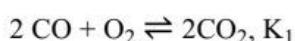
The density of dots in a region represents the probability density of finding electrons in the region. On the basis of above diagram which of the following statements is/are correct?

- (i) 1s and 2s orbitals are spherical in shape.
 (ii) The probability of finding the electron is minimum near the nucleus.
 (iii) The probability of finding the electron at a given distance is equal in all directions.
 (iv) The probability density of electrons for 2s-orbital decreases uniformly as distance from the nucleus increases.
- (1) (i) & (ii) only (2) (ii) & (iii) only
 (3) (i) & (iii) only (4) All are correct

79. If the amount of dissociation is $\sqrt{0.5}$, the value of K_p for the reaction $N_2O_3(g) \rightleftharpoons NO_{(g)} + NO_{2(g)}$ will be

- (1) Equal to pressure of the system
- (2) $\frac{2}{3}$ of the pressure of the system
- (3) $\frac{8}{3}$ of the pressure of the system
- (4) 5 times of the pressure of the system

80. If $CO + H_2O \rightleftharpoons CO_2 + H_2, K$



Then correct relation will be :-

- (1) $K = \sqrt{\frac{K_1}{K_2}}$
- (2) $K = \sqrt{K_1 \times K_2}$
- (3) $K = K_1 \times K_2$
- (4) None

81. The kinetic data for the given reaction

$A(g) + 2B(g) \xrightarrow{k} C(g)$ is provided in the following table for three experiments at 300 K:-

Ex. No.	conc. A (M)	conc. B (M)	Initial rate ($M \text{ sec}^{-1}$)
1	0.01	0.01	6.930×10^{-6}
2	0.02	0.01	1.386×10^{-5}
3	0.02	0.02	1.386×10^{-5}

then correct expression for rate of reaction is :-

- (1) $r = k[A]^1[B]^1$
- (2) $r = k[A]^2[B]^1$
- (3) $r = k[A]^1$
- (4) $r = k[B]^1$

82. Match the columns

	Column-I		Column-II
(A)	Number of collisions per second per unit volume of the reaction mixture.	(p)	Effective collisions.
(B)	Fraction of molecules with energies equal to or greater than E_a	(q)	Collision frequency
(C)	Molecules for which Rate = $Z_{AB} e^{-E_a/RT}$ shows significant deviations	(r)	$e^{-E_a/RT}$
(D)	Collision in which molecules collide with sufficient K.E. and proper orientation.	(s)	Complex molecules

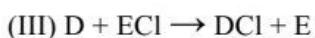
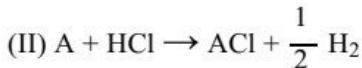
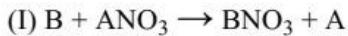
(1) A-(q),B-(r),C-(s),D-(p)

(2) A-(r),B-(q),C-(s),D-(p)

(3) A-(q),B-(s),C-(r),D-(p)

(4) A-(q),B-(r),C-(p),D-(s)

83. With the help of following reactions, arrange metals A, B, D and E in decreasing order of their reactivity:-



- (1) B > D > E > A
- (2) B > A > D > E
- (3) E > D > A > B
- (4) None of these

84. Equal concentration of NH_4OH and NH_4Cl are present in a solution. If the K_b of NH_4OH is 10^{-5} then pH of solution is :-

- (1) 5
- (2) 9
- (3) 5.7
- (4) 9.3

85. Which of the following is most soluble in water:

- (1) $\text{Ba}_3(\text{PO}_4)_2$, $K_{sp} = 6 \times 10^{-39}$
- (2) ZnS , $K_{sp} = 7 \times 10^{-16}$
- (3) Fe(OH)_3 , $K_{sp} = 6 \times 10^{-38}$
- (4) Ag_3PO_4 , $K_{sp} = 1.8 \times 10^{-18}$

86. Match list-I with list-II

	List-I		List-II
(A)	68% nitric acid and 32% water by mass	(I)	Minimum boiling azeotrope
(B)	Solution showing large positive deviation from Raoult's law may form	(II)	Ideal solution
(C)	n-hexane and n-heptane	(III)	Maximum boiling azeotrope
(D)	Two solutions having same osmotic pressure at a given temperature	(IV)	Isotonic solution

Choose the correct answer from the options given below :-

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

87. **Assertion** : Depression in freezing point for same concentration solutions of Na_2SO_4 & Hg_2I_2 in the water is same (Assuming 100% ionisation)

Reason : Hg_2I_2 in water dissociates as

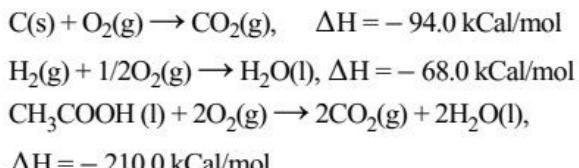
$$\text{Hg}_2\text{I}_2 \rightleftharpoons 2\text{Hg}^+ + 2\text{I}^-$$

- (1) Both Assertion & Reason are correct but Reason is not a correct explanation of the Assertion.
- (2) Both Assertion & Reason are correct and Reason is correct explanation of the Assertion.
- (3) Assertion is true but Reason is false.
- (4) Assertion is false but Reason is true.

88. If relative decrease in vapour pressure is 0.4 for a solution, containing 1 mol NaCl in 3 mol H_2O , NaCl is ionised :-

- (1) 60%
- (2) 50%
- (3) 100%
- (4) 40%

89. Using the following thermochemical data :



The heat of formation of acetic acid is :-

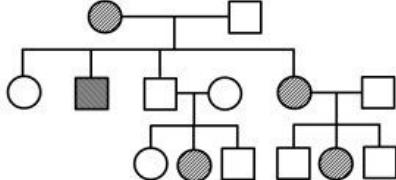
- (1) 116.0 kCal/mol
- (2) - 116.0 kCal/mol
- (3) - 114.0 kCal/mol
- (4) + 114.0 kCal/mol

90. During isothermal free expansion of an ideal gas which is incorrect -

- (1) $\Delta E = 0$
- (2) $w = 0$
- (3) $q = 0$
- (4) $\Delta E < 0$

SUBJECT : BIOLOGY

Topic : FULL SYLLABUS

- 91.** Polyembryony found in :-
 (1) Asteraceae (2) Grasses
 (3) Citrus (4) Banana
- 92.** **Assertion (A)** : Pollen-pistil interaction is mediated by chemical components of pollen and pistil.
Reason (R) : Pollination does not guarantee the transfer of the right type of pollen.
 Choose the correct option :-
 (1) Both **A** and **R** are true but **R** is not the correct explanation of **A**.
 (2) **A** is true but **R** is false.
 (3) **A** is false but **R** is true.
 (4) Both **A** and **R** are true and **R** is the correct explanation of **A**.
- 93.** In over _____ percent of angiosperms, pollen grains are shed at this 2-celled state.
 (1) 30% (2) 50% (3) 60% (4) 70%
- 94.** In a mendelian dihybrid cross how many plants are impure for both characters in F_2 generation out of 16?
 (1) 8 (2) 2 (3) 16 (4) 4
- 95.** Which of the following statement is incorrect for multiple allelism ?
 (1) Presence of more than two allele
 (2) Multiple alleles are located on different loci of homologous chromosome
 (3) ABO blood group in human showing multiple allelism.
 (4) For the study of multiple allelism population study is essential.
- 96.** Mendel published his work on inheritance of characters in A but for several reasons, it remained unrecognised till B.
 (1) A-1865, B-1900 (2) A-1900, B-1965
 (3) A-1856, B-1900 (4) A-1863, B-1900
- 97.** **Statement-I** : In the pedigree analysis the inheritance of a particular trait is represented in the family tree over generations.
Statement-II : In human genetics, pedigree study provides a strong tool which is utilised to trace the inheritance of specific trait.
 (1) Both statement are correct.
 (2) Statement-I is correct but statement-II is incorrect.
 (3) Statement-I is incorrect but statement-II is correct.
 (4) Both statement are incorrect.
- 98.** Given pedigree chart show which type of inheritance-
- 
- (1) x-linked recessive
 (2) Autosomal dominant
 (3) Autosomal recessive
 (4) x-linked dominant
- 99.** Histones are rich in (i) amino acid residues (ii) and (iii) which carry (iv) charges.
 (1) (i) acidic, (ii) lysine, (iii) arginine, (iv) negative
 (2) (i) basic, (ii) lysine, (iii) arginine, (iv) positive
 (3) (i) acidic, (ii) alanine, (iii) arginine, (iv) positive
 (4) (i) basic, (ii) arginine, (iii) lysine, (iv) negative
- 100.** What will be the sequence of m-RNA produced from the following coding strand :-
 5'ATTGCCAATTGCTAT3'
 (1) 5' AUUGCCAAUUGCUAU3'
 (2) 5'UAACGGUUACGUAU3'
 (3) 5'TAACGTTAACGATA3'
 (4) 5' TATCGTTAACCGTTA3'

101. In the process of replication in E.coli, the DNA-dependent _____ catalyse polymerisation in respectively _____.
 (1) RNA polymerase, only in one direction ($5' \rightarrow 3'$)
 (2) DNA polymerase, in both direction ($3' \rightarrow 5'$)
 (3) DNA polymerase, only in one direction ($5' \rightarrow 3'$)
 (4) RNA polymerase in, both direction ($3' \rightarrow 5'$)
102. **Assertion :** Providing proof that the codon was a triplet, was a more daunting task.
Reason : 61 codons code for amino acid and 3 codons do not code for any amino acids, hence they function as stop codons.
 (1) Both **Assertion** and **Reason** are true and **Reason** is the correct explanation of **Assertion**.
 (2) Both **Assertion** and **Reason** are true but **Reason** is NOT the correct explanation of **Assertion**.
 (3) **Assertion** is true but **Reason** is false
 (4) Both **Assertion** and **Reason** are false
103. Which of the following statement is correct about Lac operon.
 (A) The z gene code for permease.
 (B) The y gene code for beta-galactosidase.
 (C) The a gene code for transacetylase.
 (D) The genes present in the operon are needed together to function in the same or related metabolic pathway.
 (1) A, B (2) B, C (3) C, D (4) D, A
104. Which of the following is an optional step in the process of DNA fingerprinting ?
 (1) Digestion of DNA by restriction endonuclease
 (2) Polymerase chain reaction
 (3) Southern blotting
 (4) Gel electrophoresis
105. How many genes are present in human chromosome 1 ?
 (1) 2698 (2) 231 (3) 1838 (4) 2968
106. Which of the following factors leads to decrease in population density of a given area at a particular time?
 (1) Emigration (2) Immigration
 (3) Mortality (4) Both 1 and 3
107. Which one of the following is not related, regarding "*Ophrys*" and bee?
 (1) Sexual deceit (2) Pseudo copulation
 (3) Brood parasitism (4) Coevolution
108. Match the list-I and list-II and select correct option :-
- | list-I | | list-II | |
|--------|--------------------------------|---------|-------------------|
| (A) | Camouflaged | (I) | <i>Acacia</i> |
| (B) | Poisonous chemical in the body | (II) | <i>Calotropis</i> |
| (C) | Cardiac glycosides | (III) | Frog |
| (D) | Thorns | (IV) | Monarch butterfly |
- (1) A → IV, B → III, C → II, D → I
 (2) A → III, B → IV, C → II, D → I
 (3) A → I, B → III, C → II, D → IV
 (4) A → III, B → II, C → IV, D → I
109. The recent illegal introduction of the African catfish _____ for aquaculture purposes is posing a threat to the indigenous catfishes in our rivers.
 (1) *Catla catla* (2) *Clarias gariepinus*
 (3) *Labeo rohita* (4) *Cirrhinus mrigala*
110. Read the following statements regarding ecological pyramid -
 i. In most of ecosystem all the pyramids of number, energy & biomass are upright.
 ii. The pyramid of biomass in sea is generally upright.
 iii. Pyramid of energy is always upright.
 iv. Saprophytes are not given any place in ecological pyramids.
 How many above statements are incorrect.
 (1) (i) only (2) (ii) only
 (3) (ii) & (iii) (4) All of the above

111. Classification proposed by Linnaeus is :-
 (1) Artificial (2) Natural
 (3) Numerical (4) Phylogenetic
112. Gas vacuole and heterocyst both are commonly observed in :
 (1) *Nostoc*
 (2) *Albugo*
 (3) Amoeba
 (4) Purple photosynthetic bacteria
113. Two organisms with same division but they have different order, will be kept under the same :-
 (1) Family (2) Order (3) Class (4) Genus
114. Which statement is incorrect with respect to genus ?
 (1) Each genus may have one or more than one specific epithets
 (2) It comprises a group of related species
 (3) Species of one genera have more characters in common in comparison to species of other genera
 (4) Dog and cat belong to same genus
115. Identify the correct statements
 (A) Archaebacteria differ from other bacteria in having a different cell wall structure.
 (B) Most of euglenoids have two flagella one lies longitudinally and the other transversely
 (C) Viruses are inert outside their specific host cell
 (D) Most of gymnosperms have two or more than two Archegonia
 Option :
 (1) A, B and C only (2) A, C and D only
 (3) A, B, C and D (4) B and D only
116. How many example in list given below are related with Autotrophic eukaryotes ?
Cycas, Chlorella, Nostoc, Sphagnum, Fucus, Yeast, Pteris, Mucor, Anabaena, Azolla
 (1) 7 (2) 5 (3) 6 (4) 4

117. Aerobic respiration produces about ATP molecules from one molecule of glucose.
 (1) 36 - 38 (2) 30 (3) 8 (4) 26
118. Find the incorrect statement
 (1) Cellular respiration is an amphibolic process
 (2) Cellular respiration is an exergonic process.
 (3) All the enzymes of TCA cycle are present in mitochondrial matrix.
 (4) Yeast poison themselves to death when the concentration of alcohol reaches about 13 percent.
119. Oxidation of one molecule of NADH gives rise to (a) molecules, while that of one molecule of FADH_2 produces (b) molecules.
 (1) b-3 ATP, a-2ATP
 (2) a-2 ATP, b-3ATP
 (3) a-3 ATP, b-2ATP
 (4) a-4 ATP, b-2ATP
120. Fill in the blank.
 C_4 -plant respond to _____ temperature and show higher rate of photosynthesis.
 Choose the correct answer from options given below.
 (1) Higher (2) Much lower
 (3) Sub-zero (4) Optimum
121. Given below are two statements :
Statement 1 : In C_4 plants, total 30 ATP and 12 NADPH are utilised for synthesis of one glucose.
Statement 2 : In C_3 plants, photorespiration doesn't occur.
 Choose the correct answer from the options given below :
 (1) Both Statement 1 and Statement 2 are false.
 (2) Statement 1 is correct but Statement 2 is false.
 (3) Statement 1 is incorrect but Statement 2 is true.
 (4) Both Statement 1 and Statement 2 are true.

122. Geometric growth is related to -

- (1) $W_o = W_1 e^{rt}$ (2) $W_o = W_1 + e^{rt}$
 (3) $W_1 = W_o e^{rt}$ (4) $W_1 = W_o + e^{rt}$

123. Match the column 'A' with column 'B' and select the correct option :

	Column-A		Column-B
a	Development	i	First cell of sporophytic generation
b	Zygote	ii	First process of plant growth
c	Seed germination	iii	Fundamental and conspicuous characteristic of a living being
d	Growth	iv	Sum of growth and differentiation

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

124. Fill in the blanks

In his experiment Joseph Priestley used A and B.

- (1) A-mint plant, B-*Hydrilla* plant
 (2) A-*Hydrilla* plant, B-Light
 (3) A-*Cladophora*, B-Aerobic bacteria
 (4) A-mint plant, B-Bell Jar

125. Which among the following statement is/are correct?

- (a) Glycolysis is also referred to as EMP pathway.
 (b) In glycolysis, glucose undergoes partial oxidation to form two molecules of pyruvic acid.
 (c) Citrate is isomerised to isocitrate in TCA cycle.
 (d) Complex IV is also known as cytochrome bc₁ complex.

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

126. Makoi & Tulip are respectively belongs to which family-

- (1) Solanaceae & Brassicaceae
 (2) Solanaceae & Liliaceae
 (3) Liliaceae & Solanaceae
 (4) Liliaceae & Fabaceae

127. Axile placentation is found in-

- (1) Members of liliaceae family
 (2) Members of solanaceae family
 (3) Members of fabaceae family
 (4) (1) and (2) both

128. Fruit is developed without fertilisation is called :-

- (1) Apospory (2) Parthenogenesis
 (3) Parthenocarpy (4) Polyembryony

129. Assertion : Ashwagandha belongs to solanaceae family.

Reason : Bicarpellary, syncarpous, bilocular oblique ovary with swollen placenta is present in ashwagandha.

- (1) Both Assertion & Reason are True & the Reason is a correct explanation of the Assertion.
 (2) Both Assertion & Reason are True but Reason is not a correct explanation of the Assertion.
 (3) Assertion is True but the Reason is False.
 (4) Both Assertion & Reason are False.

130. The protoxylem lies towards the pith and the metaxylem lies towards the periphery of the plant organ. This type of primary xylem is called _____.

- (1) Exarch (2) Endarch
 (3) Mesarch (4) Centrarch

131. _____ consists of long, narrow cells with thick and lignified cell walls having a few or numerous pits.

- (1) Sclerenchyma (2) Collenchyma
 (3) Parenchyma (4) Ray parenchyma

132. **Statement-1** :- Radial vascular bundles are found in stems and leaves.
Statement-2 :- Exarch primary xylem is found in stems.

 - Both Statement 1 and Statement 2 are correct.
 - Both Statement 1 and Statement 2 are incorrect
 - Statement 1 is correct and Statement 2 is incorrect
 - Statement 1 is incorrect and Statement 2 is correct

133. What is the term for the movement of individuals from one country to another for the purpose of resettlement :-

 - Emigration
 - Immigration
 - Natality
 - Mortality

134. Which of the following statement is incorrect for Ex-situ conservation :

 - Zoological parks, botanical gardens and wild life safari parks are example of ex-situ.
 - In this conservation threatened animals and plants are taken out from their natural habitat
 - Hot spot is example of ex-situ
 - Seeds of different genetic strains of commercially important plants can be kept for long periods in seed banks

135. Which of the following are the example of codominance, pleiotropy, polygenic inheritance and sex-linked inheritance in human respectively ?

 - Phenylketonuria, Colour-blindness, human height, AB blood group
 - AB blood group, Phenylketonuria, human height, colour-blindness.
 - Colourblindness, human height, AB blood group, Phenylketonuria.
 - Human height, colourblindness, AB blood group, Phenylketonuria

136. Chitinous plate of cockroach is called –

 - Tergite
 - Sternite
 - Pleurite
 - Sclerite

137. **Assertion (A)** : Thorax of cockroach is related with flight & walking of cockroach.
Reason (R) : Mid portion of cockroach body called thorax bears wings & legs.

 - Both **Assertion** and **Reason** are correct and **Reason** is the correct explanation of **Assertion**
 - Both **Assertion** and **Reason** are correct but **Reason** is NOT the correct explanation of **Assertion**
 - Assertion** is correct and **Reason** is incorrect
 - Assertion** is incorrect and **Reason** is correct

138. Out of following which statement is correct about mollusca ?

 - In mollusca tail region has sensory tentacles.
 - The mouth contains a file like rasping organ for feeding
 - They are usually bisexual
 - They are viviparous and development is indirect.

139. Which of the following is well marked in ctenophores ?

 - Dorso-ventrally flattened
 - Endoparasites
 - Triploblastic
 - Bioluminescence

140. Which of the following forms coal deposits slowly :

 - Gymnosperms
 - Angiosperm monocots
 - Angiosperm dicots
 - Giant ferns

141. How much amount of blood is pumped by each ventricle in 10 cardiac cycles ?

 - 70 ml
 - 70 litre
 - 700 ml
 - 7 litre

- 142.** Which of the following involves in osmotic balance?

 - Albumen
 - Albumin
 - Globulin
 - Fibrinogen

143. Assertion : SAN is called the pacemaker of heart.
Reason : SAN is present in the right upper corner of the right atrium of heart.

 - Both **Assertion** and **Reason** are true and **Reason** is the correct explanation of **Assertion**.
 - Assertion** is true but **Reason** is false
 - Both **Assertion** and **Reason** are false.
 - Both **Assertion** and **Reason** are true but **Reason** is NOT the correct explanation of **Assertion**.

144. Select the correct option:

(1) A-Synaptic vesicles
(2) B-Post-synaptic membrane
(3) C-Axon
(4) D-Synaptic cleft.

145. Chemicals called neurotransmitters are involved in the transmission of impulses at :-

 - Electrical synapses only
 - Electrical and chemical synapses
 - Chemical synapses only
 - Mostly at electrical synapses and some time at chemical synapses.

146. The early embryo upto 8 blastomere could than be transferred into fallopian tube the process is known as ?

 - Gamete intra fallopian transfer
 - Zygote inter fallopian transfer
 - Gamete inter fallopian transfer
 - Zygote intra fallopian transfer

147. Value of pCO_2 in oxygenated blood is equal to the value of pO_2 in :-

 - Systemic arteries
 - Systemic veins
 - Pulmonary vein
 - Atmosphere

148. Fill in the blanks :-

_ (a) _ is utilized by the organisms to _ (b) _ break down simple molecules like glucose, Amino acids, fatty acids etc. to derive energy to perform various activities.

 - (a)-Oxygen, (b)-Indirectly
 - (a)- CO_2 (b)-Indirectly
 - (a)- N_2 (b)-directly
 - (a)- CO_2 (b)-directly

149. Match the columns and select the correct option :-

	Column-I	Column-II
(1)	Conduction part	Atmospheric air to alveoli
(2)	Exchange part	Alveolar air to atmosphere
(3)	Tidal volume	1000 ml
(4)	Residual volume	800 ml

150. **Statement-I :** Lymph nodes are large solid structures located at different points along lymphatic system.
Statement-II : Antigens trapped in the lymph nodes are responsible for the activation of lymphocyte.

 - Statement-I is incorrect and Statement-II are correct.
 - Statement-I is correct and Statement-II are incorrect.
 - Statement-I and Statement-II are incorrect.
 - Statement-I and Statement-II are correct.

151. Coca alkaloid or cocaine is obtained from the coca plant _____, native to South America.

 - Erythroxylum coca*
 - Cannabis sativa*
 - Papaver somniferum*
 - Atropa belladonna*

Column I		Column II	
(i)	Counter current mechanism	(a)	Check on the Renin angiotensin Mechanism
(ii)	JG Cell	(b)	Powerful vasoconstrictor
(iii)	Angiotensin II	(c)	Release Renin
(iv)	Atrial Natriuretic factor	(d)	Maintain concentration gradient

156. Hair pin shape part of nephron is :-
(1) PCT (2) DCT
(3) Loop of Henle (4) Bowman's capsule

- 157.** The space between the plasma membrane of the oocyte and the zona pellucida is called _____.
Fill in the blanks ?

(1) Corona radiata (2) Perivitelline space
(3) Cytoplasm (4) Germinal vesicle

158. The mitotic division starts as the zygote moves through the _____ of the oviduct called cleavage.
Fill in the blanks :

(1) Infundibulum (2) Isthmus
(3) Ampulla (4) Uterus

159. Simple squamous epithelium is not found in

(1) Bowman's capsule (2) Endothelium
(3) PCT of nephron (4) Alveoli of lungs.

160. In white muscles number of ___a___ are less but the amount of ___b___ is high.

(1) a - myoglobin; b - ribosome
(2) a - haemoglobin ; b - proteins
(3) a - mitochondria ; b - myoglobin
(4) a - mitochondria ; b - sarcoplasmic reticulum

161. Find the mismatch pair :-

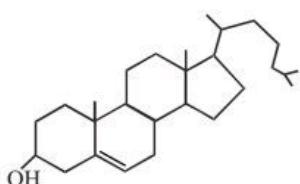
(1) Labia majora - Fleshy fold of tissue.
(2) Labia minora - Paired fold of tissue.
(3) Clitoris - Cushion fold of tissue.
(4) Mons pubis - Fatty tissue covered by skin and pubic hair.

162. Which of the following is/are correct with respect to reduction division ?

(A) Diakinesis is marked by appearance of chiasmata
(B) Duplication of centrioles occurs in anaphase-I
(C) Sister chromatids of homologous chromosomes exhibit crossing over
(D) Interkinesis is short lived phase which is followed by prophase-II, a much simpler phase than prophase-I

(1) A, B (2) B, D (3) A, C (4) Only D

163. Below structure shows which biomolecule :-



- (1) Adenosine (2) Alanine
 (3) Lecithin (4) Cholesterol

164. The cutting of DNA at specific locations became possible with the discovery of

- (1) Ligases (2) Restriction enzymes
 (3) Probes (4) Selectable markers

165. Enzyme used in PCR is :-

- (1) Taq polymerase (2) Gyrase
 (3) Transcriptase (4) Hexokinase

166. Animals that have had their DNA manipulated to possess and express a extra (foreign) gene are called :

- (1) Transgenic animals (2) Somatic hybrids
 (3) Somaclones (4) Carrier animals

167. Which of the following organism serve as an important biofertiliser in paddy fields ?

- (1) Fungi (2) Cyanobacteria
 (3) Trichoderma (4) Ladybird

168. Which of the following statement is/are correct ?

- (a) Cell is the fundamental structural and functional unit of all unicellular organisms only because these organisms are capable of independent existance.
 (b) The concentration of ions in vacuole is higher than in the cytoplasm because tonoplast facilitates the transport of ions against concentration gradient into the vacuole.
 (c) Cell organelle with cartwheel like organisation has 9 + 0 arrangement of microtubules with 9 peripheral doublets and absence of microtubules in centre.
 (d) In submetacentric chromosome, the centromere is situated close to its end forming one extremely short and one very long arm.
- (1) a , b , c & d (2) b, c & d only
 (3) b & c only (4) b only

169. In which method of transport in plasma membrane does not require carrier ?

- (1) $\text{Na}^+ - \text{K}^+$ pump (2) Active transport
 (3) Simple diffusion (4) Facilitated diffusion

170. Which statement is not true ?

- (1) Growth of multicellular organisms occurs by mitosis
 (2) In meiosis nuclear division occurs twice but DNA Replication occurs only once.
 (3) In Animals, meiosis occurs in diploid cell
 (4) All four cells produced by meiosis are always genetically similar

171. Hind brain does not comprises of ?

- (1) Medulla Oblongata (2) Cerebellum
 (3) Optic lobes (4) Pons

172. FRC is the total of _____

- (1) TV + IRV + ERV (2) ERV + RV
 (3) TV + ERV (4) VC + RV

173. **Statement-I** :- Blood is a special connective tissue consisting of a fluid matrix plasma and formed element.

Statement-II :- Erythrocytes, leucocytes and platelets are collectively called formed elements and they constitute nearly 45% of the blood.

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

174. **Assertion** :- LH & FSH are called gonadotrophins.

Reason :- LH & FSH acts on testis and ovary & stimulate secretion of hormones from them.

- (1) Both Assertion & Reason are true and R is correct explain.
 (2) Both Assertion & Reason are true but Reason is not the correct explanation of Assertion.
 (3) Assertion is true but Reason is not true
 (4) Reason is true but Assertion is not true

175. Which of the following is more in white muscles ?

- (1) Mitochondria
- (2) Myoglobin
- (3) ATP
- (4) Sarcoplasmic reticulum

176. Which of the following disease infect nose & respiratory passage but not the lungs?

- | | |
|-----------------|-----------------|
| (1) Typhoid | (2) Pneumonia |
| (3) Common cold | (4) Chikungunya |

177. Which connective tissue do not have fibres

- | | |
|-----------|--------------------|
| (1) Bone | (2) Cartilage |
| (3) Blood | (4) Adipose tissue |

178. In male frog Bidder's canal open into -

- | | |
|------------------|---------------------|
| (1) Ureter | (2) Vasa efferentia |
| (3) Both 1 and 4 | (4) None |

179. Match the column-I with column-II?

	Column-I		Column-II
(A)	Urochordate	(i)	Notochord extend from head to tail
(B)	Cephalochordate	(ii)	Notochord absent
(C)	Vertebrate	(iii)	Notochord in larval tail
(D)	Invertebrate	(iv)	Notochord found during embryonic period.

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

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

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

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

180. During pregnancy the levels of thyroxine.

(1) Increases several folds in maternal blood.

(2) Increases several folds in fetal blood.

(3) Decreases several folds in maternal blood.

(4) Decreases several folds in fetal blood.

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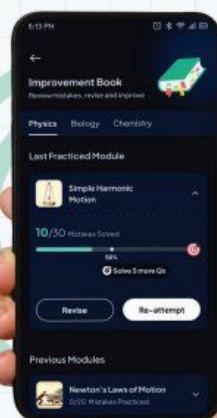
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