**APMA (Abhang Prabhu Medical Academy) is a leading NEET coaching Institute in Maharashtra.**

**With Time tested robust systems, immaculate academics, NCERT based teaching and NEET pattern tests, teamed up with result oriented effective counselling, APMA has excelled in the arena of UG NEET preparation with an outstanding success rate in terms of students getting into prominent medical colleges.**

| Sr No | Name of Student | Score | Allotted Medical College |
|---|---|---|---|
| 1 | Vedant Kavita Wavre | 710 | AIIMS Jodhpur |
| 2 | Piyush Anushka Arole | 705 | AIIMS Nagpur |
| 3 | Soham Sushama Thange | 705 | AIIMS Bhopal |
| 4 | Girija Prajakta Bhuskute | 701 | BJ Medical College Pune |
| 5 | Om Shruti Birajdar * | 696 | BJ Medical College Pune |
| 6 | Urvi Snehal Yadav * | 695 | AIIMS Hyderabad |
| 7 | Prasad Vaishali Dumbre Patil | 690 | BJ Medical College Pune |
| 8 | Shivlal Jyoti Jadhav | 690 | GS Medical College Mumbai |
| 9 | Vishwaraj Surekha Chavan * | 690 | BJ Medical College Pune |
| 10 | Aarushee Asha Ranade | 685 | Karnataka Medical College & Research Institute Hubli |
| 11 | Aditya Swati Doshi * | 685 | HBT & Cooper Medical College Mumbai |
| 12 | Eesha Vasanti Sajgure | 685 | BJ Medical College Pune |
| 13 | Purva Hemangi Jagtap | 685 | BJ Medical College Pune |
| 14 | Yash Jyoti Goregaonkar | 684 | AIIMS Nagpur |
| 15 | Ketaki Shilpa Purandare * | 680 | HBT & Cooper Medical College Mumbai |
| 16 | Tanisha Poonam Gandhi | 680 | Topiwala National Medical College(TNMC) Mumbai |
| 17 | Ameya Aparna Dandgawhane * | 677 | Topiwala National Medical College(TNMC) Mumbai |
| 18 | Tanmay Meenal Dhadwad | 677 | AIIMS Jodhpur |
| 19 | Sharvi Kavita Mulay | 676 | HBT & Cooper Medical College Mumbai |
| 20 | Purva Vaishali Nigade | 675 | Grant Medical College Mumbai |
| 21 | Samruddhi Rupali Kakade | 675 | Grant Medical College Mumbai |
| 22 | Arohi Kanchan Bhave * | 673 | BS Medical Sciences & Engineering, IIT Madras |
| 23 | Yash Mrudula Chitale | 673 | GMC & GT Hospital (CAMA) Mumbai |
| 24 | Aditee Kranti Nalawade | 671 | Rajiv Gandhi Medical College Kalva Thane |
| 25 | DeepenKumar Sasmita Panda | 670 | MKCG Medical College, Berhampur Odisha |
| 26 | Anika Seema Shirore | 667 | Bharatratna Atalbihari Vajpeyi Medical College Pune |
| 27 | Mrunalini Kirti Sathaye | 667 | GMC CH Sambhajinagar(Aurangabad) |
| 28 | Shourya Sunanda pawar* | 666 | GMC CH Sambhajinagar(Aurangabad) |
| 29 | Atharva Pranita Dhote * | 665 | GMC CH Sambhajinagar(Aurangabad) |
| 30 | Tanya Priti Bhaskarwar * | 663 | GMC Baramati |
| 31 | Kajal Asha Sonawane | 661 | GMC Baramati |
| 32 | Aditri Swati Joshi * | 660 | MGIMS Medical College Sevagram,Wardha |

| | | | |
|---|---|---|---|
| 33 | Aniket Sheetal Rajahansa * | 660 | GMC Satara |
| 34 | Srujan Rekha Chakote | 660 | GMC Satara |
| 35 | Aarya Madhuri Wadgaonkar | 659 | GMC Satara |
| 36 | Yug Jital jain | 657 | GMC Satara |
| 37 | Kavya Sunita Karthikeyan | 656 | GMC Satara |
| 38 | Ira Mamta Deshmukh | 656 | GMC Satara |
| 39 | Chinmayi Smita Choudhari | 655 | Bharatratna Atalbihari Vajpeyi Medical College Pune |
| 40 | Praneet Anupama Kawatgi * | 655 | Father Muller Medical College Mangalore |
| 42 | Tanvi Swati Temkar * | 654 | GMC Ratnagiri |
| 43 | Samiksha Megha Patil | 653 | Bharatratna Atalbihari Vajpeyi Medical College Pune |
| 44 | Mukta Samarpita Watkar | 652 | Bharatratna Atalbihari Vajpeyi Medical College Pune |
| 45 | Rhutvij Leena Choudhari * | 652 | GMC Jalgaon |
| 46 | Vanshika Anjali Jain | 651 | GMC Dhule (Bhausaheb Hire) |
| 47 | Khushi Ranju Singh | 650 | GMC Dhule (Bhausaheb Hire) |
| 41 | Varad Jyoti Dachawar | 655 | GMC Dhule (Bhausaheb Hire) |
| 48 | Spandan Kshitija Kachale | 650 | Dr SC GMC Nanded |
| 49 | Sujay Kalyani Ghewari | 649 | Bharatratna Atalbihari Vajpeyi Medical College Pune |
| 50 | Tanmay Supriya Khirid | 649 | GMC Dhule (Bhausaheb Hire) |
| 51 | Bhavya Ruchi Shukla | 647 | GMC Jalgaon |
| 52 | Ojasee Swapna P | 647 | HBT & Cooper Medical College Mumbai |
| 53 | Pradyumna Shubhangi Karhade | 646 | GMC Jalgaon |
| 54 | Ananya Supriya Damle | 645 | Bharatratna Atalbihari Vajpeyi Medical College Pune |
| 55 | Pooja Manjusha Talekar * | 645 | GMC Dhule (Bhausaheb Hire) |
| 56 | Sharvari Surekha Arsul | 643 | GMC Ratnagiri |
| 57 | Rose Savita Kalbhor | 641 | Bharatratna Atalbihari Vajpeyi Medical College Pune |
| 58 | Pranjali Gauri Dhaygude | 640 | Bharatratna Atalbihari Vajpeyi Medical College Pune |
| 59 | Ranjeetkumar Ashwini Thube | 640 | GMC Ratnagiri |
| 60 | Suhani Ashwini Bhavsar* | 639 | Bharatratna Atalbihari Vajpeyi Medical College Pune |
| 61 | Pratham Divya Gandhi * | 638 | VM Medical College Solapur |
| 62 | Arjun Varsha Bartakke | 637 | Bharatratna Atalbihari Vajpeyi Medical College Pune |
| 63 | Radhika Rupali Pasalkar | 637 | Smt Kashibai Navale Medical College Pune |
| 64 | Parth Rupali Waman | 636 | Vasantrao Pawar Medical College Nashik |
| 65 | Tanmay Shubhangi Dhawale | 636 | K J Somaiya Medical College Mumbai |
| 66 | Arya Mangal Pawar | 635 | GMC Sindhudurg |
| 67 | Nrupshambhu Rupali Sarnobat | 631 | Vasantrao Pawar Medical College Nashik |
| 68 | Suryansh Mohita Goyal | 631 | MIMER Medical College Talegaon , Pune |
| 69 | Jasmin Mansi Apte * | 630 | Symbiosis women's Medical College Pune |
| 70 | Sanika Gunjan Borate | 627 | K J Somaiya Medical College Mumbai |
| 71 | Shruti Geetanjali Yadav | 627 | MIMER Medical College Talegaon , Pune |
| 72 | Dhanshree Priya Zagade | 626 | Smt Kashibai Navale Medical College Pune |
| 73 | Candice Suneetha Rocha | 625 | St John's Medical College Bengaluru |
| 74 | Prathamesh Surekha Jadhav | 625 | GMC Gadchiroli |
| 75 | Vaishnavi Vaishali yadav | 624 | GMC Bhandara |
| 76 | Sanskruti Lata Atkare | 621 | Smt Kashibai Navale Medical College Pune |
| 77 | Tanmayee Dhanashree Patil * | 621 | MIMER Medical College Talegaon , Pune |
| 78 | Aarya Anita kadam | 620 | Smt Kashibai Navale Medical College Pune |

| | | | |
|---|---|---|---|
| 79 | Prisha Rashmi Kothavale | 620 | BJ Medical College Pune |
| 80 | Anshula Shital Ravankar | 616 | Vithalrao Vikhe Patil Medical College Ahmednagar |
| 81 | Samruddhi Sheetal Shrigiri | 616 | Bharatratna Atalbihari Vajpeyi Medical College Pune |
| 82 | Shalmali Kalpana bhujbal | 614 | Vithalrao Vikhe Patil Medical College Ahmednagar |
| 83 | Hrutika Sayali Bagade | 612 | B K L Walawalkar Medical College Chiplun |
| 84 | Farhan Bahar Khan | 612 | Vithalrao Vikhe Patil Medical College Ahmednagar |
| 85 | Adwaiti Poonam Walave | 610 | Vithalrao Vikhe Patil Medical College Ahmednagar |
| 86 | Natasha Mousami Ghaisas | 610 | BhartiVidyapeeth Medical College Pune |
| 87 | Siya Poonam Mantri | 610 | Vithalrao Vikhe Patil Medical College Ahmednagar |
| ….. And many more | | | |

# Start Your NEET Success Journey With ...

**Dr. Abhang Prabhu Medical Academy, Pune**
...students first


JOIN NOW

## OUR STRENGTHS

- Personalized attention
- Experienced faculty
- Prompt doubt solving
- Regular NEET pattern tests
- Regular student and parent counselling
- Performance Enhancement Programme

## OUR COURSES

- NEET 2027 Two Year Classroom Course
  (For Students Currently in 10th Standard)
- NEET 2026 One Year Classroom Course
  (For Students Currently in 11th Standard)
- NEET 2025 One Year Classroom Course
  (For Students Repeating NEET)
- NEET 2025 Test Series & Crash Course

## FOUNDATION COURSES
**(Online)**

- **Class 9th**
  Physics, Chemistry, Mathematics
- **Class 10th**
  Physics, Chemistry, Mathematics

**Call / Whatsapp**
+91 8830333256 / 8788839195
9822378505 / 8261924134
Landline : 020 45032335

**www.apma.co.in** The Fortress, Late JP Trivedi Road, Near Dnyaneshwar Paduka Chowk, Shivajinagar, Pune

# MP Murlidhar Mohol & APMA initiative

**Mission NEET 2025**

**TIME : 3 HRS.** **PAPER - V** **MARKS: 720**

**DATE : 27.04.2025**

**PCB : ENTIRE XI + XII NCERT**

**Note:**

* Every correct answer (+4 Mark)
* Every wrong answer (–1 Mark)
* Not attempted question (0 Mark)

1. If the velocity of light C, the universal gravitational constant G and plank's constant h be choosen as fundamental units, the dimensions of mass in this system are

   1) hCG 2) $hCG^{-1}$

   3) $h^{-1}C^{-1}G$ 4) $h^{1/2}\,C^{1/2}\,G^{-1/2}$

2. A particle is executing SHM along a straight line its velocities at distance $x_1$ and $x_2$ from the mean position are $v_1$ and $v_2$ respectively its time period is

   1) $2\pi\sqrt{\frac{v_1^2 - v_2^2}{x_1^2 - x_2^2}}$ 2) $2\pi\sqrt{\frac{x_1^2 + x_2^2}{v_1^2 + v_2^2}}$

   3) $2\pi\sqrt{\frac{x_2^2 - x_1^2}{v_1^2 - v_2^2}}$ 4) $2\pi\sqrt{\frac{v_1^2 + v_2^2}{x_1^2 + x_2^2}}$

3. A shell bursts on contact with the ground and fragments fly in all directions with speed upto 39.2 m/s. A man 78.4m way is in danger for

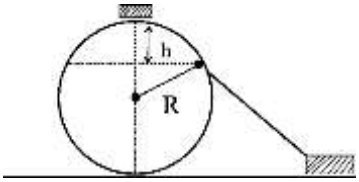
   1) 4 sec 2) 6 sec

   3) $\sqrt{2}$ sec 4) $4\sqrt{2}$ sec

4. The following four wires of length L and radius r are made of the same material. Which of these will have the largest extension when the same tension is applied

   1) L = 50 cm, r = 0.25 mm
   2) L = 100 cm, r = 0.5 mm
   3) L = 200 cm, r = 1 mm
   4) L = 300 cm, r = 1.5 mm

5. A particle originally at rest at the highest point of smooth circle in a vertical plane is gently pushed and starts sliding along the circle. It will leave the circle at a vertical distance h below the highest point such that




   1) h = 2R 2) $h = \frac{R}{2}$

   3) h = R 4) $h = \frac{R}{3}$

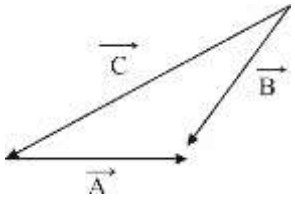
6. For the figure shown

1) $\vec{A}+\vec{B}=\vec{C}$

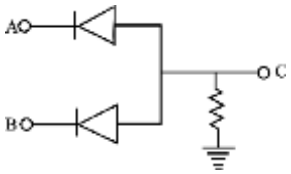
2) $\vec{B}+\vec{C}=\vec{A}$

3) $\vec{C}+\vec{A}=\vec{B}$

4) $\vec{A}+\vec{B}+\vec{C}=0$




7. In the circuit below A and B represents two inputs and C represent the output. The circuit represents?




1) OR 2) NOR

3) AND **4) NAND**

8. Two metals spheres are falling through a liquid of density $2 \times 10^3$ kg/m$^3$ with the same uniform speed. The material density of sphere 1 and sphere 2 are $8 \times 10^3$ kg / m$^3$ and $11 \times 10^3$ kg / m$^3$ respectively. The ratio of their radii is

1) $\frac{11}{8}$ 2) $\sqrt{\frac{11}{8}}$

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

9. An α – particle and a deuteron are moving with velocities v and 2v respectively. What will be the ratio of their de–broglie wave length

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

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

10. In which type of material the magnetic susceptibility does not depends on temperature?

1) Diamagnetic 2) Paramagnetic

3) Ferromagnetic 4) Ferrite

11. A hydrogen atom is in excited state of principal quantam number n. It emits a photon of wavelength$\lambda$, when returns to ground state. The value of n is

1) $\sqrt{\lambda R(\lambda R-1)}$ 2) $\sqrt{\frac{\lambda R-1}{\lambda R}}$

3) $\sqrt{\frac{\lambda R}{\lambda R-1}}$ 4) $\sqrt{\lambda(R-1)}$

12. An electric current passes through a long straight copper wire. At a distance 5cm from the straight wire, the magnetic field is B. The magnetic field at 20cm from the straight wire would be

1) $\frac{B}{6}$ 2) $\frac{B}{4}$

3) $\frac{B}{3}$ 4) $\frac{B}{2}$

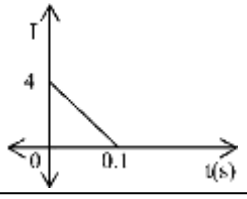
13. In a coil of resistance 10 Ω the induced current developed by changing magnetic flux through it is shown in figure as a function of time. The magnitude of change in flux through the coil is

1) 8

2) 2

3) 6

4) 4



21. A ball is projected horizontally with a velocity of 4 m/s from the top of a tower. The velocity of the ball after 0.7 sec is

1) 1 m/s 2) 10 m/s
3) 8 m/s 4) 3 m/s

22. A block of mass 10 kg is moving in x–direction with a constant speed of 10 m/s. It is subjected to a retarding force F = – 0.1 xJ/m during its travel from x = 20 m to x = 30 m. It is final kinetic energy will be

1) 475 J 2) 450 J
3) 275 J 4) 250 J

23. The frequency of the first overtone of a closed pipe of length $l_1$ is equal to that of the first overtone of an open pipe of length $l_2$. The ratio of their lengths ($l_1 : l_2$) is

1) $\frac{2}{3}$ 2) $\frac{4}{5}$
3) $\frac{3}{5}$ 4) $\frac{3}{4}$

24. A wire of resistance $R_0$ is elongated 'n' fold to make a new uniform wire. The resistance of new wire is

1) $nR_0$ 2) $n^2R_0$
3) $2nR_0$ 4) $2n^2R_0$

25. If for Hydrogen $C_P - C_V = m$ and for Nitrogen $C_P - C_V = n$ where $C_P$ and $C_V$ refer to specific heat per unit mass respectively at constant pressure and constant volume the relation between m and n is [molar mass of Hydrogen = 2 and molar mass of $N_2$ = 28 ]

1) n = 14 m 2) n = 7 m
3) m = 7n 4) m = 14 n

26. Light from two coherent source of the same amplitude A and wavelength $\lambda$ illuminates the screen. The intensity of the central maxima is $I_0$. If the sources were incoherent the intensity at the same point will be

1) $4\ I_0$ 2) $2\ I_0$
3) $I_0$ 4) $\frac{I_0}{2}$

27. The area of the acceleration – displacement curve of a body gives

1) Impulse
**2) Change in kinetic energy per unit mass**
3) Change in momentum per unit mass
4) Total change in energy

28. A glass has refractive index $\frac{3}{2}$ and water has refractive index $\frac{4}{3}$. If the speed of light in glass is $2 \times 10^8$ m/s, the speed of light in water is:

1) $1.5 \times 10^6$ 2) $1.78 \times 10^8$
3) $2.25 \times 10^8$ 4) $2.67 \times 10^8$

29. A body is moving along a rough horizontal surface with an initial velocity 6 m/s. If the body comes to rest after travelling a distance 9 m. then the coefficient of sliding friction will be

1) 0.4 2) 0.2
3) 0.6 4) 0.8

30. A 2μF condenser is charged upto 200 V and then battery is removed On combining this with another uncharged condenser in parallel, the potential difference between two plates are found to be 40 V. The capacity of second condenser is

1) 2 μF 2) 4 μF
3) 8 μF 4) 16 μF

31. A straight wire conductor of length of 0.4 m is moving with a speed of 7 m/s perpendicular to a magnetic field B of intensity 0.9 $Wb/m^2$. The induced emf across the conductor is

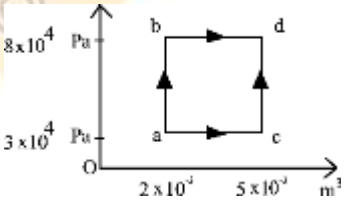
1) 2.52 V 2) 25.2 V
3) 5.2 V 4) 1.26 V

32. A particle describes a horizontal circle in a conical funnel whose inner surface is smooth with speed with speed of 0.5 m/s. What is the height of the plane of circle from vertex of the funnel?

1) 0.25 cm 2) 2 cm
3) 4 cm 4) 2.5 cm

33. A thermodynamic process is shown in figure in process ab, 600 J of heat is added and in process bd 200 J of heat is added. The total heat added in process acd is

1) 550 J
2) 650 J
3) 750 J
4) 850 J




34. A rigid body rotates about a fixed axis with variable angular velocity equal to (a–bt) at time t where a and b are constants. The angle through which it rotates before it comes to rest is

1) $\frac{a^2}{b}$ 2) $\frac{a^2}{2b}$
3) $\frac{a^2}{4b}$ 4) $\frac{a^2}{2b^2}$

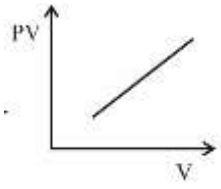
35. Two opposite and equal charge $4 \times 10^{-8}$ C when placed $2 \times 10^{-2}$ cm away from a dipole. If this dipole is placed in external electric field $4 \times 10^8$ N/C, the value of maximum torque and the work done in rotating it through $180^0$ will be

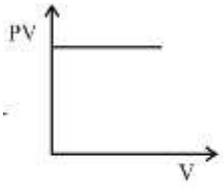
1) $64 \times 10^{-4}$ N –m and $64 \times 10^{-4}$ J
2) $64 \times 10^{-4}$ N – m and $32 \times 10^{-4}$ J
3) $32 \times 10^{-4}$ N – m and $32 \times 10^{-4}$ J
4) $32 \times 10^{-4}$ N – m and $64 \times 10^{-4}$ J

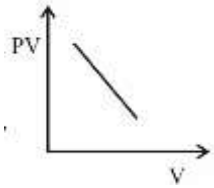
36. A uniform rope of length *l* lies on a table. If the coefficient of friction is μ, then the maximum length $l_1$ of the part of this rope which can overhang from the edge of the table without slicing down is

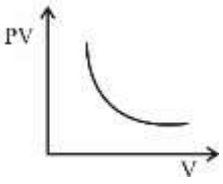
1) $\frac{l}{\mu}$ 2) $\frac{l}{\mu+1}$
3) $\frac{\mu l}{\mu+1}$ 4) $\frac{\mu l}{l-1}$

37. Which one of the following graphs represents the behavior of an ideal gas at constant temperature ?

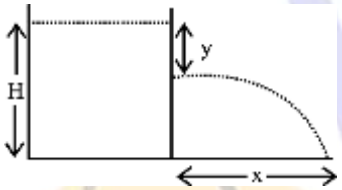
1) 


2) 


3) 


4) 


38. A cylindrical vessel is filled with a liquid up to a height H. A small hole is made in the vessel at a distance y below the liquid surface as shown in figure. The liquid emerging from the hole strike the ground at distance x




1) x is equal, if depth = y or H – y
2) x is minimum for y = $\frac{H}{2}$
3) 1) and 2) correct
4) None

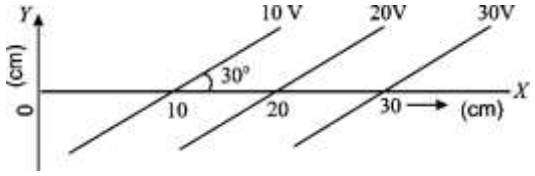
39. A body of mass m rests on a horizontal floor with which it has a coefficient of static friction μ. It is desired to make the body move by applying the minimum possible force F. the magnitude of F is

1) $\mu mg$
2) $\sqrt{\frac{1+\mu^2}{\mu}}mg$
3) $\mu\sqrt{1+\mu^2}mg$
4) $\frac{\mu mg}{\sqrt{1+\mu^2}}$

40. A block released from rest from the top of a smooth inclined plane of angle $\theta_1$ reaches the bottom in time $t_1$. The same block released from rest from the top of another smooth inclined plane of angle $\theta_2$ reached the bottom in time $t_2$. If the two inclined planes have the same height the relation between $t_1$ and $t_2$ is

1) $\frac{t_2}{t_1}=1$
2) $\frac{t_2}{t_1}=\left[\frac{\sin\theta_1}{\sin\theta_2}\right]^{1/2}$
3) $\frac{t_2}{t_1}=\frac{\sin\theta_1}{\sin\theta_2}$
4) $\frac{t_2}{t_1}=\frac{\sin^2\theta_1}{\sin^2\theta_2}$

41. Equipotential surfaces are shown in figure. Then the electric field strength will be



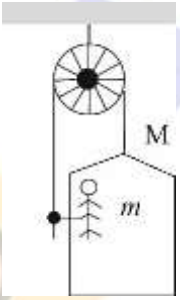

1) 100 $Vm^{-1}$ along X–axis
2) 100 $Vm^{-1}$ along Y–axis
3) 200 $Vm^{-1}$ at an angle $120^0$ with X–axis
4) 50 $Vm^{-1}$ at an angle $120^0$ with X–axis

42. A small piece of wire bent in to an L shape with upright and horizontal portions of equal lengths, is placed with the horizontal portion along the axis of the concave mirror whose radius of curvature is 10 cm. If the bend is 20 cm from the pole of the mirror, then the ratio of the lengths of the images of the upright and horizontal portions of the wire is

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

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

43. A man of mass m stands on a crate of mass M. He pulls on a light rope passing over a smooth light pulley. The other end of the rope is attached to the crate. For the system to be equilibrium, the force exerted by the men on the rope will be

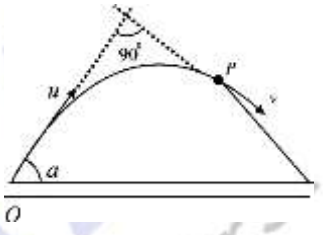



1) (M + m) g
2) $\frac{1}{2}(M+m)g$
3) Mg
4) mg

44. A capacitor of 20 μF charged upto 500 V is connected in parallel with another capacitor of 10 μF which is charged upto 200 V. The common potential is

1) 250 V 2) 300 V
3) 400 V 4) 600 V

45. A particle is projected from point O with velocity u in a direction making an angle α with the horizontal. At any instant its position is at point P. at right angles to the initial direction of projection. Is velocity at point P is




1) u tan α 2) u cot α
3) u cosec α 4) u sec α

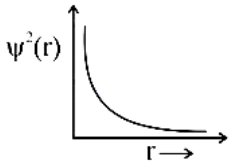
46. The average molar mass of chlorine is 35.5 $gmol^{-1}$. The ratio of $^{35}Cl$ to $^{37}Cl$ in naturally occuring chlorine is close to

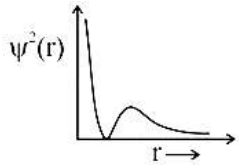
1) 01 : 01 2) 02 : 01
3) 03 : 01 4) 04 : 01

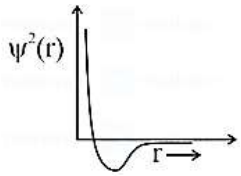
47. 0.6 g of urea on strong heating with NaOH evolves $NH_3$. Liberated $NH_3$ will combine completely with which of the following HCl solution?

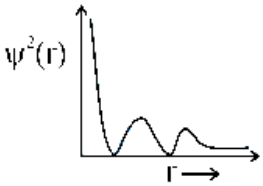
1) 100 mL of 0.2 N HCl
2) 400 mL of 0.2 N HCl
3) 100 mL of 0.1N HCl
4) 200 mL of 0.2 N HCl

48. Which of the following is the correct plot for the probability density $\psi^2(r)$ as a function of distance 'r' of the electron form the nucleus for 2s orbital?

1) 


2) 


3) 


4) 


49. For emission line of atomic hydrogen from $n_i = 8$ to $n_f = n$, the plot of wave number ($\bar{\nu}$) against $\left(\frac{1}{n^2}\right)$ will be (The Rydberg constant, $R_H$ is in wave number unit)

1) Linear with intercept – $R_H$
2) Non linear
3) Linear with slope $R_H$
4) Linear with slope – $R_H$

50. **Statement-I:** Along the period, the chemical reactivity of the element gradually increases from group 1 to group 18.

**Statement-II:** The nature of oxides formed by group 1 element is basic while that of group 17 elements is acidic

1) Both statement I and Statement II are truc
2) Statement I is true but Statement II is False.
3) Statement I is false but Statement II is true.
4) Both Statement I and Statement II is false.

51. The electron gain enthalpy value are negative for

A. $Be \rightarrow Be^-$
B. $N \rightarrow N^-$
C. $O \rightarrow O^{2-}$
D. $Na \rightarrow Na^-$
E. $Al \rightarrow Al^-$

Choose the most appropriate answer from the options given below:

1) D and E only
2) A, B and C only.
3) A and D only
4) A, B, D and E only

52. The number of species from the following in which the central atom uses $sp^3$ hybrid orbitals in its bonding is _____.

$NH_3$, $SO_2$, $SiO_2$, $BeCl_2$, $CO_2$, $H_2O$, $CH_4$, $BF_3$

1) 5
2) 4
3) 3
4) 2

53. The correct statement/s about Hydrogen bonding is/are

A. Hydrogen bonding exists when H is covalently bonded to the highly electro negative atom.

B. Intermolecular H bonding is present in o-nitro phenol

C. Intramolecular H bonding is present in HF.

D. The magnitude of H bonding depends on the physical state of the compound.

E. H-bonding has powerful effect on the structure and properties of compounds

Choose the correct answer from the options given below:

1) A, B, D only 2) A, D, E only

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

54. The first and second ionisation enthalpies of a metal are 496 and 4560 kJ $mol^{-1}$, respectively. How many moles of HCl and $H_2SO_4$, respectively, will be needed to react completely with 1 mole of the metal hydroxide?

1) 1 and 0.5 2) 2 and 0.5

3) 1 and 2 4) 1 and 1

55. For a reaction,

$4M(s) + nO_2(g) \rightarrow 2M_2O_n(s)$

the free energy change is plotted as a function of temperature. The temperature below which the oxide is stable could be inferred from the plot as the point at which

1) the free energy change shows a change from negative to positive value

2) the slope changes from positive to negative

3) the slope changes from negative to positive

4) the slope changes from positive to zero

56. For the reaction,

$2SO_2(g) + O_2(g) \rightleftharpoons 2SO_3(g)$,

$\Delta H = -57.2$ kJ $mol^{-1}$ and $K_c = 1.7 \times 10^{16}$

Which of the following statement is INCORRECT?

1) The equilibrium constant is large suggestive of reaction going to completion and so no catalyst is required.

2) The equilibrium will shift in forward direction as the pressure increases.

3) The equilibrium constant decreases as the temperature increases.

4) The addition of inert gas at constant volume will not affect the equilibrium constant.

57. The $K_{sp}$ for the following dissociation is $1.6 \times 10^{-5}$

$PbCl_2(s) \rightleftharpoons Pb^{2+}(aq) + 2Cl^{-1}(aq)$

Which of the following choices is correct for a mixture of 300 mL 0.134 M $Pb(NO_3)_2$ and 100 mL 0.4 M NaCl?

1) $Q > K_{sp}$
2) $Q < K_{sp}$
3) $Q = K_{sp}$
4) Not enough data provided

58. **Statement I:** In the titration between strong acid and weak base methyl orange is suitable as an indicator.

**Statement II:** For titration of acetic acid with NaOH phenolphthalein is not a suitable indicator.

1) Statement I is false but Statement II is true
2) Statement I is true but Statement II is false
3) Both Statement I and Statement II are true
4) Both Statement I and Statement II are false

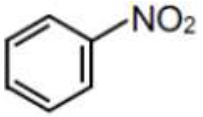
59. The oxidation states of 'P' in $H_4P_2O_7$, $H_4P_2O_5$ and $H_4P_2O_6$, respectively, are:

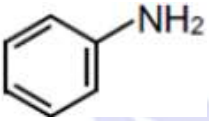
1) 7, 5 and 6 2) 5, 4 and 3
3) 5, 3 and 4 4) 6, 4 and 5

60. 15 mL of aqueous solution of $Fe^{2+}$ in acidic medium completely reacted with 20 mL of 0.03 M aqueous $Cr_2O_7^{2-}$. The molarity of the $Fe^{2+}$ solution is _____ M

1) 0.04 M 2) 0.08 M
3) 0.12 M 4) 0.24 M

61. Kjeldahl method cannot be used for :

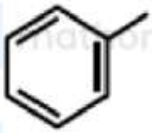
1) 


2) 


3) $CH_3 - CH_2 - CH_2 - C \equiv N$

4) $H_2N - \overset{\overset{O}{\|}}{C} - NH_2$

62. Which among the following is the strongest acid?

1) $CH_3CH_2CH_2CH_3$ 2) 

3)  4) 

63. Arrange the following in increasing order of reactivity towards nitration

A. p-xylene B. bromobenzene
C. mesitylene D. nitrobenzene
E. benzene

Choose the correct answer from the options given below

1) C < D < E < A < B 2) D < B < E < A < C
3) D < C < E < A < B 4) C < D < E < B < A

64. In the following sequence of reactions,

$C_3H_6 \xrightarrow{H^+/H_2O} A \xrightarrow{KIO} B + C$

The compound B and C respectively are:

1) $Cl_3COOK$, HCOOH 2) $Cl_3COOK$, $CH_3I$
3) $CH_3I$, HCOOK 4) $CHI_3$, $CH_3COOK$

65. Consider the following pairs of solution which will be isotonic at the same temperature. The number of pairs of solutions is/are _____.

(A) 1 M aq. NaCl and 2 M aq. urea
(B) 1 M aq. $CaCl_2$ and 1.5 M aq. KCl
(C) 1.5 M aq. $AlCl_3$ and 2 M aq. $Na_2SO_4$
(D) 2.5 M aq. KCl and 1 M aq. $Al_2(SO_4)_3$

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

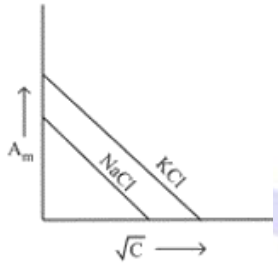
66. $K_2HgI_4$ is 40% ionised in aqueous solution. The value of its van't Hoff factor (i) is :

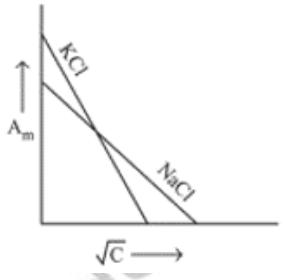
1) 1.6 2) 1.8
3) 2.0 4) 2.2

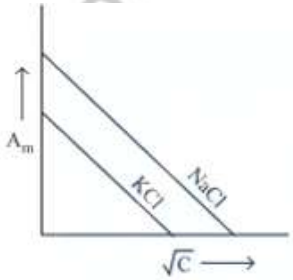
67. Which one of the following statements regarding Henry's law is not correct?

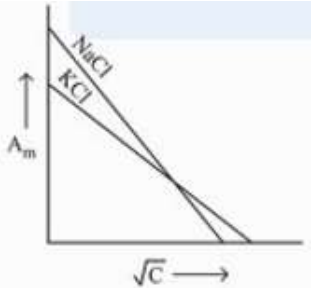
1) Higher the value of $K_H$ at a given pressure, higher is the solubility of the gas in liquids.
2) Different gases have different $K_H$ (Henry's law constant) values at the same temperature.
3) The partial pressure of the gas in vapour phase is proportional to the mole fraction of the gas in the solution.
4) The value of $K_H$ increases with increase of temperature and $K_H$ is function of the nature of the gas.

68. Which one of the following graphs between molar conductivity ( $\Lambda_m$ ) versus $\sqrt{C}$ is correct?

1) 


2) 


3) 


4) 

69. Calculate the standard cell potential (in V) of the cell in which following reaction takes place:

$Fe^{2+}(aq) + Ag^{+}(aq) \rightarrow Fe^{3+}(aq) + Ag(s)$

Given that

$E^{0}_{Ag^{+}/Ag} = xV$

$E^{0}_{Fe^{2+}/Fe} = yV$

$E^{0}_{Fe^{3+}/Fe} = zV$

1) $x - z$ 2) $x - y$

3) $x + 2y - 3z$ 4) $x + y - z$

70. Half life of $_{90}Sr$ is 6.93 years. In a child body $1\mu g$ of $_{90}Sr$ dopped in place of calcium, how many years will it take to reduce its concentration by 90% (Assume no involvement of Sr in metabolism).

1) 0.2303 year 2) 2.303 years

3) 23.03 years 4) None of these

71. Rate of reaction increases by $10^6$ times when a reaction is carried out in presence of enzyme catalyst at same temperature. Determine change in activation energy.

1) $-6x2.303RT$ 2) $+6x2.303RT$

3) $+6RT$ 4) $-6RT$

72. Match List-1 with List-II

| | **List-I Species** | | **List-II Electronic distribution** |
|---|---|---|---|
| (A) | $Cr^{+2}$ | (I) | $3d^8$ |
| (B) | $Mn^{+}$ | (II) | $3d^3 4s^1$ |
| (C) | $Ni^{+2}$ | (III) | $3d^4$ |
| (D) | $V^{+}$ | (IV) | $3d^5 4s^1$ |

Choose the correct answer from the options given below:

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

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

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

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

73. The orange colour of $K_2Cr_2O_7$, and purple colour of $KMnO_4$ is due to

1) Charge transfer transition in both.

2) $d \rightarrow d$ transition in $KMnO_4$ and charge transfer transitions in $K_2Cr_2O_7$.

3) $d \rightarrow d$ transition in $K_2Cr_2O_7$ and charge transfer transitions in $KMnO_4$.

4) $d \rightarrow d$ transition in both.

74. The correct statements from following are :

A. The strength of anionic ligands can be explained by crystal field theory.

B. Valence bond theory does not give a quantitative interpretation of kinetic stability of coordination compounds

C. The hybridization involved in formation of $[Ni(CN)_4]^{2-}$ complex is $dsp^2$.

D. The number of possible isomer(s) of cis – $[PtCl_2(en)_2]^{2+}$ is one

Choose the correct answer from the options given below

1) A, D only 2) A, C only

3) B, D only 4) B, C only

75. Match List I with List II

| | **LIST-I (Complex ion)** | | **LIST-II (Electronic Configuration)** |
|---|---|---|---|
| A. | $[Cr(H_2O)_6]^{3+}$ | I. | $t_{2g}^2 e_g^0$ |
| B. | $[Fe(H_2O)_6]^{3+}$ | II. | $t_{2g}^3 e_g^0$ |
| C. | $[Ni(H_2O)_6]^{2+}$ | III. | $t_{2g}^3 e_g^2$ |
| D. | $[V(H_2O)_6]^{3+}$ | IV. | $t_{2g}^6 e_g^2$ |

Choose the correct answer from the options given below

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

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

76. Select the option with correct property-

1) $[Ni(CO)_4]$ and $[NiCl_4]^{2-}$ both diamagnetic

2) $[Ni(CO)_4]$ and $[NiCl_4]^{2-}$ both paramagnetic

3) $[NiCl_4]^{2-}$ diamagnetic, $[Ni(CO)_4]$ paramagnetic

4) $[Ni(CO)_4]$ diamagnetic, $[NiCl_4]^{2-}$ paramagnetic

77. **Assertion (A):** Haloalkanes react with KCN to form alkyl cyanides as a main product while with AgCN form isocyanide as the main product.

**Reason (R):** KCN and AgCN both are highly ionic compounds.

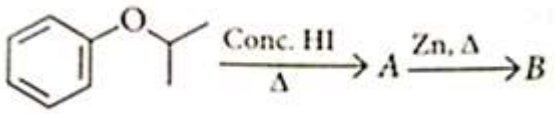
1) (A) is correct but (R) is not correct

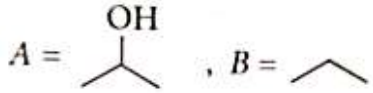
2) Both (A) and (R) are correct but (R) is not the correct explanation of (A)

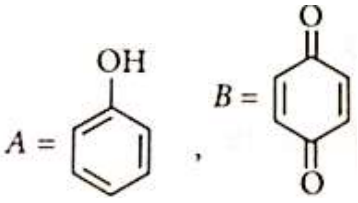
3) (A) is not correct but (R) is correct

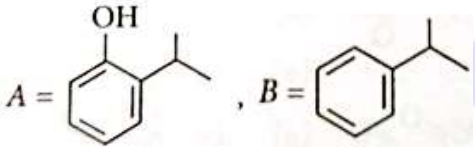
4) Both (A) and (R) are correct and (R) is the correct explanation of (A)

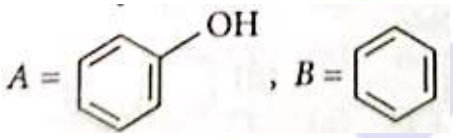
78. Compound 1 is heated with conc. HI to give a hydroxyl compound A which is further heated with Zn dust to give compound B. Identify A and B




1) 


2) 


3) 


4) 

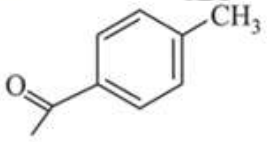

79. When enthanol is heated with conc. $H_2SO_4$, a gas is produced. The compound formed, when this gas is treated with cold dilute aqueous solution of Baeyer's reagent, is:

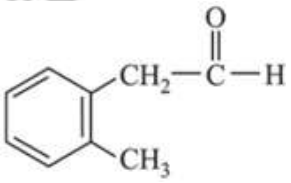
1) Formaldehyde 2) Formic acid
3) Glycol 4) Ethanoic acid

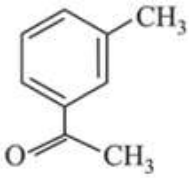
80. **Assertion (A):** Treatment of HBr with propene yields 2-Bromopropane.
**Reason (R):** Addition of HBr to alkene follows Markovnikov's rule.

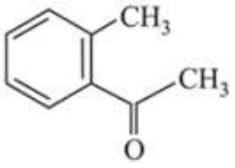
1) Both (A) and (R) are true but (R) is NOT the correct explanation of (A).
2) (A) is false but (R) is true.
3) Both (A) and (R) are true and (R) is the correct explanation of (A)
4) (A) is true but (R) is false.

81. Compound A($C_9H_{10}O$) shows positive iodoform test. Oxidation of A with $KMnO_4$/KOH gives acid B($C_8H_6O_4$). Anhydride of B is Phathalic anhydride. Compound A is:

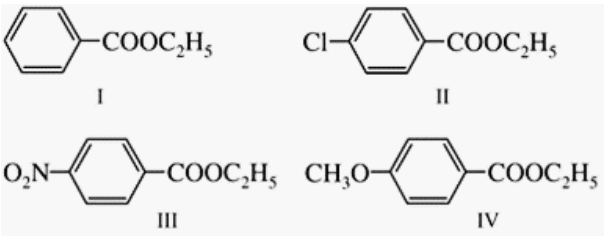
1) 


2) 


3) 

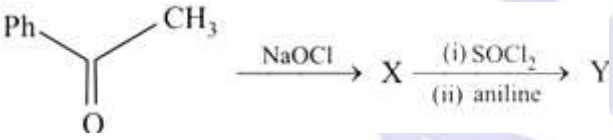

4) 

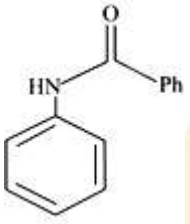
82. The decreasing order of ease of alkaline hydrolysis for the following esters is

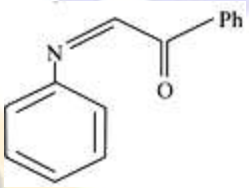


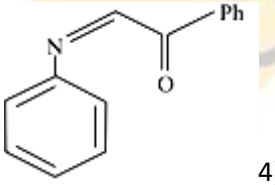

1) III > II > IV > I 2) III > II > I > IV
3) IV > II > III > I 4) II > III > I > IV

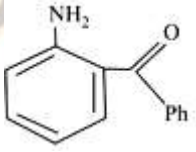
83. The major product 'Y' in the following reaction is:




1) 


2) 


3) 


4) 


84. Which of the following is NOT a correct method of the preparation of benzylamine from cyanobenzene?
1) $H_2$/Ni
2) (i) $LiAlH_4$ (ii) $H_2O$
3) (i) $Na(Hg)/C_2H_5OH$
4) (i) $HCl/H_2O$ (ii) $NaBH_4$

85. Which of the following statements is not true about RNA?
1) It controls the synthesis of protein.
2) It has always double stranded $\alpha$-helix structure.
3) It usually does not replicate.
4) It is present in the nucleus of the cell.

86. Which of the given statements is INCORRECT about glycogen?
1) It is a straight chain polymer similar to amylose.
2) Only $\alpha$-linkages are present in the molecule.
3) It is present in animal cells.
4) It is present in some yeast and fungi.

87. Match Column I with Column II

| | **Column I** | | **Column II** |
|---|---|---|---|
| A. | Cryolite | i. | $Al_2O_3 \cdot 2H_2O$ |
| B. | Bauxite | ii. | $CaF_2$ |
| C. | Fluorspar | iii. | $Na_3AlF_6$ |
| D. | Fluoroapatite | iv. | $3Ca_3(PO_4)_2 \cdot CaF_2$ |

Choose the correct answer from the options given below
1) A-iii; B-i; C-ii; D-iv 2) A-ii; B-iii; C-i; D-iv
3) A-ii; B-i; C-iii; D-iv 4) A-iii; B-ii; C-iv; D-i

88. Consider the oxides of groups 14 elements $SiO_2$, $GeO_2$, $SnO_2$, $PbO_2$, CO and GeO. The amphoteric oxides are

1) GeO, $GeO_2$ 2) $SiO_2$, $GeO_2$
3) $SnO_2$, $PbO_2$ 4) $SnO_2$, CO

89. Identify the incorrect statements about group 15 elements:

(A) Dinitrogen is a diatomic gas which acts like an inert gas at room temperature
(B) The common oxidation states of these elements are – 3, + 3 and + 5.
(C) Nitrogen has unique ability to form $p\pi - p\pi$ multiple bonds.
(D) The stability of + 5 oxidation states increases down the group.
(E) Nitrogen shows a maximum covalency of 6.

Choose the correct answer from the options given below:

1) (A), (C), (E) only 2) (B) (D) (E) only
3) (D) and (E) only 4) (A) (B) (D) only

90. **Assertion (A):** Both rhombic and monoclinic sulphur exist as $S_8$ while oxygen exists as $O_2$.
**Reason (R):** Oxygen forms $p\pi - p\pi$ multiple bonds with itself and other elements having small size and high electronegativity like C, N, which is not possible for sulphur.

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

91. Cell division as mode of reproduction can be observed in

1) Protists and Fungi
2) Protists and Monerans
3) Fungi and Monerans
4) Plants and Monerans

92. Viruses that infect animals have

(i) Single stranded RNA
(ii) double stranded RNA
(iii) double stranded DNA
(iv) Single stranded DNA

1) (iii) or (iv) only
2) (ii) or (iii) only
3) (i) or (ii) or (iii) or (iv)
4) (i) or (ii) or (iii) only

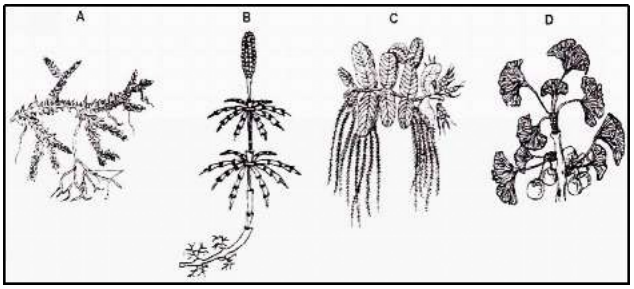
93. Select mismatched pair.

1) viroid: Diener
2) crystallisation of viruses: Stanley
3) currently accepted definition of a ecological species: Ernst Mayr
4) Contagium vivum fluidum: Beijerinek

94. In the seeds of cereals, seed coat is ____ and fused with.

1) membranous, aleurone layer
2) membranous, endosperm
3) membranous, fruit wall
4) thick, fruit wall

95. Examine the figures A, B, C and D. In which one of the four options all the items, A, B, C and D are correctly classified?




| | A | B | C | D |
|---|---|---|---|---|
| 1) | Bryophyte | Pteridophyte | Pteridophyte | Gymnosperms |
| 2) | Pteridophyte | Pteridophyte | Pteridophyte | Gymnosperms |
| 3) | Bryophyte | Gymnosperms | Pteridophyte | Pteridophyte |
| 4) | Pteridophyte | Gymnosperms | Pteridophyte | Pteridophyte |

96. Which region of root is responsible for the growth in length ?
1) region of meristematic activity only
2) region of meristematic activity and region of elongation
3) Root cap
4) Region of elongation only

97. Choose the incorrect match.
1) Centriole – Composed of fibrils of tubulin
2) Carotenoids – fat soluble pigments
3) Smooth ER – Formation of glycolipids
4) Nucelolus – Active site for r – RNA synthesis

98. Match the column:

| | | | |
|---|---|---|---|
| A) | Capitulum | I) | Malvaceae |
| B) | 4 petals, polypetalous | II) | Compositae |
| C) | Staminal tube | III) | Gramineae |
| D) | Glumes | IV) | Brassicaceae |

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

99. Bundle sheath cells are found in which of following?
(A) Dicot stem (B) Monocot stem
(C) Dicot Leaf (D) Monocot Leaf
1) A, B, C, D 2) C, D only
3) B only 4) B, C, D only

100. Mark the longest phase seen in megaspore mother cell.
1) interkinesis 2) prophase I
3) telophase II 4) prophase II

101. Read the following statements and select the correct option.
**Statement I:** In a monocot stem, peripheral vascular bundles are generally larger than centrally located ones.
**Statement II:** Tissue systems in Angiosperms are classified into three types, based on their structure and location.
1) Statement I is false but Statement II is true
2) Statement I is true but Statement II is false.
3) Both Statement I and Statement II are true
4) Both Statement I and statement II are false

102. During chemiosmosis, in photosynthesis phosphorylation of ADP occurs when protons ($H^+$) are passed from
1) Thylakoid lumen to cytosol
2) Thylakoid membrane to lumen
3) Lumen of thylakoid to stroma
4) Stroma to thylakoid lumen

103. Who provided evidence for production of glucose when plants grow?
1) Julius von sachs
2) Jan Ingenhousz
3) T. W. Engelmann
4) Cornelius van Niel

104. In the process of chemiosmosis in mitochondrion, the passage of protons through the 'channel' is coupled to the 'catalytic site' for production of ATP.
In the above statement channel is _(i)_ and catalytic site is _(ii)_.
1) (i) Inner mitochondrial membrane, (ii) $F_0$ - $F_1$
2) (i) Inner mitochondrial membrane, (ii) $F_0$ .
3) (i) $F_0$, (ii) $F_1$
4) (i) Inter membrane space, (ii) $F_0$ - $F_1$.

105. When organism needs to synthesize _(i)_, _(ii)_ would be withdrawn from the respiratory pathway for it.
1) (i) glycerol, (ii) acetyl co A
2) (i) – Fatty acids, (ii) – Glyceraldehyde 3- phosphate
3) (i) – fatty acids, (ii) – acetyl co A
4) (i) – fatty acids, (ii) – Pyruvic acid

106. Diplotene can last for months or years in _____ of some vertebrates.
1) Oogonia
2) primary oocyte
3) secondary oocyte
4) primary or secondary oocyte

107. Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R.
**Assertion (A):** The vascular bundles in dicot stem are called radial vascular bundles.
**Reason (R):** In a dicot stem, vascular bundles have xylem and phloem jointly present along the same radius.
1) Both (A) and (R) are correct and (R) is the correct explanation of (A).
2) Both (A) and (R) are correct but (R) is not the correct explanation of (A).
3) A is false but R is true
4) A is true but R is false.

108. In an Angiospermic pollen grain, Generative cell–
1) lacks a Nucleus
2) has abundant Cytoplasm in which the vegetative cell floats
3) floats in the cytoplasm of the vegetative cell
4) lacks Both Nucleus & Cytoplasm

109. Which of the following statements is not correct?
1) Pollen germination and pollen tube growth are regulated by chemical components of pollen interacting with those of the pistil.
2) Some reptiles have also been reported as pollinators in some plant species.
3) Pollen grains of many species can germinate on the stigma of a flower, but only one pollen tube of the same species grows into the style.
4) Insects that consume pollen or nectar without bringing about pollination are called pollen/nectar robbers.

110. Most appropriate example of point mutation is found in the disease known as
1) thalassaemia
2) night blindness
3) down's syndrome
4) sickle-cell anaemia

111. In which of the following steps of cellular respiration two redox-equivalent are removed from the substrate?
1) Conversion of PGAL to BPGA
2) Conversion of BPGA to PGA
3) Conversion of Pyruvate to lactic acid
4) Conversion of PEP to Pyruvate

112. Identify false fruits from the following list.
A) Banana B) Apple
C) Strawberry D) Mulberry

1) A, B, C only 2) B, C only
3) B, C, D only 4) A, B, C, D

113. Which statement is incorrect regarding restriction endonuclease enzyme?
1) It belongs to the class of nucleases
2) It is isolated from bacteriophages
3) It recognises a palindromic nucleotide sequence
4) one type produces the same kind of sticky ends in different DNA molecules

114. A desired gene inserted into the coding sequence of β-galactosidase enzyme would lead to
1) insertional inactivation giving rise to blue colonies of bacteria
2) insertional inactivation giving rise to colourless colonies of bacteria
3) disappearance of tetracyclin resistance in bacteria
4) disappearance of ampicillin resistance in bacteria

115. Select the correctly match placentation:

| | | |
|---|---|---|
| 1) | Marginal | Mustard |
| 2) | Parietal | Argemone |
| 3) | Axile | Dianthus |
| 4) | Free central | Marigold |

116. The spatial pattern in an ecosystem which occurs vertically is termed as -
1) zonation
2) stratification
3) hyper volume niche
4) habitat niche

117. Geitonogamy involves:
1) fertilization of a flower by the pollen from another flower of the same plant.
2) fertilization of a flower by the pollen from the same flower.
3) fertilization of a flower by the pollen from a flower of another plant in the same population
4) fertilization of a flower by the pollen from a flower of another plant belonging to a distant population

118. In the E. coli cloning vector pBR 322, the number of selectable marker is
1) 4 2) 1
3) 2 4) 3

119. Besides the involvement of multiple genes, polygenic inheritance also takes into account the influence of ____.
1) Hormones 2) Environment
3) Chromosomes 4) Proteins

120. Identify the concerned plant growth regulators in following three statements
(i) X is involved in internode elongation just prior to flowering in plants with rosette habit.
(ii) Y plays an important role in seed development, maturation and dormancy.
(iii) Z promotes lateral shoot growth and adventitious shoot formation
1) X: cytokinin, Y: Dormin, Z: IAA
2) X: Gibberelic acid, Y: Abscisic acid, Z: cytokinins
3) X: Gibberellic acid, Y: stress hormone, Z: Auxin
4) X: ethylene, Y: ABA, Z: auxin

121. Identify the enzymes involved in the following:
I. Condensation of Acetyl CoA and OAA in TCA cycle
II. Oxidative decarboxylation of pyruvic acid
III. Reduction of Pyruvic acid

| | I | II | III |
|---|---|---|---|
| 1) | Citrate synthase | Pyruvate decarboxylase | Lactate dehydrogenase |
| 2) | Citrate synthase | Pyruvate dehydrogenase | Lactate dehydrogenase |
| 3) | Citrate synthase | Pyruvate dehydrogenase | Pyruvate decarboxylase |
| 4) | Citrate reductase | Pyruvate decarboxylase | Pyruvate dehydrogenase |

122. Which of the following are a part of endomembrane system of eukaryotic cell ?

(i) Nucleus (ii) Mitochondria
(iii) ER (iv) Golgi bodies
(v) Vacuole (vi) Lysosomes

1) (i), (ii), (iii), (iv)
2) (i), (iii), (iv), (v)
3) (ii), (iii), (iv) (vi)
4) (iii), (iv), (v), (vi)

123. In fungi, sexual reproduction takes place by

1) Ascospores, basidiospores and zoospores
2) Zoospores, sporangiospores and conidia
3) Zoospores, oospores and basidiospores
4) Oospores, ascospores and basidiospores

124. Which one of the following is considered first terrestrial plant to be evolved having xylem and phloem?

1) Bryophyte 2) Gymnosperms
3) Pteridophytes 4) Angiosperms

125. Select an example of plant showing plasticity.

1) Tomato 2) Cotton
3) Pea 4) Cabbage

126. Crossing over takes place between -

1) Two non-sister chromatids of non-homologous chromosomes.
2) Two non-sister chromatids of homologous chromosomes
3) Two sister chromatids of non-homologous chromosomes
4) Two sister chromatids of homologous chromosomes.

127. Identify correct statement

(i) All Gibberellins are acidic
(ii) Cytokinins cause nutrient mobilization and hence hasten leaf senescence
(iii) ABA acts antagonistic to Auxins

1) (i) 2) (i), (ii)
3) (ii), (iii) 4) (i), (ii) (iii)

128. Which of the following is not a component of photosystem I?

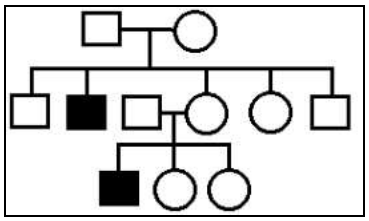
1) LHC 2) Reaction centre
3) P – 700 4) P – 680

129. Match the following columns:

| | **Column I** | | **Column II** |
|---|---|---|---|
| I. | IAA | (i) | Gases |
| II. | $N^6$ –furfuryl amino purine | (ii) | Terpenes |
| III. | ABA | (iii) | Derivatives of Carotenoids |
| IV. | $GA_3$ | (iv) | Adenine derivatives |
| V. | Ethylene | (v) | Indole compounds |

1) I (v), II (ii), III (iii), IV (iv), V (i)
2) I (v), II (iv), III (iii), IV (ii), V (i)
3) I (v), II (ii), III (iii), IV (iv), V (i)
4) I (iv), II (v), III (i), IV (ii), V (iii)

130. Study the pedigree chart of a family showing the inheritance of sickle-cell anaemia.



The trait in the above pedigree chart is

1) dominant X-linked
2) recessive X-linked, or autosomal dominant
3) autosomal dominant
4) autosomal recessive

131. As a seed matures its water content is reduced to _A__. The general metabolic activity of embryo __B_. The embryo may enters a state called __C__.

Choose correct option for A, B and C.

1) A- 50-60% moisture by mass,
   B- hasten, C- infertile
2) A- 10-15% moisture by mass,
   B- slow down, C- dormancy
3) A- 35-50% moisture by mass,
   B- slow down, C- development
4) A- 10-15% moisture by mass,
   B- hasten, C- Embryogenesis

132. If two pea plants having violet coloured flowers with unknown genotypes are crossed with each other. The progeny showed 75% of the flowers violet and 25% white. The genotypic constitution of the parents having violet coloured flowers will be

1) Both homozygous
2) Male homozygous, female heterozygous
3) Both heterozygous
4) Female homozygous, male heterozygous

133. Coconut fruit is a ____ type of fruit.

1) Berry 2) Nut
3) Capsule 4) Drupe

134. Root hairs develop from the region of :

1) Elongation
2) root cap
3) Meristematic activity
4) Maturation

135. A cross between two individuals produces 50% progeny with dominant trait & 50% with recessive trait. The genotype of parents of the cross would be:

1) RR X rr 2) Rr X Rr
3) Rr X rr 4) Rr X RR

136. Taxonomic studies consider a group of individual organisms with fundamental similarities as:

1) Kingdom 2) Phylum/Division
3) Genus 4) Species

137. Read the following statements carefully:
a. Hooks and suckers are present
b. Some of them absorb nutrients from the host directly through their body surface
c. Fertilisation is internal and development is through many larval stages
The animal showing above feature is:

1) Fasciola 2) Ancylastoma
3) Nereis 4) Saccoglossus

138. In RNA, every nucleotide residue has an additional - OH group at which of the following position.
1) 2' position of deoxyribose
2) 1' possition of ribose sugar
3) 3' position of ribose sugar
4) 2' position of ribose sugar

139. Which is correctly matched w.r.t. disease, causative organism and mode of transmission?

| | | | |
|---|---|---|---|
| 1) | Typhoid | Salmonella typhi | with inspired air |
| 2) | Pneumonia | Streptococcus pneumonia | Droplet infection |
| 3) | Elephantiasis | Wuchereria bancrofti | Contaminated water and food |
| 4) | Malaria | Plasmodium vivax | Bite of male Anopheles. |

140. Identify the set of three bones, all of which articulate with parietal bone of human skull?
1) Frontal, Maxilla, Mandible
2) Frontal, occipital, zygomatic
3) Frontal, occipital, temporal
4) Frontal, temporal, zygomatic

141. The beta-pleated sheet structure found in proteins is its ____ structure.
1) primary 2) secondary
3) tertiary 4) quaternary

142. Lecithin has ___ elements in its molecule.
1) C, H, O only 2) C, H, O, N only
3) C, H, O, N, P 4) C, H, O, P, S

143. The most dramatic examples of habitat loss come from tropical rain forests. Once covering more that 14 present of earths land surface and now cover no more than:
1) 5% 2) 6%
3) 10% 4) 13%

144. Which of the following roles are played by predator in ecosystem?
(i) Act as conduits for energy transfer
(ii) To keep prey population under control
(iii) To maintain species diversity in community

1) (i), (ii) 2) (ii), (iii)
3) (i), (iii) 4) (i), (ii), (iii)

145. Researcher wants to work upon the growth pattern of Megakaryocytes. For his experiments, he is supposed to take sample from…
1) bone marrow of volunteer
2) blood platelets of volunteer
3) from lymph nodes of volunteer
4) from biopsy of kidney of volunteer

146. Ketosis is characteristic of
1) Diabetes insipidus
2) Addison's disease
3) Diabetes mellitus
4) Tetany

147. As per sliding filament theory, when muscle shortens which of the following events does not take place?
1) Actin and myosin slide over each other
2) H-zone disappears
3) I- band fails to retain its size
4) size of sarcomere decreases

148. Match the terms given in Column I with their physiological processes given in Column II and choose the correct answer.

| | **Column I** | | **Column II** |
|---|---|---|---|
| A) | Proximal convoluted tubule | I. | Formation of concentrated urine |
| B) | Distal convoluted tubule | II. | Filtration of blood |
| C) | Henle's loop | III. | Reabsorption of 70- 80% of electrolytes |
| D) | Counter-current mechanism | IV. | Ionic balance |
| E) | Renal corpuscle | V. | Maintenance of concentration gradient in medullary interstitium |

1) A - IV, B - III, C - V, D - I, E - II
2) A - III, B - IV, C - I, D - V, E - II
3) A - I, B - III, C - II, D - V, E - IV
4) A - III, B - I, C - IV, D - V, E – II

149. What is not structurally associated with Amoeboid movement?
1) microfilament
2) streaming of protoplasm
3) contractile vacuole
4) pseudopodia

150. Which of the following is not a part of cerebrum ?
(i) cerebral aqueduct
(ii) limbic lobe
(iii) corpora quadrigemina

1) (i) only 2) (ii), (iii) only
3) (i), (iii) only 4) (iii) only

151. Today ____ is/are extensively used as a starting point in the sequencing of genome as was done in the case of the Human Genome sequencing project.
1) Genetic maps
2) r-DNA technology
3) PCR technique
4) VNTRs

152. What is not true about cortisol
1) It creates anti-inflammatory effect
2) It inhibits lipolysis
3) It inhibits the immune response
4) Inhibits cellular uptake of amino acids

153. Which is correct sequence of male accessory ducts starting from testis?
1) Rete testis, vasa efferentia, epididymis, vas deferens
2) Rete testis, vasa efferentia, vas deferens, epididymis
3) Rete testis, vas deferens, epididymis, vasa efferentia
4) Rete testis, vas deferens, vasa efferentia, epididymis

154. Which of the following hormones stimulates milk forming apparatus and milk secretion in human female?
1) oxytocin 2) estrogen
3) progesterone 4) GnRH

155. Read the following statements and find out the incorrect statement(s).
a. Humans are sexually reproducing and viviparous.
b. Transfer of sperm in female genital tract (vagina) is called ejaculation.
c. There are remarkable differences between the reproductive events in the male and in the female.
d. Sperm formation and in formation of ovum ceases around the age of fifty years.
e. The male and female reproductive systems are located in the pelvic region.

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

156. Mark the mismatched pair.
1) Triplet nature of genetic code: Gamow
2) Use of cell free system for protein synthesis: Nirenberg
3) DNA fingerprinting : Alec Jeffreys
4) Semiconservative mode of replication of DNA in chromosome : Meselson and Stahl

157. In a population of 2000 pea plants short pea plants are 320. Assuming that the population is in Hardy Weinberg equilibrium, what is the frequency of allele for tallness?
1) 0.4 2) 0.8
3) 0.6 4) 0.2

158. Transcription unit of DNA includes all of these except…..
1) promoter region
2) structural gene
3) UTR
4) terminator region

159. Match the column:

| | | | |
|---|---|---|---|
| A) | collar cells | I) | support to body |
| B) | cnidocyte | II) | osmoregulation & excretion |
| C) | Spongin fibres | III) | digestion |
| D) | flame cells | IV) | Defence |
| E) | parapodia | V) | swimming |

1) A-III, B-II, C-V, D-I, E-IV
2) A-III, B-IV, C-I, D-II, EV
3) A-IV, B-I, C-II D-V, E- III
4) A-IV, B-III, C-II, D-I, E-V

160. Artificial selection to obtain cows yielding higher milk output represents
1) Directional as it pushes the mean of the character in one direction
2) Disruptive as it splits the population into two, one yielding higher output and the other lower output
3) Stabilizing followed by disruptive as it stabilizes the population to produce higher yielding cows
4) Stabilizing selection as it stabilizes this character in the population

161. The proteinaceous molecule that joins with a cofactor to form a functional enzyme is called
1) Ribozyme 2) apoenzyme
3) holoenzyme 4) isoenzyme

162. Lungs are made up of air-filled sacs, the alveoli. The air left in the lungs even after forceful expiration is:
1) Inspiratory Reserve Volume
2) Tidal Volume
3) Expiratory Reserve Volume
4) Residual Volume

163. What is true about Ichthyosaurs ?
1) It is reptile like fish
2) it is a fish like reptile
3) it is the first animal to invade land
4) it is jawless fish

164. Identify a different kind of IUD than the remaining three:
1) CuT 2) LNG – 20
3) Cu 7 4) Multiload 375

165. Read the following statements and find out the incorrect statements.
a. A synapse is formed by the membranes of a pre-synaptic neuron and a post-synaptic neuron, which may or may not be separated by a gap called synaptic cleft.
b. At electrical synapses, the membranes of pre- and post-synaptic neurons are in very close proximity.
c. Electrical current can flow directly from one neuron into the other across chemical synapses.
d. Impulse transmission across a chemical synapse is always faster than that across a electric synapse.
e. Electrical synapses are rare in our system.
1) a and b 2) b and c
3) c and d 4) d and e

166. Select the incorrect alternative regarding number of bones.
1) vertebral column : 26
2) Cranial bones: 8
3) ribs: 24
4) ankle bones: 8

167. Secretin causes
1) flow of gastric juice
2) inhibition of gastric juice secretion
3) secretion of pancreatic enzymes
4) secretion of water and bicarbonate ions from pancreas

168. Tegmina in cockroach help to ....
1) controll spiracles & thus inturn respiration
2) Cover fore wings
3) take a flight
4) Cover hind wings

169. Consider the following statements.
**Statement I:** All sexually transmitted diseases can be cured completely if detected early and treated properly.
**Statement II:** Early symptoms of STIs include itching, fluid discharge and swelling in genital areas.
Select the correct option.
1) Statement I is true, Statement II is false
2) Statement I and Statement II are true
3) Statement I is false, Statement II is true
4) Statement I and Statement II are false

170. It is possible that, while postulating the theory of evolution by natural selection, Darwin was influenced by
1) Mutation theory of Hugo de Vries
2) Lamarck's theory of acquired characters
3) Work of Thsomas Malthus on populations
4) Theory of Alfred Wallace

171. Which one of the following statements is correct with respect to AIDS?
1) Drug addicts are least susceptible to HIV infection.
2) Genetic material in HIV is DNA.
3) The causative HIV retrovirus enters and destroys helper T-lymphocytes thus reducing their number.
4) HIV can be transmitted through eating food together with an infected person.

172. The conducting part of human respiratory system deals with all functions except...
1) humidification of air
2) bringing air to body temperature
3) diffusion of gases
4) cleaning of air from foreign particles

173. The Amazon rain forest 'lungs of Planet' harbouring probably millions of species is being cut and cleared for which purpose:
(i) For cultivation of soyabeans
(ii) For conversion of grasslands for raising beef cattles
(iii) For cuttivation of fruit plants

1) (i) and (ii) 2) (ii) and (iii)
3) (i) and (iii) 4) (i), (ii) and (iii)

174. Choose the site where the sporozoites of Plasmodium are being formed.
1) Liver of patient
2) Erythrocytes of patient
3) Salivary glands of female Anopheles mosquito
4) Gut of female Anopheles mosquito

175. Meninges surrounding the brain of Human from outside to inside are :-
1) Duramater, arachnoid, piamater
2) Piamater, arachnoid, duramater
3) Duramater, Piamater, arachnoid
4) Piamater, duramater, arachnoid

176. Sticky ends of DNA fragments, obtained in recombinant DNA technology, are joined by enzyme ____.
1) DNA polymerase 2) DNA ligase
3) Restriction enzyme 4) Phosphorylase

177. *Propionibacterium sharmanii…*
1) biocontrol measure for the weeds
2) used in malting process
3) creates large holes in Swiss cheese
4) key microbe in activated sludge

178. Match the columns I and II, and choose the correct combination from the options given.

| | **Column I** | | **Column II** |
|---|---|---|---|
| (A) | Gorgonia | I. | Brain coral |
| (B) | Adamsia | II. | Jelly fish |
| (C) | Meandrina | III. | Portuguese-man-of-war |
| (D) | Physalia | IV. | Sea anemone |
| (E) | Pennatula | V. | Sea-fan |
| (F) | Aurelia | VI. | Sea-pen |

1) A-VI, B-IV, C-III, D-I, E-V, F-II
2) A-V, B-IV, C-I, D-III, E-VI, F-II
3) A-V, B-III, C-I, D-IV, E-II, F-VI
4) A-V, B-IV, C-III, D-I, E-VI, F-II

179. Speed of conduction of action potential in heart is decreased by:
1) AV node
2) SA node
3) Sympathetic neural signals
4) Parasympathetic neural signals

180. Which blood vessel takes blood away from human kidney?
1) Renal portal vein
2) Renal vein
3) Afferent arteriole
4) Efferent arteriole

**********