

**Sample Copy****TEST SERIES - NEET****FULL TEST - 01****TEST CODE FT - 01**

Name of the Candidate : \_\_\_\_\_

Roll No. \_\_\_\_\_

Time : 3 Hours 20 Minutes

Maximum Marks : 720

Date : \_\_\_\_\_

**Syllabus**

**PHYSICS : COMPLETE Syllabus; CHEMISTRY : COMPLETE Syllabus**  
**BOTANY : COMPLETE Syllabus; ZOOLOGY : COMPLETE Syllabus**

**INSTRUCTIONS**

1. Immediately fill in the particulars on this page of the Test Booklet with Blue/Black Ball Point Pen only.
2. The test is of 3 hours 20 minutes duration and the test booklet contains 200 Multiple choice questions. Which have four options with a single correct answer.
3. This test consists of Physics, Chemistry, Botany and Zoology questions with equal weightage of 180 marks.
4. Each question is of 4 marks. For each correct response the candidate will get 4 marks. For each incorrect response, 1 mark will be deducted from the total score. The maximum marks are 720.
5. There are four parts in the question paper, consisting Part-I Physics (Q.no.1 to 50), Part-II Chemistry (Q.no. 51 to 100), Part-III Botany (Q. no. 101 to 150) and Part-IV Zoology (Q. no.151 to 200). Each part is divided into two Sections, Section-A consists of 35 multiple choice questions & Section-B consists of 15 Multiple choice questions, out of these 15 questions candidates can choose to attempt any 10 questions.

	Parts		Physics	Chemistry	Botany	Zoology	Total
	Sections						
Questions	Section A	35	35	35	35	140	200
	Section B	15	15	15	15	60	
To Attempt	Section A	35	35	35	35	140	180
	Section B	10	10	10	10	40	

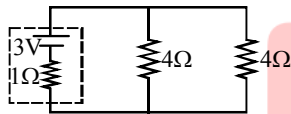
6. Candidates are advised to read all 15 questions in each subject of Section-B before they start attempting the question paper. In the event of a candidate attempting more than ten questions, the first ten questions answered by the candidate shall be evaluated.
7. Use Blue/Black Ball Point Pen only for writing particulars/markings responses on OMR Sheet.
8. Do not fold or make any stray marks on the Answer Sheet. Rough work is to be done on the space provided for this purpose.

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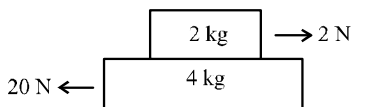
**PART-I: PHYSICS**

**Section-A**

- If the temperature of a gas is increased from 27°C to 159°C, then the percentage increase in the rms speed of the gas molecules is [NCERT-XI, Page 250]  
 (1) 5 (2) 10 (3) 15 (4) 20
- In a Young's double slit experiment, if the wavelength of light is increased by 50% and the distance between the slits is doubled then the percentage change in fringe width is [NCERT-XII, Page 266]  
 (1) 75 (2) 50 (3) 25 (4) 15
- A vernier callipers has 20 divisions on the vernier scale, which coincides with 19<sup>th</sup> division on the main scale. The least count of the instrument is 0.1 mm. One main scale division is equal to  
 (1) 1mm (2) 0.5mm (3) 2mm (4) 5mm
- In the given circuit, the terminal potential difference of the cell is : [NCERT-XII, Page 94]



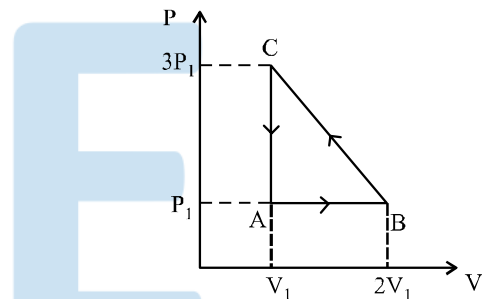
- (1) 2V (2) 4V (3) 1.5V (4) 3V
- The magnetic moments associated with two closely wound circular coils A and B of radius  $r_A = 10$  cm and  $r_B = 20$  cm respectively are equal if: (Where  $N_A, I_A$  and  $N_B, I_B$  are number of turn and current of A and B respectively) [NCERT-XII, Page 128]  
 (1)  $2N_A I_A = N_B I_B$  (2)  $N_A = 2N_B$   
 (3)  $N_A I_A = 4N_B I_B$  (4)  $4N_A I_A = N_B I_B$
- In the arrangement shown in the figure, the coefficient of friction between two blocks is 0.5. The force of friction between the two blocks is (Assume that the 4 kg block is placed on a smooth horizontal surface.) (Acceleration due to gravity =  $10 \text{ ms}^{-2}$ .) [NCERT-XI, Page 60, 61]



- (1) 8N (2) 10N (3) 6N (4) 4N
- Primary side of a transformer is connected to 230 V, 50 Hz supply. Turns ratio of primary to secondary winding is 10 : 1. Load resistance connected to secondary side is 46Ω. The power consumed in it is : [NCERT-XII, Page 195]  
 (1) 12.5 W (2) 10.0 W  
 (3) 11.5 W (4) 12.0 W
- Given below are two statements:  
**Statement I** : Most of the mass of the atom and all its positive charge are concentrated in a tiny nucleus and the electrons revolve around it, is Rutherford's model.

**Statement II** : An atom is a spherical cloud of positive charges with electrons embedded in it, is a special case of Rutherford's model. [NCERT-XII, Page 293]

- In the light of the above statements, choose the **most appropriate** from the options given below
- (1) Statement I is true but Statement II is false
  - (2) Both Statement I and Statement II are true
  - (3) Both Statement I and Statement II are false
  - (4) Statement I is false but Statement II is true
- Two long parallel straight metal wires A and B carrying currents 12 A and 36 A respectively, in the same direction are separated by 50 cm. The point relative to A, where the resultant magnetic induction between the two wires due to the currents is zero, will be [NCERT-XII, Page 123]  
 (1) 90 cm (2) 7.5 cm (3) 28 cm (4) 12.5 cm
  - The net work done by an ideal gas going through the cycle as shown in the P – V diagram below is [NCERT-XI, Page 235]



- (1) 0 (2)  $P_1 V_1$   
 (3)  $\frac{3}{2} P_1 V_1$  (4)  $\frac{1}{2} P_1 V_1$
- An electric charge  $10^{-6} \mu\text{C}$  is placed at origin (0, 0) m of X – Y co-ordinate system. Two points P and Q are situated at  $(\sqrt{3}, \sqrt{3})$  m and  $(\sqrt{6}, 0)$  m respectively. The potential difference between the points P and Q will be : [NCERT-XII, Page 48]  
 (1)  $\sqrt{3}V$  (2)  $\sqrt{6}V$  (3) 0 V (4) 3V
- A string of length 1 m and mass 490 g is put under a tension of 25 N. A wave of frequency 120 Hz is sent along it. The speed of this wave is [NCERT-XI, Page 285]  
 (1)  $7.14 \text{ ms}^{-1}$  (2)  $0.71 \text{ ms}^{-1}$   
 (3)  $0.51 \text{ ms}^{-1}$  (4)  $51.0 \text{ ms}^{-1}$
- A stone of mass 2 kg is tied at one end of a string of length 2 m and is whirled in a horizontal circle. If the string can withstand a maximum tension of 64 N, then the permissible maximum number of rotations per minute is [NCERT-XI, Page 63]  
 (1) 19 (2)  $\frac{60}{\pi}$  (3)  $\frac{152}{3}\pi$  (4)  $\frac{120}{\pi}$

14. Which of the following phenomena does not explain by wave nature of light. [NCERT-XII, Page 280, 281]

- (A) reflection
- (B) diffraction
- (C) photoelectric effect
- (D) interference
- (E) polarization

Choose the **most appropriate** answer from the options given below :

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

15. A body of mass 2 kg begins to move under the action of a time dependent force given by  $\vec{F} = (6t\hat{i} + 6t^2\hat{j})\text{ N}$ . The power developed by the force at the time t is given by:

[NCERT-XI, Page 83]

- (1)  $(6t^4 + 9t^5)\text{ W}$
- (2)  $(3t^3 + 6t^5)\text{ W}$
- (3)  $(9t^5 + 6t^3)\text{ W}$
- (4)  $(9t^3 + 6t^5)\text{ W}$

16. A light ray incidents normally on one surface of an equilateral prism. The angle of deviation of the light ray is (refractive index of the material of the prism =  $\sqrt{2}$ )

[NCERT-XII, Page 239, 240]

- (1)  $60^\circ$
- (2)  $30^\circ$
- (3)  $0^\circ$
- (4)  $120^\circ$

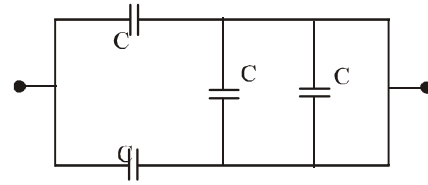
17. Match the physical quantities of Column I with their mathematical expressions in Column II.

[NCERT-XII, Page 112, 116, 123, 126]

Column I	Column II
(A) Torque on a circular current loop placed in uniform magnetic field	(p) $\frac{\mu_0 i}{2R}$
(B) Force per unit length between parallel current carrying wires	(q) $iAB \sin \theta$
(C) Magnetic field at the centre of a circular current carrying loop.	(r) $\frac{mV}{qB}$
(D) Radius of circular path of a charge particle moving in uniform magnetic field.	(s) $\frac{\mu_0 i_1 i_2}{2\pi d}$

- (1) (A) → (q); (B) → (p); (C) → (r); (D) → (s)
- (2) (A) → (q); (B) → (q); (C) → (s); (D) → (r)
- (3) (A) → (s); (B) → (r); (C) → (q); (D) → (p)
- (4) (A) → (q); (B) → (s); (C) → (p); (D) → (r)

18. The equivalent capacitance of the combination shown is [NCERT-XII, Page 72]



- (1)  $\frac{C}{2}$
- (2)  $4C$
- (3)  $2C$
- (4)  $\frac{5}{3}C$

19. Which of the following pairs has same dimensions?

[NCERT-XI, Page 7]

- (1) Current density and charge density
- (2) Angular momentum and linear momentum
- (3) Spring constant and surface energy
- (4) Force and torque

20. A metal wire with circular cross section and length one metre is pulled with tensile force of 1000 N on each side. For the wire to be stretched not more than 0.25 cm, the minimum diameter of the wire required is (Young's modulus of the metal =  $10^{11}\text{ Pa}$ ,

take  $\sqrt{\pi} = 1.77$ )

[NCERT-XI, Page 170]

- (1) 1.13 mm
- (2) 2.26 mm
- (3) 4.12 mm
- (4) 3.1 mm

21. Given below are two statements : one is labelled a Assertion (A) and the other is labelled as Reason (R)

**Assertion (A) :** Work done by electric field on moving a positive charge on an equipotential surface is always zero.

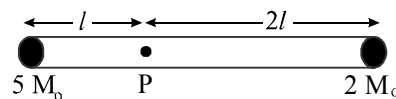
**Reason (R) :** Electric lines of forces are always perpendicular to equipotential surfaces.

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

[NCERT-XII, Page 54]

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

22. A rigid massless rod of length 3l has two masses attached at each end as shown in the figure. The rod is pivoted at point P on the horizontal axis (see figure). When released from initial horizontal position, its instantaneous angular acceleration will be: [NCERT-XI, Page 119]



- (1)  $\frac{g}{13l}$
- (2)  $\frac{g}{3l}$
- (3)  $\frac{g}{2l}$
- (4)  $\frac{7g}{3l}$

23. A uniform solid sphere of radius  $R$  produces a gravitational acceleration of  $a_0$  on its surface. The distance of the point from the centre of the sphere where the gravitational acceleration becomes  $\frac{a_0}{4}$  is [NCERT-XI, Page 130]

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

24. A light whose electric field vectors are completely removed by using a good Polaroid, allowed to incident on the surface of the prism at Brewster's angle. Choose the most suitable option for the phenomenon related to the prism.

- (1) Reflected and refracted rays will be perpendicular to each other  
 (2) Wave will propagate along the surface of prism  
 (3) No refraction, and there will be total reflection of light.  
 (4) No reflection and there will be total transmission of light.

25. A metal ball of mass 2 kg moving with a velocity of 36 km/h has a head on collision with a stationary ball of mass 3 kg. After the collision, if both balls move together, then the loss in kinetic energy due to collision is [NCERT-XI, Page 84]

- (1) 40 J      (2) 60 J      (3) 100 J      (4) 140 J

26. Binding energy of a certain nucleus is  $18 \times 10^8$  J. How much is the difference between total mass of all the nucleons and nuclear mass of the given nucleus: [NCERT-XII, Page 311]

- (1) 0.2  $\mu$ g      (2) 20  $\mu$ g  
 (3) 2  $\mu$ g      (4) 10  $\mu$ g

27. The equation of motion of a particle executing simple harmonic motion is given by  $x = 3 \sin \left( 6t + \frac{\pi}{6} \right)$ , where  $x$  is in metres and  $t$  is in seconds. The ratio of the potential and kinetic energies of the particle at time  $t = 0$  is [NCERT-XI, Page 268]

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

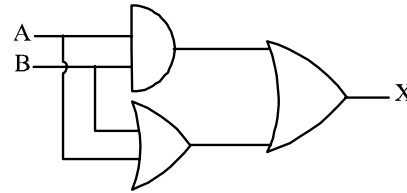
28. If  $\vec{E}$  and  $\vec{B}$  are the electric and magnetic field vectors of an electromagnetic wave, then the direction of propagation of the electromagnetic wave is [NCERT-XII, Page 206]

- (1) along the direction of  $\vec{E}$   
 (2) along the direction of  $\vec{B}$   
 (3) parallel to the direction of  $\vec{E} \times \vec{B}$   
 (4) perpendicular to the direction of  $\vec{E} \times \vec{B}$

29. A water drop breaks into 64 identical droplets of each surface area  $10^{-7} \text{ m}^2$ . If the surface tension of water is  $0.07 \text{ Nm}^{-1}$ , the increase in the surface energy in the process is [NCERT-XI, Page 194]

- (1)  $158 \times 10^{-9} \text{ J}$   
 (2)  $432 \times 10^{-9} \text{ J}$   
 (3)  $216 \times 10^{-9} \text{ J}$   
 (4)  $336 \times 10^{-9} \text{ J}$

30. The behaviour of the circuit is like \_\_\_\_\_ gate



- (1) OR      (2) NOR      (3) NAND      (4) AND

31. A body rotating with uniform acceleration about its geometrical axis makes 8 rotations in the first 2 seconds. The number of rotations the body makes in the next 3 seconds is [NCERT-XI, Page 117]

- (Initially the body is at rest)  
 (1) 50      (2) 25      (3) 42      (4) 21

32. **Statement-I** : By doping silicon semiconductor with pentavalent material, the electrons density increases.

**Statement-II** : The n-type semiconductor has net negative charge.

In the light of the above statements, choose the most appropriate answer from the options given below : [NCERT-XII, Page 330]

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

33. An electric cable of copper has just one wire of radius 9 mm. Its resistance is  $14\Omega$ . If this single copper wire of the cable is replaced by seven identical well insulated copper wires each of radius 3 mm connected in parallel, then the new resistance of the combination will be: [NCERT-XII, Page 84]

- (1)  $9\Omega$       (2)  $18\Omega$       (3)  $28\Omega$       (4)  $126\Omega$

34. Two coils are placed close to each other. The mutual inductance of the pair of coils depends upon

- I. relative position and orientation of the two coils  
 II. the materials of the wires of the coils  
 III. the rates at which currents are changing in the two coils  
 IV. Number of turns in the coils

Which of the above statements is/are correct?

[NCERT-XII, Page 166, 167]

- (1) I and IV      (2) II only  
 (3) I and III      (4) II and III

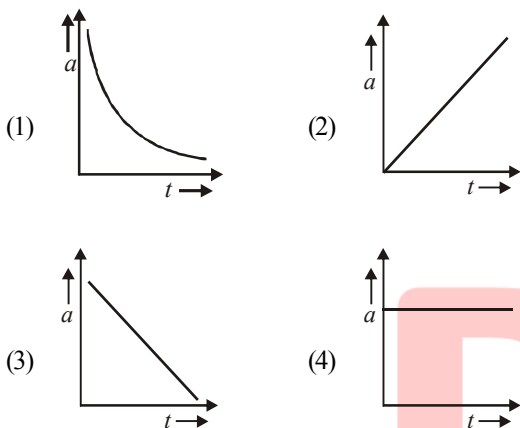
35. If the angles of projection of a projectile with same initial velocity exceed or fall short of  $45^\circ$  by equal amounts, then the ratio of horizontal ranges is [NCERT-XI, Page 40]

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

**Section-B**

36. The displacement current through the plates of a parallel plate capacitor of capacitance  $30 \mu\text{F}$  is  $150 \mu\text{A}$ . The capacitor is charged by a source of varying potential at the rate of [NCERT-XII, Page 203, 204]  
 (1)  $3.5 \text{ Vs}^{-1}$  (2)  $2 \text{ Vs}^{-1}$  (3)  $5 \text{ Vs}^{-1}$  (4)  $3 \text{ Vs}^{-1}$

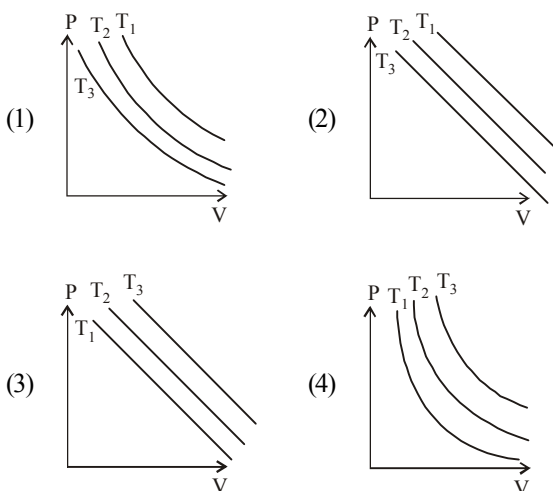
37. The distance travelled by a body moving along a line in time  $t$  is proportional to  $t^3$ . The acceleration-time ( $a, t$ ) graph for the motion of the body will be [NCERT-XI, Page 16]



38. The magnifying power of a telescope with tube length  $60 \text{ cm}$  is  $5$ . Then the focal length of its eye piece is [NCERT-XII, Page 244, 245]  
 (1)  $20 \text{ cm}$  (2)  $40 \text{ cm}$  (3)  $30 \text{ cm}$  (4)  $10 \text{ cm}$

39. Two electric bulbs rated  $25\text{W} - 220\text{V}$  and  $100\text{W} - 220\text{V}$  are connected in series to a  $440 \text{ V}$  supply. Which of the bulbs will fuse? [NCERT-XII, Page 93]  
 (1) Both (2)  $100 \text{ W}$  (3)  $25 \text{ W}$  (4) Neither

40. In an Isothermal change, the change in pressure and volume of a gas can be represented for three different temperature;  $T_3 > T_2 > T_1$  as : [NCERT-XI, Page 234, 235]



41. Two parallel large thin metal sheets have equal surface densities  $26.4 \times 10^{-12} \text{ C/m}^2$  of opposite signs. The electric field between these sheets is- [NCERT-XII, Page 35]  
 (1)  $1.5 \text{ N/C}$  (2)  $1.5 \times 10^{-16} \text{ N/C}$   
 (3)  $3 \times 10^{-10} \text{ N/C}$  (4)  $3 \text{ N/C}$

42. A simple pendulum of length  $1 \text{ m}$  is freely suspended from the ceiling of an elevator. The time period of small oscillations as the elevator moves up with an acceleration of  $2 \text{ m/s}^2$  is (use  $g = 10 \text{ m/s}^2$ ) [NCERT-XI, Page 271]  
 (1)  $\frac{\pi}{\sqrt{5}} \text{ s}$  (2)  $\sqrt{\frac{2}{5}}\pi \text{ s}$   
 (3)  $\frac{\pi}{\sqrt{2}} \text{ s}$  (4)  $\frac{\pi}{\sqrt{3}} \text{ s}$

43. Energy required to move a body of mass  $m$  from an orbit of radius  $2R$  to  $3R$  is [NCERT-XI, Page 134]  
 (1)  $\frac{GMm}{12R^2}$  (2)  $\frac{GMm}{3R^2}$   
 (3)  $\frac{GMm}{8R}$  (4)  $\frac{GMm}{6R}$

44. Match the following. Column II gives  $\lambda_{\text{max}}/\lambda_{\text{min}}$  for the spectral series in column I

Column I	Column II
(A) Lyman series	(p) $16/7$
(B) Balmer series	(q) $9/5$
(C) Paschen series	(r) $25/9$
(D) Bracket series	(s) $4/3$

- (1) (A)  $\rightarrow$  (q); (B)  $\rightarrow$  (r); (C)  $\rightarrow$  (p); (D)  $\rightarrow$  (s)  
 (2) (A)  $\rightarrow$  (s); (B)  $\rightarrow$  (q); (C)  $\rightarrow$  (p); (D)  $\rightarrow$  (r)  
 (3) (A)  $\rightarrow$  (r); (B)  $\rightarrow$  (q); (C)  $\rightarrow$  (s); (D)  $\rightarrow$  (p)  
 (4) (A)  $\rightarrow$  (q); (B)  $\rightarrow$  (s); (C)  $\rightarrow$  (r); (D)  $\rightarrow$  (p)

45. A steel rod with  $Y = 2.0 \times 10^{11} \text{ Nm}^{-2}$  and  $\alpha = 10^{-5} \text{ }^\circ\text{C}^{-1}$  of length  $4 \text{ m}$  and area of cross-section  $10 \text{ cm}^2$  is heated from  $0^\circ \text{C}$  to  $400^\circ\text{C}$  without being allowed to extend. The tension produced in the rod is  $x \times 10^5 \text{ N}$  where the value of  $x$  is [NCERT-XI, Page 207]  
 (1)  $8$  (2)  $9$  (3)  $48$  (4)  $92$

46. Consider the following statements regarding series grouping of capacitors and select the correct statements. [NCERT-XII, Page 72]

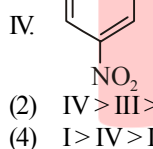
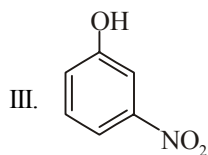
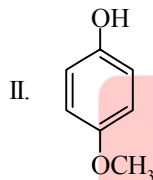
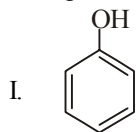
- I. Charge on each capacitor remains same and equals to the main charge supplied by the battery.
  - II. Potential difference and energy distributes in the reverse ratio of capacitance.
  - III. Effective capacitance is even less than the least of the individual capacitances.
  - IV. Potential on each capacitor remains same and equals to the potential supplied by battery.
- (1) I and II (2) III and IV  
 (3) II and IV only (4) I, II and III

47. Susceptibility of ferromagnetic substance is  
[NCERT-XII, Page 147]  
(1)  $>1$  (2)  $<1$  (3) 0 (4) 1
48. The force is given in terms of time  $t$  and displacement  $x$  by the equation  
[NCERT-XI, Page 7, 8]  
 $F = A \cos Bx + C \sin Dt$   
The dimensional formula of  $\frac{AD}{B}$  is:  
(1)  $[M^0 L T^{-1}]$  (2)  $[M L^2 T^{-3}]$   
(3)  $[M^1 L^1 T^{-2}]$  (4)  $[M^2 L^2 T^{-3}]$
49. Two coils have a mutual inductance 0.005H. The current changes in first coil according to equation  $I = I_0 \sin \omega t$  where  $I_0 = 10A$  and  $\omega = 100\pi$  radian/sec. The max. value of e.m.f. in second coil is  
[NCERT-XII, Page 167]  
(1)  $2\pi$  (2)  $5\pi$   
(3)  $\pi$  (4)  $4\pi$
50. When a current  $I$  is set up in a wire of radius  $r$ , the drift velocity is  $v_d$ . If the same current is set up through a wire of radius  $2r$ , the drift velocity will be [NCERT-XII, Page 86]  
(1)  $4v_d$  (2)  $2v_d$   
(3)  $v_d/2$  (4)  $v_d/4$

## PART-II: CHEMISTRY

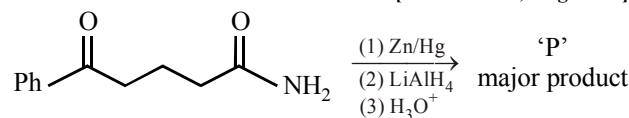
## Section-A

51. Arrange the following in the correct order of their acidic strength  
[NCERT-XII, Page 207]



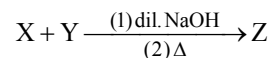
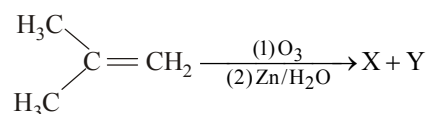
- (1) III > IV > I > II  
(2) IV > III > I > II  
(3) II > I > III > IV  
(4) I > IV > III > II
52. **Assertion:** The stability order of +1 oxidation state of Ga, In and Tl is  $Ga < In < Tl$ .  
**Reason:** The inert pair effect stabilizes the lower oxidation state down the group.  
(1) If both Assertion and Reason are correct and the Reason is a correct explanation of the Assertion.  
(2) If both Assertion and Reason are correct but Reason is not a correct explanation of the Assertion.  
(3) If the Assertion is correct but Reason is incorrect.  
(4) If the Assertion is incorrect and Reason is correct.
53. The number of molecules in 2.8375 litres of  $O_2$  at STP are respectively  
[NCERT-XI, Page 18]  
(1)  $7.527 \times 10^{24}$  (2)  $1.505 \times 10^{23}$   
(3)  $7.527 \times 10^{23}$  (4)  $7.527 \times 10^{22}$
54. **Statement I:** For isothermal irreversible change of an ideal gas,  $q = -w = P_{\text{ext}}(V_{\text{final}} - V_{\text{initial}})$   
**Statement II:** For adiabatic change,  $\Delta U = W_{\text{adiabatic}}$   
[NCERT-XI, Page 142]  
(1) Both statement I and II are correct.  
(2) Both statement I and II are incorrect.  
(3) Statement I is correct but statement II is incorrect.  
(4) Statement II is correct but statement I is incorrect.

55. The major product 'P' for the following sequence of reactions is:  
[NCERT-XII, Page 239]



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

56. Consider the reactions  
[NCERT-XII, Page 241]



The IUPAC name of 'Z' is

- (1) But-1-en-3-one  
(2) 4-Hydroxybutan-2-one  
(3) But-3-en-2-one  
(4) 1-Hydroxybutan-3-one
57. **Statement I:** Liquids A and B form a non-ideal solution with positive deviation. The interactions between A and B are weaker than A-A and B-B interactions  
**Statement II:** For an ideal solution,  $\Delta_{\text{mix}} H = 0; \Delta_{\text{mix}} V = 0$   
[NCERT-XII, Page 10]  
(1) Both statement I and II are correct.  
(2) Both statement I and II are incorrect.  
(3) Statement I is correct but statement II is incorrect.  
(4) Statement II is correct but statement I is incorrect.



58. Identify the mixture that shows positive deviations from Raoult's Law [NCERT-XII, Page 10]

- (1)  $\text{CHCl}_3 + (\text{CH}_3)_2\text{CO}$  (2)  $\text{CHCl}_3 + \text{C}_6\text{H}_6$   
 (3)  $(\text{CH}_3)_2\text{CO} + \text{C}_6\text{H}_5\text{NH}_2$  (4)  $(\text{CH}_3)_2\text{CO} + \text{CS}_2$

59. Choose the correct option for free expansion of an ideal gas under adiabatic condition from the following:

- (1)  $q = 0, \Delta T \neq 0, w = 0$  [NCERT-XI, Page 140]  
 (2)  $q = 0, \Delta T < 0, w \neq 0$   
 (3)  $q \neq 0, \Delta T = 0, w = 0$   
 (4)  $q = 0, \Delta T = 0, w = 0$

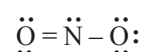
60. Match the complexes in list-I with their hybridization in list-II. [NCERT-XII, Page 128]

- | List-I (Complex)                      | List-II (Hybridization) |
|---------------------------------------|-------------------------|
| (A) $\text{Ni}(\text{CO})_4$          | (p) $sp^3d^2$           |
| (B) $[\text{Ni}(\text{CN})_4]^{2-}$   | (q) $d^2sp^3$           |
| (C) $[\text{Co}(\text{NH}_3)_6]^{3+}$ | (r) $dsp^2$             |
| (D) $[\text{CoF}_6]^{3-}$             | (s) $sp^3$              |
- (1) A - (r), B - (s), C - (p), D - (q)  
 (2) A - (r), B - (s), C - (q), D - (p)  
 (3) A - (s), B - (r), C - (q), D - (p)  
 (4) A - (s), B - (r), C - (p), D - (q)

61. Methods used for purification of organic compounds are based on : [NCERT-XI, Page 278]

- (1) neither on nature of compound nor on the impurity present.  
 (2) nature of compound only.  
 (3) nature of compound and presence of impurity.  
 (4) presence of impurity only.

62. Observe the following structure



- (1) (2) (3)

The formal charges on the atoms 1, 2, 3 respectively are

[NCERT-XI, Page 104]

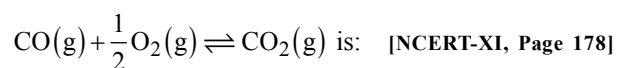
- (1) +1, 0, -1 (2) 0, 0, -1  
 (3) -1, 0, +1 (4) 0, 0, 0

63. **Statement I** : The metallic radius of Na is 1.86 Å and the ionic radius of  $\text{Na}^+$  is lesser than 1.86 Å.

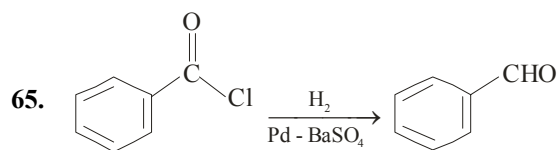
**Statement II** : Ions are always smaller in size than the corresponding elements. [NCERT-XI, Page 87]

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

64. The ratio  $\frac{K_P}{K_C}$  for the reaction



- (1)  $(RT)^{1/2}$  (2)  $RT$  (3) 1 (4)  $\frac{1}{\sqrt{RT}}$



This reduction reaction is known as :

- (1) Rosenmund reduction [NCERT-XII, Page 232]  
 (2) Wolff-Kishner reduction  
 (3) Stephen reduction  
 (4) Etard reduction

66. **Statement I** : Dimethyl glyoxime forms a six - membered covalent chelate when treated with  $\text{NiCl}_2$  solution in presence of  $\text{NH}_4\text{OH}$ .

**Statement II** : Prussian blue precipitate contains iron both in (+2) and (+3) oxidation states.

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

67. The  $E^0$  of  $\text{M}|\text{M}^{2+}||\text{Cu}^{2+}/\text{Cu}$  is 0.3 V, At what concentration of  $\text{Cu}^{2+}$  (in  $\text{mol L}^{-1}$ ), the  $E_{\text{cell}}$  value becomes zero?

$$\left( \frac{2.303RT}{F} = 0.06 \right) (\text{Conc. of } \text{M}^{2+} = 0.1 \text{ M})$$

[NCERT-XII, Page 38]

- (1)  $10^{-9}$   
 (2)  $10^{-8}$   
 (3)  $10^{-11}$   
 (4)  $10^{-10}$

68. The element having the highest first ionization enthalpy is [NCERT-XI, Page 87]

- (1) C (2) Al  
 (3) Si (4) N

69. **Assertion** :  $\text{S}_{\text{N}}2$  reaction of  $\text{C}_6\text{H}_5\text{CH}_2\text{Br}$  occurs more readily than the  $\text{S}_{\text{N}}2$  reaction of  $\text{CH}_3\text{CH}_2\text{Br}$ .

**Reason** : The partially bonded unhybridized p-orbital that develops in the trigonal bipyramidal transition state is stabilized by conjugation with the phenyl ring.

[NCERT-XII, Page 171]

- (1) If both Assertion and Reason are correct and the Reason is a correct explanation of the Assertion.  
 (2) If both Assertion and Reason are correct but Reason is not a correct explanation of the Assertion.  
 (3) If the Assertion is correct but Reason is incorrect.  
 (4) If the Assertion is incorrect and Reason is correct.

70. Isomerisation of gaseous cyclobutene to butadiene is a first order reaction. At T (K), the rate constant of the reaction is  $3.3 \times 10^{-4} \text{ s}^{-1}$ . What is the time required (in min) to complete 90% of this reaction at the same temperature? (log 2 = 0.3)

[NCERT-XII, Page 73]

- (1) 116.67 (2) 233.34  
 (3) 58.34 (4) 350.0

71. Match Column-I with Column-II [NCERT-XI, Page 115]

Column-I (Compound)	Column-II (Shape)
(A) $\text{BrF}_5$	(p) bent
(B) $\text{SF}_6$	(q) square pyramidal
(C) $\text{H}_2\text{O}$	(r) trigonal bipyramidal
(D) $\text{PCl}_3\text{F}_2$	(s) octahedral

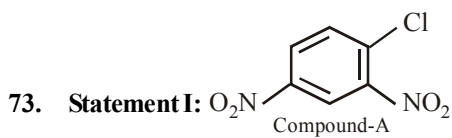
Choose the **correct** answer from the options given below:

- (1) (A) - (p); (B) - (q); (C) - (r); (D) - (s)  
 (2) (A) - (s); (B) - (r); (C) - (q); (D) - (p)  
 (3) (A) - (q); (B) - (s); (C) - (p); (D) - (r)  
 (4) (A) - (r); (B) - (s); (C) - (q); (D) - (p)

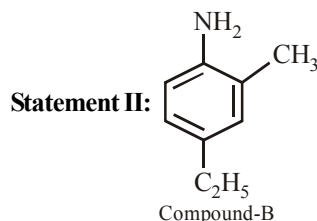
72. For a first order reaction, the concentration of reactant was reduced from  $0.03 \text{ mol L}^{-1}$  to  $0.02 \text{ mol L}^{-1}$  in 25 min.

What is its rate (in  $\text{mol L}^{-1} \text{ s}^{-1}$ )? [NCERT-XII, Page 67]

- (1)  $6.667 \times 10^{-6}$  (2)  $4 \times 10^{-4}$   
 (3)  $6.667 \times 10^{-4}$  (4)  $4 \times 10^{-6}$



IUPAC name of compound A is 1-chloro-2,4-dinitrobenzene:



IUPAC name of Compound B is 4-ethyl-2-methylaniline.

[NCERT-XI, Page 269]

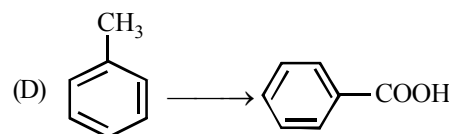
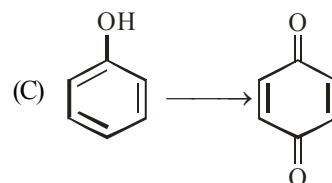
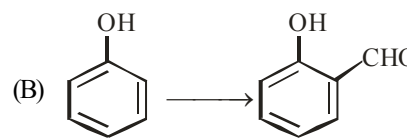
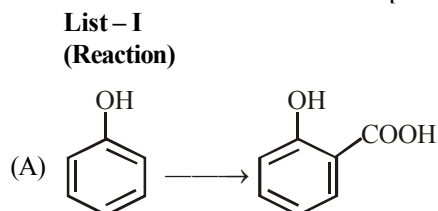
- (1) Both statement I and II are correct.  
 (2) Both statement I and II are incorrect.  
 (3) Statement I is correct but statement II is incorrect.  
 (4) Statement II is correct but statement I is incorrect.

74. **Statements I:** Aminobenzene and aniline are same organic compounds.

**Statements II:** Aminobenzene and aniline are different organic compounds. [NCERT-XII, Page 261]

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

75. Match List-I with List-II. [NCERT-XII, Page 213]



**List - II**

(Reagent(s))

- (p)  $\text{Na}_2\text{Cr}_2\text{O}_7, \text{H}_2\text{SO}_4$   
 (q) (i)  $\text{KMnO}_4/\bar{\text{O}}\text{H}, \Delta$  (ii)  $\text{H}_3\text{O}^+$   
 (r) (i)  $\text{NaOH}, \text{CHCl}_3$  (ii)  $\text{NaOH}$  (iii)  $\text{HCl}$   
 (s) (i)  $\text{NaOH}$  (ii)  $\text{CO}_2$  (iii)  $\text{HCl}$

Choose the correct answer from the options given below:

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

76. Arrange the following in the order of decreasing basicity



- (1)  $\text{I} > \text{III} > \text{II}$  (2)  $\text{III} > \text{I} > \text{II}$   
 (3)  $\text{II} > \text{III} > \text{I}$  (4)  $\text{II} > \text{I} > \text{III}$

77. Match List I with List II: [NCERT-XII, Page 271]

List I Test	List II Functional group / Class of Compound
(A) Molisch's Test	(p) Peptide
(B) Biuret Test	(q) Carbohydrate
(C) Carbylamine Test	(r) Primary amine
(D) Schiff's Test	(s) Aldehyde

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

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

78. **Assertion:**  $\text{PH}_3$  has lower boiling point than  $\text{NH}_3$ .

**Reason:** In liquid state  $\text{NH}_3$  molecules are associated through van der Waal's forces, but  $\text{PH}_3$  molecules are associated through hydrogen bonding.

[NCERT-XI, Page 131]

- (1) If both Assertion and Reason are correct and the Reason is a correct explanation of the Assertion.

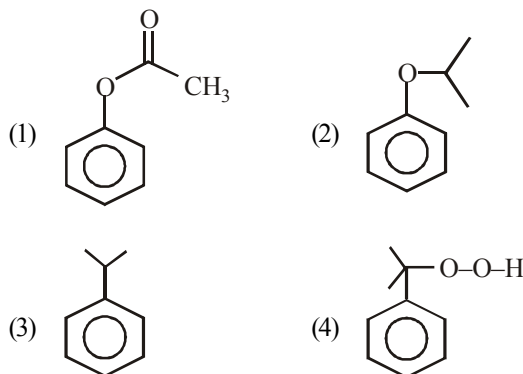


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- (2) If both Assertion and Reason are correct but Reason is not a correct explanation of the Assertion.  
 (3) If the Assertion is correct but Reason is incorrect.  
 (4) If the Assertion is incorrect and Reason is correct.

79. In the cumene to phenol preparation in presence of air, the intermediate is [NCERT-XII, Page 202]



80. Anomalous behavior of oxygen is due to its [NCERT-XII, Page 187]

- (1) small size and high electronegativity  
 (2) small size and low electronegativity  
 (3) large size and high electronegativity  
 (4) large size and low electronegativity

81. In case of isoelectronic species the size of  $F^-$ ,  $Ne$  and  $Na^+$  is affected by: [NCERT-XI, Page 87]

- (1) Principal quantum number (n)  
 (2) None of the factors because their size is the same  
 (3) Electron - electron interaction in the outer orbitals  
 (4) Nuclear charge (z)

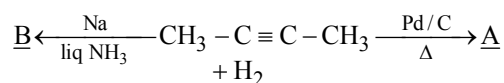
82. Identify correct statements from below: [NCERT-XII, Page 105]

- A. The chromate ion is square planar.  
 B. Dichromates are generally prepared from chromates.  
 C. The green manganate ion is diamagnetic.  
 D. Dark green coloured  $K_2MnO_4$  disproportionates in a neutral or acidic medium to give permanganate.  
 E. With increasing oxidation number of transition metal, ionic character of the oxides decreases.

Choose the correct answer from the options given below:

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

83. But-2-yne is reacted separately with one mole of Hydrogen as shown below: [NCERT-XI, Page 316]



- (A) A is more soluble than B.  
 (B) The boiling point & melting point of A are higher and lower than B respectively.  
 (C) A is more polar than B because dipole moment of A is zero.  
 (D)  $Br_2$  adds easily to B than A.

Identify the incorrect statements from the options given below:

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

84. If the first ionisation enthalpy of Li, Be and C respectively are 520, 899, 1086  $\text{kJ mol}^{-1}$ , the first ionisation enthalpy (in  $\text{kJ mol}^{-1}$ ) of B will be [NCERT-XI, Page 88]

- (1) 487 (2) 950  
 (3) 801 (4) 1402

85. The **incorrect** statement about Glucose is : [NCERT-XII, Page 282]

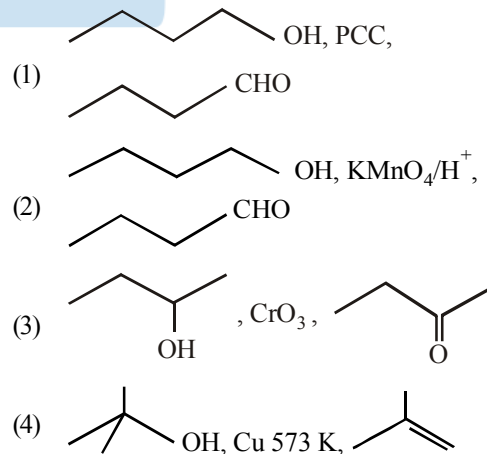
- (1) Glucose is soluble in water because of having aldehyde functional group  
 (2) Glucose remains in multiple isomeric form in its aqueous solution  
 (3) Glucose is an aldohexose  
 (4) Glucose is one of the monomer unit in sucrose

## Section-B

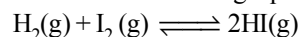
86. The sum of oxidation state and co-ordination number of central metal atom is maximum with respect to which of the following complex? [NCERT-XII, Page 119]

- (1)  $K_3[Cr(C_2O_4)_3]$  (2)  $[Cr(CO)_6]$   
 (3)  $K_2[PtCl_6]$  (4)  $K_4[Fe(CN)_6]$

87. An alcohol X ( $C_4H_{10}O$ ) does not give turbidity with conc. HCl and  $ZnCl_2$  at room temperature. X on reaction with reagent Y gives Z. What are X, Y and Z respectively? [NCERT-XII, Page 208, 210]



88. Observe the following equilibrium at T (K)



Which one of the following does not disturb the above equilibrium? [NCERT-XII, Page 185]

- (1) Addition of  $H_2(g)$   
 (2) Removal of  $HI(g)$   
 (3) Addition of  $I_2(g)$   
 (4) Addition of  $He(g)$

89. Identify the factor from the following that **does not** affect electrolytic conductance of a solution.

[NCERT-XII, Page 42]

- (1) The nature of solvent used.
- (2) Concentration of the electrolyte.
- (3) The nature of the electrode used.
- (4) The nature of the electrolyte added.

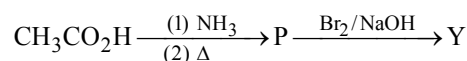
90. Aqueous  $\text{CuSO}_4$  solution was electrolysed by passing 2 amp of current for 10 min. What is the weight (in g) of copper deposited at cathode?

( $\text{Cu} = 63 \text{ u}$ ;  $F = 96500 \text{ C mol}^{-1}$ )

[NCERT-XII, Page 51]

- (1) 0.195
- (2) 0.39
- (3) 0.78
- (4) 1.56

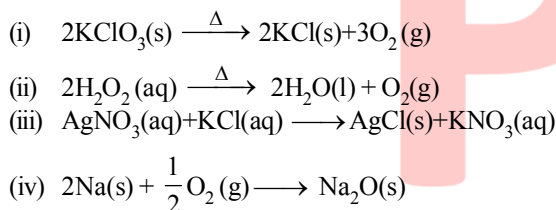
91. In the reaction sequence Y is



[NCERT-XII, Page 264]

- (1) a primary amine with same number of carbons as in P
- (2) a primary amine with one carbon less than in P
- (3) a secondary amine with same number of carbons as in P
- (4) a secondary amine with one carbon less than in P

92. Observe the following reactions [NCERT-XI, Page 242]



The number of redox reactions in this list is

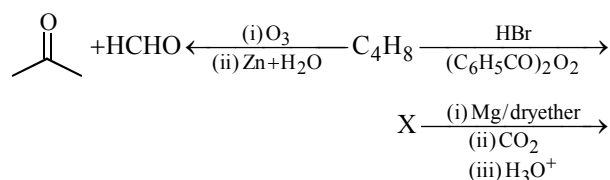
- (1) 3
- (2) 4
- (3) 2
- (4) 1

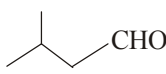
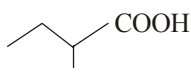
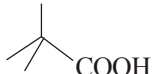
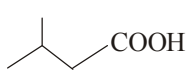
93. What happens to freezing point of benzene when small quantity of naphthalene is added to benzene?

- (1) Increases [NCERT-XII, Page 18]
- (2) Remains unchanged
- (3) First decreases and then increases
- (4) Decreases

94. What is Y in the following reaction sequence?

[NCERT-XII, Page 246]



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

95. Match List I with List II

[NCERT-XII, Page 239]

List I (Name of reaction)	List II (Reagent used)
(A) Hell-Volhard-Zelinsky reaction	(p) $\text{Zn, Hg/HCl}$
(B) Clemmensen	(q) (i) $\text{CrO}_2\text{Cl}_2, \text{CS}_2$ (ii) $\text{H}_2\text{O}$
(C) Etard reaction	(r) (i) $\text{Br}_2/\text{red phosphorus}$ (ii) $\text{H}_2\text{O}$
(D) Gattermann-Koch reaction	(s) $\text{CO, HCl, anhyd. AlCl}_3$

Choose the correct answer from the options given below:

- (1) A – (r), B – (q), C – (p), D – (s)
- (2) A – (r), B – (p), C – (s), D – (q)
- (3) A – (p), B – (q), C – (r), D – (s)
- (4) A – (r), B – (p), C – (q), D – (s)

96. Arrange the following in the increasing order of number of unpaired electrons present in the central metal ion

[NCERT-XII, Page 132]

- |   |   |
|---|---|
| I. $[\text{MnCl}_6]^{3-}$                           | II. $[\text{FeF}_6]^{3-}$                           |
| III. $[\text{Mn}(\text{CN})_6]^{3-}$                | IV. $[\text{Fe}(\text{CN})_6]^{3-}$                 |
| (1) $\text{IV} < \text{I} < \text{III} < \text{II}$ | (2) $\text{I} < \text{III} < \text{II} < \text{IV}$ |
| (3) $\text{IV} < \text{III} < \text{I} < \text{II}$ | (4) $\text{I} < \text{II} < \text{III} < \text{IV}$ |

97. The fragrance of flowers is due to the presence of some steam volatile organic compounds called essential oils. These are generally insoluble in water at room temperature but are miscible with water vapour in vapour phase. A suitable method for the extraction of these oils from the flowers is -

[NCERT-XI, Page 321]

- (1) crystallisation
- (2) distillation under reduced pressure
- (3) distillation
- (4) steam distillation

98. The density of nitric acid solution is  $1.5 \text{ g mL}^{-1}$ . Its weight percentage is 68. What is the approximate concentration (in  $\text{mol L}^{-1}$ ) of nitric acid? ( $\text{N} = 14 \text{ u}$ ;  $\text{O} = 16 \text{ u}$ ;  $\text{H} = 1 \text{ u}$ )

[NCERT-XI, Page 23]

- (1) 14.2
- (2) 11.6
- (3) 18.2
- (4) 16.2

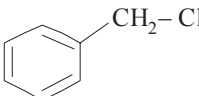
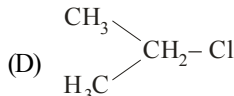
99. Which of the following will make a basic buffer solution.

[NCERT-XI, Page 203]

- (1) 100 mL of 0.1 M  $\text{CH}_3\text{COOH}$  + 100 mL of 0.1 M NaOH
- (2) 100 mL of 0.1 M HCl + 100 mL of 0.1 M NaOH
- (3) 50 mL of 0.1 M KOH + 25 mL of 0.1 M  $\text{CH}_3\text{COOH}$
- (4) 100 mL of 0.1 M HCl + 200 mL of 0.1 M  $\text{NH}_4\text{OH}$

100. Which among the following halide/s will not show  $\text{S}_{\text{N}}1$  reaction:

[NCERT-XI, Page 174]

- |  |   |
|--|---|
| (A) $\text{H}_2\text{C} = \text{CH} - \text{CH}_2\text{Cl}$                              | (B) $\text{CH}_3 - \text{CH} = \text{CH} - \text{Cl}$                                     |
| (C)  | (D)  |

Choose the most appropriate answer from the options given below:

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

## PART-III: BOTANY

### Section-A

101. The eukaryotes include— [NCERT-XI, Page 91]

- (1) Fungi (2) Protists  
(3) Plants and animals (4) All

102. Read the given statements:

- A. Outer most covering of whole plant body  
B. Comprises stomata, trichomes and hairs  
C. Cells – compactly arranged  
D. Often single layered  
E. Protective tissue [NCERT-XI, Page 71-72]

The characters are shown by which of the following tissues—

- (1) Epidermis (2) Collenchyma  
(3) Sclerenchyma (4) Vascular tissue

103. Arrangement of leaves on the stem or branch is called

[NCERT-XI, Page 61]

- (1) Phyllotaxy (2) Ptyxis  
(3) Vernation (4) Venation

104. *Solanum tuberosum* is the scientific name of:

[NCERT-XI, Page 6]

- (1) Potato (2) Tomato  
(3) Brinjal (4) Lemon

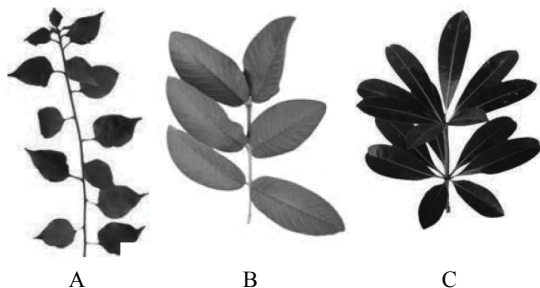
105. Which of the following is not an exception of cell theory?

[NCERT-XI, Page 87]

- (1) Bacteria (2) Viruses  
(3) Prions (4) Viroids

106. Identify the kind of phyllotaxy shown in the given figures A, B, and C.

[NCERT-XI, Page 61]



- A B C  
(1) A - Alternate, B - Opposite, C - Whorled  
(2) A - Whorled, B - Opposite, C - Alternate  
(3) A - Alternate, B - Whorled, C - Opposite  
(4) A - Whorled, B - Alternate, C - Opposite

107. Which ones forms bloom in polluted water mostly?

[NCERT-XI, Page 13]

- (1) Cyanobacteria (2) Green algae  
(3) Red algae (4) Aquatic and terrestrial animals

108. Which of the following is not multilayer in dicot root?

[NCERT-XI, Page 74]

- (1) Epidermis (2) Cortex  
(3) Pericycle (4) Pith

109. Given below are two statements:

**Statement-I:** The flower of guava is hypogynous.

**Statement-II:** In hypogynous flower, the ovary occupies the lower position. [NCERT-XI, Page 63]

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

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

110. Match List - I with List - II

[NCERT-XI, Page 101]

#### List - I

- A. Metacentric chromosome  
B. Acrocentric chromosome  
C. Submetacentric chromosome  
D. Telocentric chromosome

#### List - II

- I. Centromere situated close to the end forming one extremely short and one very long arms  
II. Centromere at the terminal end  
III. Centromere in the middle forming two equal arms of chromosomes  
IV. Centromere slightly away from the middle forming one shorter arm and one longer arm

Choose the correct answer from the options given below:

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

111. The group of organisms oxidising various inorganic substance such as nitrates, nitrites and ammonia using the released energy for their ATP production are –

- (1) Chemoheterotrophic bacteria [NCERT-XI, Page 13]  
(2) Chemosynthetic autotrophic bacteria  
(3) Photoautotrophic bacteria  
(4) Saprophytic bacteria

112. Which of the following is not a part of epidermal tissue system?

[NCERT-XI, Page 71]

- (1) Trichomes (2) Companion cells  
(3) Guard cells (4) Subsidiary cells

113. The members of class chlorophyceae are commonly called—

[NCERT-XI, Page 26]

- (1) Red algae (2) Blue green algae  
(3) Green algae (4) Brown algae

114. Match the column-I and column-II. [NCERT-XI, Page 59-60]

#### Column-I

- A. Stem  
B. Leaf  
C. Reticulate venation  
D. Parallel venation

#### Column-II

- I. Monocot leaf  
II. Dicot leaf  
III. Axillary bud  
IV. Nodes and internodes

Choose the correct answer from the options given below:

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

115. Which of the following statement (s) are correct?

- A. Respiration refers to the release of considerable amount of energy by the hydrolysis of the 3-C bonds of complex compounds through oxidation within the cells.
- B. Plants do not need any specialised organs for gaseous exchange
- C. In stems, the ‘living’ cells are organised in thin layers inside and beneath the bark.
- D. During the process of respiration, oxygen, carbon dioxide, water and energy are released as products.

[NCERT-XI, Page 153-154]

Choose the correct answer from the options given below:

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

116. Given below are two statements:

**Statement I:** DNA replication and centriole replication occur during S-phase in animal cell.

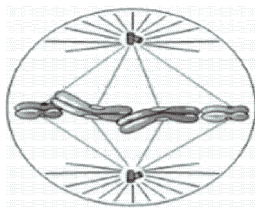
**Statement II:** Significance of mitosis is in producing cells genetically dissimilar to parent cell.

[NCERT-XI, Page 121-125]

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

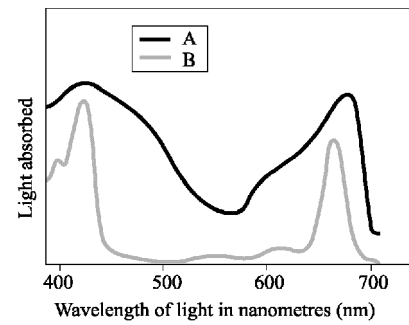
- (1) Both Statement I and Statement II are true.
- (2) Both Statement I and Statement II are false.
- (3) Statement I is true but Statement II is false.
- (4) Statement I is false but Statement II is true.

117. A stage of mitosis is shown in the given diagram. Identify stage with its characteristics? [NCERT-XI, Page 123]



- (1) Late prophase – Chromosomes move to spindle equator.
- (2) Metaphase – Spindle fibres attached to kinetochores, centromeres split and chromatids separate
- (3) Metaphase – chromosomes moved to spindle equator chromosomes made up of two sister chromatids
- (4) Anaphase – centromeres split and chromatids separate and start moving away

118. Study the given graph which shows the action spectrum of A superimposed on B spectrum of chlorophyll a. Identify A & B in the graph. [NCERT-XI, Page 137]



	A	B
(1)	Rate of respiration	Action spectrum
(2)	Rate of respiration	Absorption
(3)	Rate of photosynthesis	Action spectrum
(4)	Rate of photosynthesis	Absorption

119. Which is the longest phase in the cell cycle of human liver cells? [NCERT-XI, Page 121]

- (1) Anaphase
- (2) Prophase
- (3) Interphase
- (4) Telophase

120. Match the Column I with Column II–

[NCERT-XI, Page 65-66]

Column I	Column II
A. Ovary	I. Fruit
B. Ovule	II. Guava, orange, mango
C. Wall of ovary	III. Pericarp
D. Fleshy fruit	IV. Seed

Choose the correct answer from the options given below:

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

121. A normal girl, whose mother is haemophilic marries a male with no ancestral history of haemophilia. What will be the possible phenotypes of the offsprings? [NCERT-XII, Page 72]

- A. Haemophilic son and haemophilic daughter
- B. Haemophilic son and carrier daughter
- C. Normal daughter and normal son.
- D. Normal son and haemophilic daughter.

Choose the correct answer from the options given below:

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

122. According to the fluid mosaic model of the cell membrane, the proteins are located– [NCERT-XI, Page 94]

- (1) In a continuous layer over the outer surface of the membrane only
- (2) In a continuous layer over the inner surface only
- (3) In discontinuous arrangement, both on the surface (as peripheral proteins) and in the interior of the membrane (as integral proteins)
- (4) In the middle of the membrane, between the lipid layers only



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- 123.** Oxygen which is liberated during photosynthesis comes from- [NCERT-XI, Page 139]  
 (1) Carbon dioxide (2) Water  
 (3) Chlorophyll (4) Phosphoglyceric acid
- 124.** Go through the following statements. [NCERT-XI, Page 126-127]  
 A. Meiosis - II is similar to mitosis  
 B. Terminalization of chiasmata occurs in meiosis - II.  
 C. Meiosis - II performs separation of homologous chromosomes.  
 D. Interphase is intermitosis  
 E. After mitosis, the number of chromosomes in daughter cells shall one fourth of parent cell.  
 Choose the correct answer from the options given below:  
 (1) A, C and E (2) A, B and C  
 (3) A, C and D (4) A and D
- 125.** Read the following four statements, A, B, C and D and select the right option having both correct statements  
 A. Z scheme of light reaction takes place in presence of PS-I only  
 B. Only PS-I is functional in cyclic photophosphorylation  
 C. Cyclic photophosphorylation results into synthesis of ATP and NADPH<sub>2</sub>  
 D. Stroma lamellae lack PS-II as well as NADP reductase. [NCERT-XI, Page 139]  
 Choose the correct answer from the options given below:  
 (1) A and B (2) B and C  
 (3) C and B (4) B and D
- 126.** Which of the following induces fruit - set in pineapple? [NCERT-XI, Page 177]  
 (1) Auxin (2) Gibberellin  
 (3) Kinetin (4) Ethylene
- 127.** In the first step of monohybrid cross experiment, Mendel selected pea plants which were [NCERT-XII, Page 54]  
 (1) Pure tall as male and pure dwarf as female  
 (2) Pure tall as female and pure dwarf as male  
 (3) Heterozygous tall as male and pure dwarf as female  
 (4) Heterozygous tall as female and pure dwarf as male
- 128.** Match the columns: [NCERT-XII, Page 67, 69, 74]  

Column A	Column B
A. Non parental gene combination	I. Crossing over
B. Non sister chromatids	II. X and Y
C. Sex chromosomes	III. Sex-linked disease
D. Haemophilia	IV. Recombination

 Choose the correct answer from the options given below:  
 (1) A - II, B - IV, C - I, D - III  
 (2) A - IV, B - I, C - II, D - III  
 (3) A - II, B - IV, C - III, D - I  
 (4) A - II, B - I, C - IV, D - III
- 129.** A gene may have many alleles, but each individual has only two alleles because [NCERT-XII, Page 56]  
 (1) having more than two alleles is lethal.  
 (2) having more than two alleles unbalances the chromosomes.  
 (3) a person has two parents who each contribute one allele.  
 (4) a backup set of alleles is necessary in case something goes wrong.
- 130.** Root hair development is promoted by [NCERT-XI, Page 175]  
 (1) Abscisic acid  
 (2) Auxin  
 (3) Gibberellin  
 (4) Cytokinin
- 131.** The PGR which causes apical hook formation in dicot seedling also helps in [NCERT-XI, Page 177]  
 A. Overcoming the apical dominance  
 B. Widely used as herbicides  
 C. Delays senescence  
 D. Induces flowering in mango  
 E. Also known as antigibberellin  
 Choose the correct answer from the options given below:  
 (1) A and C (2) B and D  
 (3) D only (4) D and E
- 132.** In the AB blood group the two genes are [NCERT-XII, Page 61]  
 (1) codominant  
 (2) corecessive  
 (3) incompletely dominant  
 (4) dominant-recessive
- 133.** Linkage was discovered by [NCERT-XII, Page 67]  
 (1) Mendel (2) Morgan  
 (3) Crick (4) Muller
- 134.** During the process of respiration, which of the following is not released? [NCERT-XI, Page-154 155]  
 (1) Carbon dioxide  
 (2) Water  
 (3) Oxygen  
 (4) Energy
- 135.** Given below are two statements:  
**Statement I:** A diploid female plant and a tetraploid male plant are crossed. The ploidy of endosperm shall be 3N.  
**Statement II:** Milky water of green coconut is liquid endosperm. [NCERT-XII, Page 18-19]  
 In the light of the above statements, choose the correct answer from the options given below:  
 (1) Both Statement I and Statement II are true.  
 (2) Both Statement I and Statement II are false.  
 (3) Statement I is true but Statement II is false.  
 (4) Statement I is false but Statement II is true.

## Section-B

- 136.** Which of the following countries has the highest biodiversity? [NCERT-XII, Page 219]  
 (1) Brazil (2) South Africa  
 (3) Russia (4) India



137. In an area, there are 200 *Parthenium* and a single huge banyan tree. Which of the following conclusions is correct? [NCERT-XII, Page 192]

- (1) Population density of banyan is low relative to that of *Parthenium*.
- (2) Population cover area of banyan is high relative to *Parthenium*.
- (3) In the above case % cover or biomass is a more meaningful measure of the population size.
- (4) All the above

138. Experiments by Avery, MacLeod, and McCarty supported DNA as the genetic material by showing that [NCERT-XII, Page 85]

- (1) both protein and DNA samples provided the transforming factor
- (2) DNA was not complex enough to be the genetic material
- (3) only samples with DNA provided transforming activity
- (4) even though DNA was molecularly simple, it provided adequate variation to act as the genetic material

139. Information transfer from RNA to DNA is called [NCERT-XII, Page 83]

- (1) Replication
- (2) Reverse transcription
- (3) Translation
- (4) Transcription

140. Given below are two statements:

**Statement I:** India is divided into ten biogeographical regions.

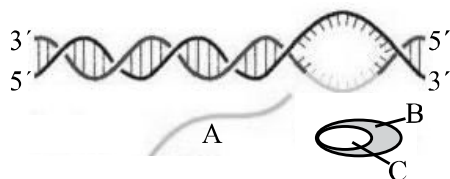
**Statement II:** India is with only 2.4% of the world's land area and possesses 8.1% species diversity of the world.

[NCERT-XII, Page 219]

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

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

141. The given figure represent one of the step in the process of transcription in bacteria. Identify the step and label A, B & C marked in the figure. [NCERT-XII, Page 93]



- (1) Initiation; A – DNA, B – RNA, C – Promoter
- (2) Termination; A – RNA, B – RNA polymerase, C – Rho factor
- (3) Elongation; A – RNA, B – RNA polymerase, C – Sigma factor
- (4) Elongation; A – DNA, B – DNA polymerase, C – RNA

142. Match the columns : [NCERT-XII, Page 93, 94]

Column-I	Column-II
A. Exon	I. RNA of influenza virus
B. Intron	II. Functional DNA
C. Genetic RNA	III. RNA of eukaryotes
D. Non-genetic RNA	IV. Junk DNA

Choose the correct answer from the options given below:

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

143. Match the columns : [NCERT-XII, Page 223]

Column-I	Column-II
A. <i>Parthenium</i>	I. Lake victoria
B. <i>Nile Perch</i>	II. Water hyacinth
C. <i>Eichhornia</i>	III. African catfish
D. <i>Clarias gariepinus</i>	IV. Carrot grass

Choose the correct answer from the options given below:

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

144. Which statement best describes what ultimately happens to the chemical energy that is converted into new biomass in the process of energy transfer between trophic levels in an ecosystem? [NCERT-XII, Page 209]

- (1) It is used by organisms to maintain their life processes through the reactions of cellular respiration
- (2) It is undigested and winds up in the faeces and is not passed on to higher trophic levels
- (3) It is eliminated as faeces consumed in ingestion, respiration or is dissipated into space in accordance with the second law of thermodynamics
- (4) None of food chain

145. Which of the following coined the term linkage?

[NCERT-XII, Page 67]

- (1) Morgan
- (2) Mendel
- (3) Darwin
- (4) None of them

146. Match the columns :

[NCERT-XII, Page 96]

Column-I	Column-II
A. AUG	I. Phenyl alanine
B. UCU	II. Methionine
C. UGG	III. Serine
D. UUU	IV. Tryptophan

Choose the correct answer from the options given below:

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

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147. Match the Column-I with the Column-II.

[NCERT-XII, Page 84, 85, 89]

Column-I	Column-II
A. The unequivocal proof that DNA is the genetic material	I. Frederick Griffith
B. Transformation	II. Post-transcription modification of protein
C. DNA replicates semiconservatively	III. Alfred Hershey and Martha Chase
D. Ribozyme action	IV. Matthew Meselson and Franklin Stahl.

Choose the correct answer from the options given below:

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

148. Which of the following statements about mycorrhizae is false?

[NCERT-XII, Page 201-202]

- A. Mutualism confers benefits on both the interacting species.
- B. The mycorrhizal association of fungus have importance in the absorption of essential nutrients.
- C. The mycorrhizal association is a mutualistic symbiosis
- D. Fungal partner is associated with the only roots of the higher plants (like angiosperms)
- E. Plants provide the fungi with energy-yielding proteins.

Choose the correct answer from the options given below:

- (1) Only E
- (2) Only D
- (3) Only A and C
- (4) Only B and E

149. Match the columns :

[NCERT-XII, Page 222-223]

Column-I	Column-II
A. Tropical rain forest	I. 6% cover
B. Steller's sea cow	II. Firewood
C. Water hyacinth	III. Over exploitation
D. Narrowly utilitarian	IV. Alien species invasion

Choose the correct answer from the options given below:

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

150. Match the columns :

[NCERT-XII, Page 194-195]

Column-I	Column-II
A. Exponential growth equation	I. $\frac{dN}{dt} = rN$
B. Integral form of exponential growth equation	II. $N_t = N_0 e^{rt}$
C. Logistic growth equation	III. $\frac{dN}{dt} = rN \left( \frac{K - N}{K} \right)$
D. Integral form of logistic growth equation	IV. $N_t = \frac{K}{1 + \left( \frac{K - N_0}{N_0} \right) e^{-rt}}$

Choose the correct answer from the options given below:

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

## PART-IV: ZOOLOGY

### Section-A

151. Read the given statements.

[NCERT-XI, Page 42]

- A. Extracellular and intracellular digestion
- B. Exclusively marine, radially symmetrical, diploblastic, tissue level of organization
- C. Bisexual, external fertilization and indirect development
- D. No asexual reproduction

Choose the correct answer from the options given below:

- (1) Cnidaria
- (2) Porifera
- (3) Ctenophora
- (4) Rotifers

152. Which of the following is not true about frogs?

[NCERT-XI, Pages 81-82]

- A. Alimentary canal of frogs is short
- B. Undigested wastes passes out through cloaca
- C. Respiration by lungs i.e., pulmonary respiration

D. Vascular system open type

E. Heart has three chambers

Choose the correct answer from the options given below:

- (1) Only D
- (2) Only E
- (3) Only A and B
- (4) Only C and E

153. The 20 different common amino acids have different–

[NCERT-XI, Page 143]

- (1) R-groups
- (2) Acid groups
- (3) Peptide bonds
- (4) 1° structure

154. Match the columns:

[NCERT-XI, Pages 156, 158, 146]

Column-I	Column-II
A. Cytochrome c oxidase	I. $Mg^{2+}$
B. RuBisCo	II. Bundle sheath cell
C. Hexokinase	III. Two copper centre
D. Pyruvate dehydrogenase	IV. Glycolysis

Choose the correct answer from the options given below:

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

155. Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R:

**Assertion A:** Oxygen can bind with haemoglobin in a irreversible manner.

**Reason R:** Binding of oxygen with haemoglobin is primarily related to partial pressure of O<sub>2</sub>. [NCERT-XI, Page-189]

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

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

156. Match the columns : [NCERT-XI, Page 203]

Column-I	Column-II
A. Angina pectoris	I. Heart does not pump blood effectively enough to meet the needs of body
B. Heart attack	II. Acute chest pain when no enough oxygen reaches heart
C. Heart failure	III. Damage of heart muscles suddenly by inadequate blood supply
D. Cardiac arrest	IV. Heart stops beating

Choose the correct answer from the options given below:

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

157. Match the columns : [NCERT-XI, Page 206]

Column-I	Column-II
A. Protonephridia/ Flame cells	I. Cockroach
B. Nephridia	II. Prawns
C. Malpighian tubules	III. <i>Planaria</i>
D. Antennal glands/ Green glands	IV. Earthworms

Choose the correct answer from the options given below:

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

158. Match the columns and find out the correct combination:

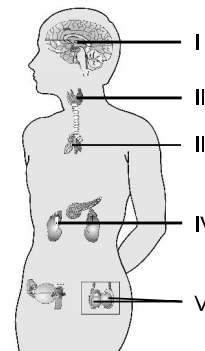
[NCERT-XI, Page 224]

Column-I	Column-II
A. Stapes	I. Ear ossicle
B. Occipital	II. Facial bone
C. Hyoid	III. Cranial bone
D. Zygomatic	IV. U-shaped

Choose the correct answer from the options given below:

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

159. The given diagram represents the location of human endocrine glands I, II, III, IV and V. [NCERT-XI, Page 240]



Which of the following gland is correctly matched with their secretions?

Hormones	Their secretions
I	Melatonin
II	Thymosin
III	Epinephrine
IV	Aldosterone
V	Testosterone

- (1) I, II and III only
- (2) I, IV and V only
- (3) II, IV and V only
- (4) II, III and V only

160. Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R:

**Assertion A:** The changes in the ovarian cycle as well as uterine cycle are induced by changes in the level of pituitary and ovarian hormones.

**Reason R:** The secretion of LH and FSH increases gradually during the follicular phase and estrogen also secreted by developing follicle. [NCERT-XII, Pages 34-35]

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

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

161. Given below are two statements:

**Statements I:** Oral contraceptive pills prevent ovulation.

**Statements II:** It contains progestogen-estrogen combinations. [NCERT-XII, Page 45]

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

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

162. Match the columns : [NCERT-XII, Pages 113, 118, 119]

Column-I	Column-II
A. Lamarck	I. Theory of inheritance of acquired characters or the theory use and disuse of organ
B. Ernst Haeckel	II. Embryological support for evolution
C. Darwin	III. Theory of natural selection
D. Hugo de Vries	IV. Mutation theory

Choose the correct answer from the options given below:

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

163. Common character between flatworms, roundworms and earthworms is – [NCERT-XI, Pages 38-39]

- (1) Parasitism (2) Acoelomate nature  
 (3) Triploblastic (4) Pseudocoelomate

164. Which of the following statements about frogs are false– [NCERT-XI, Page-80]

- A. Frog belongs to class amphibia  
 B. They do not have constant body temperature.  
 C. They are warm blooded.  
 D. They show camouflage

Choose the correct answer from the options given below:

- (1) Only A and D (2) Only B and C  
 (3) Only C (4) Only D

165. Choose the incorrect statements–

- A. Cofactors may be identified: prosthetic groups, coenzymes and metal ions.  
 B. Cofactors are tightly bound to the apoenzyme.  
 C. NAD and NADP contain the Vitamin Niacin.  
 D. Catalytic activity is regain when cofactor is removed.

[NCERT-XI, Page 118]

Choose the correct answer from the options given below:

- (1) All (2) None  
 (3) Only D (4) A and C

166. Match the columns w.r.t. respiratory capacities of lungs: [NCERT-XI, Pages 186-187]

Column-I	Column-II
A. Residual volume	I. 2500 mL – 3000 mL
B. Inspiratory reserve volume	II. 3000 mL – 3500 mL
C. Tidal volume	III. 500 mL
D. Inspiratory capacity	IV. 1100 mL – 1200 mL

Choose the correct answer from the options given below:

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

167. Systemic circulation of oxygenated blood starts from [NCERT-XI, Page 201]

- (1) Right atrium (2) Left atrium  
 (3) Left ventricle (4) Right ventricle

168. Which is the correct pathway for passage of urine in humans? [NCERT-XI, Page 207]

- (1) Collecting tubule → ureter → bladder → urethra  
 (2) Renal vein → renal ureter → bladder → urethra  
 (3) Pelvis → Medulla → bladder → urethra  
 (4) Cortex → Medulla → bladder → ureter

169. Match the columns [NCERT-XI, Page 236]

Column-I	Column-II
A. Association areas	I. Limbic lobe
B. Hypothalamus	II. Body temperature
C. Hippocampus	III. Intersensory associations
D. Medulla	IV. Cardiovascular reflexes

Choose the correct answer from the options given below:

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

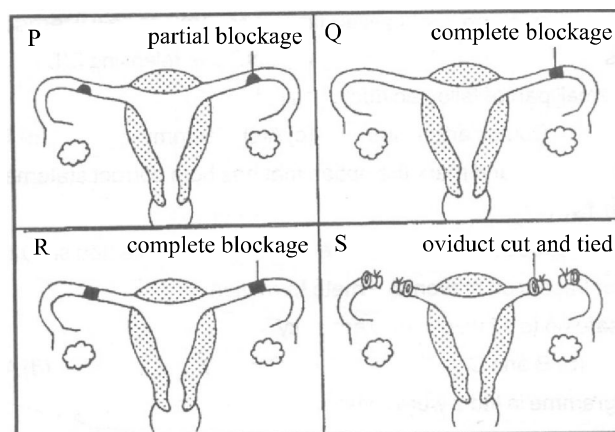
170. Which of the following hormones is mismatched with stated functions? [NCERT-XI, Page 242]

- (1) ACTH - Stimulates the adrenal cortex  
 (2) Oxytocin - Stimulates water reabsorption by the kidneys  
 (3) Prolactin (PRL) - regulates the growth of mammary glands and milk production in them  
 (4) TSH - Promotes the synthesis and secretion of thyroid hormones from thyroid gland

171. Which of the following hormone levels will cause release of ovum (ovulation) from the Graafian follicle? [NCERT-XII, Page 32]

- (1) High concentration of progesterone  
 (2) Low concentration of LH  
 (3) Low concentration of FSH  
 (4) High concentration of oestrogen

172. The given diagram shows the uterine tubes of four women (P, Q, R and S). [NCERT-XII, Page 45]





- In which two women is fertilization impossible at present?  
 (1) P and Q (2) Q and R  
 (3) R and S (4) S and P
- 173.** Match the columns : [NCERT-XII, Page 122]  

<b>Column-I</b>	<b>Column-II</b>
A. Cretaceous	I. Amphibians dominant, origin of reptiles, extensive forests of vascular plants
B. Jurassic	II. Age of fishes, origin of amphibians
C. Carboniferous	III. Angiosperms appear, dinosaurs disappear
D. Devonian	IV. Dinosaurs and gymnosperms dominate

 Choose the correct answer from the options given below:  
 (1) A – III, B – IV, C – I, D – II  
 (2) A – III, B – II, C – IV, D – I  
 (3) A – I, B – II, C – III, D – IV  
 (4) A – III, B – IV, C – II, D – I
- 174.** Water exits from sponges through the— [NCERT-XI, Page 40]  
 (1) Osculum (2) Ostia  
 (3) Spicules (4) Choanocytes
- 175.** *Rana tigrina* is zoological name of [NCERT-XI, Page 80]  
 (1) Frog (2) Leopard  
 (3) Lizard (4) Earthworm
- 176.** Match the columns: [NCERT-XI, Page 117]  

<b>Column-I</b>	<b>Column-II</b>
A. Transferase	I. $S - G + S' \rightarrow S + S' - G$
B. Lyase	II. Removal of groups
C. Ligase	III. Linking two compounds
D. Hydrolase	IV. Hydrolysis

 Choose the correct answer from the options given below:  
 (1) A – I, B – II, C – III, D – IV  
 (2) A – II, B – I, C – IV, D – III  
 (3) A – I, B – III, C – II, D – IV  
 (4) A – IV, B – III, C – I, D – II
- 177.** A mammalian brain is characterised by the presence of [NCERT-XI, Page 236]  
 (1) Optic lobes (2) Corpus callosum  
 (3) Cerebellum (4) Cerebrum
- 178.** Match the columns: [NCERT-XII, Pages 30, 32, 27, 28]  

<b>Column I</b>	<b>Column II</b>
A. Semen	I. Clitoris
B. Birth canal	II. Testicular lobules
C. Penis	III. Vagina
D. Seminiferous tubule	IV. Prostate gland

 Choose the correct answer from the options given below:  
 (1) A – II, B – I, C – IV, D – III  
 (2) A – IV, B – II, C – III, D – I  
 (3) A – IV, B – III, C – II, D – I  
 (4) A – IV, B – III, C – I, D – II
- 179.** Match the columns : [NCERT-XII, Page 122, 123]  

<b>Column-I</b>	<b>Column-II</b>
A. 500 mya	I. Sea weeds existed
B. 350 mya	II. Invertebrates were formed and active
C. 320 mya	III. Reptiles of different shapes and sizes dominated
D. 200 mya	IV. Jawless fishes evolved

 Choose the correct answer from the options given below:  
 (1) A – II, B – I, C – IV, D – III  
 (2) A – III, B – II, C – I, D – IV  
 (3) A – IV, B – II, C – I, D – III  
 (4) A – II, B – IV, C – I, D – III
- 180.** Which mosquito acts as vector? [NCERT-XI, Page 44]  
 (1) *Anopheles* (2) *Culex*  
 (3) *Aedes* (4) All
- 181.** Match the columns: [NCERT-XI, Page 80]  

<b>Column-I</b>	<b>Column-II</b>
A. Protective coloration	I. Tympanum
B. Summer sleep	II. Mimicry
C. Winter sleep	III. Aestivation
D. Ear	IV. Hibernation

 Choose the correct answer from the options given below:  
 (1) A – I, B – III, C – II, D – IV  
 (2) A – II, B – III, C – IV, D – I  
 (3) A – II, B – III, C – I, D – IV  
 (4) A – II, B – IV, C – III, D – I
- 182.** Match the columns: [NCERT-XI, Pages 106, 109, 110, 213]  

<b>Column-I</b>	<b>Column-II</b>
A. Insulin	I. Heparin
B. Lecithin	II. Protein
C. Fructose	III. Phospholipid
D. Anticoagulant	IV. Fruit sugar

 Choose the correct answer from the options given below:  
 (1) A – II, B – III, C – I, D – IV  
 (2) A – IV, B – III, C – I, D – II  
 (3) A – IV, B – II, C – III, D – I  
 (4) A – II, B – III, C – IV, D – I
- 183.** Read the following statements and identify the incorrect statements [NCERT-XII, Pages 27, 28]  
 A. Theca cells is present in testicular lobule.  
 B. Temperature in scrotum necessary for sperm formation should be 2°C below from body temperature.  
 C. Common duct formed by the union of vas deferens and duct of seminal vesicle is ejaculatory duct.  
 D. Prostate, Bulbourethral and seminal vesicles are accessory glands of male reproductive system.  
 E. Scrotal sacs of man are connected with the abdominal cavity by ligament.  
 Choose the correct answer from the options given below:  
 (1) A, B, C and E only (2) A and E only  
 (3) C, D and E only (4) A, B, D and E only.



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184. Given below are two statements:

**Statements I:** Continental drift caused survival of pouched mammals of Australia.**Statements II:** It was due to lack of competition from any other mammal. [NCERT-XII, Page 117]

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

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

185. Match the columns: [NCERT-XII, Pages 27, 28, 29, 33]

**Column I****Column II**

- |                      |                         |
|----------------------|-------------------------|
| A. Testis            | I. Present in males     |
| B. Vulva             | II. Oogenesis           |
| C. Prostatic fluid   | III. Located in scrotum |
| D. Production of ova | IV. Labia majora        |

Choose the correct answer from the options given below:

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

**Section-B**

186. Given below are two statements:

**Statements I:** Histamine is involved in allergic and inflammatory reactions.**Statements II:** Histamine is vasodilator.

[NCERT-XI, Page 194]

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

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

187. Match the columns w.r.t. HIV-enzymes and their functions:

[NCERT-XII, Pages 134, 135]

**Column-I****Column-II**

- |                          |  |
|--------------------------|--|
| A. Physical barrier      | I. PMNL                                |
| B. Physiological barrier | II. Mucus coating of epithelial lining |
| C. Cellular barrier      | III. Acid in stomach                   |
| D. Cytokine barrier      | IV. Interferons                        |

Choose the correct answer from the options given below:

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

188. Marsupials evolved from ancestral stock, but all within Australian continent. This represents

[NCERT-XII, Page 117]

- (1) Adaptive radiation like in Darwin's finches
- (2) Adaptive radiation unlike in Darwin's finches
- (3) Convergent evolution like in Darwin's finches
- (4) Convergent evolution unlike in Darwin's finches

189. Given below are two statements:

**Statements I:** In PCR, the multiple copies of gene of interest is synthesized in vivo.**Statements II:** Primers used in PCR are small synthetic oligonucleotides. [NCERT-XII, Pages 172-173]

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

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

190. Match the columns [NCERT-XII, Pages 169, 171]

**Column-I****Column-II**

- |                        |                     |
|------------------------|---------------------|
| A. Transformation      | I. Animal cell      |
| B. Biolistics/gene gun | II. Plant cell      |
| C. Microinjection      | III. Bacterial cell |
| D. Cloning vector      | IV. pBR322          |

Choose the correct answer from the options given below:

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

191. Read the following statements: [NCERT-XII, Page 141]

- A. Malignant tumors are the mass of non-proliferating cells called neoplastic cells
- B. Malignant tumor starves the normal cells by competing for vital nutrients
- C. Cells of malignant tumors show metastasis
- D. The cells of malignant tumor severely loses the property of contact inhibition
- E. The cells sloughed from benign tumor reach distant sites through blood, where they get lodged to start a new tumor

How many of the above statements are correct?

- (1) Five
- (2) Four
- (3) Two
- (4) Three

192. Given below are two statements:

**Statements I:** Darwinian variations are random and directionless.**Statements II:** Evolution is a directed process in the sense of determination. [NCERT-XII, Page-119]

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

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

193. Identify the desirable characteristics for a plasmid used in rDNA technology from the following. [NCERT-XII, Page 169]

- A. Ability to multiply and express outside the host in a bioreactor.
- B. A highly active promoter.
- C. A site at which replication can be initiated.
- D. One or more identifiable marker genes.
- E. One or more unique restriction sites.

Choose the correct answer from the options given below:

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

194. Read the following statements : [NCERT-XII, Page-183]

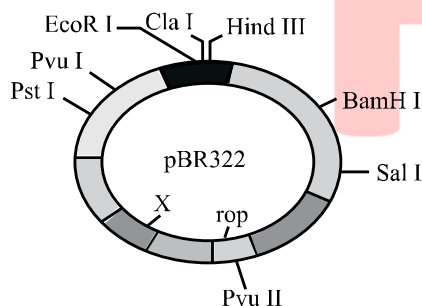
- A. Very low concentration of bacteria or virus (at a time when the symptoms of the disease are not yet visible) can be detected by amplification of their nucleic acid by PCR
- B. PCR is now routinely used to detect HIV in suspected AIDs patients
- C. PCR is being used to detect mutations in genes in suspected cancer patients
- D. For many diseases, using conventional method of diagnosis (serum and urine analysis), early detection is not possible
- E. ELISA (Enzyme Linked Immunosorbent Assay) is based on the principle of antigen-antibody interaction.

How many of the above statements are correct?

- (1) Five
- (2) Four
- (3) Three
- (4) Two

195. The following diagram shown restriction sites in *E. coli* cloning vector pBR322. Find the role of 'X':

[NCERT-XII, Page 169]



- (1) Gene 'X' is responsible for recognitions sites
- (2) The gene 'X' is for protein involved in replication of Plasmid
- (3) The gene 'X' is responsible for controlling the copy number of the linked DNA
- (4) The gene 'X' is responsible for resistance to antibiotics.

196. Match the columns : [NCERT-XII, Pages 179, 180, 184]

- | Column I       | Column II                 |
|----------------|---------------------------|
| A. Golden Rice | I. Cry protein            |
| B. Bt toxin    | II. Rich in vit. A        |
| C. RNAi        | III. First transgenic cow |
| D. Rosie       | IV. Gene silencing        |
- (1) A – II, B – I, C – IV, D – III
  - (2) A – IV, B – III, C – I, D – II
  - (3) A – II, B – III, C – I, D – IV
  - (4) A – IV, B – I, C – II, D – III

197. Match the columns: [NCERT-XII, Pages 164, 168, 169]

- | Column-I                           | Column-II  |
|------------------------------------|--|
| A. Stanley Cohen and Herbert Boyer | I. Selectable marker                                       |
| B. Ethidium bromide                | II. Isolated the antibiotic resistant genes from a plasmid |
| C. Kanamycin                       | III. Cloning vector  |
| D. pBR322                          | IV. Bright orange colour bands of DNA                      |

Choose the correct answer from the options given below:

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

198. Match the columns : [NCERT-XII, Pages 179, 182, 184]

- | Column I                         | Column II                       |
|----------------------------------|---------------------------------|
| A. <i>Eschereria coli</i>        | I. Polio vaccine                |
| B. <i>Bacillus thuringiensis</i> | II. Interferon                  |
| C. Transgenic mice               | III. Bt toxin                   |
| D. Rosie                         | IV. Human protein enriched milk |

Choose the correct answer from the options given below:

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

199. Match the columns: [NCERT-XII, Pages 168, 170, 171]

- | Column-I                    | Column-II                              |
|-----------------------------|--|
| A. Elution                  | I. Gene gun                            |
| B. Competence               | II. $Ca^{2+}$                          |
| C. Biolistics               | III. $\beta$ -galactosidase gene       |
| D. Insertional inactivation | IV. Extraction of DNA from agarose gel |

Choose the correct answer from the options given below:

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

200. Given below are two statements:

**Statements I:** Indian Basmati rice was crossed with semidwarf variety of rice and it was claimed as a novelty by an American company.

**Statements II:** Traditional knowledge related to bioresources can be exploited by industrialised nations.

[NCERT-XII, Page 185]

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

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