TECHNO INDIA GROUP PUBLIC SCHOOL

Dt. 01-04-2025

NEET

Mock Test - 2 (2025)

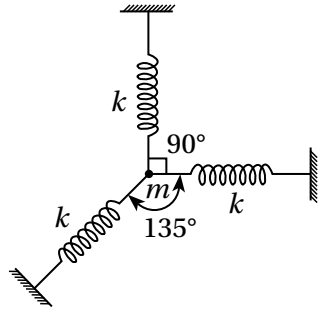
Time Allowed: **3 hours** Maximum Marks: **720**

General Instructions:

1. This test will be a 3 hours Test, Maximum Marks 720.
2. This test consists of 180 questions of Physics, Chemistry and Biology. All questions are COMPULSORY to attempt.
3. Each question is of 4 marks.
4. There are three parts in the question paper, consisting Part-I Physics (Q. No. 1 to 45), Part-II Chemistry (Q. no. 46 to 90), Part-III Biology (Q. no. 91 to 180).
5. There will be only one correct choice in the given four choices for each question. For each question 4 marks will be awarded for correct choice, 1 mark will be deducted for incorrect choice and zero mark will be awarded for unattempted question.
6. Any textual, printed or written material, mobile phones, calculator, etc. is not allowed for the students appearing for the test.
7. All calculations / written work should be done in the rough sheet provided.

PHYSICS

1. A particle of mass m is attached to three identical massless springs of spring constant k as shown in the figure. The time period of vertical oscillation of the particle is



① $2\pi\sqrt{\frac{m}{k}}$ ② $2\pi\sqrt{\frac{m}{2k}}$ ③ $2\pi\sqrt{\frac{m}{3k}}$ ④ $\pi\sqrt{\frac{m}{k}}$

2. A spring of force constant k is cut into three equal parts. The force constant of each part would be

① $k/3$ ② $3k$ ③ k ④ $2k$

3. A body floats in water with 40% of its volume outside water. When the same body floats in oil, 60% of its volume remains outside oil. The relative density of the oil is

① 0.9 ② 1.2 ③ 1.5 ④ 1.8

4. Two solid spheres of same metal but of mass M and $8M$ fall simultaneously on a viscous liquid and their terminal velocities are v and nv, then value of n is

① 16 ② 8 ③ 4 ④ 2

5. A particle is executing linear simple harmonic motion of amplitude A. At what displacement is the energy of the particle half potential and half kinetic?

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

6. The equation of a progressive wave is $y = 4\sin\left(4\pi t - 0.04x + \frac{\pi}{3}\right)$ where x is in meter and t is in second. The velocity of the wave is

① 100π m/s ② 50π m/s ③ 25π m/s ④ π m/s

7. A longitudinal wave is represented by $x = A\sin 2\pi\left(nt - \frac{x}{\lambda}\right)$. The maximum particle velocity will be four times the wave velocity of λ =

① $\frac{\pi A}{4}$ ② $2\pi A$ ③ $\frac{\pi A}{2}$ ④ $4\pi A$

8. Two black bodies at temperatures 327°C and 427°C are kept in an evacuated chamber at 27°C. The ratio of their rates of loss of heat are

① $\frac{6}{7}$ ② $\left(\frac{6}{7}\right)^2$ ③ $\left(\frac{6}{7}\right)^3$ ④ $\frac{243}{464}$

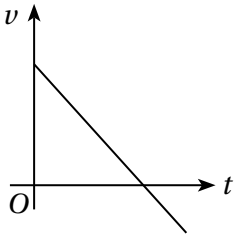
Cont...

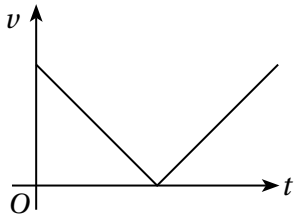
9.	Moment of inertia of a ring of mass M and radius R about a tangent to the circle of the ring is ① $\frac{5}{2}MR^2$ ② $\frac{3}{2}MR^2$ ③ $\frac{MR^2}{2}$ ④ MR^2
10.	If the escape velocity of a planet is 3 times that of the earth and its radius is 4 times that of the earth, then mass of planet is ① $12M$ (earth) ② $9M$ (of earth) ③ $36M$ (of earth) ④ $24M$ (of earth)
11.	Two bodies of mass 1 kg and 3 kg have a position vectors $\left(\hat{i}+2\hat{j}+\hat{k}\right)$ and $\left(-3\hat{i}-2\hat{j}+\hat{k}\right)$ respectively. The centre of mass of this system has a position vector ① $-2\hat{i}-\hat{j}+\hat{k}$ ② $2\hat{i}-\hat{j}-2\hat{k}$ ③ $-\hat{i}+\hat{j}+\hat{k}$ ④ $-2\hat{i}+2\hat{k}$
12.	A simple pendulum performs S.H.M about $x = 0$ with an amplitude a and time period T. The speed of the pendulum at $x=\frac{a}{2}$ will be ① $\frac{\pi a}{T}$ ② $\frac{3\pi^2 a}{T}$ ③ $\frac{\pi a\sqrt{3}}{T}$ ④ $\frac{\pi a\sqrt{3}}{2T}$
13.	Each of the two strings of length 51.6 cm and 49.1 cm are tensioned separately by 20 N force. Mass per unit length of both the strings is same and equal to 1 g/m. When both the strings vibrate simultaneously the number of beats is ① 7 ② 8 ③ 3 ④ 5
14.	The driver of a car travelling with speed 30 m/s towards a hill sounds horn of frequency 600 Hz. If the velocity of sound in air is 330 m/s, the frequency of reflected sound as heard by driver is ① 555.5 Hz ② 720 Hz ③ 500 Hz ④ 550 Hz
15.	A wave in a string has an amplitude of 2 cm. The wave travels in the +ve direction of x-axis with a speed of 128 m/s and it is noted that 5 complete waves fit in 4 m length of the string. The equation describing the wave is ① $y=(0.02)\sin(15.7x-2010t)$ ② $y=(0.02)\sin(15.7x+2010t)$ ③ $y=(0.02)\sin(7.85x-1005t)$ ④ $y=(0.02)\sin(7.85x+1005t)$
16.	A circular disc rolls down an inclined plane. The ratio of rotational kinetic energy to total kinetic energy is ① $\frac{1}{2}$ ② $\frac{1}{3}$ ③ $\frac{2}{3}$ ④ $\frac{3}{4}$
17.	For an object through at 45° to horizontal, the maximum height (H) and horizontal range (R) are related as ① $R=16H$ ② $R=8H$ ③ $R=4H$ ④ $R=2H$
18.	A particle is projected with certain velocity at two different angles of projections with respect to horizontal plane so as to have same range R on a horizontal plane. If t_1 and t_2 are the time taken for the two paths, then which one of the following relations is correct? ① $t_1t_2=\frac{2R}{g}$ ② $t_1t_2=\frac{R}{g}$ ③ $t_1t_2=\frac{R}{2g}$ ④ $t_1t_2=\frac{4R}{g}$

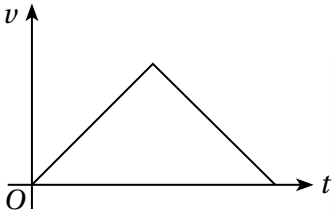
19. The acceleration a of a particle starting from rest varies with time according to relation $a = \alpha t + \beta$. The velocity of particle

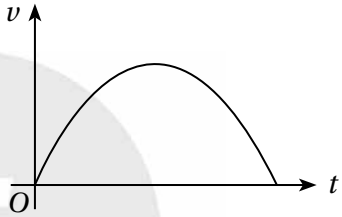
① $\frac{\alpha t^2}{2} + \beta$ ② $\frac{\alpha t^2}{2} + \beta t$ ③ $\alpha t^2 + \frac{1}{2}\beta t$ ④ $\frac{\alpha t^2 + \beta}{2}$

20. A ball is thrown vertically upward. Ignoring the air resistance, which one to the following plot represent the velocity time plots for the period ball remains in air?

① 

② 

③ 

④ 

21. The ratio of the vapour densities of two gases at a given temperature is 9 : 8. the ratio of the r.m.s. velocities of their molecules is

① $3:2\sqrt{2}$ ② $2\sqrt{2}:3$ ③ 9 : 8 ④ 8 : 9

22. The mean kinetic energy of one mole gas per degree of freedom is

① $\frac{1}{2}kT$ ② $\frac{3}{2}kT$ ③ $\frac{3}{2}RT$ ④ $\frac{1}{2}RT$

23. A carnot engine working between 450 k and 600 k has a work output of 300 J per cycle. The amount of heat energy supplied to the engine from the source in each cycle is

① 1200 J ② 800 J ③ 1600 J ④ 3200 J

24. According to Newton's law of cooling, the rate of colling is proportional to $(\Delta\theta)^n$, where is the temperature difference between the body and the surroundings and n is equal to

① three ② two ③ one ④ four

25. A black body at a high temperature T radiates energy at the rate of U (in W/m^2) when the temperature falls to half (i.e. $T/2$), the radiated energy (in W/m^2) will be

① $\frac{U}{8}$ ② $\frac{U}{16}$ ③ $\frac{U}{4}$ ④ $\frac{U}{2}$

26. A thin lens of glass (μ = 1.5) of focal length +10 cm is immersed in water (μ = 4/3). The new focal length is

① 20 cm ② 40 cm ③ 48 cm ④ 12 cm

Cont...

27. R, L, C represent the physical quantities resistance, inductance and capacitance respectively. Which one of the following combinations has dimension of frequency?

① $\frac{1}{\sqrt{RC}}$ ② $\frac{R}{L}$ ③ $\frac{1}{LC}$ ④ $\frac{C}{L}$

28. A metallic wire of resistance 12 Ω is bent to form a square. The resistance between two diagonal points would be

① 12 Ω ② 24 Ω ③ 6 Ω ④ 3 Ω

29. A lead-acid battery of a car has an emf of 12 V. If the internal resistance of the battery is 0.5 ohm, the maximum current that can be drawn from the battery will be

① 30 A ② 20 A ③ 6 A ④ 24 A

30. If two parallel metal wires carry current in opposite directions

① the wires attract each other
② the wires repel each other
③ the wires experien neither attraction nor repulsion
④ the wires may attract each other.

31. 100π phase difference = ___n ×___ path difference then n =

① 50λ ② 100λ ③ 10λ ④ 25λ

32. What will be the angle of diffraction for the first order maximum due to diffraction by a single slit of width 0.50 mm, using light of wavelength 500 mm?

① 1.5×10^{-4} rad ② 1.5×10^{-3} rad ③ 1×10^{-3} rad ④ 3×10^{-3} rad

33. The photo electric effect represents that

① proton has a wave nature ② electron has a wave nature
③ light has a particle nature ④ none of these

34. For an electron in the second orbit of Bohr's Hydrogen atom, the moment of linear momentum is

① $\frac{2h}{\pi}$ ② $\frac{h}{\pi}$ ③ $n\pi$ ④ $2\pi h$

35. The current gain of a transistor in common base mode is 0.9. If the change in the emitter current is 5 mA, the change in the collector current will be

① 5.6 mA ② 0 mA ③ 4 mA ④ 4.5 mA

36. A resistor of R = 6 Ω, an inductor of L = 1 H and a capacitor of C = 17.36 μF are connected in series with an A.C source. Then the Q-factor is

① 2.37 ② 80 ③ 3.72 ④ 40

37. A short bar magnet experiences a torque of magnitude 0.64 J when it is placed in a uniform magnetic field of 0.32 T, making an angle of 30° with the direction of the field. The magnetic moment of the magnet is

① 6 Am^2 ② 4 Am^2 ③ 2 Am^2 ④ none of these

38. The magnifying power of a telescope is m. If the focal length of the eye-piece is halved, then its magnifying power is

① $\frac{1}{2m}$ ② $4m$ ③ $2m$ ④ $m/2$

39. The unit of magnetic moment is

① Am^{-2} ② Am^{-1} ③ TJ^{-2} ④ JT^{-1}

40. Two similar cells, whether joined in series or in parallel, have the same current through an external resistance of 2 Ω. The internal resistance of each cell is

① 0.5 Ω ② 1.5 Ω ③ 1 Ω ④ 2 Ω

41. The relation between the intensity of the electric field of an electric dipole at a distance r from its centre on its axis and the distance r is (where $r >> 2a$)

① $E \propto \frac{1}{r^4}$ ② $E \propto \frac{1}{r^3}$ ③ $E \propto \frac{1}{r}$ ④ $E \propto \frac{1}{r^2}$

■ Assertion Reason based Questions:

Directions: Read the following questions and choose any one of the following four responses.

A: Assertion and Reason both are correct and Reason is the correct explanation of Assertion.

B: Assertion and Reason both are correct and Reason is not the correct explanation of Assertion.

C: Assertion is correct but Reason is wrong.

D: Assertion is wrong but Reason is correct.

42. **Assertion:** For a particle in SHM, if the amplitude of the displacement is a and the amplitude of velocity is v, the amplitude of acceleration is $\frac{v^2}{a}$.

Reason: Maximum acceleration is $2a\omega$.

① A ② B ③ C ④ D

43. **Assertion:** n_1 is the frequency of the pipe closed at one end and n_2 is the frequency of the pipe open at both ends. If both are joined end to end, the fundamental frequency of closed pipe so formed is $\frac{n_1 n_2}{n_2 + 2n_1}$

Reason: $n_1 = \frac{v}{4l_1}$; $n_2 = \frac{v}{2l_2}$; $l = l_1 + l_2 = \frac{v}{4n}$

① A ② B ③ C ④ D

44. **Assertion:** Time taken by light to travel through glass slab of thickness t and $r \cdot i$ μ is $\frac{\mu t}{C_0}$.

Reason: Time taken $= \frac{\text{optical path length}}{\text{speed of light in air}}$

① A ② B ③ C ④ D

45. **Assertion:** The de-Broglie wavelength of an electron in the ground state of H-atom is $(1.06)(\pi)$ $\mathring{A}$.

Reason: $2\pi r = n\frac{h}{mv} = n\lambda$ and at $n = 1$, $r_n = 0.53$ $\mathring{A}$

① A ② B ③ C ④ D

Cont...

CHEMISTRY

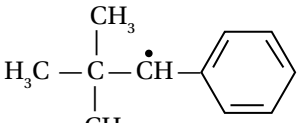
46. The correct order regarding the electro negativity of hybrid orbitals of carbon is:

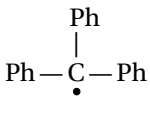
① $sp > sp^2 > sp^3$ ② $sp < sp^2 > sp^3$ ③ $sp < sp^2 < sp^3$ ④ $sp > sp^2 < sp^3$

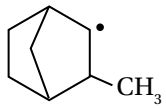
47. I.U.P.A.C. name of the following is: $CH_2 = CH - CH_2 - CH_2 - C \equiv CH$,

① 1, 5–hexenyne ② 1–hexene–5–yne ③ 1–hexyne–5–ene ④ 1, 5–hexynene

48. Consider the following compounds:


(I)

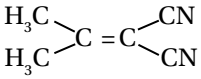
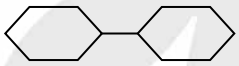
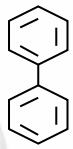
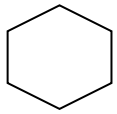

(II)


(III)

Hyper conjugation occurs in:

① II only ② III only ③ I and III ④ I only

49. In which of the following molecules, all atoms are co-planar?

①  ②  ③  ④ 

50. The radius of second Bohr orbit of Be^{3+} in terms of the Bohr radius a_0 .

① $\frac{2a_0}{3}$ ② $\frac{4a_0}{3}$ ③ a_0 ④ $\frac{2a_0}{9}$

51. Which among the following has more number of lone pairs on central atom ?

① XeF_4 ② SiF_4 ③ SF_4 ④ $BF_4^{\ominus}$

52. Freezing point is least for :

① 0.1 m urea ② 0.1 m NaCl ③ 0.1 m $BaCl_2$ ④ 0.1 m glucose

53. Given below are two statements :

Statement-I : One Faraday always deposits /liberates one mole of any substance at appropriate electrode.

Statement-II : On dilution of acetic acid solution its molar conductance decreases where as its specific conductance increases.

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

① Both Statement-I and Statement-II are true ② Statement-I is false and Statement-II is true

③ Statement-I is true and Statement-II is false ④ Both statement-I & Statement-II are false

54. The difference between ΔH and ΔU, ($\Delta H - \Delta U$) when the combustion of one mole of methane is carried out at a room temperature 'T' is equal to :

① – 4 RT ② 3 RT ③ 4 RT ④ – 2 RT

55. 90% of the first order reaction is completed in 120 sec. The time required for 99% of the reaction to be completed in minutes is :

① 200 ② 360 ③ 4 ④ 8

56. Which of the following expression is correct for the rate of reaction given below ?

$5Br^{\ominus}.(aq) + BrO_3^{\ominus}(aq) + 6H^+(aq) \longrightarrow 3Br_2(aq) + 3H_2O(l)$

① $\frac{\Delta[Br^-]}{\Delta t} = 5\frac{(\Delta H^+)}{\Delta t}$ ② $\frac{\Delta[Br^-]}{\Delta t} = \frac{6\Delta(H^+)}{5\Delta t}$

③ $\frac{\Delta[Br^-]}{\Delta t} = \frac{5}{6}.\frac{(\Delta H^+)}{\Delta t}$ ④ $\frac{\Delta[Br^-]}{\Delta t} = 6\frac{(\Delta H^+)}{\Delta t}$

57. Which of the following statements regarding α-amino acids are correct ?

I. Proteins on complete hydrolysis give α-amino acids

II. All α- amino acids contain $-NH_2$ group in their structure.

III. Amino acids with equal number of amino and carboxyl groups are neutral amino acids.

IV. All naturally occurring α-amino acids are optically active.

① I & III ② I, II, and IV ③ III & IV ④ II, III, and IV

58. Match the Column I and Column II and select the correct answer using given codes.

Column-I (Order)	**Column-II (Properties)**
(A) $Si^{4+} < Al^{3+} < Mg^{2+} < K^+$	(1) EA (Electron affinity)
(B) C < N < F < O	(2) Ionic radii in gaseous state
(C) S > Se > Te > O	(3) EN (Electro negativity)
(D) F > O > N > C	(4) Second Ionisation Enthalpy

① A–2, B–4, C–3, D–1 ② A–2, B–4, C–1, D–3 ③ A–4, B–2, C–3, D–1 ④ A–4, B–2, C–1, D–3

59. Oxidation state of Cr in CrO_5

① +10 ② +6 ③ +8 ④ +5

60. **Assertion (A) :** Fructose is reducing sugar.
Reason (R) : Fructose is an aldose.
In light of the above statements, choose the most appropriate answer from the options given below.

① Both A and R are correct 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 not correct but R is correct

④ A is correct but R is not correct

61. Which of following is not an essential amino acid?

① Glycine ② Valine ③ Phenyl Alanine ④ Leucine

62. Consider the chemical equation.

$Na^+(g) + Cl^-(g) \longrightarrow Na^+Cl^-(s)$

For 1 mole of NaCl(s)

Lattice enthalpy = $+788kj^{-1}$

$\Delta_{hyd}H^0 = -784kjmol^{-1}$

The enthalpy of solution is calculated as

① -4 kj $(mol)^{-1}$ ② -8 kj $(mol)^{-1}$ ③ $+4$ kj $(mol)^{-1}$ ④ -6 kj $(mol)^{-1}$

Cont...

63. The oxidation potential of hydrogen electrode with pH = 10

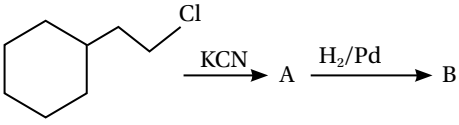
① –0.295V ② +0.59V ③ –0.059V ④ +0.059V

64. Radio active Lantthanide is

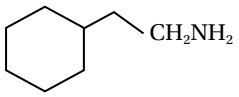
① Th ② Gd ③ Pm ④ Eu

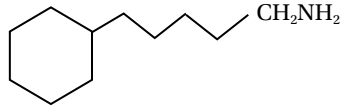
65. Least acidic among the following is

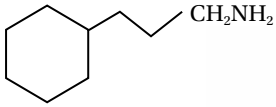
① chloroacetic acid ② acetic acid ③ phenol ④ propanoic acid

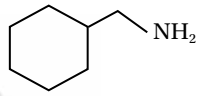
66. 

Here 'B' is

① 

② 

③ 

④ 

67. Oxidation states of bromine in tribromooctoxide (Br_3O_8) are

① +6, +4, +6 ② +6, +4, +2 ③ +4, +6, +2 ④ +6, +2, +4

68. **Assertion (A) :** For a single chiral carbon containing alkyl halide, substitution takes place at chiral centre, 'S_N1' reaction leads to recemisation.

Reason (R) : The attack of the nucleophile may be accomplished from either side of the plane of the intermediate carbocation formed in the reaction.

① Both A and R are correct; R is the correct explanation of A

② Both A and R are correct; R is not the correct explanation of A

③ A is correct; R is incorrect

④ R is correct ; A is incorrect

69. Which of the following VIA group hydride is thermally most stable ?

① H_2Te ② H_2Se ③ H_2S ④ H_2O

70. Match List I with List II.

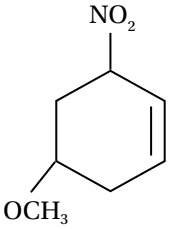
List-I (Compound)	**List-II (Shape)**
(A) XeF_6	(i) Distorted octahedral
(B) NH_3	(ii) Square planar
(C) BrF_5	(iii) Pyramidal
(D) ICl_4^-	(iv) Square pyramidal

Choose the correct answer from the options given below :

① A–i, B–iii, C–iv, D-ii ② A–i, B–ii, C–iv, D-iii ③ A–iv, B–iii, C–i, D-ii ④ A–iv, B–i, C–ii, D-iii

71. Non polar molecule with polar bonds is

① Cl_2 ② H_2O ③ BF_3 ④ N_2

72. 

① 4-methoxy-6-nitrocyclohexene – 1 ② 5-methoxy-3-nitrocyclohexene – 1

③ 3-nitro-1-methoxycyclohexene – 4-ene ④ 3-nitro-5-methoxycyclohexene – 1

73. **Assertion (A) :** Nitration of benzene with nitric acid requires the use of concentrated sulphuric acid.

Reason (R) : The mixture of concentrated sulphuric acid and concentrated nitric acid produces the electrophile, NO_2^+

① Both A and R are correct; R is the correct explanation of A

② Both A and R are correct; R is not the correct explanation of A

③ A is correct; R is incorrect

④ R is correct; A is incorrect

74. Which among the following is least electronegative?

① B ② Al ③ Ga ④ In

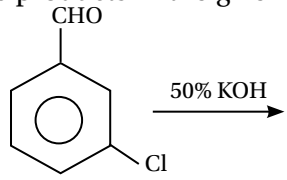
75. Iodoform test is not given by

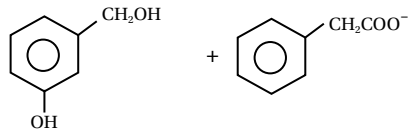
① Ethanal ② Ethanol ③ Diphenyl ketone ④ Dimethyl ketone

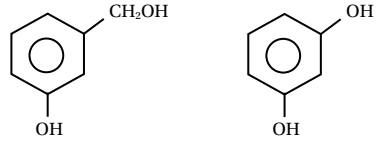
76. Which of the following pairs of ions are isoelectronic and isostructural?

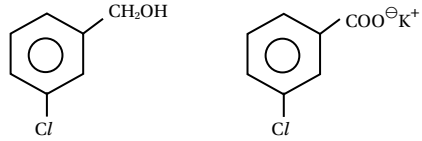
① CO_3^{2-}, SO_3^{2-} ② ClO_3^{2-}, CO_3^{2-} ③ SO_3^{2-}, NO_3^{2-} ④ ClO_3^{-}, SO_3^{2-}

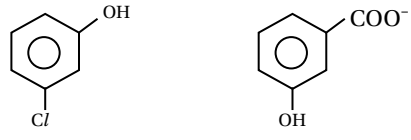
77. Predict the products in the given reaction.



① 

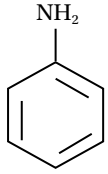
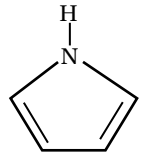
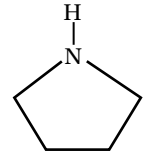
② 

③ 

④ 

Cont...

78. Among the following amines, the strongest base is

①  ② NH_3 ③  ④ 

79. When H_2S is passed through a mixture containing Cu^{+2}, Ni^{2+} and Zn^{2+} in acidic solution then, the ion that will precipitate is

① Cu^{+2}, Ni^{+2} only ② Ni^{+2} only ③ Cu^{+2}, Zn^{+2} only ④ Cu^{+2} only

80. Lassaigne's test is not applicable to

① NH_2CONH_2 ② $NH_2 - NH_2$ ③ NH_2CSNH_2 ④ $C_6H_5NH_2$

81. A salt solution on treatment with H_2SO_4 (dilute) gives out a gas which turns $K_2Cr_2O_7$ paper green and lead acetate paper black. The salt contains

① Carbonate ② Chloride ③ Nitrate ④ Sulphide

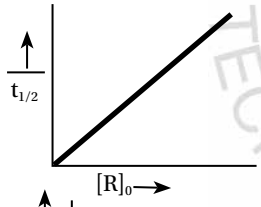
82. Which of the following actinoids show oxidation states up to +7 ?

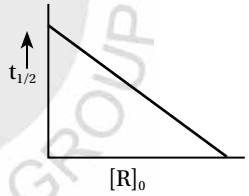
① Am ② Pa ③ U ④ Np

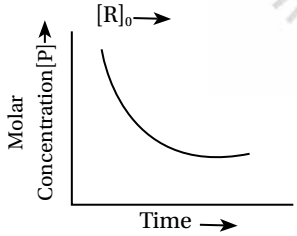
83. Ksp of AgCl is $8\times10^{-12}M^2$. The molar solubility of AgCl in 0.1M $AgNO_3$ solution is

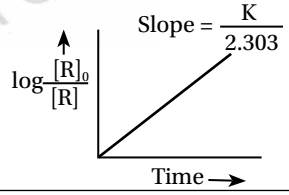
① 8×10^{-12} M ② 8×10^{-13} M ③ 8×10^{-10} M ④ 8×10^{-11} M

84. Which of the following graphs correctly represent the first order reaction, $R \rightarrow P$?

① 

② 

③ 

④ 

85. Write the IUPAC name of the coordination compound $Fe_4[Fe(CN)_6]_3$.

① Iron (II) hexacyanidoferrate (II) ② Iron (III) hexacyanidoferrate (II)
③ Iron (II) hexacyanoferrate (III) ④ Iron (II) hexacyanoiron (III)

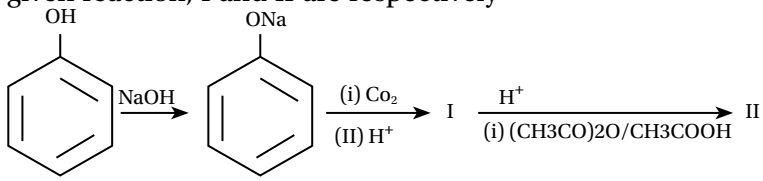
86. An organic compound 'A' on treatment with benzene sulphonyl chloride gives compound B. B is soluble in dil NaOH solution. The compound 'A' is

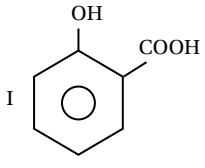
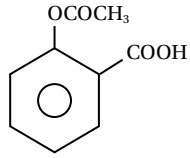
① $(CH_3)_3N$ ② $(CH_3)_2NH$ ③ $(CH_3)_2N(C_2H_5)$ ④ $CH_3 - NH_2$

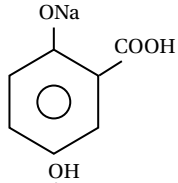
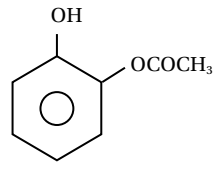
87. **Assertion (A) :** Oxidising power increases in order : $VO_2^+ < Cr_2O_7^{2-} < MnO_4^-$
Reason (R) : it is due to the increasing stability of lower species to which they are easily reduced.

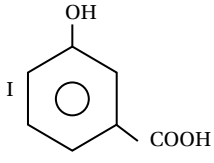
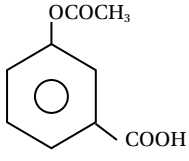
① Both A and R are correct; R is the correct explanation of A
② Both A and R are correct; R is not the correct explanation of A
③ A is correct; R is incorrect
④ R is correct ; A is incorrect

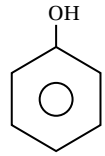
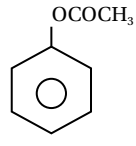
88. In the given reaction, I and II are respectively



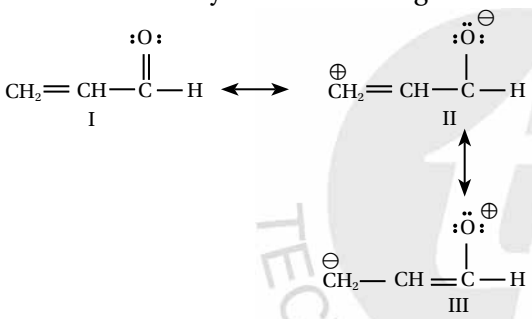
①  

②  

③  

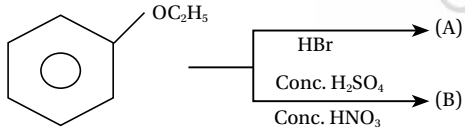
④  

89. The correct order of stability of the following resonance structures

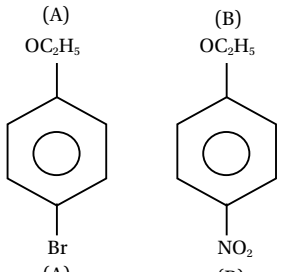


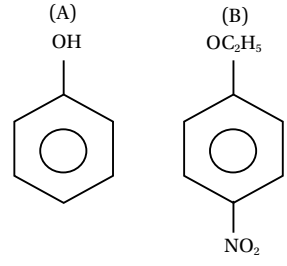
① III > II > I ② I > II > III ③ II > I > III ④ I > III > II

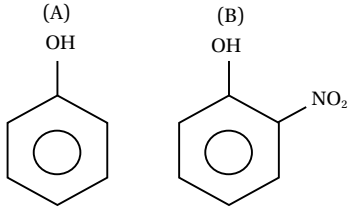
90. Predict the major product of the following reaction.

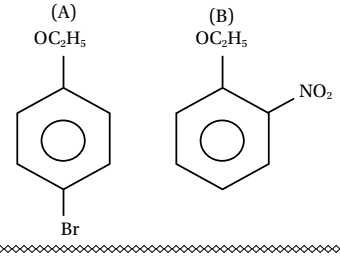


Choose the option with appropriate products from the codes given below .

① 

② 

③ 

④ 

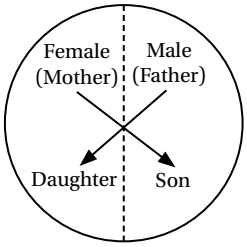
BIOLOGY

Botany

91. The one aspect which is not a salient feature of genetic code, is its being
① specific ② degenerate ③ ambiguous ④ universal

92. At 5′ end of polynucleotide chain,
① –OH group is attached ② Phosphate group is attached
③ Pentose sugar is attached ④ –H bond is present

93. Represented below is the inheritance pattern of a certain type of traits in human. Which one of the following conditions could be an example of this pattern?
① Phenylketonuria
② Sickle-cell anaemia
③ Haemophilia
④ Thalassamia



94. A normal-visioned man whose father was colourblind, marries a woman whose father was also colourblind. They have their first child as a daughter. What are the chances that this child would be colourblind?
① 100% ② 0% ③ 25% ④ 50%

95. Given below are two statements, one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**. Choose the correct option:
Assertion (A): Amphibians have evolved from fishes.
Reason (R): *Archaeopteryx* is a fossil linking fishes and amphibians.
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 correct but R is not correct
④ A is not correct but R is correct

96. Choose the correct statement with reference to organic evolution.
I. Flippers of whale and wings of bat show analogy.
II. Wings of butterfly and wings of bird show homology.
III. Organs with dissimilar structure are called analogous organs.
IV. Organs with similar structure and origin are called homologous organs.
① I and II ② II and IV ③ I and III ④ III and IV

97. Similarities in organisms with different polymers indicate—
① microevolution ② macroevolution
③ convergent evolution ④ divergent evolution

98. In a stable ecosystem, which of the following limits the number of trophic levels?
① Biomass
② Number of nutrients
③ Availibility of nutrients
④ Presence of contaminants that increase in concentration along the food chain

99. Secondary productivity is rate of formation of new organic matter by
① parasite ② consumer ③ decomposer ④ producer

100. The upright pyramid of number is absent in
① pond ② forest ③ lake ④ grassland

101. Given below are two statements, one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**. Choose the correct option:
Assertion (A): The problem of acid rain has dramatically increased due to industrialisation.
Reason (R): Industries are responsible for most of the emission of oxides of sulphur and nitrogen.
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 correct but R is not correct
④ A is not correct but R is correct

102. Match the following Column I with Column II.

Column I		Column II	
A.	Zooplankton	1.	0.003 ppm
B.	Small fishes	2.	2 ppm
C.	Water	3.	25 ppm
D.	Fish eating birds	4.	0.04 ppm
E.	Big fishes	5.	0.5 ppm

Codes

	A	B	C	D	E
①	2	1	4	5	3
②	4	5	1	2	3
③	4	5	3	2	1
④	4	5	1	3	2

103. Find out the mismatched pair:

(a)	C_4 plants	1.	Kranz anatomy
(b)	Primary CO_2 fixation product of C_4 plants	2.	OAA
(c)	Primary CO_2 acceptor of C_3 plants	3.	RuBP
(d)	C_3 plants	4.	Maize

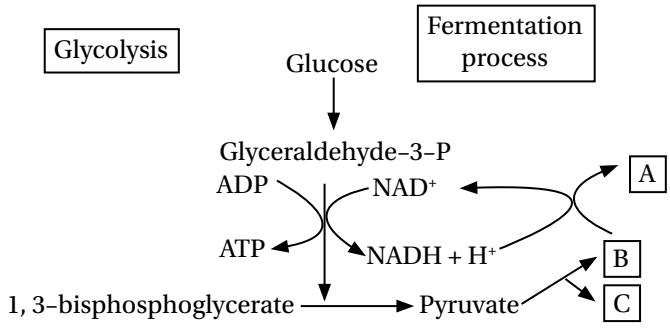
Cont...

104. In PS–I, the first electron acceptor is

① ferredoxin ② cytochrome

③ plastocyanin ④ an–iron sulphur protein

105. Choose the correct combination of labelling the molecules involved in the pathway of anaerobic respiration in yeast.



① A–Ethanol, B–CO_2, C–Acetaldehyde ② A–CO_2, B–Ethanol, C–Acetaldehyde

③ A–CO_2, B–Acetaldehyde, C–Ethanol ④ A–Ethanol, B–Acetaldehyde, C–CO_2

106. 2 NADH (H^+) produced during anaerobic glycolysis yield

① 6 ATP molecules ② 4 ATP molecules ③ 8 ATP molecules ④ None of these

107. Match the following and choose the correct combination:

Column I		Column II	
A.	Zeatin	1.	Flowering hormone
B.	Florigen	2.	Synthetic auxin
C.	IBA	3.	Cytokinin
D.	MAA	4.	Natural auxin

Codes

	A	B	C	D
①	3	4	1	2
②	2	1	4	3
③	1	2	3	4
④	3	1	4	2

108. Given below are two statements, one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**. Choose the correct option:

Assertion (A): Bryophytes are also known as vascular cryptogams.

Reason (R): Pteridophytes show heterospory.

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 correct but R is not correct

④ A is not correct but R is correct

109. Botanical name of peat moss is
① *Sphagnum* ② *Funaria* ③ *Anthoceros* ④ *Polytrichum*

110. Which one of the following is an algal parasite?
① *Volvox* ② *Ulothrix* ③ *Porphyra* ④ *Cephaleuros*

111. Ribosomes are essential for protein synthesis, but they are present in mitochondria and plastids, the sites of respiration and photosynthesis, respectively. What is the role of ribosomes in these organelles?
① Ribosomes transport ATP formed in respiration and photosynthesis to cytoplasm through ER
② Subunits of some required proteins are synthesised in these organelles
③ Ribosomes transport RNA and DNA to cytoplasm
④ All of the above

112. How many chromosomes will the cell have at G1, after S and after M–phase, respectively, if it has 14 chromosomes at interphase?
① 14, 14, 7 ② 14, 14, 14 ③ 7, 7, 7 ④ 7, 14, 14

113. Replication of centriole occurs during
① interphase ② prophase ③ late prophase ④ late telophase

114. A fibrous root system is excellent for
① food storage ② nitrogen fixation
③ absorbing water from deeper layers of soil ④ providing good anchorage to the plant

115. Pineapple fruit develops from
① unilocular polycarpellary flower
② multipistillate syncarpous flower
③ multilocular monocarpellary flower
④ a cluster of compactly borne flowers on an axis

116. Read I-IV and tell the correct order of components from outer side to inner side in a woody dicot stem.
I. Secondary cortex II. Wood III. Secondary phloem IV. Phellem
Codes
① III, IV, II, I ② I, II, IV, III ③ IV, I, III, II ④ IV, III, I, II

117. Select the characters which are not applicable to the anatomy of dicot roots.
I. Conjunctive tissue present
II. Presence of protein compounds in casparian strips
III. Polyarch xylem bundles
IV. Presence of pericycle
Codes
① I and II ② II and IV ③ III and IV ④ II and III

118.	The process of finding the age of a tree by counting the annual rings is called— ① dendrochronology ② ageing ③ chronology ④ countrology
119.	Vascular bundle having phloem in the centre, encircled by xylem is called ① bicollateral ② conjoint collateral ③ amphivasal ④ amphicribral
120.	Which one of the following is not a lateral meristem? ① Intrafascicular cambium ② Interfascicular cambium ③ Phellogen ④ Intercalary meristem
121.	ATP is a ① nucleotide ② nucleosome ③ nucleoside ④ purine base
122.	Macromolecule chitin is ① phosphorus containing polysaccharide ② sulphur containing polysaccharide ③ nitrogen containing polysaccharide ④ simple polysaccharide
123.	Raphe is a ① part of flower ② funicle attached to ovule ③ ridge formed by funiculus ④ part of nucellus
124.	Nucellus form which of the following part of a fruit? ① Seed coat ② Perisperm ③ Seed ④ Endosperm
125.	What is the direction of micropyle in an anatropous ovule? ① Upward ② Inverted ③ Right ④ Left
126.	Photolysis of each water molecule in light reaction yields: ① 2 electrons and 4 protons ② 4 electrons and 4 protons ③ 2 electrons and 2 protons ④ 1 electron and 2 protons
127.	C_4–plants differ from C_3–plants with respect to: ① number of ATP used ② substrate, which accepts the CO_2 molecules ③ the final product ④ number of ATP formed
128.	Which of the following cells do not respire? ① Epidermal cell ② Cork cell ③ RBC ④ Sieve tube cells
129.	Given below are two statements, one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**. Choose the correct option: **Assertion (A):** Endosperm is haploid in gymnosperm **Reason (R):** In Cycas, stem is usually branched 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 correct but R is not correct ④ A is not correct but R is correct

130.	Coralloid root is the feature of ① *Cycas* ② Mosses ③ *Pinus* ④ *Selaginella*
131.	Smallest unit in the plant cell wall is ① Micelle ② Microfibril ③ Fibril ④ None of the above
132.	Colchicine arrests spindle at ① Anaphase ② Prophase ③ Telophase ④ Metaphase
133.	Which of the following is not a stem modification? ① Thorns of citrus ② Tendrils of cucumber ③ Flattened structures of *Opuntia* ④ Pitcher of *Nepenthes*
134.	Pollination by bats is called ① Anaemophily ② Hydrophily ③ Ornithophily ④ None of the above
135.	The number of cells in the endospermic cell is 36. What will be the number of chromosomes in root tip cells? ① 9 ② 18 ③ 12 ④ 24

Zoology

136.	Hiccups can be best described as ① forceful sudden expiration ② jerky incomplete inspiration ③ vibration of the soft palete during breathing ④ sign of indigestion
137.	Which of the following changes (I–IV) usually tend to occur in the plain dwellers when they move to high altitudes, say 3500m or more? I. Increase in red blood cell size II. Increase in red blood cell production III. Increased breathing rate IV. Increase in thrombocyte count Changes occuring are ① II and III ② III and IV ③ I and IV ④ I and II
138.	Battery of artificial pacemaker is built of ① nickel ② lithium ③ photosensitive material ④ dry calcium
139.	Oval depression or fossa is observed over ① interatrial septum ② interventricular septum ③ right auriculo ventricular septum ④ left auriculoventricular septum

Cont...

140. **Statement A:** When urine moves through the descending limb, it becomes hypertonic and as it passes through the ascending limb of Henle's loop, it becomes hypotonic.
Statement B: The descending limb is permeable to sodium ions, while the ascending limb is impermeable to sodium ions.

① Both statements A and B are correct ② Both statements A and B are incorrect
③ Statement A is correct, B is incorrect ④ Statement B is correct, A is incorrect

141. Given below are two statements, one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**. Choose the correct option:

Assertion (A): Process of maintaining a constant internal environment is homeostasis.

Reason (R): Kidneys are excretory and homeostatic organs.

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 correct but R is not correct.
④ A is not correct but R is correct.

142. Progressive degeneration of skeletal muscle, mostly due to genetic disorders, occurs in
① myasthania gravis ② muscular dystrophy ③ tetany ④ osteoporosis

143. Which of the following is/are made up of a single bone in mammals?
① Dentary ② Hyoid ③ Upper jaw ④ All of the above

144. Which function will be lost due to damage of occipital lobe?
① Hearing ② Speech ③ Vision ④ Memory

145. Which centre is stimulated during increase in body temperature?
① Anterior hypothalamus ② Posterior hypothalamus
③ Limbic system ④ Medulla oblongata

146. Bartholin's glands of the female correspond to which glands in males?
① Cowper's glands ② Inguinal gland ③ Rectal gland ④ Prostate gland

147. TCytoplasm of ovum does not contain—
① Golgi body ② centrosomes ③ mitochondria ④ ribosomes

148. A change in the amount of yolk and its distribution in the egg will affect
① formation of zygote ② pattern of cleavage
③ number of blastomeres produced ④ fertilisation

149. The embryo at 16–celled stage is called—
① morula ② blastula ③ gastrula ④ blastomere

150. Notochord, skeletal system and dermis of the skin are the derivatives of–
① ectoderm ② mesoderm ③ endoderm ④ All

151. Match the following columns:

Column I		Column II	
A.	Syphilis	1.	Human Papilloma Virus
B.	Genital warts	2.	HBV
C.	Hepatitis–B	3.	*Treponema pallidum*
D.	Gonorrhoea	4.	Herpes Simplex Virus
		5.	*Neisseria*

Codes

	A	B	C	D
①	2	1	4	5
②	3	1	4	2
③	3	1	2	5
④	2	3	4	5

152. Progestesart is an IUD, which makes the uterus unsuitable and cervix hostile to the sperms as they are
① hormone releasing IUDs ② copper releasing IUDs
③ ideal contraceptive ④ non medicated IUDs

153. Oral contraceptive pills for females, developed at CDRI, Lucknow is
① Mala-D ② Cortisol ③ Saheli ④ None of these

154. What is common among silver fish, scorpion, crab and honey bee?
① Compound eyes ② Poison glands ③ Jointed appandages ④ Metamorphosis

155. Connecting link between Annelida and Mollusca is
① *Neopilina* ② *Peripatus* ③ *Periplaneta* ④ *Limulus*

156. Which one of the following is a mismatching pair of an animal and a certain phenomenon it exhibits?
① *Chameleon – Mimicry* ② *Taenia – Polymorphism*
③ *Pheretima – Sexual dimorphism* ④ *Musca – Metamorphosis*

157. Given below are two statements, one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**. Choose the correct option:
Assertion (A): Cyclostomes belong to Agnatha.
Reason (R): True jaws are absent in cyclostomes.
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 correct but R is not correct.
④ A is not correct but R is correct.

158. Which is the National Aquatic Animal of India?
① River dolphin ② Blue whale ③ Sea-horse ④ Gangetic shark

159. Which one is a flying fish?
① *Scoliodon* ② *Exocoetus* ③ *Pristis* ④ *Trygon*

160 Select the incorrect combination:

① Encephalitis – viral disease ② Kala azar – *Phlebotomus*

③ Rhabditiform larvae – *Ascaris* ④ *Entamoeba* – Sporgony

161. World AIDS Day is on

① 1st May ② 1st December ③ 20th December ④ 1st June

162. Food poisoning is caused by

① *Nitrosomonas* ② *Lactobacillus* ③ *E. coli* ④ None of these

163. Vaccine for TB is called

① PAS vaccine ② BCG vaccine ③ OPV ④ DPT

164. Consider the following statements related to *Rana tigrina* and select the correct option stating which are True (T) and which are False (F).

I. Hindlimbs are larger and muscular than forelimbs.

II. The alimentary canal of frog is short.

III. They respire on land through skin only.

IV. They contain a two chambered heart.

Codes

	I	II	III	IV
①	T	F	T	F
②	F	F	T	T
③	F	T	T	F
④	T	T	F	F

165. Which of the following features in not present in *Periplaneta americana*?

① Indeterminate and radial cleavage during embryonic development

② Endoskeleton composed of N-acetyl glucosamine

③ Metamerically segmented body

④ Schizocoelom as body cavity

166. Given below are two statements, one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**. Choose the correct option:

Assertion (A): Restriction endonuclease recognise short palindromic sequence and cut at specific sites.

Reason (R): When a restriction endonucolease acts on a palindrome, it cleaves both the strands of DNA molecules.

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 correct but R is not correct.

④ A is not correct but R is correct.

167. The first recombinant DNA was constructed by linking an antibiotic resistant gene, with the native plasmid of
① *E. coli* ② *Salmonella typhimurium*
③ *Clostridium butylicum* ④ *Acetobacter aceti*

168. Hepatitis–B vaccine is
① Combined vaccine ② Polysaccharide vaccine
③ Recombinant antigen vaccine ④ DNA vaccine

169. During sewage treatment, the biogas produced includes
① hydrogen sulphide, nitrogen, methane ② methane, oxygen, hydrogen sulphide
③ methane, hydrogen sulphide, carbondioxide ④ methane, hydrogen sulphide, sulphur dioxide

170. Which one of the following is not a biofertilizer?
① *Rhizobium* ② *Nostoc* ③ *Mycorrhiza* ④ *Agrobacterium*

171. The function of pineal body is to
① lighten the skin colour ② control sexual behaviour
③ regulate the period of puberty ④ All of the above

172. Melanocyte Stimulating Hormone (MSH) is produced by
① anterior pituitary ② posterior pituitary
③ pars intermedia of pituitary ④ parathyroid

173. In which Assisted Reproductive Technology (ART), 'test tube baby' procedure is applied?
① GIFT ② ICSI ③ IVFET ④ ZIFT

174. One of the legal methods of birth control is
① by abstaining from coitus from day 10–17 of menstrual cycle
② by having coitus at the time of day break
③ by a premature ejaculation during coitus
④ abortion by taking medicine

175. Given below are two statements, one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**. Choose the correct option:
Assertion (A): The coelenteron of *Hydra* is called gastrovascular cavity.
Reason (R): Hydra is a monoblastic animal.
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 correct but R is not correct.
④ A is not correct but R is correct.

176. **Assertion (A):** Scolex with hooks are present in *Taenia.*
Reason (R): Structure of scolex gives and *Taenia* more surface area for absorption.
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 correct but R is not correct
④ A is not correct but R is correct

Cont...

177.	Frogs differ from humans in possessing ① paired cerebral hemispheres ② hepatic portal system ③ nucleated RBCs ④ All of the above
178.	Which of the following diseases is caused by a protozoan? ① Syphilis ② Influenza ③ Babesiosis ④ Blastomycosis
179.	BOD may not be a good index for pollution in water bodies receiving effluents from ① domestic sewage ② petroleum industry ③ dairy industry ④ sugar industry
180.	Which is correct regarding genetically engineered insulin using E. coli ? ① Difficult to purify ② Obtained in large unlimited quantities ③ Possibility of transmission of animal diseases ④ Insulin obtained varies in chemical structure

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