E-TECH ACADEMY (NEET & IIT-JEE)

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Sec: XII **Integrated Booster-Test-04** **Date : 25-08-2023**
Time : 3:20 mins **Max. Marks: 720**

Exam Syllabus

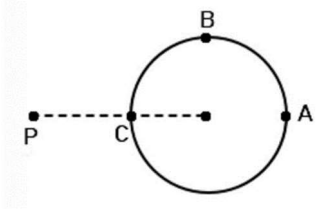
Physics :
Chemistry :
Botany :
Zoology :

IMPORTANT INSTRUCTION

1. The answer sheet is inside this Test Booklet. When you are directed to open the Test booklet, take out the answer sheet and fill in the particulars on OFFICE copy carefully with blue/black ball point pen only.
2. The test is of 3 hours duration and the Test booklet contains **200 multiple-choice questions** (four options with a single correct answer) from **Physics, Chemistry & Biology (Botany & Zoology).** 50 questions in each subject are divided into **two Sections (A and B)** as per details given below.
   Section A shall consist of **35 Questions** in each subject (Question Nos. **1 to 35, 51 to 85, 101 to 135 and 151 to 185**). All questions are compulsory.
   Section B shall consist of **15** questions in each subject (Questions Nos. **36 to 50, 86 to 100, 136 to 150 and 186 to 200**). In **Section B,** a candidate needs to attempt any **10** questions out of **15** in each subject. Candidate 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 question, the first ten questions answer by the candidate shall be evaluated.
3. Each questions carries **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**.
4. **Use Blue/Black** ball point Pen only for writing particulars on these page/ marking responses on Answer Sheet.
5. Rough work is to be done on the space provided for this purpose in the Test Booklet only.
6. One completion of the test, the candidate must hand over the Answer Sheet (ORIGINAL and OFFICE copy) to the invigilator before leaving the Room/Hall. The candidates are allowed to take away this Test Booklet with them.
7. The candidates should ensure that the Answer Sheet is not folded. Do not make any stray marks on the Answer Sheet. Do not write your roll number anywhere else except in the specified space in the test Booklet/Answer Sheet.
8. Use of white fluid for correction is NOT permissible on the Answer Sheet.
9. No candidate, without special permission of the centre Superintendent or Invigilator, would leave his/her seat.
10. The candidate should not leave the Examination Hall without handing over their Answer Sheet to the Invigilator on duty and sign. (With time) the Attendance Sheet twice. Cases, where a candidate has not signed the attendance sheet second time, will be deemed not to have handed over the Answer Sheet and dealt with as an Unfair Means case.

SECTION: A – PHYSICS (Q.1 TO 35)

1. A hollow conducting sphere is placed in an electric field produced by a point charge placed at P as shown in the figure. Let V_A, V_B, V_c be the potentials at points A, B and C respectively. Then:



1) $V_A < V_B < V_c$ 2) $V_A > V_B > V_c$

3) $V_C > V_B = V_A$ *4) $V_A = V_B = V_c$

2. Two metallic spheres of radii 2cm and 3cm are given charges 6mC and 4mC respectively. The final charge on the smaller sphere will be if they are connected by a conducting wire

*1) 4mC 2) 6mC 3) 5mC 4) 10mc

3. Capacitors C_1= 10μF and C_2 = 30μF are connected in series across a source of emf 20KV. The potential difference across C_1 will be

1) 5 KV *2) 15 KV 3) 10 KV 4) 20 KV

4. Two charge +q and -q are situated at a certain distance. At the point exactly midway between them –

1) Electric field and potential both are zero

2) Electric field is zero but the potential is not zero

*3) Electric field is not zero but the potential is zero

4) Neither electric field nor potential is zero

5. Which relation is wrong?

1) 1 cal = 4.18 joules

2) 1 Å = 10^{-10}m

3) 1 MeV = 1.6 × 10^{-13} joules

*4) 1 newton = 10^{-5} dynes

6. Four equal charges Q are placed at the four corners of a square of each side is 'a'. Work done in removing a charge - Q from its centre to infinity is

1) 0 2) $\frac{\sqrt{2}Q^2}{4\pi\varepsilon_0 a}$ *3) $\frac{\sqrt{2}Q^2}{\pi\varepsilon_0 a}$ 4) $\frac{Q^2}{2\pi\varepsilon_0 a}$

7. A wire has a mass (0.3 ± 0.003) g, radius (0.5 ± 0.005) mm and length (6 ± 0.06) cm. The maximum percentage error in the measurement of its density is-

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

8. Which of the following is incorrect statement

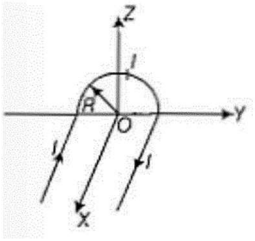
1) A dimensionally correct equation may be correct

2) A dimensionally correct equation maybe incorrect

*3) A dimensionally incorrect equation may be correct

4) A dimensionally incorrect equation is incorrect

9. A wire carrying current I has the shape as shown in the adjoining figure. Linear parts of the wire are very long and parallel to X-axis while the semicircular portion of radius R is lying in the Y-Z plane. Magnetic field at point 0 is :



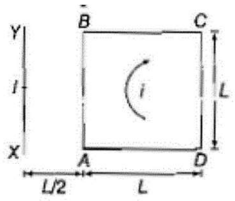
1) $B = \frac{\mu_0}{4\pi} \times \frac{i}{R}\left(\pi\hat{i} + 2\hat{k}\right)$

2) $B = -\frac{\mu_0}{4\pi} \times \frac{i}{R}\left(\pi\hat{i} - 2\hat{k}\right)$

*3) $B = -\frac{\mu_0}{4\pi} \times \frac{i}{R}\left(\pi\hat{i} + 2\hat{k}\right)$

4) $B = \frac{\mu_0}{4\pi} \times \frac{i}{R}\left(\pi\hat{i} - 2\hat{k}\right)$

10. A square loop ABCD carrying a current i, is placed near and coplanar with a long straight conductor XY carrying a current I, the net force on the loop will be:



1) $\frac{\mu_0 Ii}{2\pi}$ 2) $\frac{2\mu_0 IiL}{3\pi}$ *3) $\frac{\mu_0 IiL}{2\pi}$ 4) $\frac{2\mu_0 Ii}{3\pi}$

11. Given below are two statements:

I. Biot-Savart's law gives us the expression for the magnetic field strength of an infinitesimal current element I(*dl*) of a current-carrying conductor only.

II. Biot-Savart's law is analogous to Coulomb's inverse square law of charge q, with the former being related to the field produced by a scalar source, I *dl* while the latter being produced by a vector source, q.

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

1) I is incorrect and II is correct.

2) both I and II are correct.

3) both I and II are incorrect.

*4) I is correct and II is incorrect.

12. A particle mass m, charge Q, and kinetic energy T enter a transverse uniform magnetic field of induction $\vec{B}$. After 3sec the kinetic energy of the particle will be:

1) 3T

2) 2T

*3) T 4) 4T

13. A long straight wire of length 2 m and mass 250 g is suspended horizontally in a uniform horizontal magnetic field of 0.7 T. The amount of current flowing through the wire will be ($g = 9.8\ ms^{-2}$):

1) 2.45 A 2) 2.25 A

3) 2.75 A *4) 1.75 A

14. An infinitely long straight conductor is bent into the shape as shown in the figure. It carries a current of *i* ampere and the radius of the circular loop is r metre. Then the magnetic induction at its centre will be

1) $\frac{\mu_0}{4\pi}\frac{2i}{r}(\pi+1)$ *2) $\frac{\mu_0}{4\pi}\frac{2i}{r}(\pi-1)$

3) Zero 4) infinite

15. The ratio of the radii of two circular coils is 1 : 2. The ratio of currents in the respective coils such that the same magnetic moment is produced at the centre of each coil is:

*1) 4 : 1 2) 2:1 3) 1:2 4) 1:4

16. Two circular coils made of similar wires but of radius 20 cm and 40 cm are connected in parallel. The ratio of magnetic fields at their centre is –

*1) 4:1 2) 1: 4 3) 2: 1 4) 1:2

17. A proton of mass m and charge +e is moving in a circular orbit of a magnetic field with energy 1MeV. What should be the energy of α-particle (mass = 4 m and charge = +2e), so that it can revolve in the path of same radius

*1) 1 MeV 2) 4 MeV

3) 2 MeV 4) 0.5 MeV

18. The linear momentum of a particle varies with time t as

$p = a + bt + ct^2$

Which of the following statements is correct?

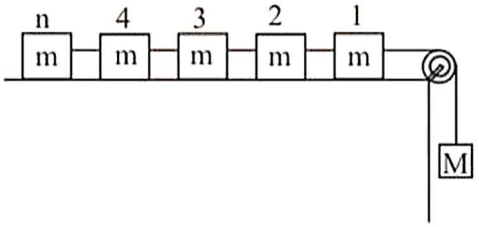
1) Force varies with time in a quadratic manner

*2) Force is time-dependent

3) The velocity of the particle is proportional to time

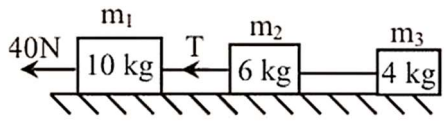
4) The displacement of the particle is proportional to t.

19. In the given arrangement, n number of equal masses are connected by strings of negligible masses. The tension in the string connected to nth mass is –



*1) $\frac{mMg}{nm+M}$ 2) $\frac{mMg}{nmM}$ 3) mg 4) mng

20. Three blocks of masses m_1, m_2 and m_3 are placed on a horizontal frictionless surface. A force of 40 N pulls the system then calculate the value of T, if m_1 = 10kg, m_2 = 6 kg, m_3 = 4 kg



1) 40 N *2) 20 N 3)10N 4) 5 N

21. A rocket of mass 120 kg is fired in the gravity free space. It ejects gases with velocity 600 m/s at the rate of 1 kg/s. What will be the initial acceleration of the rocket?

1) 1 m/s^2 *2) 5 m/s^2

3) 10 m/s^2 4) 15 m/s^2

22. A man is standing on a weighing machine placed in a lift When Stationary, his weight is recorded as 40 kg. If the lift is moved upwards with an acceleration of 2 ms^{-2}, then the weight recorded in the machine will be (g = 10ms^{-2})

1) 32 kg 2) 40 kg 3) 42 kg *4) 48kg

23. If the engine power is 3.3kW and it is 60% efficient, how much water will it pump in 5s from a height of 10m?

1) 60kg *2) 100kg 3)75kg 4) 80kg

24. A particle of mass 0.5 kg is displaced from position $\vec{r}_1(2,3,1)$ to $\vec{r}_2(4,3,2)$ by applying a force of magnitude 30 N which is acting along $(\hat{i}+\hat{j}+\hat{k})$. The work done by the force is

1) $10\sqrt{3}$ J *2) $30\sqrt{3}$ J

3) 30 J 4) none of these

25. The tension in the string revolving in a vertical circle with a mass m at the end which is at the lowest position

1) $\frac{mv^2}{r}$ 2) $\frac{mv^2}{r}-mg$ *3) $\frac{mv^2}{r}+mg$ 4) mg

26. A long spring is stretched by x cm its PE is U. If the spring is stretched by Nx cm the PE stored in it will be

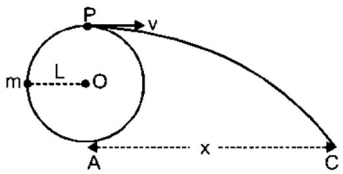
1) U/N 2) NU *3) N^2u 4) U/N^3

27. If a cyclist moving with a speed of 4.9 m/s on a level road can take a sharp circular turn of radius 4 m, then coefficient of friction between the cycle tyres and road is

1) 0.41 2) 0.51 *3) 0.61 4) 0.71

28. A body tied to a string of length L is revolved in a vertical circle with minimum velocity, when the body reaches the upper most point the string

breaks and the body moves under the influence of the gravitational field of earth along a parabolic path. The horizontal range AC of the body will be:-



1) X = L *2) x = 2L

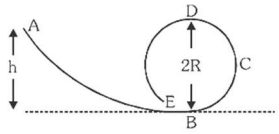
3) $x = 2\sqrt{2}L$ 4) $x = \sqrt{2}L$

29. A body of mass 0.4 kg is whirled in a vertical circle making 2 rev/sec. If the radius of the circle is 2 m, then tension in the string when the body is at the top of the circle, is

1) 41.56 N 2) 89.86 N

3) 109.86 N *4) 122.4 N

30. A frictionless track ABCDE ends in a circular loop of radius R. A body slides down the track from point A which is at a height h = 5 cm. Maximum value of R for the body to successfully complete the loop is :-



1) 5 cm *2) 2 cm. 3) $\frac{10}{3}$cm. 4) $\frac{15}{4}$cm.

31. In a closed circuit, the current I (in ampere) at an instant of time t (in second) is given by $I = 4 - 0.08t$ The number of electrons flowing in 50 s through the cross-section of the conductor is

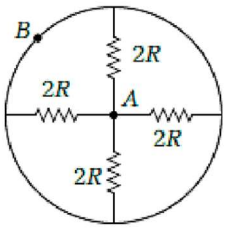
1) 1.25×10^{19}

*2) 6.25×10^{20}

3) 5.25×10^{19}

4) 2.25×10^{20}

32. Find the equivalent resistance between A and B.



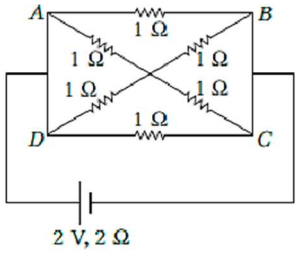
1) 8R 2) 2R 3) R *4) 0.5R

33. The resistance of a thin silver wire is 1.0 Ω at 20°C. The wire is placed in a liquid bath and its resistance rises to 1.2 Ω. What is the temperature of the bath in °C?

(Take, α for silver = 4×10^{-3} per °C)

1) 80°C *2) 70°C 3) 60°C. 4) 50°C.

34. Find the current drawn from a cell of emf 2 V and internal resistance 2 Ω connected to the network given below.



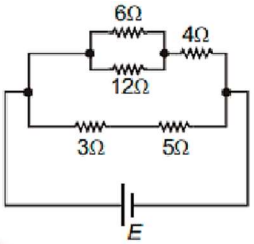
1) 3/7 A 2) 7/6 A 3) 7 A *4) 6/7 A

35. A current of 2 A, passing through a conductor produces 80 J of heat in 10 s. The resistance of the ohm is

1) 0.5 *2) 2 3) 4 4) 20

SECTION: B – PHYSICS (Q.36 TO 50)

36. In the circuit shown, the potential drop across 6 Ω resistor is 12 V, The emf of the ideal battery is

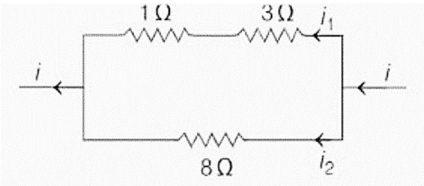


1) 8V 2) 16 V *3) 24 V 4) 32 V

37. In potentiometer experiment, a cell of emf 1.25 V gives balancing length of 30 cm. If the cell is replaced by another cell, then balancing length is found to be 40 cm. What is the emf of second cell?

1) ≃ 1.5V *2) ≃ 1.67 V
3) ≃ 1.47 V 4) ≃ 1.37V

38. Power dissipated across the 8 Ω resistor in the circuit shown here is 2 W. The power dissipated in watt units across the 3 Ω resistor is



1) 2.0 2) 1.0 3) 0.5 *4) 3.0

39. A wire of resistance 10 ohm is compressed by 2 times to its original length. The new resistance will be

1) 20 ohm 2) 40 ohm
3) 5 ohm *4) 2.5 ohm

40. The resistance of a carbon resistor of colour code Red - Red -Green- Silver is (in kΩ)

1) 2200 ± 5% *2) 2200 ± 1%
3) 220 ± 10% 4) 220 ± 5%

41. A filament bulb (500 W, 100 V) is to be used in a 230 V main supply. When a resistance R is connected in series, it works perfectly and the bulb consumes 500 W. The value of R is

1) 230 Ω 2) 46 Ω *3) 26 Ω 4) 13 Ω

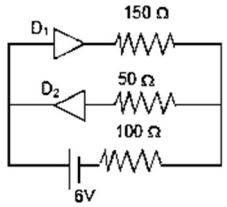
42. A galvanometer having internal resistance 10 Ω requires 0.01 A for a full scale deflection. To convert this galvanometer to a voltmeter of full scale deflection at 120 V, we need to connect a resistance

*1) 11990 Ω In series 2) 11990 Ω in parallel
3) 12010 Ω in series 4) 12010 Ω in parallel

43. A Ge specimen is doped with Al. The concentration of acceptor atoms is ≈ 10^{21} atoms/m^3. Given that the intrinsic concentration of electrons in the specimen is 10^{19} / m^3. The new electron concentration is

*1) 10^{17} /m^3 2) 10^{15} /m^3
3) 10^4 in^3 4) 10^2 /in^3

44. The circuit shown in the figure contains two diodes each with a forward resistance of 50 Ω and with infinite backward resistance. If the battery voltage is 6 V, the current through the 100 Ω resistance (in ampere) is



1) zero *2) 0.02 3) 0.03 4) 0.036

45. A semiconducting device connected in series with a cell and a resistor indicates some current in the circuit. If the polarity of the battery is reversed, the current almost reduces to zero. The device may be

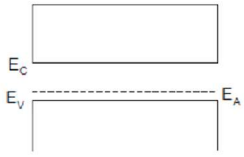
1) a p-type semiconductor
2) ail n-type semiconductor
*3) a p-n junction
4) an intrinsic semiconductor

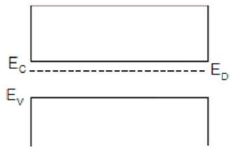
46. When N-type of semiconductor is heated?

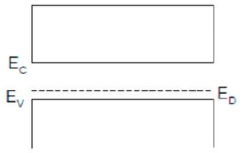
1) Number of electrons increases while that of holes decreases.
2) Number of holes increases while that of electrons decreases.
3) Number of electrons and holes remains same

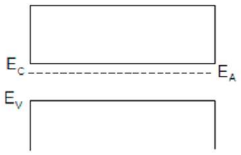
*4) Number of electrons and holes increases equally

47. The energy bands of N-type semiconductor at T > OK can be represented by which of the following figure

1) 

*2) 

3) 

4) 

48. Choose the correct statement for the energy band structure of a semiconductor

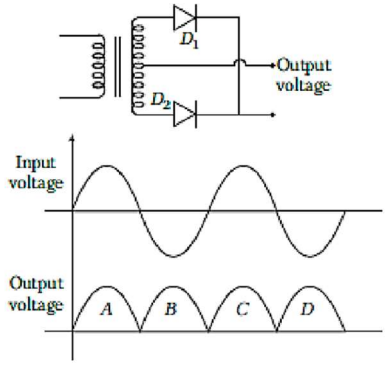
1) At absolute zero temperature, the conduction band of semiconductor is completely filled and valance band is totally empty

*2) At absolute zero temperature, the conduction band of semiconductor is totally empty and valance band is totally filled

3) At absolute zero temperature, both conduction band and valance band of semiconductor are totally empty

4) At absolute zero temperature, both conduction band and valance band of semiconductor are completely filled

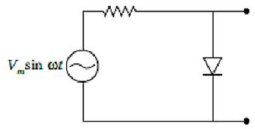
49. A full wave rectifier circuit along with the input and output voltages is shown in the figure



The contribution to output voltage from D_2 is

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

50. The output of the given circuit in figure given below, is



1) would be zero at all times

2) would be Like a half wave rectifier with positive cycles in output

*3) would be like a half wave rectifier with negative cycles in output

4) would be like that of a full wave rectifier

SECTION: A – CHEMISTRY (Q.51 TO 85)

51. The maximum percentage of available volume that can be filled in a face centered cubic system by atoms is-

1) 74% 2) 68% *3) 34% 4) 26%

52. A compound is formed by elements A and B. This crystallises in the cubic structure when atoms A are at the corners of the cube and atoms B are at the centre of the body. The simplest formula of the compound is:

*1) AB 2) AB_2 3) A_2B 4) AB4

53. The fraction of total volume occupied by the atoms present in a simple cube is –

*1) $\frac{\pi}{6}$ 2) $\frac{\pi}{3\sqrt{2}}$ 3) $\frac{\pi}{4\sqrt{2}}$ 4) $\frac{\pi}{4}$

54. The coordination number of a cation occupying an octahedral hole is

1) 4 *2) 6 3) 8 4) 12

55. If the radius ratio is in the range of 0.414 - 0.732 then the co-ordination number will be :

1) 2 2) 4 *3) 6 4) 8

56. Schottky as well as Frenkel defects are observed in the crystal of

1) NaCl *2) AgBr 3) AgCl 4) $MgCl_2$

57. A metal crystallizes with a face-centered cubic lattice. The edge of the unit cell is 408 pm. The diameter of the metal atom is:

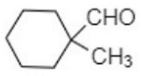
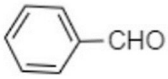
1) 144 pm 2) 204 pm

*3) 288 pm 4) 408 pm

58. Right option for the number of tetrahedral and octahedral voids in hexagonal primitive unit cell are:

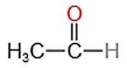
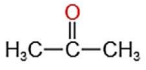
1) 8, 4 2) 6, 12 3) 2, 1 *4) 12,6

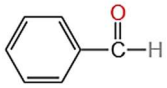
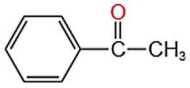
59. Cannizzaro's reaction is not given by:

1)  2) 

3) HCHO *4) CH_3CHO

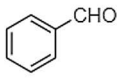
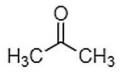
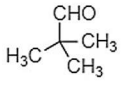
60. Which of the following compounds is most reactive towards nucleophilic addition reaction?

*1)  2) 

3)  4) 

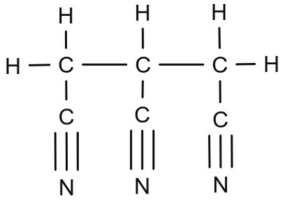
61. Which of the following compounds do not undergo aldol condensation?

Options are as follows:

a.  b.  c.  d. 

1) a, b *2) b, d 3) b, c 4) c, d

62. The IUPAC name of the below mentioned compound is



1) 1,2,3-Tricyanopropane

*2) Propane-1,2,3-tricarbonitrile

3) 1,2,3-Cyanopropane

4) Propane Tricarbylamine

63. Which of the following reactions is not correct according to the law of conservation of mass?

1) $2Mg_{(s)} + O_{2(g)} \rightarrow 2MgO(s)$

*2) $C_3H_{8(g)} + O_{2(g)} \rightarrow CO_{2(g)} + H_2O_{(g)}$

3) $P_{4(s)} + 5O_{2(g)} \rightarrow P_4O_{10(s)}$

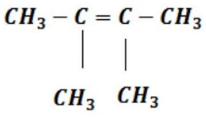
4) $CH_{4(g)} + 2O_{2(g)} \rightarrow CO_{2(g)} + 2H_2O_{(g)}$

64. The correct structure of 3,3-dimethyl butyne is-

1) $CH_3\ CH_2$ - C ≡ C - $CH_2\ CH_3$

*2) $(CH_3)_3C$ - C ≡ CH_3

3) CH_3 - C ≡ $CCH(CH_3)_2$

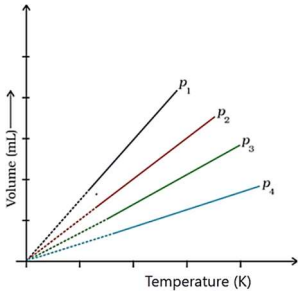
4) 

65. The mass percent of carbon in carbon dioxide is

1) 0.034% *2) 27.27%

3) 3.4% 4) 28.7%

66. A plot of volume versus temperature (T) for a gas at constant pressure is a straight line passing through the origin. The plots at different values of pressure are shown in the figure given below.



The correct order of pressure is –

Temperature (K)

1) $p_1 > p_2 > p_3 > p_4$ 2) $p_1 = p_2 = p_3 = p_4$

*3) $p_1 < p_2 < p_3 < p_4$ 4) $p_1 < p_2 = p_3 < p_4$

67. The incorrect statement among the following is-

1) A molecule of a compound has atoms of different elements.

2) A compound can-not be separated into its constituent elements by the physical method of separation.

*3) A compound retains the physical properties of its constituent elements.

4) The ratio of atoms of different elements in a compound is fixed.

68. The correct van der Waals equation for 1 mole of a real gas is:

*1) $\left(P+\frac{a}{V^2}\right)(V-b)=RT$

2) $\left(P+\frac{V^2}{a}\right)(V-b)=RT$

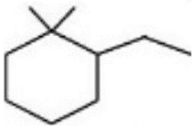
3) $\left(P+\frac{an^2}{V^2}\right)(V^2-nb)=RT$

4) $\left(P+\frac{an^2}{V}\right)(V-nb)=nRT$

69. The oxidation number of Fe in $K_3[Fe(CN)_6]$ is

1) +2 *2) +3 3) +4 4) +1

70. The IUPAC name of the following compound is:



1) 1, 1 dimethyl-2-ethylcyclohexane

*2) 2- ethyl -1,1 dimethylcyclohexane

3) 1 -ethyl-2,2 dimethylcyclohexane

4) 2,2 dimethyl-1- ethylcyclohexane

71. The correct decreasing order of priority for the functional groups of organic compounds in the IUPAC system of nomenclature is

*1) – COOH, – SO_3H, – $CONH_2$, – CHO

2) – SO_3H, –COOH, – $CONH_2$, –CHO

3) –CHO, –COOH, –SO_3H, –$CONH_2$

4) –$CONH_2$,–CHO, –SO_3H, –COOH

72. The reaction during which nitrogen gets oxidised is-

*1) $NH_4^+ \rightarrow N_2$ 2) $NO_3^- \rightarrow NO$

3) $NO_2 \rightarrow NO_2^-$ 4) $NO_3^- \rightarrow NH_4^+$

73. The freezing point of depression constant (K_f) of benzene is 5.12 K kg mol^{-1}. The freezing point depression for the solution of molality 0.078 m containing a non-electrolyte solute in benzene is -(rounded off upto two decimal places) :

1) 0.80 K *2) 0.40 K

3) 0.60 K 4) 0.20 K

74. An unripe mango placed in a concentrated salt solution to prepare pickle shrivels because –

1) It gains water due to osmosis.

2) It loses water due to reverse osmosis.

3) It gains water due to reverse osmosis.

*4) It loses water due to osmosis.

75. The values of van't Hoff factors for KCl, NaCl and K_2SO_4 respectively are……..

1) 2, 2 and 2 *2) 2, 2 and 3

3) 1,1 and 2 4) 1,1 and 1

76. Match the items given in Column I and Column II.

Column I		Column II	
A.	Saturated solution	1.	Solution having same osmotic pressure at a given temperature as that of a given solution.
B.	Hypertonic solution	2.	A solution whose osmotic pressure is less than that of another.
C.	Isotonic solution	3.	A solution that contains the maximum amount of solute that can be dissolved in a

			given amount of solvent at a given temperature.
D.	Hypotonic solution	4.	A solution whose osmotic pressure is more than that of another.

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

77. Colligative properties depend on:

1) The nature of the solute particles dissolved in the solution.

*2) The number of solute particles in the solution.

3) The physical properties of the solute particles dissolved in the solution.

4) The nature of solvent particles.

78. The unit of Ebullioscopic constant is:

*1) K kg mol^{-1} or K $(molality)^{-1}$

2) mol kg K^{-1} or K^{-1} (molality)

3) kg mol^{-1} K^{-1} or K^{-1} $(molality)^{-1}$

4) K mol kg^{-1} or K (molality)

79. The unit that relates concentration of solution with its vapour pressure is:

*1) Mole fraction.

2) Parts per million.

3) Mass percentage.

4) Molality.

80. Low concentration of oxygen in the blood and tissues of people living at high altitude is due to

1) Low temperature

*2) low atmospheric pressure

3) High atmospheric pressure

4) Both low temperature and high atmospheric pressure

81. Consider the given reaction:

$$CH_3COCH_3 \xrightarrow{dil.Ba(OH)_2} \text{"X"}$$

The functional groups present in compound "X" are:

1) ketone and double bond

2) double bond and aldehyde

3) alcohol and aldehyde

*4) alcohol and ketone

82. There is only one $-NH_2$ group involved in semicarbazone formation out of two $-NH_2$ group. It is due to:

*1) Resonance of one type of $-NH_2$ group

2) Inductive effect of one type of $-NH_2$ group

3) Hyperconjugation of one type of $-NH_2$ group

4) Reverse hyperconjugation of one type of $-NH_2$ group

83. Match List - I with List - II.

	List-I (Products formed)		**List - II (Reaction of carbonyl compound with)**
(A)	Cyanohydrin	(I)	NH_2OH
(B)	Acetal	(II)	RNH_2
(C)	Schiff's base	(III)	alcohol
(D)	Oxime	(IV)	HCN

Choose the correct answer from the options given below:

	(A)	(B)	(C)	(D)
*1)	(IV)	(III)	(II)	(I)
2)	(Ill)	(IV)	(II)	(I)
3)	(II)	(III)	(IV)	(I)
4)	(I)	(III)	(II)	(IV)

84. Select the correct option based on statements below:

Assertion (A): Aromatic aldehydes and formaldehydes undergo the Cannizzaro reaction.

Reason (R): Aromatic aldehydes are almost as reactive as formaldehyde.

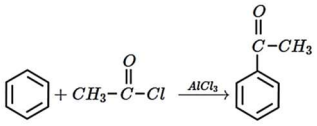
1) Both (A) and (R) are true and (R) is the correct explanation of (A).

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,

85. Match the example in Column I with the name of the reaction in Column II.

Column I (Example)	Column II (Reaction)
A. $CH_3-\overset{O}{\overset{\|}{C}}-Cl + H_2 \xrightarrow{Pd-C/BaSO_4} CH_3-\overset{O}{\overset{\|}{C}}-H$	1. Friedel-Crafts acylation
B. 	2. HVZ reaction
C. $2CH_3CHO \xrightarrow{NaOH} CH_3-CH=CHCHO$	3. Aldol condensation
D. $R-CH_2-COOH \xrightarrow[2.\ H_2O]{1.\ Br_2/Red\ P} R-\underset{Br}{CH}-COOH$	4. Rosenmund Reaction

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

SECTION: B–CHEMISTRY (Q.86 TO 100)

86. For the redox reaction,

$$MnO_4^- + C_2O_4^{2-} + H^+ \rightarrow Mn^{2+} + CO_2 + H_2O$$

the correct coefficients of the reactants for the balanced equation are

1) 16, 5, 2 *2) 2,5,16

3) 2, 16, 5 4) 5,16, 2

87. Which of the following order of radius is incorrect?

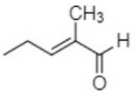
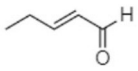
1) $C^{4+} < B^{3+} < Be^{2+} < Li^+$

2) $Mg^{2+} < Na^{2+} < F^- < O^{2-}$

3) $Ca^{2+} < K^+ < Cl^- < S^{2-}$

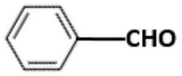
*4) $H^- < F^- < Cl^- < Br^-$

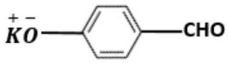
88. Propanal and butanal can produce four different aldol condensation products. The possible structures are:

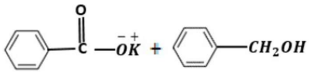
*1)  2) 

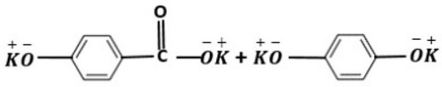
3) Both (1) and (2) 4) None of these

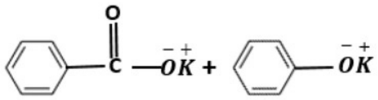
89. The compound below is treated with a concentrated aqueous KOH solution. The products obtained are:



1) 

*2) 

3) 

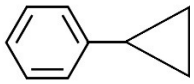
4) 

90. Match the common names given in Column I with the IUPAC names given in Column II.

	Column I (Common names)	Column II (IUPAC names)
A.	Cinnamaldehyde	1. Pentanal
B.	Acetophenone	2. Prop-2-enal
C.	Valeraldehyde	3. 1-phenylethanone
D.	Acrolein	4.3-Phenylprop-2-en-al

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

91. IUPAC name of



1) Cyclopropylbenezene

*2) Phenylcyclopropane

3) 1- Cyclopropylbenezene

4) None

92. Which of the following is not correct for first order reaction

1) Half – life ; $t_{1/2} = \frac{\ln_2}{K}$ 2) Rate law; R = K[A]

3) $t_{99.9\%} = 3 \times t_{90\%}$ *4) $\ln[A]_t = \ln[A]_0 + Kt$

93. During the kinetic study of the reaction,

2A + B → C + D, following results were obtained:

Ex. No.	[A] (mol L^{-1})	[B] (mol L^{-1})	Initial rate of formation of D (mole L^{-1} min^{-1})
I	0.1	0.1	6.0×10^{-3}
II	0.3	0.2	7.2×10^{-2}
III	0.3	0.4	2.88×10^{-1}
IV	0.4	0.1	2.40×10^{-2}

Based on the above data which one of the following is correct ?

*1) rate = $k[A][B]^2$ 2) rate = $k[A]^2[B]$

3) rate = k[A][B] 4) rate = $k[A]^2[B]^2$

94. The unit of rate constant for a first order reaction is :-

1) s^{-1} 2) mol L^{-1} s^{-1}

3) L mol^{-1} s^{-1} 4) L^2 mol^{-2} s^{-1}

95. In a zero-order reaction for every 10° rise of temperature, the rate is doubled. If the temperature is increased from 20^0C to 100°C, the rate of the reaction will become:

1) 64 times 2) 128 times

*3) 256 times 4) 512 times

96. Activation energy (E_a) and rate constants (k_1 and k_2) of a chemical reaction at two different temperatures (T_1 and T_2) are related by:

1) $\ln\frac{k_2}{k_1} = -\frac{E_a}{R}\left(\frac{1}{T_2} + \frac{1}{T_1}\right)$

*2) $\ln\frac{k_2}{k_1} = \frac{E_a}{R}\left(\frac{1}{T_1} - \frac{1}{T_2}\right)$

3) $\ln\frac{k_2}{k_1} = -\frac{E_a}{R}\left(\frac{1}{T_1} + \frac{1}{T_2}\right)$

4) $\ln\frac{k_2}{k_1} = -\frac{E_a}{R}\left(\frac{1}{T_2} - \frac{1}{T_1}\right)$

97. The addition of a catalyst during a chemical reaction alters which of the following quantities?

1) Entropy 2) Internal energy

3) Enthalpy *4) Activation energy

98. For the chemical reaction

$N_{2(g)} + 2H_{2(g)} \rightarrow 2NH_{3(g)}$ the correct option is:-

1) $-\frac{1}{3}\frac{d[H_2]}{dt} = -\frac{1}{2}\frac{d[NH_3]}{dt}$

2) $-\frac{d[N_2]}{dt} = -2\frac{d[NH_3]}{dt}$

*3) $-\frac{d[N_2]}{dt} = \frac{1}{2}\frac{d[NH_3]}{dt}$

4) $3\frac{d[H_2]}{dt} = 2\frac{d[NH_3]}{dt}$

99. Which of the following compounds does not react with methylmagnesium bromide to produce tertiary alcohol?

1) 3-methylpentanal

2) Ethyl benzoate

3) 4,4-dimethylcyclohexanone

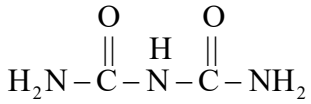
*4) 4-heptanone

100. If Acetaldehyde reacts with semicarbazide, then the product will be:

1) $CH_3CH = NHNH_2$

2) $CH_3CH = NCONHNH_2$

*3) $CH_3CH = NNH\text{-}CO\text{-}NH_2$

4) 

SECTION: A – BOTANY (Q.101 TO 135)

101. Net primary productivity is the gross primary productivity minus

1) that which is consumed by herbivores

*2) that which is consumed by producer in metabolism

3) secondary productivity

4) loss due to mortality

102. Given below are two statements:

Statement I: Gause's 'Competitive Exclusion Principle' states that two closely related species competing for the same resources cannot co-exist indefinitely and competitively inferior one will be eliminated eventually.

Statement-II: In general, carnivores are more adversely affected by competition than herbivores.

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

1) Statement I is incorrect but Statement II is true.

2) Both Statement I and Statement. II are true.

3) Both Statement I and Statement II are false.

*4) Statement I is correct but Statement II is false.

103. Match List I with List II

	List I (Interaction)	List II (Species A and B)
A.	Mutualism	I. +(A), O (B)
B.	Commensalism	II. -(A), O (B)
C.	Amensalism	III. +(A), - (B)
D.	Parasitism	IV +(A), +(B)

Choose the correct answer from the options given below:

	A	B	C	D
1.	III	I	IV	II
2.	IV	II	I	II
*3.	IV	I	II	III
4.	IV	III	I	II

104. The formula for exponential population growth is :

1) $dt/dN = rN$ 2) $dN/rN = dt$

3) $rN/dN = dt$ *4) $dN/dt = rN$

105. Match the following and select the correct option

	Column I	Column II
(I)	Earthworm	(i) pioneer species
(II)	Succession	(ii) Detritivore
(III)	Ecosystem service	(iii) Natality
(IV)	Population growth	(iv) Pollination

	I	II	III	IV
1)	i	ii	iii	iv
2)	iv	i	iii	ii
3)	iii	ii	iv	i
*4)	ii	i	iv	iii

106. If there are 250 snails in a pond, and within a year their number increases to 2500 by reproduction. What should be their birth rate per snail per year?

1) 10 *2) 9 3) 25 4) 15

107. Assertion (A): A person goes to high altitude and experiences "Altitude Sickness" with symptoms like breathing difficulty and heart palpitations.

Reason (R): Due to low atmospheric, v pressure at high altitude, the body does not get sufficient oxygen

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

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

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

*3) Both (A) and (R) are true and (R) is the correct explanation of (A)

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

108. The most ecologically relevant environmental factor is:

*1) Temperature 2) Water

3) Light 4) Soil

109. The thickness of ozone in a column of air in the atmosphere is measured in terms of:

1) Kilobase *2) Dobson unit

3) Decibels 4) Decameter

110. Which of the following is an innovative remedy for plastic waste?

1) Burning in the absence of oxygen

2) Burying 500 m deep below the soil surface

*3) Polyblend

4) Electrostatic precipitator

111. For chemical defense against herbivores, Calotropis has

*1) Cardiac glycosides

2) strychnine distasteful

3) toxic ricin

4) quinine

112. The device which can remove particulate matter present in the exhaust from a thermal power plant is:

1) Catalytic Convertor

2) STP

3) Incinerator

*4) Electrostatic Precipitator

113. Given below are two statements:

Statemen-I: Electrostatic precipitator is most widely used in thermal power plant.

Statement-II Electrostatic precipitator in thermal power plant removes ionising radiations

1) Statement I is incorrect but Statement II is correct.

2) Both Statement I and Statement II are correct.

3) Both Statement I and Statement II are incorrect.

*4) Statement I is correct but Statement II is incorrect.

114. Nitrates and phosphates flowing from agricultural farms into water bodies are a significant cause of:

*1) Eutrophication 2) Humification

3) Mineralisation 4) Stratification

115. Which of the following components provides sticky character to the bacterial cell?

1) Nuclear membrane

2) Plasma membrane

*3) Glycocalyx 4) Cell Wall

116. Which one of the following statements is NOT correct?

1) The amount of some toxic substances of industrial waste water increases in the organisms at successive trophic levels.

2) The micro-organisms involved in biodegradation of organic matter in a sewage-polluted water body consume aquatic organisms.

*3) Algal blooms caused by excess of organic and promote fisheries.

4) Water hyacinth grows abundantly in eutrophic water bodies and leads to an imbalance in the ecosystem dynamics of the water body.

117. Who concluded, based on his studies on plant tissues, that the presence of cell wall is a unique character of plant cells?

1) Mathias Schleiden

*2) Theodore Schwann

3) Rudolph Virchow

4) Robert Hooke

118. A non-membrane bound organelle found exclusively in animal cells is:

1) Sphaerosome 2) Glyoxisome

3) Peroxisome *4) Centriole

119. The cis and trans faces of the Golgi Apparatus are:

1) Similar but not interconnected

2) Similar and interconnected

*3) Entirely different but interconnected

4) Entirely different and not interconnected

120. The endomembrane system of a eukaryotic cell does not include:

1) Endoplasmic reticulum

2) Lysosome

3) Vacuole *4) Peroxisome

121. Synapsis occurs between

1) a male and a female gamete

2) mRNA and ribosomes

3) spindle fibres and centromere

*4) two homologous chromosomes

122. Asserion: Mitosis does play a role in gamete formation.

Reason: Haploid organisms divide by mitosis.

1) Both Assertion & Reason are true and the Reason is the correct explanation of the Assertion.

*2) Both Assertion & Reason are true but the Reason is not the correct explanation of the Assertion

3) Assertion is a true statement but Reason is false.

4) Both Assertion and Reason are false statements.

123. During cell division, the spindle fibres attach to the chromosomes at a region called

1) chromocenter *2) kinetochore

3) centriole 4) chromomere

124. Which one of the following is not a nitrogen-fixing organism?

1) Anabaena 2) Nostoc

3) Azotobacter *4) Pseudomonas

125. A bivalent consists of

1) two chromatids and one centromere

2) two chromatids and two centromeres

*3) four chromatids and two centromeres

4) four chromatids and four centromeres

126. Consider the following:

I. Facilitation of uptake and utilization of calcium by plants

II. Cell elongation and cell differentiation

III. Nitrogen metabolism

IV. Carbohydrate translocation

V. Water splitting reaction in photosynthesis

The functions of Boron in plants will include:

1) I,II,III, IV *2) I, II, IV

3) II,III, IV 4) I, III, V

127. Mad cow disease in cattle and Cr Jacob disease in humans are due to infection by_.

1) Bacterium 2) Virus

3) Viroid *4) Prion

128. For each molecule of ammonia produced by nitrogenase, the number of ATP molecules required are:

1) 4 *2) 8 3) 12 4) 16

129. Identify the group that is not matched correctly to all the characters shown:

	Group	Cell Type	Cell Wall	Nuclear Membrane	Body Organization
*1)	Monera	Prokaryotic	Absent	Absent	Cellular
2)	Protista	Eukaryotic	Present in some	Present	Cellular
3)	Fungi	Eukaryotic	Present	Present	Multicellular/loose tissue
4)	Plantae	Eukaryotic	Present	Present	Tissue/ organ

130. Consider the following regarding the reasons for the fact that now Cyanobacteria are kept in Monera and not in Plantae:

I. They are prokaryotes.

II. The cell wall of cyanobacteria has peptidoglycan.

III. They can fix atmospheric nitrogen

The correct explanations would be:

1) I and II only 2) I and III only

3) II and III only *4) I, II and III

131. Maximum nutritional diversity is found in the group

1) Fungi 2) Animalia

*3) Monera 4) Plantae

132. At the trophic level of consumers, the rate at which food energy is assimilated, is called:

*1) Secondary productivity

2) Gross primary productivity

3) Net primary productivity

4) None of these

133. Nuclear membrane is absent in

1) Penicillium

2) Agaricus

3) Vol vox *4) Nostoc

134. Plants capture approximately _____of the sun's energy while other trophies levels capture about _____of the energy available to them in their food.

*1) 1%, 10%

2) 10%, 60%

3) 10%, 1% 4) 60%, 10%

135. Assertion: In a food chain, members of successive higher levels are fewer in number.

Reason: Number of organisms at any trophic level depends upon the availability of organisms which serve as food at the lower level.

*1) Both Assertion & Reason are true and Reason is the correct explanation of Assertion

2) Both Assertion & Reason are true but Reason is not the correct explanation of Assertion

3) Assertion is true statement but Reason is false.

4) Both Assertion and Reason are false statements.

SECTION: B – BOTANY (Q.136 TO 150)

136. Which of the following pyramids can never be inverted in a natural ecosystem?

1) pyramid of numbers

*2) pyramid of energy

3) pyramid of biomass

4) all can be inverted

137. Assertion: Energy flow in ecosystem is bidirectional.

Reason: Energy goes on increasing with each and every trophic level.

In the following questions a statement of assertion (A) is followed by a statement of reason (R).

1) Both Assertion & Reason are true and Reason is the correct explanation of Assertion

2) Both Assertion & Reason are true but Reason is not the correct explanation of Assertion

3) Assertion is true statement but Reason is false.

4) Both Assertion and Reason are false statements.

138. Assertion: Energy flow in ecosystem is bidirectional.

Reason: Energy goes on increasing with each and every trophic level.

In the following questions a statement of assertion (A) is followed by a statement of reason (R).

1) If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark (1)

2) If both Assertion & Reason are true but the reason is not the correct explanation of the assertion, then mark (2)

3) If Assertion is true statement but Reason is false, then mark (3)

*4) If beg Assertion and Reason are false St jents, then mark (4)

139. Match List I with List II

	List I	List II
A.	Primary consumers	I. Top carnivore
B.	Tertiary consumers	II. Herbivore
C.	Producers	III. Carnivore
D.	Secondary consumers	IV. Plants

Choose the correct answer from the options given below:

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

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

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

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

140. In monocotyledonous seeds the outer covering of endosperm separates the embryo by a proteinous layer called as:

*1) Aleurone 2) Scutellum

3) Testa 4) Tegmen

141. Which of the following is not a floral character of the family Fabaceae?

1) Calyx - Sepals five, gamosepalous; imbricate aestivation

2) Corolla - Petals five, polypetalous; vexillary aestivation

3) Andreoecium - Ten, diadelphous, anther dithecous

*4) Gynoecium - Ovary inferior, bicarpellary, unilocular with many ovules

142. In cymose type of inflorescence:

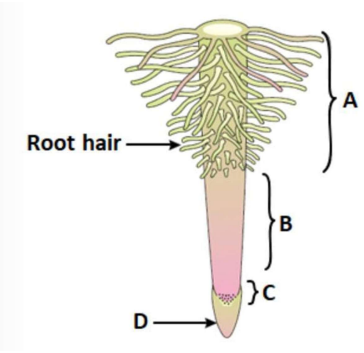
1) Main axis continues to grow and the flowers are borne in acropetal succession.

2) Main axis continues to grow and the flowers are borne in basipetal succession.

*3) Growth is limited and the flowers are borne in basipetal succession.

4) Growth is limited and the flowers are borne in acropetal succession.

143. The region responsible for growth in the length of the root is:



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

144. Zygomorphic flower is not found in:

1) Cassia *2) Canna

3) Gulmohur 4) Bean

145. Arrange the main steps of plant breeding sequentially :

I. Cross-hybridisation among the selected parents

II. Evaluation and selection of parents

III. Selection and testing of superior recombinants

IV. Testing, release and commercialisation of new cultivars

V. Collection of variability

1) II →V →I →IV →III

2) V →II →III →I →IV

*3) V →II →I →III →IV

4) II →I →V →III →IV

146. Which of the bhindi variety is resistant to yellow mosaic virus (YMV)

*1) Parbhani Kranti

2) Kalyan soria

3) Jaya

4) Ratna

147. Select the incorrect match :

Variety	Resistance of diseases
1) Wheat (Himgiri)	Leaf and stripe rust, hill bunt
*2) Brassica (Pusa swarnim)	Black rot of mustard
3) Cow pea (pusa komal)	Bacterial bligh
4) Chilli (pusa sadabahar)	Chillimosaic virus, TMV, Leaf curl

148. Which of the following are varieties of wheat?

1) Reimei and Jagannath

*2) Kalyan sona and Sonalika

3) Himgiri and Parbhani Kranti

4) None of the above

149. Identify the chemical mutagen :

1) Gamma rays

2) X-rays

*3) Ethyl methane sulphonate and sodium azide

4) All of these

150. 'Leaf curl' disease is caused by :

1) Fungi (e.g. Taphrina)

*2) Viruses

3) Both (1) and (2)

4) Nematodes

SECTION: A – ZOOLOGY (Q.151 TO 185)

151. Which of the following are true about the taxonomical aid 'key' ?

a) Keys are based on the similarities and dissimilarities.

b. Key is analytical in nature.

c. Keys are based on the contrasting characters in pair called couplet.

d. Same key can be used for all taxonomic categories.

e. Each statement in the key is called Lead.

Choose the most appropriate answer from the options given below :

1) (a), (b) and (c) only

2) (b), (c) and (d) only

*3) (a), (b), (c) and (e) only

4) (a), (c), (d) and (e) only

152. House fly belongs to……family.

1) Cyprinidae 2) Hominidae

3) Calliphoridae *4) Muscidae

153. Transition state structure of the substrate formed during an enzymatic reaction is

1) Transient but stable

2) Permanent but unstable

*3) Transient but unstable

4) Permanent and stable

154. When the co-factor is removed from the enzyme, the catalytic activity:

*1) is lost. 2) is reduced.

3) is increased. 4) is unaffected.

155. If DNA percentage of thymine is 20. What is the percentage of guanine?

1) 20% 2) 40%

*3) 30% 4) 60%

156. The most important cause of loss of biodiversity today is:

*1) habitat loss and fragmentation

2) over-exploitation

3) alien species invasions

4) co-extinctions

157. The Earth Summit was held in Rio de Janeiro in:

1) 1987

2) 1990

*3) 1992

4) 2002

158. Which one of the following statements is correct, with reference to enzymes?

1) Apoenzyme = Holoenzyme + Coenzyme

*2) Holoenzyme = Apoenzyme + Coenzyme

3) Coenzyme = Apoenzyme + Holoenzyme

4) Holoenzyme = Coenzyme + Cofactor

159. Which of the following is considered a hot-spot of biodiversity in india?

*1) Western ghats 2) Indo-Gangetic plain

3) Eastern ghats 4) Aravali hills

160. The relation between species richness and area for a wide variety of taxa on a logarithmic scale is a:

1) rectangular hyperbola

*2) straight line

3) sigmoid curve

4) sine curve

161. The total number of plant and animal species described so far is slightly more than 1.5 million. This is reported by

*1) IUCN- 2004 2) IUN-2006

3) IUCN-2006 4) IUN-2004

162. Biodiversity, this term

1) Was given by Edward Wilson

*2) Was popularized by Edward Wilson

3) Was given by Paul Ehrlich

4) Was popularized by Paul Ehrlich

163. Which of the following come under the "Evil Quarter"?

(a) Habitat loss and fragmentation

(b) Over-exploitation

(c) Alien species invasion

(d) Mortality

(e) Competition

Choose the correct answer from the options given below:

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

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

164. In 'rivet popper hypothesis', Paul Ehrlich compared the rivets in an airplane to

*1) species within a genus

2) genetic diversity

3) ecosystem

4) genera within a family

165. The colour of Plasma is

*1) Straw colour 2) Red colour

3) Colourless 4) Blue colour

166. How much percentage of plasma is water?

*1) 90 to 92 4) 80 to 90

3) 60 to 65 4) 10 to 15

167. The formed element constitutes how much per cent of blood?

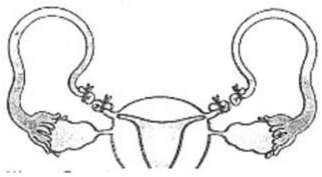
1) 55 *2) 45 3) 35 4) 65

168. Couple unable to produce children inspite of unprotected sexual co-habitation is termed as:

1) Impotency *2) Infertility

3) STD 4) PID

169. What is the figure given below showing in particular?



1) Ovarian cancer 2) Uterine cancer

*3) Tubectomy 4) Vasectomy

170. Which of the following can be used as an emergency contraceptive to avoid possible pregnancy?

1) Lactational Amenorrhea

*2) IUD, within 72 hours

3) Diaphrams

4) 1 and 2

171. In which of the following methods zygotes or early embryo upto 8 blastomeres could be transferred into the fallopian tube?

1) GIFT 2) IUT

*3) ZIFT 4) ICSI

172. Which of the following are included in barrier method

1) Condoms 2) Diaphrams

3) Cervical caps and vault *4) All of these

173. Which of the following approaches does not give the defined action of contraceptive?

*1)	Vasectomy	prevents spermatogenesis
2)	Barrier methods	prevent fertilization
3)	Intra uterine devices	increase phagocytosis of sperms, suppress sperm motility and fertilizing capacity of sperms
4)	Hormonal Contraceptives	Prevent/retard entry of sperms, prevent ovulation and fertilization

174. Which of the following is hormone releasing IUD?

1) Cu7 *2) LNG-20

3) Multilpad 375 4) Lippes loop

175. Which of the following is Incorrect regarding vasectomy?

1) Irreversible sterility

2) No sperm occurs in seminal fluid

*3) No sperm occurs in epididymis

4) Vasa deferentia is cut and tied

176. The head of epididymis is called

*1) Caput epididymis

2) Cauda epididymis

3) Gubernaculum

4) Vas deferens

177. In human males the acidity in the urethra is neutralised by the secretions of

*1) Cowper's glands 2) Rectal glands

3) Perineal glands 4) Urinary bladder

178. Testosterone is secreted by

1) Mast cells

2) Sertoli cells

3) Kupffer cells

*4) Leydig's cells

179. Which of the following is correct about mammalian testes?

1) Graafian follicles, Sertoli cells, Leydig's cells

*2) Sertoli cells, Seminiferous tubules, Leydig's cells

3) Graafian follicles, Leydig's cells, Seminiferous tubules

4) Graafian follicles, Sertoli cells, Seminiferous tubules

180. The nutritive cells found in the seminiferous tubules are

*1) Sertoli cells 2) Leydig cells

3) Chromaffin cells 4) Spermatogonia

181. Which one of the following types of glands is unpaired, in the human male reproductive system?

1) Seminal vesicle 2) Cowper's gland

*3) Prostate gland 4) Lacrimal gland

182. The sertoli cells are present in the

*1) Testis 2) Ovary

3) Blood 4) Lymph

183. Cryptorchidism is a condition in which

*1) Testis does not descend into the scrotal sacs

2) Sperms are not found in the semen

3) Male hormones are not active

4) Ovaries are absent

184. Polymorphism and alternation of generation are exhibited in some animals coming under

1) Arthropoda

2) Annelida

*3) Cnidaria

4) Echinodermata

185. Planaria possesses high capacity of

1) Metamorphosis

*2) Regeneration

3) Alternation of generation

4) Bioluminescence

SECTION: B – ZOOLOGY (Q.186 TO 200)

186. Select the incorrect statement.

1) Periplaneta has compound eyes and simple eyes

2) Earthworm shows segmentation

3) Ascaris shows sexual dimorphism

*4) Liver fluke has a complete alimentary canal

187. Which statement is correct about Aschelminthes?

*1) Pseudocoelomate and has Syncytial epidermis

2) Jointed appendages and chitinous cuticle

3) Mantle and radula are seen

4) Body is covered with spines

188. Select the mismatching combination

1) Polyp and medusa – Cnidarians

2) Ciliated comb plates – Ctenophores

3) Proboscis gland – Hemichordata

*4) Water vascular system – Porifera

189. Notochord is found from head to tail region and is persistent throughout the life in

1) Fishes *2) Amphioxus

3) Amphibians 4) Ascidia

190. Which of the following features are present in chordates?

1) Dorsal heart, presence of post anal tail and dorsal central nervous system

*2) Ventral heart, presence of post anal tail and presence of gill slits

3) Dorsal heart, pharynx perforated by gill slits and dorsal central nervous system

4) Ventral heart, presence of notochord and ventral central nervous system

191. All vertebrates possess

1) Renal portal system

2) 4-chambered ventral heart

*3) Dorsal hollow CNS

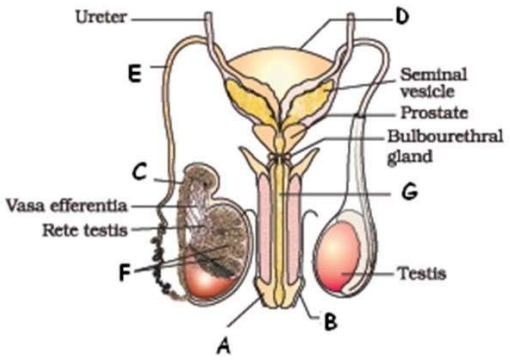
4) Pharyngeal gill slits

192. Match the following

Column I	Column II
a. Limbless reptile	1. *Lamprey*
b. Jawless vertebrate	2. *Ichthyophis*
c. Limbless amphibian	3. *Naja*
d. Cartilaginous fish	4. *Struthio*
e. Flightless bird	5. *Scoliodon*

	a	b	c	d	e
1)	1	5	2	4	3
*2)	3	1	2	5	4
3)	5	4	1	2	3
4)	5	2	3	1	4

193. Diagrammatic representation of male reproductive system is given below. Identify the labelled parts in thesequence A, B, C, D, E, F, G.



*1) Fore skin, glans penis, epididymis, urinary bladder,vas deferens, testicular lobules, urethra

2) Glans penis, fore skin, urinary bladder, vas deferens,epididymis, testicular lobules, urethra

3) Glans penis, fore skin, epididymis, urinary bladder,vas deferens, testicular lobules, urethra

4) Glans penis, fore skin, epididymis, urinary bladder,vas deferens, urethra, testicular lobules

194. Labia minora is

1) Highly sensitive organ

2) A part of oviduct

3) An accessory gland

*4) Hairless inner folds of vagina

195. Select the correct sequence

1) Mammary tubule – mammary alveolus – mammary Ampulla – mammary duct –lactiferous duct

*2) Mammary alveolus – mammary tubule – mammary duct – mammary Ampulla – lactiferous duct

3) Mammary Ampulla – mammary duct– mammary tubule – mammary alveolus – lactiferous duct

4) Mammary alveolus – lactiferous duct – mammary tubule – mammary Ampulla – mammary duct

196. The mammary glands are paired structures that contain ------- and variable amount of -----

1) Areolar tissue, fat

2) Adipose tissue, sugars

3) Epithelial tissue, proteins

*4) Glandular tissue, fats

197. A secondary oocyte undergoes second meiosis to form

1) Two ova

2) Four ova

*3) One ovum and one polar body

4) Two ova and one polar body

198. Match the following

A	B
a. FSH	1. Prepare endometrium for implantation
b. LH	2. Develops female secondary sexual characters
c. Progesterone	3. Contraction of uterine wall
d. Estrogen	4. Development of corpus luteum
	5. Maturation of Graafian follicles

*1) a-5, b-4, c-1, d-2 2) a-4, b-5, c-2, d-1

3) a-4, b-3, c-2, d-5 4) a-5, b-1, c-2, d-4

199. Mark the correct sequence of development of embryo.

1) Zygote, blastocyst, cleavage, neurula, gastrula

2) Zygote, morula, cleavage, blastocyst, gastrula

3) Zygote, blastocyst, morula, cleavage, gastrula

*4) Zygote, cleavage, morula, blastocyst, gastrula

200. During embryonic stage, blood is derived from

1) Ectoderm 2) Endoderm

*3) Mesoderm 4) Trophoblast

SPACE FOR ROUGH WORK