NEET 2020- II

Test Instructions

1. Total duration of this test is **180** minutes.
2. This test has 4 subjects consisting of
   180 questions in total.
3. There are **4** total sections in the test.
4. Sections Info :
   Physics
   a. **Section A** has **45** questions, compulsory questions **45**. **4** marks will be given for correct attempt and incorrect attempt **-1** .
   Chemistry
   a. **Section A** has **45** questions, compulsory questions **45**. **4** marks will be given for correct attempt and incorrect attempt **-1** .
   Botany
   a. **Section A** has **47** questions, compulsory questions **47**. **4** marks will be given for correct attempt and incorrect attempt **-1** .
   Zoology
   a. **Section A** has **43** questions, compulsory questions **43**. **4** marks will be given for correct attempt and incorrect attempt **-1** .
5. Total marks for this test is **720** marks.
6. No marks will be deducted for unattempted questions.
7. This test can be submitted only once.
8. Once the test has been submitted, you cannot edit the responses.
9. Results will be anounced post test submission.
10. The test will be auto-submitted once the timer ends.

Physics

Section A

1. The angle of 1' (minute of arc) in radian is nearly equal to

    1. 1.75×10^{-2} rad
    2. 2.91×10^{-4} rad
    3. 4.85×10^{-4} rad
    4. 4.80×10^{-6} rad

2. Time intervals measured by a clock give the following readings :
   1.25 s, 1.24 s, 1.27 s, 1.21 s and 1.28 s
   What is the percentage relative error of the observations?

    1. 1.6%
    2. 2%
    3. 4%
    4. 16%

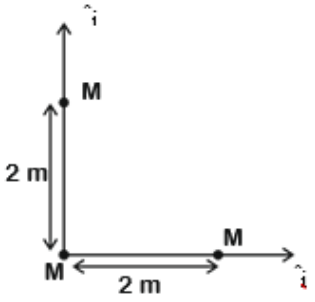
3. A plano-convex lens of unknown material and unknown focal length is given. With the help of a spherometer we can measure the,

    1. refractive index of the material
    2. focal length of the lens
    3. radius of curvature of the curved surface
    4. aperture of the lens

4. A person sitting in the ground floor of a building notices through the window, of height 1.5 m, a ball dropped from the roof of the building crosses the window in 0.1 s. What is the velocity of the ball when it is at the topmost point of the window ? ($g = 10\ m/s^2$)

    1. 20 m/s
    2. 15.5 m/s
    3. 14.5 m/s
    4. 4.5 m/s

5. Three identical spheres, each of mass M, are placed at the corners of a right angle triangle with mutually perpendicular sides equal to 2 m (see figure). Taking the point of intersection of the two mutually perpendicular sides as the origin, find the position vector of centre of mass.



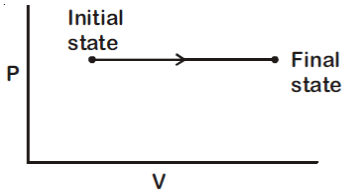
    1. $\frac{4}{3}\left(\hat{\mathrm{i}}+\hat{\mathrm{j}}\right)$
    2. $2\left(\hat{\mathrm{i}}+\hat{\mathrm{j}}\right)$
    3. $\left(\hat{\mathrm{i}}+\hat{\mathrm{j}}\right)$
    4. $\frac{2}{3}\left(\hat{\mathrm{i}}+\hat{\mathrm{j}}\right)$

6.

An ideal gas equation can be written as $P = \frac{\rho RT}{M_0}$ where ρ and M_0 are respectively,

1. Number density, mass of the gas
2. Mass density,mass of the gas
3. Number density, molar mass
4. Mass density, molar mass

7. The P-V diagram for an ideal gas in a piston cylinder assembly undergoing a thermodynamic process is shown in the figure. The process is



1. isothermal
2. adiabatic
3. isochoric
4. isobaric

8. The efficiency of a Carnot engine depends upon

1. the temperature of the source only
2. the temperature of the sink only
3. the temperatures of the source and sink
4. the volume of the cylinder of the engine

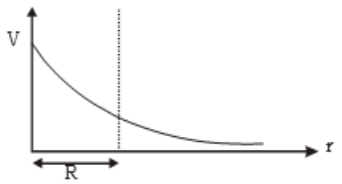
9. Identify the function which represents a periodic motion.

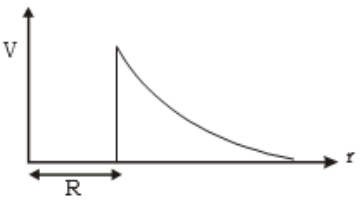
1. $e^{-\omega t}$
2. $e^{\omega t}$
3. $\log_e(\omega t)$
4. $\sin\omega t + \cos\omega t$

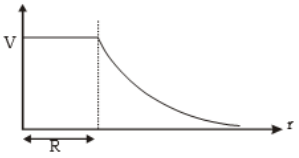
10. The length of the string of a musical instrument is 90 cm and has a fundamental frequency of 120 Hz. Where should it be pressed to produce fundamental frequency of 180 Hz?

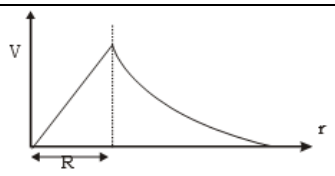
1. 80 cm
2. 75 cm
3. 60 cm
4. 45 cm

11. The variation of electrostatic potential with radial distance r from the centre of a positively charged metallic thin shell of radius R is given by the graph

1. 

2. 

3. 

4. 

12. A wire of length L metre carrying a current of l ampere is bent in the form of circle. Its magnetic moment is

    1. $\mathrm{IL}^2/4\pi\ \mathrm{Am}^2$
    2. $\mathrm{I\,L}^2/4\ \mathrm{Am}^2$
    3. $\mathrm{I}\pi\mathrm{L}^2/4\ \mathrm{Am}^2$
    4. $2I\mathrm{L}^2/\pi\ \mathrm{Am}^2$

13. The E.M. wave with shortest wavelength among the following is,

    1. Microwaves
    2. Ultraviolet rays
    3. X-rays
    4. Gamma-rays

14. The total energy of an electron in the n^{th} stationary orbit of the hydrogen atom can be obtained by

    1. $\mathrm{E_n} = -13.6 \times \mathrm{n}^2\,\mathrm{eV}$
    2. $\mathrm{E_n} = \frac{13.6}{\mathrm{n}^2}\mathrm{eV}$
    3. $\mathrm{E_n} = -\frac{13.6}{\mathrm{n}^2}\mathrm{eV}$
    4. $\mathrm{E_n} = -\frac{1.36}{\mathrm{n}^2}\mathrm{eV}$

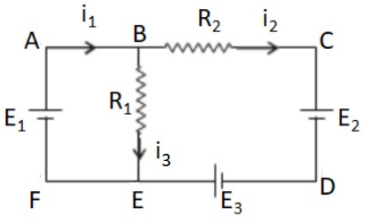
15. A barometer is constructed using a liquid (density = $760\ \mathrm{kg/m^3}$). What would be the height of the liquid column, when a mercury barometer reads 76 cm? (density of mercury = $13600\ \mathrm{kg/m^3}$)

    1. 0.76 m
    2. 1.36 m
    3. 13.6 m
    4. 136 m

16. The equivalent resistance between A and B for the mesh shown in the figure is

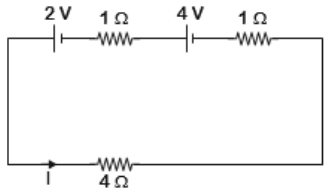
    1. 4.8Ω
    2. $7.2\ \Omega$
    3. $16\ \Omega$
    4. $30\ \Omega$

17. For the circuit given below, the Kirchoff's loop rule for the loop BCDEB is given by the equation



    1. $-\mathrm{i_2R_2} + \mathrm{E_2} + \mathrm{E_3} + \mathrm{i_3R_1} = 0$
    2. $-\mathrm{i_2R_2} + \mathrm{E_2} - \mathrm{E_3} + \mathrm{i_3R_1} = 0$
    3. $\mathrm{i_2R_2} + \mathrm{E_2} - \mathrm{E_3} - \mathrm{i_3R_1} = 0$
    4. $\mathrm{i_2R_2} + \mathrm{E_2} + \mathrm{E_3} + \mathrm{i_3R_1} = 0$

18. For the circuit shown in the figure, the current I will be



1. 0.5 A

2. 0.75 A

3. 1 A

4. 1.5 A

19. The magnetic flux linked with a coil (in Wb) is given by the equation $\phi = 5t^2 + 3t + 16$. The magnitude of induced emf in the coil at the fourth second will be

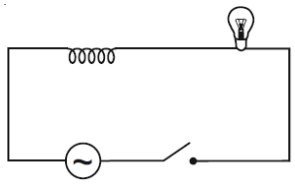
1. 10 V

2. 33 V

3. 43 V

4. 108 V

20. A light bulb and an inductor coil are connected to an ac source through a key as shown in the figure below. The key is closed and after sometime an iron rod is inserted into the interior of the inductor. The glow of the light bulb



1. increases

2. decreases

3. remains unchanged

4. will fluctuate

21. The magnetic field in a plane electromagnetic wave is given by, $B_y = 2 \times 10^{-7} \sin(\pi \times 10^3 x + 3\pi \times 10^{11} t) T$. Calculate the wavelength.

1. $\pi \times 10^{-3} m$

2. $\pi \times 10^{3} m$

3. $2 \times 10^{-3} m$

4. $2 \times 10^{3} m$

22. Two coherent sources of light interfere and produce fringe pattern on a screen. For central maximum, the phase difference between the two waves will be,

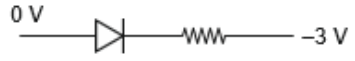
1. $\frac{\pi}{2}$

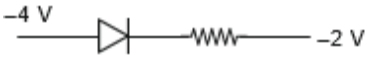
2. Zero

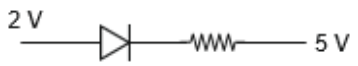
3. π

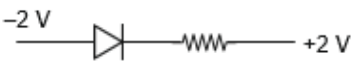
4. $\frac{3\pi}{2}$

23. Out of the following which one is a forward biased diode?

1. 

2. 

3. 

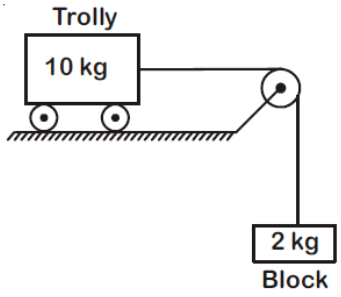
4. 

24. The angular speed of the wheel of a vehicle is increased from 360 rpm to

1200 rpm in 14 second. Its angular acceleration is,

1. $1\ \text{rad}/\text{s}^2$
2. $2\pi\ \text{rad}/\text{s}^2$
3. $28\pi\ \text{rad}/\text{s}^2$
4. $120\pi\ \text{rad}/\text{s}^2$

25. Calculate the acceleration of the block and trolly system shown in the figure. The coefficient of kinetic friction between the trolly and the surface is 0.05. ($g = 10\ m/s^2$, mass of the string is negligible and no other friction exists).



1. $1.00\ \text{m}/\text{s}^2$
2. $1.25\ \text{m}/\text{s}^2$
3. $1.50\ \text{m}/\text{s}^2$
4. $1.66\ \text{m}/\text{s}^2$

26. A point mass 'm' is moved in a vertical circle of radius 'r' with the help of a string. The velocity of the mass is $\sqrt{7gr}$ at the lowest point. The tension in the string at the lowest point is

1. 1 mg
2. 6 mg
3. 7 mg
4. 8 mg

27. What is the depth at which the value of acceleration due to gravity becomes $\frac{1}{\text{n}}$ times the value that at the surface of earth? (radius of earth = R)

1. $\frac{\text{R}}{\text{n}}$
2. $\frac{\text{R}}{\text{n}^2}$
3. $\frac{\text{R}(\text{n}-1)}{\text{n}}$
4. $\frac{\text{Rn}}{(\text{n}-1)}$

28. A liquid does not wet the solid surface if angle of contact is

1. Zero
2. equal to 45°
3. equal to 60°
4. greater than 90°

29. Three stars A, B, C have surface temperatures $\text{T}_\text{A},\ \text{T}_\text{B},\ \text{T}_\text{C}$ respectively. Star A appears bluish, star B appears reddish and star C yellowish. Hence,

1. $\text{T}_\text{A} > \text{T}_\text{C} > \text{T}_\text{B}$
2. $\text{T}_\text{A} > \text{T}_\text{B} > \text{T}_\text{C}$
3. $\text{T}_\text{B} > \text{T}_\text{C} > \text{T}_\text{A}$
4. $\text{T}_\text{C} > \text{T}_\text{B} > \text{T}_\text{A}$

30. The Mean Free Path for a gas molecule depends upon diameter, d of the molecule as

1. $\ell \propto \frac{1}{\mathrm{d}}$

2. $\ell \propto \frac{1}{\mathrm{d}^2}$

3. $\ell \propto \mathrm{d}$

4. $\ell \propto \mathrm{d}^2$

31. The acceleration of an electron due to the mutual attraction between the electron and a proton when they are 1.6 Å apart is,

$\left(\mathrm{m_e} \simeq 9 \times 10^{-31}\,\mathrm{kg}, \mathrm{e} = 1\ .6\ \times 10^{-19}\mathrm{C}\right)$

$\left(\mathrm{Take}\ \frac{1}{4\pi\varepsilon_0} = 9 \times 10^9\,\mathrm{Nm^2\,C^{-2}}\right)$

1. $10^{25}\ \mathrm{m/s^2}$

2. $10^{24}\ \mathrm{m/s^2}$

3. $10^{23}\ \mathrm{m/s^2}$

4. $10^{22}\ \mathrm{m/s^2}$

32. The electric field at a point on the equatorial plane at a distance r from the centre of a dipole having dipole moment $\vec{\mathrm{p}}$ is given by, (r >> separation of two charges forming the dipole, ϵ_0 - permittivity of free space)

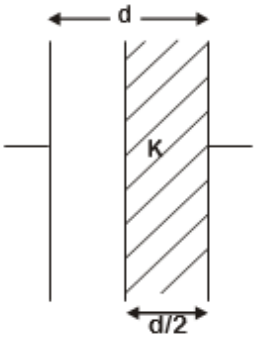
1. $\vec{\mathrm{E}} = -\frac{\vec{\mathrm{P}}}{4\pi\in_0 \mathrm{r}^3}$

2. $\vec{\mathrm{E}} = \frac{\vec{\mathrm{P}}}{4\pi\in_0 \mathrm{r}^3}$

3. $\vec{\mathrm{E}} = \frac{2\vec{\mathrm{P}}}{4\pi\in_0 \mathrm{r}^3}$

4. $\vec{\mathrm{E}} = -\frac{\vec{\mathrm{P}}}{4\pi\in_0 \mathrm{r}^2}$

33. A parallel plate capacitor having cross-sectional area A and separation d has air in between the plates. Now an insulating slab of same area but thickness d/2 is inserted between the plates as shown in figure having dielectric constant K(= 4). The ratio of new capacitance to its original capacitance will be,



1. 4 : 1

2. 2 : 1

3. 8 : 5

4. 6 : 5

34. Two solid conductors are made up of same material, have same length and same resistance. One of them has a circular cross section of area $\mathrm{A_1}$ and the other one has asquare cross section of area $\mathrm{A_2}$. The ratio $\mathrm{A_1/A_2}$ is

1. 2

2. 1.5

3. 1

4. 0.8

35. A wheel with 20 metallic spokes each 1 m lo is rotated with a speed of 120 rpm in a plane perpendicular to a magnetic field of 0 G. The induced emf between the axle

and rim of the wheel will be ($1\ \mathrm{G}\ =\ 10^{-4}\ \mathrm{T}$)

1. 2.51 V
2. $2.51\ \times\ 10^{-4}\mathrm{V}$
3. $2.51\ \times\ 10^{-5}\ \mathrm{V}$
4. $4.0\ \times\ 10^{-5}\ \mathrm{V}$

36. An object is placed on the principal axis of a concave mirror at a distance of 1.5 f (f is the focal length). The image will be at,

1. 3 f
2. -3 f
3. 1.5 f
4. -1.5 f

37. If the critical angle for total internal reflection from a medium to vacuum is 45°, then velocity of light in the medium is,

1. $3\ \times\ 10^{8}\ \mathrm{m/s}$
2. $1.5\ \times\ 10^{8}\ \mathrm{m/s}$
3. $\frac{3}{\sqrt{2}}\mathrm{x}\ 10^{8}\ \mathrm{m/s}$
4. $\sqrt{2}\mathrm{x}10^{8}\ \mathrm{m/s}$

38. The power of a biconvex lens is 10 dioptre and the radius of curvature of each surface is 10 cm. Then the refractive index of the material of the lens is,

1. $\frac{3}{2}$
2. $\frac{4}{3}$
3. $\frac{9}{8}$
4. $\frac{5}{3}$

39. The de Broglie wavelength of an electron moving with kinetic energy of 144 eV is nearly

1. $102\times10^{-2}\,\mathrm{nm}$
2. $102\times10^{-3}\,\mathrm{nm}$
3. $102\times10^{-4}\,\mathrm{nm}$
4. $102\times10^{-5}\,\mathrm{nm}$

40. The wave nature of electrons was experimentally verified by,

1. Davisson and Germer
2. de Broglie
3. Hertz
4. Einstein

41. What happens to the mass number and atomic number of an element when it emits γ-radiation?

1. Mass number increases by four and atomic number increases by two.
2. Mass number decreases by four and atomic number decreases by two.
3. Mass number and atomic number remain unchanged.
4. Mass number remains unchanged while atomic number decreases by one.

42.

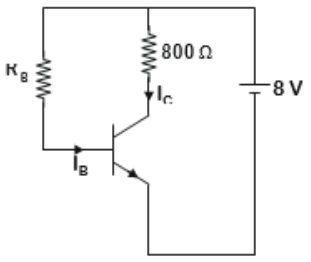
The half life of a radioactive sample undergoing α – decay is 1.4×10^{17} s. If the number of nuclei in the sample is 2.0×10^{21},the activity of the sample is nearly

1. 10^3 Bq
2. 10^4 Bq
3. 10^5 Bq
4. 10^6 Bq

43. An intrinsic semiconductor is converted into n-type extrinsic semiconductor by doping it with

1. Germanium
2. Phosphorous
3. Aluminium
4. Silver

44. n-p-n transistor is connected in common emitter configuration (see figure)in which collector voltage drop across load resistance (800 Ω) connected to the collector circuit is 0.8 V. The collector current is



1. 0.2 mA
2. 2 mA
3. 0.1 mA
4. 1 mA

45. Which of the following gate is called universal gate ?

1. NOT gate
2. OR gate
3. AND gate
4. NAND gate

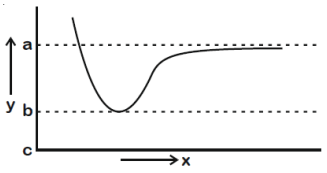
Chemistry

Section A

46. The number of angular nodes and radial nodes in 3s orbital are

1. 0 and 1, respectively
2. 0 and 2, respectively
3. 1 and 0, respectively
4. 3 and 0, respectively

47. The potential energy (y) curve for H_2 formation as a function of internuclear distance (x) of the H atoms is shown below.



The bond energy of H_2 is

1. (c – a)
2. (b – a)
3. $\frac{(c-a)}{2}$
4. $\frac{(b-a)}{2}$

48. Identify the wrongly match pair.

1.

Molecule	Shape or geometry of molecule
NH_3	Trigonal pyramidal

2.

Molecule	Shape or geometry of molecule
PCl_5	Trigonal planar

3.

Molecule	Shape or geometry of molecule
SF_6	Octahedral

4.

Molecule	Shape or geometry of molecule
$BeCl_2$	Linear

49. Match the coordination number and type of hybridisation with distribution of hybrid orbitals in space based on Valence bond theory.

Coordination number and type of hybridisation	Distribution of hybrid orbitals in space
(a) 4, sp^3	(i) trigonal bipyramidal
(b) 4, dsp^2	(ii) octahedral
(c) 5, sp^3d	(iii) tetrahedral
(d) 6, d^2sp^3	(iv) square planer

Select the correct option

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

50. At standard conditions, if the change in the enthalpy for the following reaction is –109 kJ mol^{-1}.
$H_{2(g)} + Br_{2(g)} \rightarrow 2\,HBr_{(g)}$
Given that bond energy of H_2 and Br_2 is 435 kJ mol^{-1} and 192 kJ mol^{-1} respectively. What is the bond energy (in kJ mol^{-1}) of HBr?

1. 259
2. 368
3. 736
4. 518

51. If for a certain reaction $\Delta_r H$ is 30 kJ mol^{-1} at 450 K, the value of $\Delta_r S$ (in $JK^{-1}\ mol^{-1}$) for which the same reaction will be spontaneous at the same temperature is

1. -70
2. 70
3. -33
4. 33

52. Which one of the following reactions does not come under hydrolysis type reaction ?

1. $P_4O_{10(s)} + 6H_2O_{(I)} \rightarrow 4H_3PO_{4(aq)}$
2. $SiCl_{4(I)} + 2H_2O_{(I)} \rightarrow SiO_{2(s)} + 4HCl_{(aq)}$
3. $Li_3N_{(s)} + 3H_2O_{(I)} \rightarrow NH_{3(g)} + 3LiOH_{(aq)}$
4. $2F_{2(g)} + 2H_2O_{(I)} \rightarrow 4HF_{(aq)} + O_{2(g)}$

53.

Identify the correct statement from the following.

1. Lithium chloride is deliquescent and crystallises as a hydrate, $LiCI.H_2O$.
2. The order of hydration enthalpies of alkaline earth cations

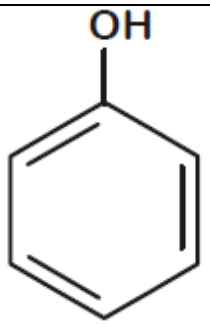
   $Be^{2+} < Mg^{2+} < Ca^{2+} < Sr^{2+} < Ba^{2+}$
3. Lithium and Magnesium show some similarities in their physical properties as they are diagonally placed in periodic table.
4. Lithium is softer among all alkali metals.

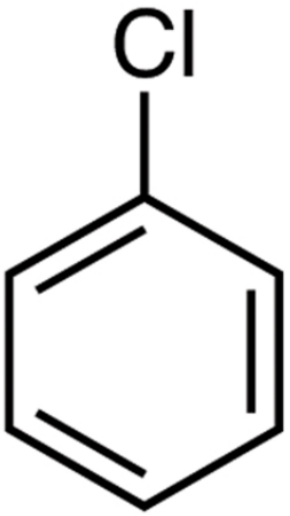
54. Match the compounds of Xe in column I with the molecular structure in column II.

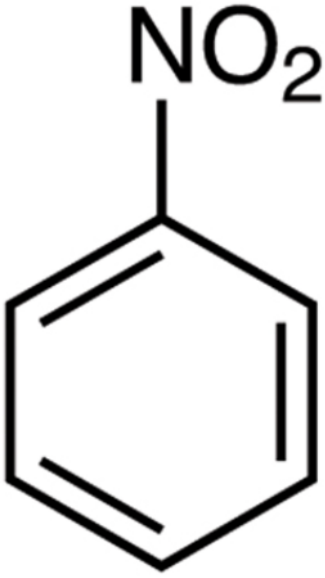
Column I	**Column II**
(a) XeF_2	(i) Square planar
(b) XeF_4	(ii) Linear
(c) XeO_3	(iii) Square pyramidal
(d) $XeOF_4$	(iv) Pyramidal

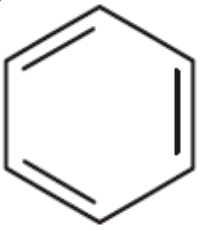
1. (a)-(ii) (b)-(i) (c)-(iv) (d)-(iii)
2. (a)-(ii) (b)-(i) (c)-(iii) (d)-(iv)
3. (a)-(ii) (b)-(iv) (c)-(iii) (d)-(i)
4. (a)-(ii) (b)-(iii) (c)-(i) (d)-(iv)

55. Which of the following compound is most reactive in electrophilic aromatic substitution?

1. 

2. 

3. 

4. 

56. In a typical fuel cell, the reactant (R) and product (P) are

1. $R = H_{2(g)}$, $N_{2(g)}$; $P = NH_{3(aq)}$

2. $R = H_{2(g)}$, $O_{2(g)}$; $P = H_2O_{2(l)}$

3. $R = H_{2(g)}$, $O_{2(g)}$; $P = H_2O_{(l)}$

4. $R = H_{2(g)}$, $O_{2(g)}$, $Cl_{2(g)}$; $P = HClO_{4(aq)}$

57. The half-life for a zero order reaction having 0.02 M initial concentration of reactant is 100 s. The rate constant (in $mol\ L^{-1}\ s^{-1}$) for the reaction is

1. 1.0×10^{-2}
2. 1.0×10^{-4}
3. 2.0×10^{-4}
4. 2.0×10^{-3}

58. In which of the sols, the colloidal particles are with negative charge?

1. Hydrated Al_2O_3
2. TiO_2
3. Haemoglobin
4. Starch

59. Match the elements in Column I with methods of purification in Column II.

Column-I		Column-II
(a) Boron	(i)	Van Arkel method
(b) Tin	(ii)	Mond's process
(c) Zirconium	(iii)	Liquation
(d) Nickel	(iv)	Zone refining

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

1. 1
2. 2
3. 3
4. 4

60. Match the following aspects with the respective metal.

Aspects	Metal
(a) The metal which reveals a maximum number of oxidation states	(i) Scandium
(b) The metal although placed in 3d block is considered not as a transition element	(ii) Copper
(c) The metal which does not exhibit variable oxidaiton states	(iii) Manganese
(d) The metal which in +1 oxidation state in aqueous solution undergoes disproportionation	(iv) Zinc

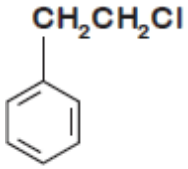
Select the correct option:

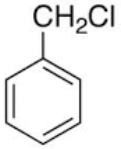
1. (a)-(ii) (b)-(iv) (c)-(i) (d)-(iii)
2. (a)-(i) (b)-(iv) (c)-(ii) (d)-(iii)
3. (a)-(iii) (b)-(iv) (c)-(i) (d)-(ii)
4. (a)-(iii) (b)-(i) (c)-(iv) (d)-(ii)

61. Which of the following will NOT undergo S_N1 reaction readily with

$\bar{O}H$?

1. $(CH_3)_3\,CCl$

2. 

3. 

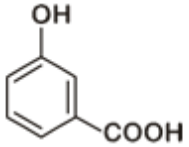
4. $CH_2 = CH - CH_2\,Cl$

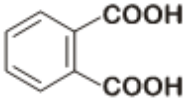
62. $CH_3CH_2CH = CH_2 \xrightarrow[H_2O_2, OH^-]{B_2H_6} Z.$

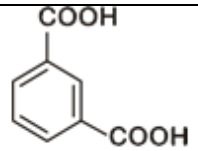
What is Z ?

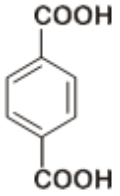
1. $CH_3\,CH_2\,CH_2\,CH_3$
2. $CH_3\,CH_2\,CH_2\,CH_2\,OH$
3. $CH_3\,CH_2\,CH(OH)\,CH_3$
4. $CH_3\,CH_2\,CH_2\,CHO$

63. Which of the following acid will form an (a) Anhydride on heating and (b) Acid imide on strong heating with ammonia?

1. 

2. 

3. 

4. 

64. Reaction of propanamide with ethanolic sodium hydroxide and bromine will give

1. Aniline
2. Ethylamine
3. Methylamine
4. Propylamine

65. Which of the following is not true about chloramphenicol ?

1. It is bacteriostatic.
2. It inhibits the growth of only gram positive bacteria.
3. It is a broad spectrum antibiotic.
4. It is not bactericidal.

66. One mole of carbon atom weighs 12 g, the number of atoms in it is equal to, (Mass of carbon-12 is 1.9926×10^{-23} g)

1. 6.022×10^{22}
2. 12×10^{22}
3. 6.022×10^{23}
4. 1.2×10^{23}

67. Among the compounds shown below which one revealed a linear structure?

1. N_2O
2. NO_2
3. HOCl
4. O_3

68. The minimum pressure required to compress 600 dm^3 of a gas at 1 bar to 150 dm^3at 40°C is

1. 2.5 bar
2. 4.0 bar
3. 0.2 bar
4. 1.0 bar

69. Which among the following salt solutions is basic in nature?

1. Ammonium sulphate
2. Ammonium nitrate
3. Sodium acetate
4. Ammonium chloride

70. The solubility product for a salt of the type AB is 4×10^{-8}. What is the molarity of its standard solution?

1. 4×10^{-4} mol /L
2. 2×10^{-4} mol /L
3. 16×10^{-16} mol /L
4. 2×10^{-16} mol /L

71. The oxidation number of the underlined atom in the following species is wrongly matched

1. $H\underline{Au}Cl_4$ is $+3$
2. $Cu_2\underline{O}$ is -1
3. $\underline{Cl}O_3^-$ is $+5$
4. $K_2\underline{Cr_2}O_7$ is $+6$

72. What is the role of gypsum, $CaSO_4.2H_2O$ in setting of cement? Identify the correct option from the following :

1. to slow down the setting process
2. to fasten the setting process
3. to provide water molecules for hydration process
4. to help to remove water molecules

73. Which of the following is a free radical substitution reaction?

1. Propene with HBr/$(C_6H_5COO)_2$
2. Benzene with Br_2 / $AlCI_3$
3. Acetylene with HBr
4. Methane with Br_2 / hv

74. A liquid compound (x) can be purified by steam distillation only if it is

1. Not steam volatile, immiscible with water

2. Steam volatile, immiscible with water

3. Not steam volatile, miscible with water

4. Steam volatile, miscible with water

75. Which of the following statement is NOT true about acid rain?

1. Its pH is less than 5.6

2. It is due to reaction of SO_2, NO_2 and CO_2 with rain water

3. Causes no damage to monuments like Taj Mahal

4. It is harmful for plants

76. Which one of the following compounds shows both, Frenkel as well as Schottky defects ?

1. ZnS

2. AgBr

3. AgI

4. NaCl

77. Isotonic solutions have same

1. Boiling temperature

2. Vapour pressure

3. Freezing temperature

4. Osmotic pressure

78. Identify the reaction from following having top position in EMF series (Std. red. potential) according to their electrode potential at 298 K.

1. $K^+ + 1e^- \rightarrow K_{(s)}$

2. $Mg^{2+} + 2e^- \rightarrow Mg_{(s)}$

3. $Fe^{2+} + 2e^- \rightarrow Fe_{(s)}$

4. $Au^{3+} + 3e^- \rightarrow Au_{(s)}$

79. In collision theory of chemical reaction, Z_{AB} represents

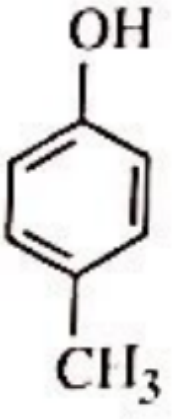
1. the fraction of molecules with energies equal to E_a

2. the fraction of molecules with energies greater than E_a

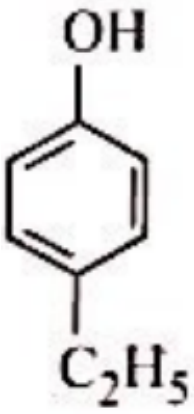
3. the collision frequency of reactants, A and B

4. steric factor

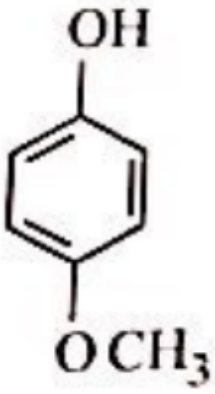
80. Which of the following substituted Phenols is the strongest acid?

1. 

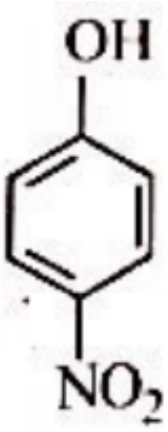
2.



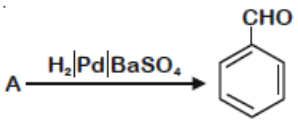
3.



4.



81. Identify compound (A) in the following reaction:



1. Benzoic acid
2. Benzoyl chloride
3. Toluene
4. Acetophenone

82. Which of the following statement is not true about glucose?

1. It is an aldopentose.
2. It is an aldohexose.
3. It contains five hydroxyl groups.
4. It is a reducing sugar.

83. Deficiency of which vitamin causes osteomalacia?

1. Vitamin E
2. Vitamin A
3. Vitamin D
4. Vitamin K

84. Which of the following statement is correct about Bakelite?

1. It is a linear polymer
2. It is a cross linked polymer
3. It is an addition polymer
4. It is a branched polymer

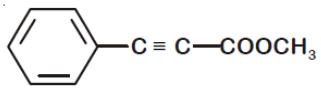
85. Match the element in column I with that in column II.

Column I		**Column II**
(a) Copper	(I)	Non-metal
(b) Fluorine	(II)	Transition Metal
(c) Silicon	(III)	Lanthanoid
(d) Cerium	(IV)	Metalloid

Identify the correct match :

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

86. How many (i) sp^2 hybridised carbon atoms and (ii) π bonds are present in the following compound?



1. 8 , 5
2. 7 , 5
3. 8 , 6
4. 7 , 6

87. Which of the following oxide is amphoteric in nature?

1. CO_2
2. SnO_2
3. SiO_2
4. GeO_2

88. The reaction of concentrated sulphuric acid with carbohydrates ($C_{12}H_{22}O_{11}$) is an example of

1. Sulphonation
2. Dehydration
3. Oxidation
4. Reduction

89. If 8 g of a non-electrolyte solute is dissolved in 114 g of n-octane to reduce its vapour pressure to 80%, the molar mass (in g mol^{-1}) of the solute is _____ . If solution is assumed as dilute solution. [Given that molar mass of n-octane is 114 g mol^{-1}]

1. 20
2. 40
3. 60
4. 80

90. Identify the incorrect statement from the following :

1. The overall decrease in atomic and ionic radii from lanthanum to lutetium is called lanthanoid contraction.
2. Zirconium and Hafnium have identical radii of 160 pm and 159 pm, respectively as a consequence of lanthanoid contraction.
3. Lanthanoids reveal only $+3$ oxidation state.
4. The lanthanoid ions other than the f^0 type and the f^{14} type are all paramagnetic.

Botany

Section A

91. Cyclosporin A used as a immunosupressant agent, is produced from

1. *Saccharomyces cerevisiae*

2. *Penicillium notatum*

3. *Trichoderma polysporum*

4. *Monascus purpureus*

92. The number of contrasting characters studied by Mendel for his experiments was

1. 7

2. 14

3. 4

4. 2

93. Pyruvate dehydrogenase activity during aerobic respiration requires

1. magnesium

2. calcium

3. iron

4. cobalt

94. Match the following

(a)	Aquaporin	(i)	Amide
(b)	Asparagine	(ii)	Polysaccharide
(c)	Abscisic acid	(iii)	Polypeptide
(d)	Chitin	(iv)	Carotenoids

Select the correct option

	a	**b**	**c**	**d**
1.	iii	i	ii	iv
2.	iii	i	iv	ii
3.	ii	iii	iv	i
4.	ii	i	iv	iii

1. 1

2. 2

3. 3

4. 4

95. In recombinant DNA technology antibiotics are used

1. as selectable markers

2. to keep medium bacteria-free

3. to detect alien DNA

4. to impart disease-resistance to the host plant

96. Which of the following statements is **incorrect**?

1. RuBisCO action does not require ATP and NADPH.

2. RuBisCO is a bifunctional enzyme.

3. In C_4 plants, the site of RuBisCO activity is mesophyll cell.

4. The substrate molecule for RuBisCO activity is a 5-carbon compound.

97. In *Glycine max*, the product of biological nitrogen fixation is transported from the root nodules to other parts as

1. Ureides

2. Ammonia

3. Glutamate

4. Nitrates

98. The laws and rules to prevent unauthorised exploitation of bio-resources are termed as

1. biopiracy
2. biopatenting
3. bioethics
4. bioengineering

99. Select the **incorrect** statement.

1. Elements most easily mobilized in plants from one region to another are phosphorus, nitrogen and potassium
2. Transport of molecules in phloem can be bidirectional
3. Movement of minerals in xylem is unidirectional
4. Unloading of sucrose at sink does not involve the utilization of ATP

100. Male and female gametophytes do not have an independent free living existence in

1. bryophytes
2. pteridophytes
3. algae
4. angiosperms

101. Match the following columns and select the correct option :

Column-I		Column-II
(a) Dragonflies	(i)	Biocontrol agents of several plant pathogens
(b) *Bacillus thuringiensis*	(ii)	Get rid of aphids and mosquitoes
(c) *Glomus*	(iii)	Narrow spectrum insecticidal applications
(d) Baculoviruses	(iv)	Biocontrol agents of lepidopteran plant pests
	(v)	Absorb phosphorus from soil

	a	b	c	d
1.	ii	iv	v	iii
2.	iii	v	iv	i
3.	ii	i	iii	iv
4	ii	iii	iv	v

1. 1
2. 2
3. 3
4. 4

102. Large, empty colourless cells of the adaxial epidermis along the veins of grass leaves are

1. bulliform cells
2. lenticels
3. guard cells
4. bundle sheath cells

103. Match Column-I with Column-II.

	Column-I		Column-II
(A)	Fruit ripener	(I)	Abscisic acid
(B)	Herbicide	(II)	GA_3
(C)	Bolting agent	(III)	2, 4-D
(D)	Stress hormone	(IV)	Ethephon

Select the correct option.

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

1. 1
2. 2
3. 3
4. 4

104. Match the following events that occur in their respective phases of cell cycle and select the correct option :

(a)	G_1 phase	(i)	Cell grows and organelle duplication
(b)	S phase	(ii)	DNA replication and chromosome duplication
(c)	G_2 phase	(iii)	Cytoplasmic growth
(d)	Metaphase in M-phase	(iv)	Alignment of chromosomes at the equator

	a	b	c	d
1.	i	ii	iii	iv
2.	ii	iii	iv	i
3	iii	iv	i	ii
4.	iv	i	ii	iii

1. 1
2. 2
3. 3
4. 4

105. Match the following columns and select the correct option :

	Column-I		Column-II
(a)	Smooth endoplasmic reticulum	(i)	Protein synthesis
(b)	Rough endoplasmic reticulum	(ii)	Lipid synthesis
(c)	Golgi complex	(iii)	Glycosylation
(d)	Centriole	(iv)	Spindle formation

	a	b	c	d
1.	i	ii	iii	iv
2.	ii	i	iii	iv
3.	iii	i	ii	iv
4.	iv	ii	i	iii

1. 1
2. 2
3. 3
4. 4

106. The term 'Nuclein' for the genetic material was used by

1. Mendel
2. Franklin
3. Meischer
4. Chargaff

107. In the polynucleotide chain of DNA, a nitrogenous base is linked to the –OH of

1. 1/ C pentose sugar
2. 2/ C pentose sugar
3. 3/ C pentose sugar
4. 5/ C pentose sugar

108. In a mitotic cycle, the correct sequence of phases is

1. G_1, G_2, S, M
2. S, G_1, G_2, M
3. G_1, S, G_2, M
4. M, G_1, G_2, S,

109. First characterized restriction endonuclease that always cuts DNA molecules at a particular point by recognizing a specific sequence of six base pairs is

1. *Hind II*
2. EcoR I
3. Adenosine deaminase
4. Thermostable DNA polymerase

110. Phycoerythrin is the major pigment in

1. brown algae
2. red algae
3. blue green algae
4. green algae

111. Inclusion bodies of blue-green, purple and green photosynthetic bacteria are

1. microtubules
2. contractile vacuoles
3. gas vacuoles
4. centrioles

112. The size of Pleuropneumonia - like organism (PPLO) is

1. $0.1\ \mu m$
2. $0.02\ \mu m$
3. $1 - 2\ \mu m$
4. $10 - 20\ \mu m$

113. Which of the following elements helps in maintaining the structure of ribosomes?

1. Molybdenum
2. Magnesium
3. Zinc
4. Copper

114. In a mixture, DNA fragments are separated by

1. polymerase chain reaction

2. bioprocess engineering

3. restriction digestion

4. electrophoresis

115. Which of the following is **incorrect** about cyanobacteria?

1. They have chlorophyll 'a' similar to green plants

2. They are photoautotrophs

3. They lack heterocysts

4. They often form blooms in polluted water bodies

116. Attachment of spindle fibers to kinetochores of chromosomes becomes evident in

1. metaphase

2. anaphase

3. telophase

4. prophase

117. Who coined the term 'Kinetin'?

1. Kurosawa

2. Skoog and Miller

3. Darwin

4. Went

118. Vegetative propagule in *Agave* is termed as

1. eye

2. rhizome

3. bulbil

4. offset

119. Which of the following is **incorrect** for wind pollinated plants?

1. Pollen grains are light and non-sticky

2. Well exposed stamens and stigma

3. Many ovules in each ovary

4. Flowers are small and not brightly coloured

120. In some plants thalamus contributes to fruit formation. Such fruits are termed as

1. parthenocarpic fruit

2. false fruits

3. aggregate fruits

4. true fruits

121. For the commercial and industrial production of citric acid, which of the following microbes is used?

1. *Clostridium butylicum*

2. *Aspergillus niger*

3. *Lactobacillus sp.*

4. *Saccharomyces cerevisiae*

122. RNA interference is used for which of the following purposes in the field of biotechnology?

1. To reduce post harvest losses

2. To develop a plant tolerant to abiotic stresses

3. To develop a pest resistant plant against infestation by nematode

4. To enhance the mineral usage by the plant

123. During non-cyclic photophosphorylation, when electrons are lost from the reaction centre at PS II, what is the source which replaces these electrons?

1. Light

2. Oxygen

3. Water

4. Carbon dioxide

124. *E. coli* has only 4.6×10^6 base pairs and completes the process of replication within 18 minutes; then the average rate of polymerization is approximately?

1. 1000 base pairs/second

2. 2000 base pairs/second

3. 3000 base pairs/second

4. 4000 base pairs/second

125. Correct position of floral parts over thalamus in mustard plant is

1. gynoecium is situated in the centre, and other parts of the flower are located at the rim of the thalamus, at the same level.

2. gynoecium occupies the highest position, while the other parts are situated below it.

3. margin of the thalamus grows upward, enclosing the ovary completely, and other parts arise below the ovary.

4. gynoecium is present in the centre and other parts cover it partially.

126. Which of the following statements about cork cambium is **incorrect**?

1. It is a couple of layers thick.

2. It forms the secondary cortex on its outer side.

3. It forms a part of periderm.

4. It is responsible for the formation of lenticels.

127. Which of the following statements is **incorrect** about gymnosperms?

1. Their seeds are not enclosed by any layers of pericarp.

2. All are heterosporous.

3. Male and female gametophytes are free living.

4. Most of them have narrow leaves with thick cuticle.

128. During Meiosis I, in which stage synapsis takes place?

1. Leptotene

2. Pachytene
3. Zygotene
4. Diplotene

129. Chromosomal theory of inheritance was proposed by

1. Watson and Crick
2. Sutton and Boveri
3. Bateson and Punnet
4. T.H. Morgan

130. Spooling is done for

1. collection of isolated DNA
2. amplification of DNA
3. cutting of separated DNA bands from the agarose gel
4. transfer of separated DNA fragments to synthetic membranes

131. Select the correct statement from the following.

1. PCR is used for the isolation and separation of gene of interest.
2. Gel electrophoresis is used for the amplification of a DNA segment.
3. The polymerase enzyme joins the gene of interest and the vector DNA.
4. Restriction enzyme digestions are performed by incubating purified DNA molecules with the restriction enzymes at optimum conditions.

132. Identify the correct features of mango and coconut fruits.
(i) In both fruit is a drupe
(ii) Endocarp is edible in both
(iii) Mesocarp in coconut is fibrous, and in mango it is fleshy
(iv) In both, fruit develops from monocarpellary ovary
Select the correct option from below :

1. (i) and (ii) only
2. (i), (iii) and (iv) only
3. (i), (ii) and (iii) only
4. (i) and (iv) only

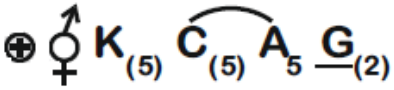
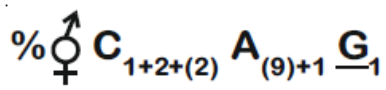
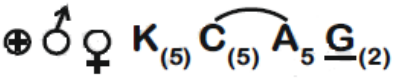
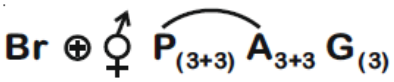
133. Which of the following statements is **incorrect** regarding the phosphorus cycle?

1. It is a sedimentary cycle.
2. Phosphates are the major form of phosphorus reservoir.
3. Phosphorus solubilizing bacteria facilitate the release of phosphorus from organic remains.
4. There is an appreciable respiratory release of phosphorus into the atmosphere.

134. The biosynthesis of ribosomal RNA occurs in

1. nucleolus
2. ribosomes
3. golgi apparatus
4. microbodies

135. Which of the following is the correct floral formula of Liliaceae?

1. 
2. 
3. 
4. 

136. The best example for pleiotropy is

1. ABO Blood group
2. skin colour
3. phenylketoneuria
4. colour blindness

137. Inhibitory substances in dormant seeds cannot be removed by subjecting seeds to:

1. Chilling conditions
2. Gibberellic acid
3. Nitrate
4. Ascorbic acid

Zoology

Section A

138. The rate of decomposition is faster in the ecosystem due to following factors, **except**

1. warm and moist environment
2. presence of aerobic soil microbes
3. detritus richer in lignin and chitin
4. detritus rich in sugars

139. According to Alexander von Humboldt,

1. species richness increases with increasing explored area, but only up to a limit
2. there is no relationship between species richness and area explored
3. species richness goes on increasing indefinitely with increasing area of exploration
4. species richness decreases with increasing area of exploration

140. Air (Prevention and Control of Pollution) Act was amended in 1987 to include among pollutants

1. Particulates of size 2.5 micrometer or below
2. Vehicular exhaust
3. Allergy causing pollen
4. Noise

141. Intrinsic factor that helps in the absorption of vitamin B_{12} is secreted by

1. hepatic cells
2. oxyntic cells
3. chief cells
4. goblet cells

142. Which of the following statements is **incorrect**?

1. Energy content gradually increases from first to fourth trophic level
2. Number of individuals decreases from first trophic level to fourth trophic level
3. Energy content gradually decreases from first to fourth trophic level
4. Biomass decreases from first to fourth trophic level

143. A species which was introduced for ornamentation but has become a troublesome weed in India :

1. *Trapa spinosa*
2. *Parthenium hysterophorus*
3. *Eichhornia crassipes*
4. *Prosopis juliflora*

144. Match the following columns with reference to cockroach and select the correct option.

	Column I		**Column II**
(a)	Grinding of the food particles	(i)	Hepatic caecae
(b)	Secrete gastric juice	(ii)	10^{th} segment
(c)	10 pairs	(iii)	Pro-ventriculus
(d)	Anal cerci	(iv)	Spiracles
		(v)	Alary muscles

	a	**b**	**c**	**d**
1	iv	iii	v	ii
2	i	iv	iii	ii
3	ii	iii	i	iv
4	iii	i	iv	ii

1. 1
2. 2
3. 3
4. 4

145. Match the following group of organisms with their respective distinctive characteristics and select the correct option.

	Organisms		**Characteristics**
(a)	Platyhelminthes	(i)	Cylindrical body with no segmentation
(b)	Echinoderms	(ii)	Warm blooded animals with direct development
(c)	Hemichordates	(iii)	Bilateral symmetry with incomplete

			digestive system
(d)	Aves	(iv)	Radial symmetry with indirect development

	a	b	c	d
1	i	ii	iii	iv
2	iii	iv	i	ii
3	ii	iii	iv	i
4	iv	i	ii	iii

1. 1
2. 2
3. 3
4. 4

146. Match the following columns and select the correct option:

	Column I		Column II
(a)	Ovary	(i)	Human chorionic gonadotropin
(b)	Placenta	(ii)	Estrogen and Progesterone
(c)	Corpus luteum	(iii)	Androgens
(d)	Leydig cells	(iv)	Progesterone only

	a	b	c	d
1	ii	i	iv	iii
2	iv	iii	ii	i
3	i	ii	iii	iv
4	i	iii	ii	iv

1. 1
2. 2
3. 3
4. 4

147. Select the correct statement.

1. Angiotensin II is a powerful vasodilator.
2. Counter current pattern of blood flow is not observed in vasa recta.
3. Reduction in glomerular filtration rate activates JG cells to release renin.
4. Atrial Natriuretic Factor increases the blood pressure.

148. Match the items in Column I with those in Column II :

	Column I		Column II
(a)	Herbivores-Plants	(i)	Commensalism
(b)	Mycorrhiza-Plants	(ii)	Mutualism
(c)	Sheep-Cattle	(iii)	Predation
(d)	Orchid-Tree	(iv)	Competition

Select the correct option from following:

	a	b	c	d
1	i	iii	iv	ii
2	iv	ii	i	iii
3	iii	ii	iv	i
4	ii	i	iii	iv

1. 1
2. 2
3. 3
4. 4

149. In cockroach, identify the parts of the foregut in correct sequence.

1. Mouth →Pharynx → Oesophagus → Crop → Gizzard
2. Mouth → Oesophagus → Pharynx → Crop → Gizzard
3. Mouth → Crop → Pharynx → Oesophagus → Gizzard
4. Mouth → Gizzard → Crop → Pharynx → Oesophagus

150. Match the following columns and select the correct option.

Column I		Column II
(a) *Aptenodytes*	(i)	Flying fox
(b) *Pteropus*	(ii)	Angel fish
(c) *Pterophyllum*	(iii)	Lamprey
(d) *Petromyzon*	(iv)	Penguin

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

1. 1
2. 2
3. 3
4. 4

151. Match the following columns and select the correct option.

Column I		Column II
(i) Typhoid	(a)	*Haemophilus influenzae*
(ii) Malaria	(b)	*Wuchereria bancrofti*
(iii) Pneumonia	(c)	*Plasmodium vivax*
(iv) Filariasis	(d)	*Salmonella typhi*

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

1. 1
2. 2
3. 3
4. 4

152. Match the following columns and select the correct option.

Column I		Column II
(a) Rods and cones	(i)	Absence of photoreceptor cells
(b) Blind spot	(ii)	Cones are densely packed
(c) Fovea	(iii)	Photoreceptor cells
(d) Iris	(iv)	Visible coloured portion of the eye

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

1. 1
2. 2
3. 3
4. 4

153. Match the following columns and select the correct option.

	Column I		Column II
(a)	Pneumotaxic centre	(i)	Alveoli
(b)	O_2 dissociation curve	(ii)	Pons region of brain
(c)	Carbonic anhydrase	(iii)	Haemoglobin
(d)	Primary site of gas exchange	(iv)	RBC

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

1. 1
2. 2
3. 3
4. 4

154. Match the following columns and select the correct option.

	Column I		Column II
(a)	Gout	(i)	Decreased level of oestrogen
(b)	Osteoporosis	(ii)	Low Ca^{++} ions in the blood
(c)	Tetany	(iii)	Accumulation of uric acid crystals
(d)	Muscular dystrophy	(iv)	Autoimmune disorder
		(v)	Genetic disorder

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

1. 1
2. 2
3. 3
4. 4

155. Match the following columns and select the correct option.

	Column I		Column II
(a)	Pituitary hormone	(i)	Steroid
(b)	Epinephrine	(ii)	Neuropeptides
(c)	Endorphins	(iii)	Peptides, proteins
(d)	Cortisol	(iv)	Biogenic amines

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

1. 1
2. 2
3. 3
4. 4

156.

After about how many years of formation of earth, life appeared on planet Earth?

1. 50 million years
2. 500 million years
3. 50 billion years
4. 500 billion years

157. Hormones stored and released from neurohypophysis are

1. oxytocin and vasopressin
2. follicle stimulating hormone and leutinising hormone
3. prolactin and vasopressin
4. thyroid stimulating hormone and oxytocin

158. Inbreeding depression is

1. reduced fertility and productivity due to continued close inbreeding
2. reduced motility and immunity due to close inbreeding
3. decreased productivity due to mating of superior male and inferior female
4. decrease in body mass of progeny due to continued close inbreeding

159. The Total Lung Capacity (TLC) is the total volume of air accomodated in the lungs at the end of a forced inspiration. This includes

1. RV; ERV; IC and EC.
2. RV; ERV; VC (Vital Capacity) and FRC (Functional Residual Capacity).
3. RV (Residual Volume); ERV (Expiratory Reserve Volume); TV (Tidal Volume); and IRV (Inspiratory Reserve Volume).
4. RV; IC (Inspiratory Capacity); EC (Expiratory Capacity); and ERV.

160. Which of the following conditions cause erythroblastosis foetalis?

1. Mother Rh^{-ve} and foetus Rh^{+ve}
2. Both mother and foetus Rh^{-ve}
3. Both mother and foetus Rh^{+ve}
4. Mother Rh^{+ve} and foetus Rh^{-ve}

161. Embryological support for evolution was proposed by

1. Karl Ernst vol Baer
2. Charles Darwin
3. Alfred Wallace
4. Ernst Heckel

162. According to Central Pollution Control Board [CPCB] what size (in diameter) of particulate is responsible for causing greater harm to human health?

1. 3.0 micrometers

2. 3.5 micrometers

3. 2.5 micrometers

4. 4.0 micrometers

163. Which of the following options correctly represent the characteristic features of phylum Annelida?

1. Diploblastic, mostly marine and radially symmetrical.

2. Triploblastic, unsegmented and bilaterally symmetrical.

3. Triploblastic, segmented and bilaterally symmetrical.

4. Triploblastic, flattened and acoelomate condition.

164. Select the **incorrectly** matched pair from following.

1. Osteocytes - Bone cells

2. Chondrocytes - Smooth muscle cells

3. Neurons - Nerve cells

4. Fibroblast - Areolar tissue

165. Progestogens alone or in combination with estrogens can be used as a contraceptive in the form of

1. pills only

2. implants only

3. injections only

4. pills, injections and implants

166. Select the correct option of haploid cells from the following groups.

1. Primary spermatocyte, secondary spermatocyte, second polar body

2. Primary oocyte, secondary oocyte, spermatid

3. Secondary spermatocyte, first polar body, ovum

4. Spermatogonia, primary spermatocyte, spermatid

167. The proteolytic enzyme rennin is found in

1. bile juice

2. gastric juice

3. pancreatic juice

4. intestinal juice

168. The impact of immigration on population density is

1. Positive

2. Negative

3. Both positive and negative

4. Neutralized by natality

169. The yellowish fluid "colostrum" secreted by mammary glands of mother during the initial days of lactation has abundant antibodies (lgA) to protect the infant. This type of immunity is called as

1. active immunity

2. acquired immunity

3. autoimmunity

4. passive immunity

170. The phenomenon of evolution of different species in a given geographical area starting from a point and spreading to other habitats is called

1. co-evolution

2. convergent evolution

3. adaptive radiation

4. saltation

171. In the following in each set a conservation approach and an example of method of conservation are given
(a) *In situ* conservation - Biosphere reserve
(b) *Ex situ* conservation - Sacred groves
(c) *In situ* conservation - Seed bank
(d) *Ex situ* conservation - Cryopreservation
Select the option with correct match of approach and method.

1. (a) and (b)

2. (a) and (c)

3. (a) and (d)

4. (b) and (d)

172. Which of the following STIs are not curable?

1. Gonorrhoea, Trichomoniasis, Hepatitis B

2. Genital herpes, Hepatitis B, HIV infection

3. Chlamydiasis, Syphilis, Genital warts

4. HIV, Gonorrhoea, Trichomoniasis

173. All vertebrates are chordates but all chordates are not vertebrates, why?

1. All chordates possess notochord throughout their life.

2. Notochord is replaced by vertebral column in adult of some chordates.

3. Ventral hollow nerve cord remains throughout life in some chordates.

4. All chordates possess vertebral column.

174. In human beings, which of the following is observed at the end of 12 weeks(first trimester) of pregnancy?

1. Movement of the foetus

2. Eyelids and eyelashes are formed

3. Most of the major organ systems are formed

4. The head is covered with hair

175.

The increase in osmolarity from outer to inner medullary interstitium is maintained due to :
(i) Close proximity between Henle's loop and vasa recta
(ii) Counter current mechanism
(iii) Selective secretion of HCO_3^- and hydrogen ions in PCT
(iv) Higher blood pressure in glomerular capillaries

1. (i) and (ii)
2. Only (ii)
3. (iii) and (iv)
4. (i), (ii) and (iii)

176. Which is the basis of genetic mapping of human genome as well as DNA finger printing?

1. Single nucleotide polymorphism
2. Polymorphism in hnRNA sequence
3. Polymorphism in RNA sequence
4. Polymorphism in DNA sequence

177. A hominid fossil discovered in Java in 1891, now extinct, having cranial capacity of about 900 cc was

1. Neanderthal man
2. *Homo sapiens*
3. *Australopithecus*
4. *Homo erectus*

178. Which of the following is associated with decrease in cardiac output?

1. Adrenal medullary hormones
2. Sympathetic nerves
3. Parasympathetic neural signals
4. Pneumotaxic centre

179. Match the following techniques or instruments with their usage:

(a)	Bioreactor	(i)	Separation of DNA fragments
(b)	Electrophoresis	(ii)	Production of large quantities of products
(c)	PCR	(iii)	Detection of pathogen, based on antigen-antibody reaction
(d)	ELISA	(iv)	Amplification of nucleic acids

Select the correct option from following:

	a	**b**	**c**	**d**
1.	ii	i	iii	iv
2.	iii	ii	iv	i
3.	ii	i	iv	iii
4.	iv	iii	ii	i

1. 1
2. 2
3. 3

4. 4

180. Identify the statement which is **incorrect**.

1. Tyrosine possesses aromatic ring in its structure.
2. Sulphur is an integral part of cysteine.
3. Glycine is an example of lipids.
4. Lecithin contains phosphorus atom in its structure.