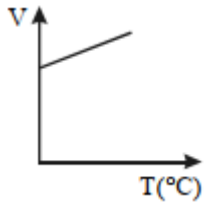
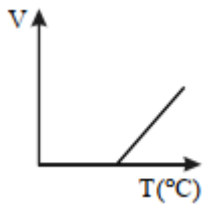
Marks: 720 **FULL TEST - 2** **Time : 3 Hrs**

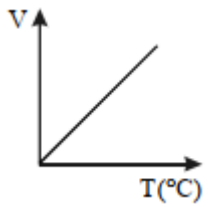
PART A – (PHYSICS)

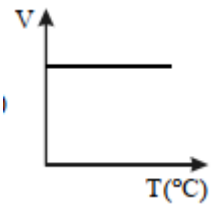
1. A block is kept on a inclined plane of inclination θ of length *l*. The velocity of block at the bottom of inclined plane is (the coefficient of friction is μ)
   (a) $[2gl\ (\mu \cos\theta - \sin\theta\ ]^{1/2}$ (b) $\sqrt{2gl(\sin\theta - \mu\cos\ \theta)}$
   (c) $\sqrt{2gl(\sin\theta + \mu\cos\ \theta)}$ (d) $\sqrt{2gl(\cos\theta + \mu\sin\ \theta)}$
2. If earth is supposed to be a sphere of radius R, if g_{30} is value of acceleration due to gravity at latitude of 30° and g at the equator, the value of $g - g_{30}$ is
   (a) $\frac{1}{4}\omega^2 R$ b) $\frac{3}{4}\omega^2 R$ c) $\omega^2 R$ d) $\frac{1}{2}\omega^2 R$
3. An organ pipe open at one end is vibrating in first overtone and is in resonance with another pipe open at both ends and vibrating in third harmonic. The ratio of length of two pipes is
   (a) 1 : 2 (b) 4 : 1 (c) 8 : 3 (d) 3 : 8
4. A coil takes 15 min to boil a certain amount of water, another coil takes 20 min for the same process. Time taken to boil the same amount of water when both coil are connected in series,
   (a) 5 min (b) 8.6 min (c) 35 min (d) 30 min
5. Two solid spheres made of same material, whose radii are R and 2R are dropped into a liquid. Then the ratio of terminal velocities attained by the spheres for small sphere to larger sphere, due to their viscous drag and buoyant force is
   a) ½ b) 1:4 c) 2:1 d) 4:1
6. A charge q is fixed. Another charge Q is brought near it and rotated in a circle of radius r around it. Work done during rotation is
   (a) Zero b) $\frac{Q.q}{4\pi\varepsilon_0 r}$ c) $\frac{Q.q}{2\varepsilon_0 r}$ d) None of these
7. In the half wave rectifier circuit operating from 50 Hz mains frequency, the fundamental frequency in the ripple would be
   (a) 50Hz b) 25Hz c) 100Hz d) 70.7Hz
8. In an electromagnetic wave, direction of propagation is in the direction of
   (a) $\vec{E}$ b) $\vec{B}$ c) $\vec{E} \times \vec{B}$ d) None of these
9. F_1 and F_2 are focal length of objective and eyepiece respectively of the telescope. The angular magnification for the given telescope is equal to
   (a) $\frac{F_1}{F_2}$ b) $\frac{F_2}{F_1}$ c) $\frac{F_1 F_2}{F_1 + F_2}$ d) $\frac{F_1 + F_2}{F_1 F_2}$
10. Critical velocity of the liquid
    (a) decreases when radius decreases (b) increases when radius increases
    (c) decreases when density increases (d) increases when density increases
11. An organ pipe, open from both end produces 5 beats per second when vibrated with a source of frequency 200 Hz. The second harmonic of the same pipes produces 10 beats per second with a source of frequency 420 Hz. The fundamental frequency of organ pipe is
    (a) 195 Hz (b) 205 Hz (c) 190 Hz (d) 210 Hz
12. Two rings of radius R and nR made up of same material have the ratio of moment of inertia about an axis passing through centre as 1 : 8. The value of n is
    (a) 2 b) $2\sqrt{2}$ c) 4 d) $\frac{1}{2}$
13. One drop of soap bubble of diameter D breaks into 27 drops having surface tension σ . The change in surface energy is
    (a) $2\pi\sigma D^2$ b) $4\pi\sigma D^2$ c) $\pi\sigma D^2$ d) $8\pi\sigma D^2$
14. The gas having average speed four times as that of SO_2 (molecular mass 64) is
    (a) He (molecular mass 4) (b) O_2 (molecular mass 32)
    (c) H_2 (molecular mass 2) (d) CH_4 (molecular mass 16)
15. A container having 1 mole of a gas at a temperature 27°C has a movable piston which maintains at constant pressure in container of 1 atm. The gas is compressed until temperature becomes 127°C. The work done is (C_P for gas is 7.03 cal/mol-K)
    (a) 703 J (b) 814 J (c) 121 J (d) 2035 J

16. An electron having mass (9.1×10^{-31} kg) and charge (1.6×10^{-19} C) moves in a circular path of radius 0.5 m with a velocity 10^6 m/s in a magnetic field. Find the strength of magnetic field.
(a) 1.13×10^{-5} T (b) 5.6×10^{-6} T (c) 2.8×10^{-6} T (d) None of these
17. A cylinder rolls down an inclined plane of inclination 30°, the acceleration of cylinder is
(a) $\frac{g}{3}$ (b) g (c) $\frac{g}{2}$ (d) $\frac{2g}{3}$
18. A period of a planet around Sun is 27 times that of Earth. The ratio of radius of planet's orbit to the radius of Earth's orbit is
(a) 4 (b) 9 (c) 64 (d) 27
19. A man of mass 60 kg records his weight on a weighing machine placed inside a lift. The ratio of weights of man recorded when lift ascending up with a uniform speed of 2 m/s to when it is descending down with a uniform speed of 4 m/s will be ($g = 10 m/s^2$)
(a) 0.5 b) 1 c) 2 d) 4
20. A solid sphere of radius R is rolling with velocity v on a smooth plane. The total kinetic energy of sphere is
(a) $\frac{7}{10}mv^2$ b) $\frac{3}{4}mv^2$ (c) $\frac{1}{2}mv^2$ (d) $\frac{1}{4}mv^2$
21. A diode having potential difference 0.5 V across its junction which does not depend on current, is connected in series with resistance of 20 Ω across source. If 0.1 A current passes through resistance then what is the voltage of the source?
(a) 1.5 V (b) 2.0 V (c) 2.5 V (d) 5 V
22. Potentiometer wire of length 1 m is connected in series with 490Ω resistance and 2 V battery. If 0.2 mV/cm is the potential gradient, then resistance of the potentiometer wire is
(a) 4.9 Ω (b) 7.9 Ω (c) 5.9 Ω (d) 6.9 Ω
23. A dipole is placed parallel to the electric field. If W is the work done in rotating the dipole by 60°, then work done in rotating it by 180° is
(a) 2 W (b) 3 W (c) 4 W (d) $\frac{W}{2}$
24. An electron of charge e moves in a circular orbit of radius r around the nucleus at a frequency *v*. The magnetic moment associated with the orbital motion of the electron is
(a) πver^2 (b) $\frac{\pi vr^2}{e}$ (c) $\frac{\pi ve}{r}$ (d) $\frac{\pi er^2}{v}$
25. A and B are two identically spherical charged bodies which repel each other with force F, kept at a finite distance. A third uncharged sphere of the same size is brought in contact with sphere B and removed. It is then kept at mid point of A and B. Find the magnitude of force on C.
(a) $\frac{F}{2}$ b) $\frac{F}{8}$ (c) F (d) Zero
26. A Bimetallic strip made of copper ($\alpha = 1.8 \times 10^{-5}\ K^{-1}$) and steel ($\alpha = 1.2 \times 10^{-5}\ K^{-1}$) is heated then it
(a) bends with steel on convex side (b) bends with copper on convex side
(c) does not expand (d) data is insufficient
27. A wave has the equation $y = 0.1 \sin [100 \pi t - kx]$ and wave velocity 100 m/s, its wave number is equal to
(a) $1 m^{-1}$ b) $2 m^{-1}$ c) $0.5 m^{-1}$ d) $2\pi m^{-1}$
28. Volume temperature graph at atmospheric pressure for a monatomic gas (V in m^3, T in °C) is

(a) 

b) 

c) 

d) 

29. In $^{226}_{88}Ra$ nucleus there are
(a) 226 protons and 88 electrons (b) 138 protons and 88 neutrons
(c) 226 neutrons and 138 electrons (d) 138 neutrons and 88 protons.
30. The ratio of frequencies of two pendulums are 2 : 3, then their length are in ratio
(a) $\sqrt{\frac{2}{3}}$ b) $\sqrt{\frac{3}{2}}$ c) $\frac{4}{9}$ d) $\frac{9}{4}$
31. The value of escape velocity on a certain planet is 2 km/s. Then the value of orbital speed for a satellite orbiting close to its surface is
(a) 12 km/s (b) 1 km/s (c) $\sqrt{2}$ km/s (d) $2\sqrt{2}$ km/s
32. A bullet of mass 10g leaves a riffle at an initial velocity of 1000 m/sec and strikes the earth at the same level with a velocity of 500 m/sec. The work in overcoming the resistance of air will be:
(a) 500J b) 5000J c) 3750J d) 475J

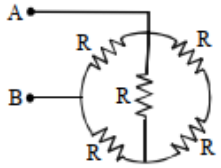
33. For a paramagnetic material, the dependence of the magnetic susceptibility, χ on the absolute temperature is given as
(a) $\chi \propto T$ (b) $\chi \propto \frac{1}{T^2}$ (c) $\chi \propto \frac{1}{T}$ (d) Independent

34. With the decrease of current in the primary coil from 2 amperes to zero value in 0.01s the emf generated in the secondary coil is 1000 volts. The mutual inductance of the two coils is
(a) 1.25H b) 2.50H c) 5H d) 10H

35. Three particles A, B and C are thrown from the top of a tower with the same speed. A is thrown up, B is thrown down and C is horizontally. They hit the ground with speeds V_A, V_B and V_C respectively.
(a) $V_A = V_B = V_C$ (b) $V_A = V_B > V_C$ (c) $V_B > V_C > V_A$ (d) $V_A > V_B = V_C$

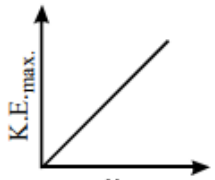
PART – B (PHYSICS)

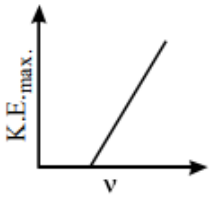
36. The equivalent resistance between A and B is

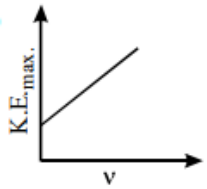


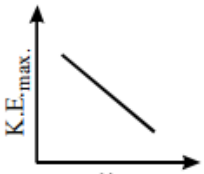
(a) $\frac{8R}{5}$ (b) $\frac{5R}{8}$ (c) $\frac{3R}{8}$ (d) $\frac{7R}{8}$

37. The variation of maximum kinetic energy photoelectrons with applied frequency (ν) is

(a) 

b) 

c) 

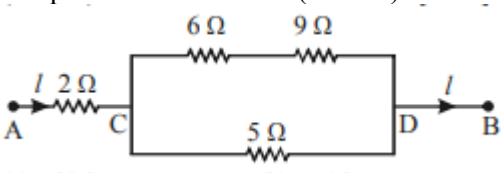
d) 

38. The angle of projection T for which range is equal to maximum height attained by projectile is
(a) $\tan^{-1} 4$ b) $\tan^{-1} 5$ c) $\tan^{-1} 4/5$ d) $\tan^{-1} 5/4$

39. The range of projectile will be maximum, when angle of projection is
(a) $\frac{\pi}{3}$ b) $\frac{\pi}{2}$ c) $\frac{\pi}{4}$ d) none

40. Forces of 4 N and 5 N are applied at origin along x-axis and y-axis respectively. The resultant force will be
(a) $\sqrt{41}N, \tan^{-1}\left(\frac{5}{4}\right)$ b) $\sqrt{41}N, \tan^{-1}\left(\frac{4}{5}\right)$ c) $-\sqrt{41}N, \tan^{-1}\left(\frac{5}{4}\right)$ d) $-\sqrt{41}N, \tan^{-1}\left(\frac{4}{5}\right)$

41. In the circuit shown in figure, the 5Ω resistance develops 20.00 cal/s due to the current flowing through it. The heat developed in 2Ω resistance (in cal/s) is



(a) 23.8 (b) 14.2 (c) 11.9 (d) 7.1

42. Which of the following is false ?
(a) convex lens always forms image with m < 1
(b) a simple mirror produces virtual, erect and same-sized image
(c) a concave mirror produces virtual, erect and magnified image
(d) a convex lens can produce real and same sized image.

43. In Young's expt., the distance between two slits is d/3 and the distance between the screen and the slits is 3 D. The number of fringes in 1/3m on the screen, formed by monochromatic light of wavelength 3λ, will be
(a) d/9Dλ b) d/27Dλ c) d/81Dλ d) d/Dλ

44. The deflection in a galvanometer decreases from 25 divisions to 5 divisions when a resistor of 20Ω is connected in series. Find resistance of galvanometer.
(a) 4 Ω (b) 5 Ω (c) 6 Ω (d) 7 Ω

45. A current source drives a current in a coil of resistance R_1 for a time t. The same source drives current in another coil of resistance R_2 for same time. If heat generated is same, find internal resistance of source
(a) $\frac{R_1 R_2}{R_1 + R_2}$ b) $R_1 + R_2$ c) Zero d) $\sqrt{R_1 R_2}$

46. The waves used by artificial satellites for communication is
(a) microwaves (b) radio-waves, AM (c) radio-waves, FM (d) X-rays

47. The ratio of de-Broglie wavelengths of proton and α -particle having same kinetic energy is
(a) $\sqrt{2} : 1$ b) $2\sqrt{2} : 1$ c) 2 : 1 d) 4 : 1

48. The dimensions of Planck's constant is
(a) $M^2 L^2 T^{-1}$ (b) M^2LT^{-2} (c) $M L^2 T^{-1}$ (d) $M L^2 T^{-2}$

49. If Alpha, Beta and Gamma rays carry same momentum, which has the longest wavelength
(a) Alpha rays (b) Beta rays (c) Gamma rays (d) None, all have same wavelength

50. If blue light is used in place of red light in a diffraction experiment
(a) diffraction pattern remains unchanged (b) fringes come closer
(c) fringes become broader (d) none of these

PART A - CHEMISTRY

51. Which of the following has largest protecting power?
(a) Gelatin (Gold no. = 0.01) (b) Dextrin (Gold no. = 15)
(c) Potato starch (Gold no. = 25) (d) Albumin (Gold no. = 0.25)

52. What is $[H^+]$ in mol/L of a solution that is 0.20 M in CH_3COONa and 0.1 M CH_3COOH? K_a for CH_3COOH is 1.8×10^{-5}.
(a) 3.5×10^{-4} b) 1.1×10^{-5} c) 1.8×10^{-5} d) 9.0×10^{-6}

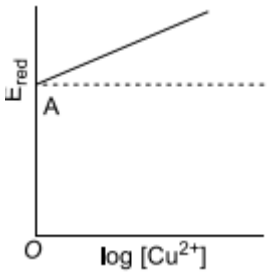
53. The value of the 'spin only' magnetic moment for one of the following configurations is 2.84 B.M. The correct one is
(a) d^4 in strong field ligand) (b) d^4 in weak field ligand)
(c) d^3 in weak as well as in strong field ligand) (d) d^5 (in strong field ligand).

54. Identify A and B in the following reactions

$$A \xrightarrow[\Delta]{\text{Aq.NaOH}} C_2H_5OH \xleftarrow{AgOH} B$$

(a) A = C_2H_2, B = C_2H_6 (b) A = C_2H_5Cl, B = C_2H_4 (c) A = C_2H_4, B = C_2H_5Cl (d) A = C_2H_4Cl, B = C_2H_5Cl

55. $Cu^{2+} + 2e \rightarrow Cu$; $\log[Cu^{2+}]$ vs.E_{red} graph is of the type as shown in figure where OA = 0.34 V, then electrode potential of the half cell of Cu | Cu^{2+} (0.1 M) will be:



a) $-0.34 + \frac{0.0591}{2} V$ b) 0.34 + 0.0591 V c) 0.34 V d) None of these

56. The basic character of the transition metal monoxides follows the order
(a) CrO > VO > FeO > TiO (b) TiO > FeO > VO > CrO
(c) TiO > VO > CrO > FeO (d) VO > CrO > TIO > FeO

57. 12 g of Mg (at. wt. = 24) will react completely with an acid to give:
a) One mole of H_2 b) Half mole of H_2 c) One mole of O_2 d) None of these

58. Number of electrons in the outermost orbit of the element of atomic number 15 is:
a) 7 b) 5 c) 3 d) 2

59. Which particle may be removed from a stable neutral atom with least energy change?
(a) An α- particle b) A neutron c) A proton d) An electron

60. Acetate ion contains:
a) One C, O single bond and one C, O double bond b) Two C, O single bonds
c) Two C, O double bonds d) None of the above

61. Compounds formed by $sp^3 d^2$ -hybridization will have configuration:
a) Square planar b) Octahedral
c) Trigonal bipyramidal d) Pentagonal bipyramidal

62. BCl_3 is a planar molecule, while NCl_3 is pyramidal, because
a) N – Cl bond is more covalent than B – Cl bond
b) Nitrogen atom is smaller than boron atom
c) B – Cl bond is more polar than N – Cl bond
d) BCl_3 has no lone pair of electrons but NCl_3 has a lone pair of electrons

63. The most probable speed of 8 g of H_2 200 ms^{-1}. Average kinetic energy of H_2 gas is
a) 240 J b) 180 J c) 320 J d) 360 J

64. The enthalpy of formation of water from hydrogen and oxygen is - 286 kJ mol^{-1}. The enthalpy of decomposition of water into hydrogen and oxygen is:
a) - 286 kJ mol^{-1} b) - 143 kJ mol^{-1} c) + 286 kJ mol^{-1} d) +143 kJ mol^{-1}

65. Two moles of helium gas expanded isothermally and irreversible at 27°C from volume 1 dm^3 to 1 m^3 at constant pressure of 100 k Pa. Calculate the work done.
a) 99900 kJ b) -99900 J c) 34464.65 kJ d) 34464.65 J

66. 28 g of N_2 and 6 g of H_2 were kept at 400°C in 1 L vessel, the equilibrium mixture contained 27.54 g of NH_3. The approximate value of K_c for the above reaction can be (in mol^{-2} L^2)
a) 25 b) 50 c) 75 d) 100

67. Which combination is odd with respect to oxidation numbers of S, Cr, N and H respectively:
(a) H_2SO_4, $H_2S_2O_8$, H_2SO_4, SF_6 (b) $K_2Cr_2O_7$, K_2CrO_4, CrO_5, CrO_2Cl_2
(c) NH_3, NH_4^+, N_3H, NO_2^- (d) CaH_2, NaH, LiH, MgH_2

68. An indicator used for redox reaction is itself :
a) Either an oxidant or a reductant b) Neither an oxidant nor a reductant
c) Acid or base d) None of the above

69. The reagent commonly used to determine hardness of water titrimetrically is
a) Oxalic acid b) Sodium thiosulphate
c) Sodium citrate d) Disodium salt of EDTA

70. A metal carbonate is sparingly soluble in water and evolves CO_2 on heating. The metal is:
a) An alkali metal b) A noble metal c) An alkaline earth metal d) None of these

71. Quartz is an example of
a) Chain silicate b) Sheet silicate
c) Cyclic silicate d) Three dimensional network silicate

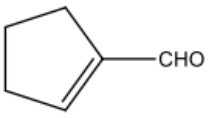
72. Tetra ethyl lead is used as:
a) Fire extinguisher b) Antiknock compound c) Pain killer d) Mosquito killer

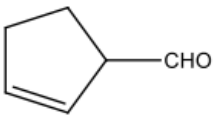
73. Arrange the following carbocations in order of stability

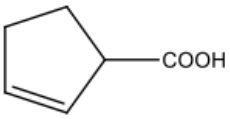
benzyl	allyl	methyl	vinyl
I	II	III	IV

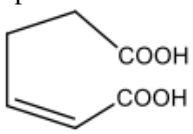
a) IV>III>II>I b) I>II>III>IV c) II>IV>III>I d) III>II>I>IV

74. Cyclohexene on ozonolysis followed by reaction with zinc dust and water gives compound E. Compound E on further treatment with aqueous KOH yields compound F. Compound F is

(a) 

b) 

c) 

d) 

75. 2-methylpent – 2 – ene on ozonolysis will give:
a) Only propanal b) Propanal and ethanal
c) 2 - Propanone and ethanal d) 2 - Propanone and propanal

76. Which of the following is not a soil pollutant?
a) Polythene bags b) Pesticides c) Detergents d) Nitrate and phosphate fertilizers

77. Schottky defect generally appears in
a) NaCl b) KCl c) CsCl d) All of these

78. Coordination number of Zn in ZnS (zinc blende) is
a) 6 b) 4 c) 8 d) 12

79. At certain temperature a 5.12% solution of cane sugar is isotonic with a 0.9% solution of an unknown solute. The molar mass of solute is
a) 60 b) 46.17 c) 120 d) 90

80. In two solutions having different osmotic pressure, the solution of higher osmotic pressure is called :
a) Isotonic solution b) Hypertonic solution
c) Hypotonic solution d) None of these

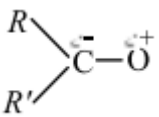
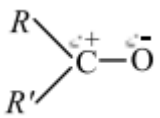
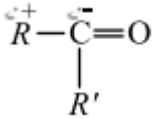
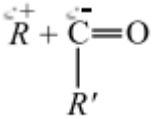
81. When electric current is passed through acidified water for 1930 s, 1120mL of H_2 gas is collected (at STP) at the cathode. What is the current passed in amperes?
a) 0.05 b) 0.50 c) 5.0 d) 50

82. For the reaction system $2NO(g) + O_2(g) \rightarrow 2NO_2(g)$ if the volume of the reaction vessel is reduced to one-third of its original volume, what will be the order of the reaction?
a) Diminished to one fourth of its initial value b) Diminished to one twenty seven of its initial value
c) Increase to twenty seven times of its initial value d) Increase to four times of its initial value

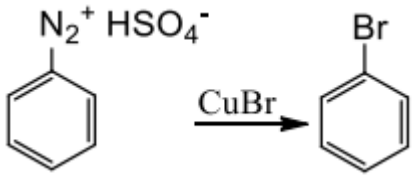
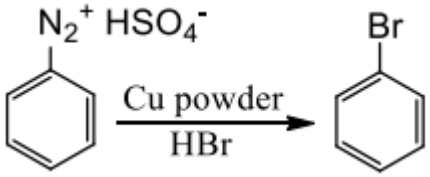
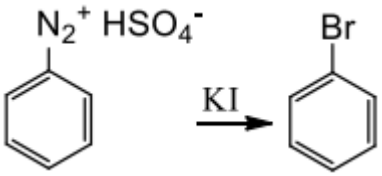
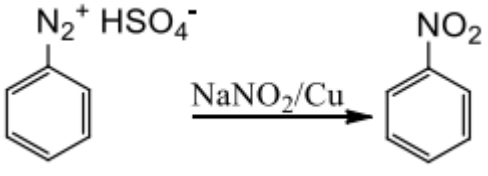
83. For the reaction system $2NO(g) + O_2(g) \rightarrow 2NO_2(g)$ Volume is suddenly reduced to half its value by increasing the pressure on it. If the reaction is of first order with respect to O_2 and second order with respect to NO; the rate of reaction will
    a) Diminish to one –fourth of its initial value
    b) Diminish to one –eighth of its initial value
    c) Increase to eight time of its initial value
    d) Increase to four time of its initial value
84. The enzyme which can catalyse the conversion of glucose to ethanol is :
    a) Zymase b) Invertase c) Maltase d) diastase
85. The metal extracted by leaching with cyanide is:
    a) Mg b) Ag c) Cu d) Na

PART B - CHEMISTRY

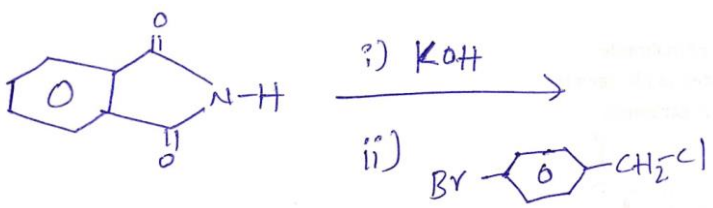
86. The ore that is concentrated by forth floatation process is
    a) Zincite b) Cinnabar c) Bauxite d) malachite
87. Chlorine acts as a bleaching agent only is presence of
    a) Dry air b) Moisture c) Sunlight d) Pure oxygen
88. The compound which gives oxygen on moderate heating is:
    a) Zinc oxide b) Mercuric oxide c) Aluminium oxide d) Ferric oxide
89. A clock spring is heated to a high temperature and then suddenly plunged into cold water. This treatment will cause the metal to become:
    a) Soft and ductile
    b) More springy than before
    c) Hard and brittle (case hardening)
    d) Strongly magnetic
90. $[Pt(NH_3)_4Cl_2]Br_2$ and $[Pt(NH_3)_4Br_2]Cl_2$ are related to
    a) Optical isomer b) Linkage isomers c) Coordinate isomers d) Ionization isomers
91. The reaction of toluene with Cl_2 in presence of $FeCl_3$ gives predominantly
    a) Benzoyl chloride b) Benzyl chloride c) o-and p-chlorotoluene d) m-chlorotoluene
92. Which could not be obtained from wood?
    a) CH_3OH b) C_2H_5OH c) Wood tar d) Wood charcoal
93. Ethyl alcohol can be prepared from Grignard reagent by the reaction of
    a) HCHO b) R_2CO c) RCN d) RCOCI
94. Which of the following is correct for carbonyl compounds?

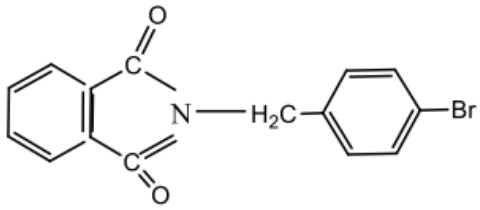
    (a) 
    b) 
    c) 
    d) 

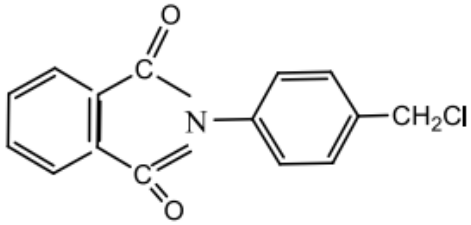
95. Which of the following reactions is an example of Sandmeyer reaction?

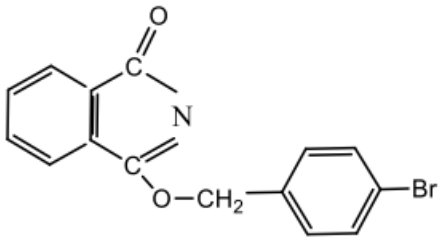
    (a) 
    b) 
    c) 
    d) 

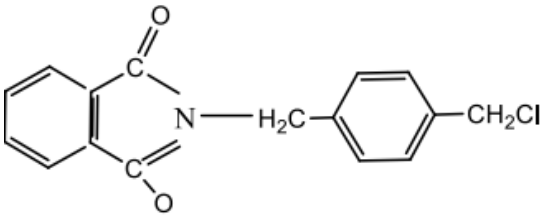
96. The major product of the following reaction is



(a) 

b) 

c) 

d) 

97. To which of the following classes of organic compounds soap belongs?
a) Esters b) Amines c) Salts of organic acids d) Aldehydes

98. Nylons, polyesters and cotton, all possess strength due to:
a) Intermolecule H-bonding b) Van der Waals' attraction
c) Dipole-dipole interaction d) None of the above

99. The alternative name of glyptal is
a) Alkyl resin b) Phenol-formaldehyde resin
c) Melamine- formaldehyde resin d) Melmac

100. Which of the following compounds is used as broad spectrum antibiotics?
a) Ampicillin b) Penicillin G c) Penicillin K d) Tetracycline

PART A – BOTANY

101. Match List I with List II and select the correct option:

List I	List II
A Bacillus thuringiensis	1 Production of chitinases
B Rhizobium meliloti	2 Scavenging of oil spills
C Escherichia coli	3 Incorporation of nif-gene
D Pseudomonas putida	4 Production of Bt toxin
E Trichoderma	5 Production of human insulin

(a) A = 2, B = 4, C = 1, D= 5, E = 3 (b) A = 2, B = 4, C = 5, D = 1, E = 3
(c) A = 4, B = 3, C = 5, D = 2, E = 1 (d) A = 3, B = 4, C = 5, D=1, E = 2

102. Linnaeus system of plant classification is
(a) Natural (b) artificial (c) phylogenetic (d) unsymmetrical.

103. Which of the following pair of diseases is caused by virus?
(a) rabies, mumps (b) cholera, tuberculosis
(c) typhoid, tetanus (d) AIDS, syphilis.

104. Pea flower is a
(a) Monocarpellary (b) Bicarpellary (c) Tricarpellary (d) Pentacarpellary

105. A gymnospermic leaf carries 16 chromosomes. The number of chromosomes in its endosperm will be
(a) 16 (b) 8 (c) 24 (d) 12.

106. Bryophytes resemble algae in the following aspects
(a) thallus like plant body, presence of roots and autotrophic nutrition
(b) thallus like plant body, lack of vascular tissues and autotrophic nutrition
(c) filamentous body, presence of vascular tissues and autotrophic nutrition
(d) differentiation of plant body into root, stem and leaves and autotrophic nutrition.

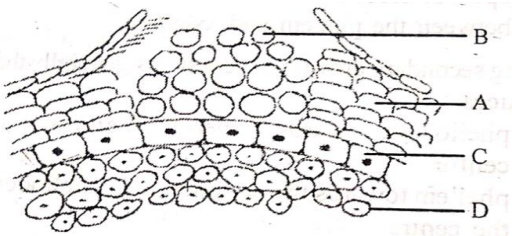
107. Bicarpellary, syncarpous ovary with axile placentation is seen in
(a) Solanaceae (b) caesalpinaceae (c) Asteraceae (d) malvaceae.

108. Ovary is called inferior in
(a) epigynous condition (b) perigynous condition
(c) hypogynous condition (d) none of these

109. When placenta forms a ridge along the ventral suture of the ovary and the ovules are borne on this ridge forming two rows, the type of placentation is termed as
(a) Marginal (b) axile (c) parietal (d) free central.

110. Which of the following is true?
(a) vessels are unicellular and with narrow lumen (b) vessels are multicellular and with wide lumen
(c) tracheids are unicellular and with wide lumen (d) tracheids are multicellular and with narrow lumen

111. In the diagram of lenticel identify the parts marked as A, B, C, D.



(a) A-phellem, B-periderm, C- phellogen, D-phelloderm
(b) A-phellem, B-complementary cells, C- phellogen, D- phelloderm
(c) A-complementary cells, B- phellogen, C - phelloderm, D - periderm
(d) A - complementary cells, B - phellem, C - periderm, D- phelloderm

112. Identify the plant parts whose transverse sections show a clear and prominent pith.
(a) dicot stem and monocot stem (b) dicot stem and monocot root
(c) dicot root and monocot root (d) dicot stem and dicot root.

113. Which of the following is not true for osmosis?
(a) transfer of water from xylem vessels to vessels (b) soil to root hairs
(c) water from xylem to phloem (d) none of the above

114. Which of the following two are exogenously produced
(a) Asscospore, conidia (b) conidia, basidiospore
(c) Asscospore, sporangiospore (d) Basidiospore, Asscospore

115. Insectivorous plants are usually adapted to
(a) water logged soil (b) soil deficient in sugars
(c) soil rich in trace elements (d) soil deficient in nitrogenous compounds

116. Which of the following is a part of cytochrome?
(a) Mg b) Zn c) Fe d) Ca

117. Photosynthesis cannot continue for long if during light reaction, only cyclic photophosphorylation takes place. This is because
(a) only ATP is formed, $NADPH^+ + H^+$ is not formed
(b) photosystem I stops getting exicted at a wavelength of light beyond 680 nm.
(c) there is unidirectional cyclic movement of the electrons
(d) there is no evolution of O_2.

118. Golden rice is a transgenic crop with
(a) Insect resistance (b) High lysine content (c) High Protein (d) High vitamin A

119. Which statement about photosynthesis is false?
(a) the enzymes required for carbon fixation are located only in the grana of chloroplasts
(b) in given plants, both PS I and PS II are required for the formation of $NADPH + H^+$
(c) the electron carriers involved in photophosphorylation are located on the thylakoid membranes
(d) photosynthesis is a redox process in which water is oxidised and carbon dioxide is reduced

120. Which of the following characteristics out of A, B and C are exhibited by C_4 plants?
A. kranz anatomy
B. the first stable product of photosynthesis is oxaloacetic acid
C. both PEP carboxylase and Ribulose– bisphosphate carboxylase act as carboxylating enzymes
The correct answer is
(a) only A and B, but not C (b) only B and C, but not A
(c) only A and C, but not B (d) all A, B and C

121. Which one of the following pairs is an example for lateral meristem?
(a) procambium and phelloderm (b) interfascicular cambium and phellem
(c) phellogen and phelloderm (d) phellogen and fascicular cambium.

122. Oxidative phosphorylation refers to
(a) anaerobic production of ATP (b) the citric acid cycle production of ATP
(c) production of ATP by chemiosmosis (d) alcoholic fermentation

123. Match the compounds given in column I with the number of the atoms present in them which are listed under column II. Choose the answer which are the correct combination of alphabets of the two columns.
Column I Column II

A. Oxaloacetate	p. 6-C compound
B. Phosphoglyceraldehyde	q. 5-C compound
C. Oxalosuccinate	r. 4-C compound
D. α-ketoglutarate	s. 3-C compound
	t. 2 - C compound

(a) A = r, B = t, C = p, D = q (b) A = q, B = s, C = p, D = t
(c) A = s, B = t, C = q, D = r (d) A = r, B = s, C = p, D = q

124. In Krebs' cycle, the FAD participates as electron acceptor during the conversion of
(a) fumaric acid to malic acid (b) succinic acid to fumaric acid
(c) succinyl CoA to succinic acid (d) a-ketoglutarate to succinyl CoA.

125. Match the phytohormones given in Column I with their functions given in Column II. Choose the answer with correct combination of alphabets.

Column I (Phytohormones)	Column II (Functions)
i. auxins	p. breaking seed dormancy
ii. gibberellins	q. inducing fruit ripening
iii. cytokinins	r. formation of abscission layer
iv. ethylene	s. root initiation
	t. chloroplast development and chlorophyll synthesis.

	(i)	(ii)	(iii)	(iv)
a)	p	r	q	s
b)	r	s	p	t
c)	s	p	t	q
d)	s	t	r	q

126. Which of the following fern is an excellent biofertilizer?
(a) Marsilia (b) Pteridium (c) Azolla (d) Salvinia.

127. Parthenocarpic tomato fruits can be produced by
(a) treating the plants with phenylmercuric acetate
(b) removing androecium of flowers before pollen grains are released
(c) treating the plants with low concentrations of gibberellic acid and auxins
(d) raising the plants from vernalized seeds

128. Which one of the following methods is commonly used to maintain the genetic traits of a given plant?
(a) by propagating through seed germination
(b) by propagating through vegetative multiplication
(c) by generating hybrids through intergeneric pollination
(d) by treating the seeds with gamma radiations.

129. Which one of the following pairs of plant structures has haploid number of chromosomes?
(a) nucellus and antipodal cells. (b) egg nucleus and secondary nucleus.
(c) megaspore mother cell and antipodal cells. (d) egg cell and antipodal cells.

130. Which of the element is needed for nitrogenase
(a) Ca – Mg (b) Mo – Fe (c) Cu – Mg (d) Mo – Zn

131. Which of the following is wrong?
(a) lysosomes are single membraned vesicles budded off from Golgi apparatus and contain digestive enzymes.
(b) endoplasmic reticulum consists of a network of membranous tubules and helps in transport, synthesis and secretion.
(c) leucoplasts are bound by single membranes, lack pigment but contain their own DNA and protein synthesizing machinery
(d) None of the above

132. Each phospholipid molecule in a cell membrane consists of
(a) one polar head and two nonpolar tail (b) one polar head and one polar tail
(c) one non polar head and one polar tail (d) one non polar head and one polar tail

133. What is true about fluid mosaic model ?
(a) phospholipid layer is sandwiched between two protein layers
(b) phospholipid monolayer is present on the top of a protein layer
(c) phospholipid bilayer is present on the top of a protein layer
(d) proteins as embedded at places in the phospholipid bilayer

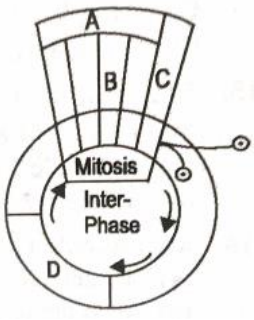
134. The specificity of any protein and its physical and enzymatic properties depends upon
(a) absence of amino acids (b) linear sequence of the amino acids

(c) amino acid without any sequence (d) number of amino acids.

135. The major role of minor elements inside living organisms is to act as
(a) co-factors of enzymes (b) building blocks of important amino acids
(c) constituent of hormones (d) binder of cell structure

PART B - BOTANY

136. The given figure is a schematic break-up of the phases/stages of cell cycle. Which one of the following is the correct indication of the stage/phase in the cell cycle?

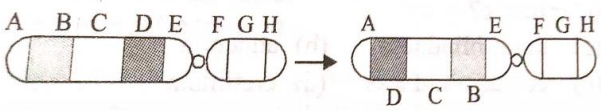


(a) C-karyokinesis (b) D-synthetic phase (c) A – cytokinesis (d) B- metaphase.

137. When a dwarf pea plant was treated with gibberellic acid, it became as tall as tall pea plants. If these pea plants are crossed with pure tall plants, then what will be the phenotypic ratio in F1 generation?
(a) 75% tall and 25% dwarf plants (b) 100% dwarf plants
(c) 100% tall plants (d) 25% tall and 75% dwarf plants.

138. Two pea plants were subjected for cross pollination. Of the 183 plants produced in the next generation, 94 plants were found to be tall and 89 plants were found to be dwarf. The genotypes of the two parental plants are likely to be
(a) TT and tt (b) Tt and Tt (c) Tt and tt (d) TT and TT.

139. Given below is a representation of a kind of chromosomal mutation. What is the kind of mutation represented?



(a) deletion (b) duplication (c) inversion (d) reciprocal translocation.

140. In man, which of the following genotypes and phenotypes may be the correct result of aneuploidy in sex chromosomes?
(a) 22 pairs + XXY males (b) 22 pairs + XX females
(c) 22 pairs + XXXY females (d) 22 pairs + Y females

141. The quickest method of plant breeding is
(a) introduction (b) selection (c) hybridization (d) mutation breeding

142. The restriction endonuclease is used for cutting
(a) single stranded DNA (b) RNA fragment (c) mRNA (d) double stranded DNA

143. The polymerase chain reaction (PCR) technology was discovered by
(a) Karry Mullis (b) Saiki et al (c) Craig Venter (d) Maxam and Gilbert

144. Most widely used bioweapon is
(a) Barulher mais (b) Peudomonas putida (c) Bacillus anthracis (d) none of these

145. Genetic engineering is possible, because
(a) we can cut DNA at specific sites by endonucleases like DNAase I
(b) restriction endonucleases purified from bacteria can be used in vitro
(c) the phenomenon of transduction in bacteria is well understood
(d) we can see DNA by electron microscope.

146. The transgenic animals are those which have
(a) foreign RNA in all its cells (b) foreign DNA in some of its cells
(c) foreign DNA in all its cells (d) both (a) and (b).

147. PCR is related with
(a) DNA cloning (b) amplification of DNA
(c) DNA selective replication (d) all of the above.

148. Gene therapy involve
(a) introduction of a normal genes in cell (b) treating of defective genes with radiation
(c) eliminating defective and useless genes (d) replacement of defective genes by normal one

149. Polyploidy can result from
(a) double fertilization (b) polyspermy (c) diploid gametes (d) all of the above

150. The loss of one single chromosome creates a condition called
(a) trisomy (b) nullisomy (c) monosomy (d) haploid.

PART A – ZOOLOGY

151. Which of the following group is characterized by the animals with worm like body, exclusively marine, open circulatory system, gill respiration and proboscis gland for excretion?
a) Echinodermata b) Mollusca c) Hemichordata d) Ctenophora

152. Which one of the following statements is totally wrong about the occurrence of notochord while the other three are correct?
a) Notochord is persistent throughout the life in Amphioxus
b) It is absent throughout the life in mammals from the very beginning including the embryonic stage.
c) Notochord is present in larval tail only in ascidians.
d) Notochord is replaced by vertebral column in adult frogs.

153. Match the following with reference to Cockroach and choose the correct option

A. Phallomere	i. Chain of developing ova
B. Gonopore	ii. Bundles of sperm
C. Spermatophore	iii. Opening of the ejaculatory duct
D. Ovarioles	iv. The external genitalia

a) A-iii, B-iv, C-ii, D-i b) A-iv, B-iii, C-ii, D-i
c) A-iv, B-ii, C-iii, D-i d) A-ii, B-iv, C-iii, D-i

154. Choose the correctly matched pair:
a) Inner lining of salivary ducts -– Ciliated epithelium
b) Moist surface of buccal cavity ---- Glandular epithelium
c) Tubular parts of nephrons ---- Cuboidal epithelium
d) Inner surface of bronchioles ---- Squamous epithelium

155. Diagnostic report of a person revealed the fact that he is suffering with the deficiency of Vitamin B12 Based on that result assume which of the following cells in his alimentary canal are not working properly /damaged?
a) Peptic cells b) Brunner's gland cells c) Oxyntic cells d) Neck cells

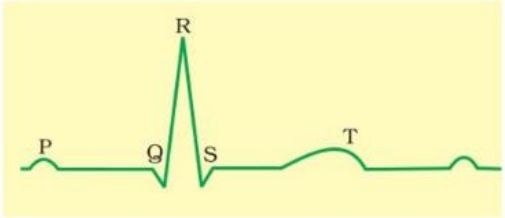
156. Identify the type of PEM which occurs in the infants less than a year in age if mother's milk is replaced too early by other foods which are poor in both protein and caloric values?
a) Rickets b) Cretinism c) Kwashiorkor d) Marasmus

157. Select the condition that occurs/leads to normal inspiration among the human beings
a) Intra pulmonary pressure < Atmospheric pressure b) Atmospheric pressure = Intra pulmonary pressure
c) Atmospheric pressure < Intra pulmonary pressure d) p O_2 in atmosphere < p O_2 in lungs

158. Identify the correct and incorrect match about respiratory volume and capacities and mark the correct answer
i) Inspiratory capacity (IC) = Tidal Volume + Residual Volume
ii) Vital Capacity (VC) = Tidal Volume (TV) + Inspiratory Reserve Volume (IRV) + Expiratory Reserve Volume (ERV).
iii) Residual Volume (RV) = Vital Capacity (VC) – Inspiratory Reserve Volume IRV)
iv) Tidal Volume (TV) = Inspiratory Capacity (IC) – Inspiratory Reserve Volume (IRV)
a) (i) Incorrect, (ii) Incorrect, (iii) Incorrect, (iv) Correct
b) (i) Incorrect, (ii) Correct, (iii) Incorrect, (iv) Correct
c) (i) Correct, (ii) Correct, (iii) Incorrect, (iv) Correct
d) (i) Correct, (ii) Incorrect, (iii) Correct, (iv) Incorrect

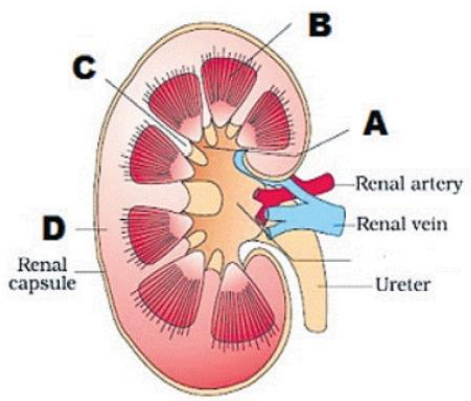
159. In human beings, which blood vessel would normally carry largest amount of nutrients?
a) Hepatic veins b) Post caval vein c) Hepatic portal vein d) Left systemic arch

160. Diagrammatic representation of a standard ECG is given below. Select the correct option



a) P - wave: Repolarisation of the atria. b) T - wave: Depolarisation of ventricles.
c) QRS complex: Depolarization of ventricles d) R - wave: Repolarization of ventricles

161. Figure shows the longitudinal section of human kidney with structures labelled A to D. Select option which correctly identifies them and gives their characteristics and/or functions.



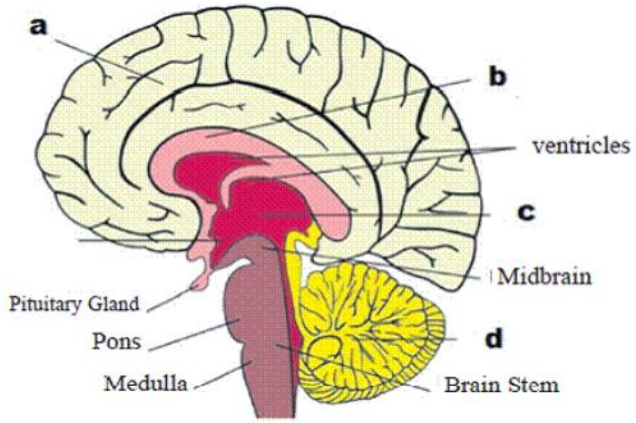
a) C - Columns of Bertini - Extensions of cortex in between the medullary pyramids
b) D - Pelvis - Gives ureter to carry urine from kidney
c) B - Cortex - Forms renal pyramids
d) A - Renal columns – It is a part of renal pelvis

162. Arrange the following events in correct sequence of their occurrence.
(I) Increase in blood pressure
(II) Releasing of Renin by JG cells
(III) Releasing of Aldosterone
(IV) Conversion of Angiotensinogen into Angiotensin II
(V) Fall in GFR
a) V - IV - II - I – III b) I - II - III - IV – V c) V - III - II - IV – I d) V - II - IV - III – I

163. Pick out the reason why 8th,9th and 10th pairs of ribs in human beings are considered as "vertebro-chondral ribs"
a) They attach dorsally with thoracic vertebrae and with sternum ventrally with hyaline cartilage
b) They attach ventrally with 7th pair of ribs with hyaline cartilage
c) They are free ventrally
d) They are free dorsally

164. Which of the following about muscle fibers is correctly matched?
a) 'H' zone in Sarcomere - With both thin and thick filaments
b) White muscle fibres - With high amount of sarcoplasmic reticulum and plenty of sarcosomes
c) Sarcomere - Portion of myofilament between two successive 'Z' lines
d) 'Z' line - An elastic fiber which bisects 'A' band

165. A sagittal section of human brain is shown here. Identify the labelled parts of a, b, c, d.



a) a - Cerebellum ; b - Corpus callosum b) b - Arbor vitae ; d - Cerebellum
c) a - Cerebrum ; c – Thalamus d) b - Corpus callosum ; d – Cerebrum

166. Which of the following two statements regarding the retina is correct?
(a) Fovea is the point of retina with the greatest visual activity (resolution)
(b) Fovea consists of densely packed cones only.
a) (a) is correct but (b) is false b) (b) is correct but (a) is false
c) Both (a) and (b) are true d) Both (a) and (b) are false

167. Which of the following pairs of hormones are not antagonistic to each other?
a) Gastrin – Gastric inhibitory peptide b) Thyrocalcitonin - Parathyroid hormone
c) Aldosterone - Atrial natriuretic factors d) Adrenalin - Nor adrenaline

168. Match the following conditions/disorders given in column - I with the reasons mentioned in column - II and choose the correct option.

Column – I	Column - II
(a) Acromegaly	(i) Hypo secretion of ADH
(b) Grave's disease	(ii) Hypo secretion of insulin
(c) Addison's disease	(iii) Hyper secretion of Growth hormone
(d) Diabetes mellitus	(iv) Hypo secretion of glucocorticoids
(e) Diabetes insipidus	(v) Hyperthyroidism

a) (a) - (iii); (b) - (ii) ; (c) - (iv) ; (d) - (i) ; (e) - (v)
b) (a) - (iii) ; (b) - (v) ; (c) - (iv) ; (d) - (ii) ; (e) - (i)
c) (a) - (iv) ; (b) - (iii) ; (c) - (ii) ; (d) - (v) ; (e) - (i)
d) (a) - (ii) ; (b) - (v) ; (c) - (i) ; (d) - (iv) ; (e) - (iii)

169. Which one of the following is the correct matching of the events that occur during menstrual cycle?
a) Follicular phase: Degeneration of endometrium of uterus and formation of Graafian follicle.
b) Secretory phase: Development of corpus luteum and secretion of large amount of progesterone
c) Ovulation phase: LH and FSH attain minimum levels and sharp increase of oestrogen
d) Menstruation phase: Breakdown of myometrium and releasing of fertilised ovum

170. Identify the wrong statement from the following:
a) high levels of estrogen triggers the ovulatory phase.
b) sperms released from seminiferous tubules are poorly motile/non –motile.
c) progesterone level is high during the post ovulatory phase of menstrual cycle.
d) oogonial cells start to proliferate and give rise to functional ova in regular cycles from puberty onwards.

171. Identify the incorrect match.

S.No.	Contraceptive device	Type	Mode of action
1)	Condom	Barrier	Prevents the meeting of sperm and ovum
2)	Multiload 375	IUD	Suppress the fertilizing capacity of sperms
3)	Saheli	Oral steroidal contraceptive pill	Inhibits ovulation and implantation
4)	LNG 20	IUD	Phagocytosis of sperms and release of hormones

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

172. Which of the following statements regarding the contraceptive methods are correct?
(a) In the Lactational Amenorrhea method, ovulation generally will not occur during the period of intense lactation by the mother after parturition.
(b) Active prolactin secretion during lactation suppresses the release of GnRH from hypothalamus and thus reduces the levels of FSH and LH from the pituitary gland.
a) Both (a) and (b) are false b) (a) is true but (b) is false
c) Both (a) and (b) are true d) (b) is true but (a) is false

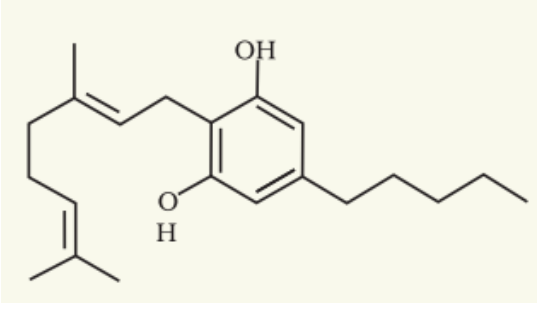
173. Select the correct combination of methods of natural selection:
a) Disruptive selection: more individuals acquire peripheral character value at both ends of the distribution curve.
b) Stabilization selection: more individuals acquire value other than the mean character.
c) Directional selection: less individuals acquire value other than the mean character.
d) None of these

174. Select one correct example each of convergent evolution and divergent evolution?

Convergent evolution	Divergent evolution
P) Thorns of Bouganivillia and tendrils of Cucurbita;	Eyes of Octopus and mammals
Q) Potato and sweet potato	Flippers of Penguins and Dolphins
R) Bones of forelimbs of vertebrates	Wings of butterfly and birds
S) Eyes of Octopus and mammals	Bones of forelimbs of vertebrates

a) P b) Q c) R d) S

175. Diagrammatic representation of certain drug is given below. Select the correct option about it.



a) Morphine - Derived from Papaver somniferum - Cause Hallucinations
b) Cannabinoid - Derived from Cannabis sativa - Effects on Cardiovascular system
c) Cocaine - Derived from Erythroxylum coca - Causes Euphoria
d) Hallucinogen - Derived from Atropa Belladona - Causes Euphoria

176. Identify the correct combination regarding the disease which is characterized by the turning of lips and finger nails into grey to bluish in colour in severe cases.
a) Pneumonia – Microsporum
b) Ringworms - Trichophyton
c) Typhoid - Salmonella typhi
d) Pneumonia - Haemophilus influenza

177. AIDS is caused by HIV. Which among the following is not a mode of transmission of HIV?
a) Sexual contact with infected persons
b) Shaking hands with infected persons
c) Sharing the infected needles
d) Transfusion of infected blood

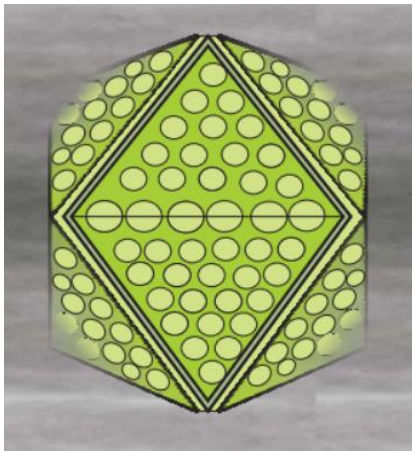
178. Consider the following two statements:
I. In spite of having more than 70 per cent of the world livestock population, the contribution of India and china to the world farm produce is only 25 per cent.
II. The productivity per unit of cattle in these countries is very low.
a) Both I and II are true and II explains I
b) Both I and II are true but II does not explain I
c) I is true but II is false
d) Both the statements are not true

179. Amongst the following the number of fresh water fishes is: Catla, Rohu, Common carp, Hilsa, Sardines, Mackerel, Pomfrets
a) 2
b) 3
c) 4
d) 5

180. The vitamin whose content increases following the conversion of milk into curd by lactic acid bacteria is:
a) Ascorbic acid
b) Calciferol
c) Cobalamine
d) Tocopherol

181. Identify the incorrectly matched pair
a) Trichoderma – Biocontrol agent
b) Aspergillus niger - source of citric acid
c) Baculovirus - narrow spectrum species specific insecticides
d) Monascus purpureus – blood cholesterol increasing agent

182. The virus shown here is a causative agent of



a) Intestinal infections
b) Respiratory infections
c) CNS infections
d) Genito-urinary infections

183. Select the correct option related to co-existence instead of competition by following the mechanism known as 'resource partitioning':
a) Connell's experiments – about Balanus and Chathamlus
b) MacArthur observations – about Warbler birds
c) Gause's principle – between goats and Abingdon tortoise.
d) Edward Wilson - flamingo birds and fishes.

184. The logistic population growth is expressed by the equation
a) $\frac{dt}{dN} = Nr\left(\frac{K-N}{K}\right)$
b) $\frac{dN}{dt} = rN\left(\frac{N-K}{N}\right)$
c) $\frac{dN}{dt} = rN$
d) $\frac{dN}{dt} = rN\left(1-\frac{N}{K}\right)$

185. Which of the following associations is exampled for the interaction like commensalism?
a) Micorrizae between fungi and roots of higher plants.
b) Lichens between algae and fungi
c) Cuckoo (koel) and the crow
d) Orchid growing on a mango branch

186. Among the following where do you think the process of decomposition would be the fastest?
A) Tropical rain forests
b) Antarctic
c) Dry arid region
d) Alpine region

187. Ecological niche is
a) an ecologically adapted zone
b) the surface area of the ocean
c) the physical position and functional role of a species within the community
d) formed of all plants and animals living at the bottom of a lake.

188. The annual net primary productivity of the whole biosphere is approximately 170 billion tons (dry weight) of organic matter. In this, the productivity of the oceans alone are only
a) 85 billion tons b) 70 Billion tons c) 170 billion tons d) 55 Billion tons

189. Which one is a hot spot of biodiversity
a) Aravalli Hills b) Western Ghats c) Indo Gangetic plain d) Eastern Ghats

190. In India, ecologically unique and biodiversity-rich regions are legally protected as biosphere reserves, national parks and sanctuaries. India now has
a) 10 Biosphere reserves, 50 National Parks and 400 wildlife sanctuaries
b) 14 Biosphere reserves, 50 National Parks and 400 wildlife sanctuaries
c) 10 Biosphere reserves, 90 National Parks and 448 wildlife sanctuaries
d) 14 Biosphere reserves, 90 National Parks and 448 wildlife sanctuaries

191. Select the incorrect combination of pollution control measures and their actions.
a) Incinerators - Burn hospital wastes
b) Catalytic converters - Convert Carbon dioxide into Carbon monoxide
c) Electrostatic precipitators - Remove particulate matter
d) Scrubber - Removes soluble gases like Sulphur dioxide

192. Match the following and choose the correct option

Act	Year
a) Environment protection Act	i) 1987
b) National Forest Policy	ii) 1986
c) Water Act	iii) 1988
d) Amendment of Air act to include noise	iv) 1974

a) a-ii, b-iii, c- i, d-iv b) a-iii, b- iv, c-ii, d-i c) a-ii, b- iii, c- iv, d-i d) a-iii, b-i, c-ii, d-iv

193. Genital pouch in male cockroach is
a) Dorsally bound with 9th terga but ventrally with 9th sterna.
b) Dorsally bound with 9th and 10th terga but ventrally with 9th pleura only.
c) Dorsally bound with 9th and 10th sterna but ventrally with 9th terga only.
d) Dorsally bound with 9th and 10th terga but ventrally with 9th sterna only.

194. In normal blood pressure of 120/80 mm Hg the numerator represents
a) Diastolic pressure b) Systolic pressure c) Pulse pressure d) Cardiac index

195. Which of the following statements is correct?
a) The descending limb of loop of Henley is impermeable to water.
b) The ascending limb of loop of Henley is permeable to water.
c) The descending limb of loop of Henley is permeable to electrolytes.
d) The ascending limb of loop of Henley is impermeable to water.

196. During the transmission of nerve impulse through a nerve fibre, the potential on the inner side of the plasma membrane has which type of electric charge?
a) First positive, then negative and continue to be negative
b) First negative, then positive and continue to be positive
c) First positive, then negative and again back to positive
d) First negative, then positive and again back to negative

197. Which of the following is mismatched?
a) Vitamin A – Xerophthalmia b) Vitamin D - Rickets
c) Vitamin K - Beri-beri d) Vitamin C – Scurvy

198. Identify air-borne diseases from the following
a) Common cold and ring worms b) Conjunctivities and amoebiasis
c) Ancylostomiasis and hay fever d) Pneumonia and common cold

199. The species diversity decreases from lower to higher altitudes on a mountain. This is due to
a) increase in temperature b) decrease in temperature
c) greater seasonal variability d) Both (b) and (c)

200. Retrogressive metamorphosis
a) Hemichordata b) Cephalochordata c) Urochordata d) Vertebrata.