PRELIMS

QUESTIONS & SOLUTIONS OF AIPMT-2010 (SCREENING) TEST PAPER

Duration : 3 Hours **Max. Marks : 800**

Please read the instructions carefully. You are allotted 5 minutes specifically for this purpose.

IMPORTANT INSTRUCTIONS

1. The Test Booklet consists of one paper containing **200** objective type questions (four options with single correct answer) from Physics, Chemistry and Biology (Botany & Zoology).

2. There are three parts in the question paper (Physics, Chemistry and Biology (Botany & Zoology)). The distribution of marks subjectwise in each part is as under for each correct response.

3. **Scoring and Negative Marking** : **Each question carries 4 marks. For each incorrect response one mark will be deducted from the total score.** No deduction from the total score will, however, be made if no response is indicated for a question in the Answer Sheet. The candidates are advised not to attempt such question in the Answer Sheet, if they are not sure of the correct response. **More than one answer indicated against a question will be deemed as incorrect response and will be negatively marked.**

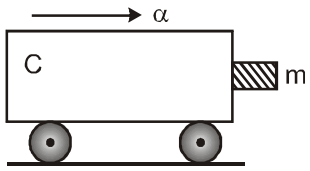
Part A — PHYSICS (200 marks) – 50 Questions

Part B — CHEMISTRY (200 marks) – 50 Questions

Part C — BIOLOGY (400 marks) – 100 Questions

PART- A (PHYSICS)

1. A block of mass m is in contact with the cart C as shown in the figure.



The coefficient of static friction between the block and the cart is μ. The acceleration α of the cart that will prevent the block from falling satisfies

(1) $\alpha > \frac{mg}{\mu}$ (2) $\alpha > \frac{g}{\mu m}$ (3) $\alpha \geq \frac{g}{\mu}$ (4) $\alpha < \frac{g}{\mu}$

2. The mass of a $^{7}_{3}Li$ nucleus is 0.042 u less than the sum of the masses of all its nucleons. The binding energy per nucleon of $^{7}_{3}Li$ nucleus is nearly

(1) 46 MeV (2) 5.6 MeV (3) 3.9 MeV (4) 23 MeV

3. A circular disk of moment of inertia I_t is rotating in a horizontal plane, about its symmetry axis, with a constant angular speed ω_r. Another disk of moment of inertia I_b is dropped coaxially onto the rotating disk. Initially the second disk has zero angular speed. Eventually both the disks rotate with a constant angular speed ω_f. The energy lost by the initially rotating disc to friction is

(1) $\frac{1}{2}\frac{I_b^2}{(I_t + I_b)}\omega_i^2$ (2) $\frac{1}{2}\frac{I_t^2}{(I_t + I_b)}\omega_i^2$ (3) $\frac{I_b - I_t}{(I_t + I_b)}\omega_i^2$ (4) $\frac{1}{2}\frac{I_b I_t}{(I_t + I_b)}\omega_i^2$

4. Which one of the following statement is false?

(1) Pure Si doped with trivalent impurities gives a p-type semiconductor.

(2) Majority carriers in a n-type semiconductor are holes.

(3) Minority carriers in a p-type semiconductor are electrons.

(4) The resistance of intrinisic semiconductor decreases with increase of temperature.

5. The displacement of a particle along the x axis is given by $x = a\sin^2\omega t$. The motion of the particle corresponds to

(1) simple harmonic motion of frequency ω/π

(2) simple harmonic motion of frequency $3\omega/2\pi$

(3) non simple harmonic motion

(4) simple harmonic motion of frequency $\omega/2\pi$

6. The radii of circular orbits of two satellites A and B of the earth, are 4R and R, respectively. If the speed of satellite A is 3V, then the speed of satellite B will be

(1) $\frac{3V}{4}$ (2) 6V (3) 12 V (4) $\frac{3V}{2}$

7. A beam of cathode rays is subjected to crossed electric (E) and magnetic fields (B). The fields are adjusted such that the beam is not deflected. The specific charge of the cathode rays is given by

(1) $\frac{B^2}{2VE^2}$ (2) $\frac{2VB^2}{E^2}$ (3) $\frac{2VE^2}{B^2}$ (4) $\frac{E^2}{2VB^2}$

(Where V is the potential difference between cathode and anode)

8. A ball is dropped from a high platform at t = 0 starting from rest. After 6 seconds another ball is thrown downwards from the same platform with a speed v. The two balls meet at t = 18 s. What is the value of v? (Take g = 10 m/s^2)

(1) 75 m/s (2) 55 m/s (3) 40 m/s (4) 60 m/s

9. A ray of light travelling in a transparent medium of refractive index μ, falls on a surface separating the medium from air at an angle of incidence of 45°. For which of the following value of μ the ray can undergo total internal reflection?

(1) $\mu = 1.33$ (2) $\mu = 1.40$ (3) $\mu = 1.50$ (4) $\mu = 1.25$

10. The period of oscillation of a mass m suspended from a spring of negligible mass is T. If along with it another mass M is also suspended the period of oscillation will now be

(1) T (2) $\frac{T}{\sqrt{2}}$ (3) 2T (4) $\sqrt{2}T$

11. A cylindrical metallic rod in thermal contact with two reservoirs of heat at its two ends conducts an amount of heat Q in time t. The metallic rod is melted and the material is formed into a rod of half the radius of the original rod. What is the amount of heat conducted by the new rod, when placed in thermal contact with the two reservoirs in time t?

(1) $\frac{Q}{4}$ (2) $\frac{Q}{16}$ (3) 2Q (4) $\frac{Q}{2}$

12. A ball moving with velocity 2 m/s collides head on with another stationary ball of double the mass. If the coefficient of restitution is 0.5, then their velocities (in m/s) after collision will be

(1) 0, 1 (2) 1, 1 (3) 1, 0.5 (4) 0, 2

13. A transverse wave is represented by $y = A\sin(\omega t - kx)$. For what value of the wavelength is the wave velocity equal to the maximum particle velocity?

(1) $\pi A/2$ (2) πA (3) $2\pi A$ (4) A

14. A particle has initial velocity $(3\hat{i} + 4\hat{j})$ and has acceleration $(0.4\hat{i} + 0.3\hat{j})$. Its speed after 10 s is

(1) 7 units (2) $7\sqrt{2}$ units (3) 8.5 units (4) 10 units

15. An engine pumps water through a hose pipe. Water passes through the pipe and leaves it with a velocity of 2 m/s. The mass per unit length of water in the pipe is 100 kg/m. What is the power of the engine?

(1) 400 W (2) 200 W (3) 100 W (4) 800 W

16. A thin ring of radius R meter has charge q coulomb uniformly spread on it. The ring rotates about its axis with a constant frequency of f revolutions/s. The value of magnetic induction in Wb/m^2 at the centre of the ring is

(1) $\frac{\mu_0 qf}{2\pi R}$ (2) $\frac{\mu_0 q}{2\pi fR}$ (3) $\frac{\mu_0 q}{2fR}$ (4) $\frac{\mu_0 qf}{2R}$

17. Which one of the following bonds produces a solid that reflects light in the visible region and whose electrical conductivity decreases with temperature and has high melting point?

(1) metallic bonding (2) van der Wall's bonding

(3) ionic bonding (4) covalent bonding

18. A particle moves a distance x in time t according to equation $x = (t + 5)^{-1}$. The acceleration of particle is proportional to

(1) $(\text{velocity})^{3/2}$ (2) $(\text{velocity})^2$ (3) $(\text{velocity})^{-2}$ (4) $(\text{velocity})^{2/3}$

19. A conducting circular loop is placed in a uniform magnetic field, B = 0.025 T with its plane perpendicular to the loop. The radius of the loop is made to shrink at a constant rate of 1 mm s^{-1}. The induced emf when the radius is 2 cm, is

(1) $2\pi\,\mu$ V (2) $\pi\,\mu$V (3) $\frac{\pi}{2}\mu$V (4) 2μV

20. The activity of a radioactive sample is measured as N_0 counts per minute at t = 0 and N_0/e counts per minute at t = 5 minutes. The time (in minutes) at which the activity reduces to half its value is

(1) $\log_e \frac{2}{5}$ (2) $\frac{5}{\log_e 2}$ (3) $5 \log_{10} 2$ (4) $5 \log_e 2$

21. Two particles which are initially at rest, move towards each other under the action of their internal attraction. If their speeds are v and 2v at any instant, then the speed of centre of mass of the system will be

(1) 2v (2) zero (3) 1.5 v (4) v

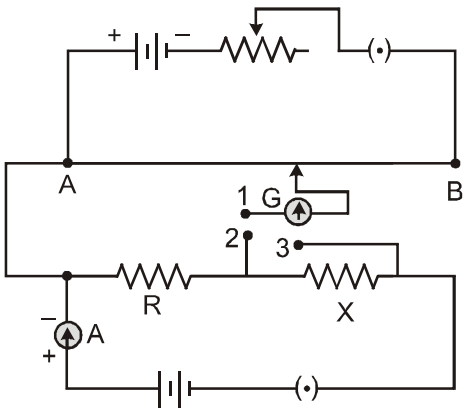
22. A particle of mass M is situated at the center of a spherical shell of same mass and radius a. The gravitational potential at a point situated at $\frac{a}{2}$ distance from the centre, will be

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

23. The device that act as a complete electronic circuit is

(1) junction diode (2) integrated circuit (3) junction transistor (4) zener diode

24. A potentiometer circuit is set up as shown. The potential gradient, across the potentiometer wire, is k volt/cm and the ammeter, present in the circuit reads 1.0 A when two way key is switched off. The balance points, when the key between the terminals (i) 1 and 2 (ii) 1 and 3, is plugged in, are found to be at length l_1 cm and l_2 cm respectively. The magnitudes, of the resistors R and X, in ohms, are then, equal, respectively, to

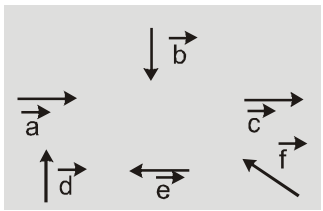


(1) $k(l_2 - l_1)$ and kl_2 (2) kl_1 and $k(l_2 - l_1)$ (3) $k(l_2 - l_1)$ and kl_1 (4) kl_1 and kl_2

25. A tuning fork of frequency 512 Hz makes 4 beats per second with the vibrating string of a piano. The beat frequency decreases to 2 beats per sec when the tension in the piano string is slightly increased. The frequency of the piano string before increasing the tension was

(1) 510 Hz (2) 514 Hz (3) 516 Hz (4) 508 Hz

26. Six vectors, $\vec{a}$ through $\vec{f}$ have the magnitudes and directions indicated in the figure. Which of the following statements is true?



(1) $\vec{b}+\vec{c}=\vec{f}$ (2) $\vec{d}+\vec{c}=\vec{f}$ (3) $\vec{d}+\vec{e}=\vec{f}$ (4) $\vec{b}+\vec{e}=\vec{f}$

27. A galvanometer has a coil of resistance 100 ohm and gives a full scale deflection for 30mA current. If it is to work as a voltmeter of 30 volt range, the resistance required to be added will be

(1) 900 Ω (2) 1800 Ω (3) 500 Ω (4) 1000 Ω

28. A gramophone record is revolving with an angular velocity ω. A coin is placed at a distance r from the centre of the record. The static coefficient of friction is μ. The coin will revolve with the record if

(1) $r = \mu g\omega^2$ (2) $r = \frac{\omega^2}{\mu g}$ (3) $r \le \frac{\mu g}{\omega^2}$ (4) $r \ge \frac{\mu g}{\omega^2}$

29. Which of the following statement is false for the properties of electromagnetic waves?
(1) Both electric and magnetic field vectors attain the maxima and minima at the same place and same time.
(2) The energy in electromagnetic wave is divided equally between electric and magnetic vectors.
(3) Both electric and magnetic field vectors are parallel to each other perpendicular to the direction of propagation of wave.
(4) These waves do not require any material medium for propagation.

30. The energy of a hydrogen atom in the ground state is –13.6 eV. The energy of a He^{+} ion in the first excited state will be
(1) – 13.6 eV (2) – 27.2 eV (3) – 54.4 eV (4) – 6.8 eV

31. The dimension of $\frac{1}{2}\varepsilon_0 E^2$, where ε_0 is permittivity of free space and E is electric field, is
(1) ML^2T^{-2} (2) $ML^{-1}T^{-2}$ (3) ML^2T^{-1} (4) MLT^{-1}

32. In producing chlorine by electrolysis 100 kW power at 125 V is being consumed. How much chlorine per minute is liberated (E.C.E. of chlorine is 0.367×10^{-6} kg/C)

(1) 1.76×10^{-3} kg (2) 9.67×10^{-3} kg (3) 17.61×10^{-3} kg (4) 3.67×10^{-3} kg

33. A man of 50 kg mass is standing in a gravity free space at a height of 10 m above the floor. He throws a stone of 0.5 kg mass downwards with a speed 2 m/s. When the stone reaches the floor, the distance of the man above the floor will be

(1) 9.9 m (2) 10.1 m (3) 10 m (4) 20 m

34. An alpha nucleus of energy $\frac{1}{2}mu^2$ bombards a heavy nuclear target of charge Ze. Then the distance of closest approach for the alpha nucleus will be proportional to

(1) $\frac{1}{Ze}$ (2) u^2 (3) $\frac{1}{m}$ (4) $\frac{1}{u^4}$

35. A lens having focal length f and aperture of diameter d forms an image of intensity I. Aperture of diameter $\frac{d}{2}$ in central region of lens is covered by a block paper. Focal length of lens and intensity of image now will be respectively

(1) f and $\frac{I}{4}$ (2) $\frac{3f}{4}$ and $\frac{I}{2}$ (3) f and $\frac{3I}{4}$ (4) $\frac{f}{2}$ and $\frac{I}{2}$

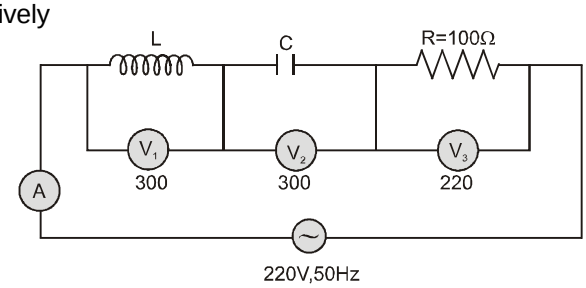
36. If ΔU and ΔW represent the increase in internal energy and work done by the system respectively in a thermodynamical process, which of the following is true?

(1) $\Delta U = -\Delta W$, in a adiabatic process
(2) $\Delta U = \Delta W$, in a isothermal process
(3) $\Delta U = \Delta W$, in a adiabatic process
(4) $\Delta U = -\Delta W$, in a isothermal process

37. The total radiant energy per unit area, normal to the direction of incidence, received at a distance R from the centre of a star of radius r, whose outer surface radiates as a black body at a temperature TK is given by (where σ is Stefan's constant)

(1) $\frac{\sigma r^2 T^4}{R^2}$
(2) $\frac{\sigma r^2 T^4}{4\pi r^2}$
(3) $\frac{\sigma r^4 T^4}{r^4}$
(4) $\frac{4\pi\sigma r^2 T^4}{R^2}$

38. In the given circuit the reading of voltmeter V_1 and V_2 are 300 volts each. The reading of the voltmeter V_3 and ammeter A are respectively



(1) 150 V, 2.2 A
(2) 220 V, 2.2 A
(3) 220 V, 2.0 A
(4) 100 V, 2.0 A

39. A 220 volt input is supplied to a transformer. The output circuit draws a current of 2.0 ampere at 440 volts. If the efficiency of the transformer is 80% the current drawn by the primary windings of the transformer is
(1) 3.6 ampere (2) 2.8 ampere (3) 2.5 ampere (4) 5.0 ampere

40. A source S_1 is producing 10^{15} photons per second of wavelength 5000Å. Another sorce S_2 is producing 1.02×10^{15} photons per second of wavelength 5100 Å. Then (power of S_2)/(power of S_1) is equal to
(1) 1.00 (2) 1.02 (3) 1.04 (4) 0.98

41. A common emitter amplifier has a voltage gain of 50, an input impedance of 100 Ω and an output impedance of 200 Ω. The power gain of the amplifier is

(1) 500 (2) 1000 (3) 1250 (4) 50

42. A vibration magnetometer placed in magnetic meridian has a small bar magnet. The magnet executes oscillations with a time period of 2 sec in earth's horizontal magnetic field of 24 microtesla. When a horizontal field of 18 microtesla is produced opposite to the earth's field by placing a current carrying wire, the new time period of magnet will be

(1) 1 s (2) 2 s (3) 3 s (4) 4 s

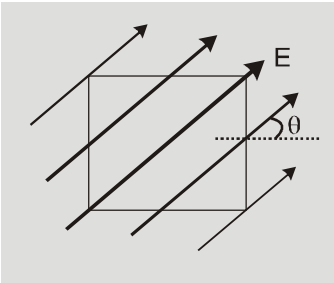
43. Two positive ions, each carrying a charge q, are separated by a distance d. If F is the force of repulsion between the ions, the number of electrons missing from each ion will be (e being the charge on an electron)

(1) $\frac{4\pi\varepsilon_0 Fd^2}{e^2}$ (2) $\sqrt{\frac{4\pi\varepsilon_0 Fe^2}{d^2}}$ (3) $\sqrt{\frac{4\pi\varepsilon_0 Fd^2}{e^2}}$ (4) $\frac{4\pi\varepsilon_0 Fd^2}{q^2}$

44. The potential difference that must be applied to stop the fastest photoelectrons emitted by a nickel surface, having work function 5.01 eV, when ultraviolet light of 200 nm falls on it, must be

(1) 2.4 V (2) –1.2 V (3) – 2.4 V (4) 1.2 V

45. A square surface of side L meter in the plane of the paper is placed in a uniform electric field E (volt/m) acting along the same plane at an angle θ with the horizontal side of the square as shown in figure. The electric flux linked to the surface in units of volt × meter is



(1) EL^2 (2) $EL^2\cos\theta$ (3) $EL^2\sin\theta$ (4) zero

46. A series combination of n_1 capacitors, each of value C_1 is charged by a source of potential difference 4V. When another parallel combination of n_2 capacitors, each of value C_2, is charged by a source of potential difference V, it has the same (total) energy stored in it, as the first combination has. The value of C_2, in terms of C_1, is then

(1) $\frac{2C_1}{n_1n_2}$ (2) $16\frac{n_2}{n_1}C_1$ (3) $2\frac{n_2}{n_1}C_1$ (4) $\frac{16C_1}{n_1n_2}$

47. Electromagnets are made of soft iron because soft iron has

(1) low retentivity and high coercive force (2) high retentivity and high coercive force

(3) low retentivity and low coercive force (4) high retentivity and low coercive force

48. A square current carrying loop is suspended in a uniform magnetic field acting in the plane of the loop. If the force on one arm of the loop is $\vec{F}$, the net force on the remaining three arms of the loop is

(1) $3\vec{F}$ (2) $-\vec{F}$ (3) $-3\vec{F}$ (4) $\vec{F}$

49. Consider the following two statements.

(A) Kirchhoff's junction law follows from the conservation of charge

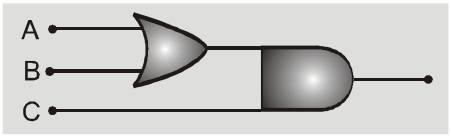
(B) Kirchhoff's loop law follows from the conservation of energy

Which of the following is correct?

(1) Both (A) and (B) are wrong (2) (A) is correct and (B) is wrong

(3) (A) is wrong and (B) is correct (4) Both (A) and (B) are correct

50. To get an output Y = 1 from the circuit shown below the input must be



	A	**B**	**C**
(1)	0	1	0
(2)	0	0	1
(3)	1	0	1
(4)	1	0	0

PART- B (CHEMISTRY)

51. For the reaction,

$$N_2O_5(g) \longrightarrow 2NO_2(g) + \frac{1}{2} O_2(g)$$

the value of rate of disappearance of N_2O_5 is given as 6.25×10^{-3} mol L^{-1} s^{-1}. The rate of formation of NO_2 and O_2 is given respectively as:

(1) 6.25×10^{-3} mol $L^{-1}s^{-1}$ and 6.25×10^{-3} mol $L^{-1}s^{-1}$

(2) 1.25×10^{-2} mol $L^{-1}s^{-1}$ and 3.125×10^{-3} mol $L^{-1}s^{-1}$

(3) 6.25×10^{-3} mol $L^{-1}s^{-1}$ and 3.125×10^{-3} mol $L^{-1}s^{-1}$

(4) 1.25×10^{-2} mol $L^{-1}s^{-1}$ and 6.25×10^{-3} mol $L^{-1}s^{-1}$

52. Liquid hydrocarbons can be converted to a mixture of gaseous hydrocarbons by:

(1) Oxidation (2) Cracking

(3) Distillation under reduced pressure (4) Hydrolysis

53. In which of the following pairs of molecules/ions, the central atoms have sp^2 hybridization ?

(1) NO_2^- and NH_3 (2) BF_3 and NO_2^- (3) NH_2^- and H_2O (4) BF_3 and NH_2^-

54. Which one of the following does not exhibit the phenomenon of mutarotation?

(1) (+) Sucrose (2) (+) Lactose (3) (+) Maltose (4) (–) Fructose

55. Which one of the following species does not exist under normal conditions ?

(1) Be_2^+ (2) Be_2 (3) B_2 (4) Li_2

56. Which of the following complex ions is not expected to absorb visible light ?

(1) $[Ni(CN)_4]^{2-}$ (2) $[Cr(NH_3)_6]^{3+}$ (3) $[Fe(H_2O)_6]^{2+}$ (4) $[Ni(H_2O)_6]^{2+}$

57. Given are cyclohexanol (I), acetic acid (II), 2, 4, 6-trinitrophenol (III) and phenol (IV). In these the order of decreasing acidic character will be:
(1) III > II > IV> I (2) II > III > I > IV (3) II > III > IV > I (4) III > IV > II > I

58. If pH of a saturated solution of $Ba(OH)_2$ is 12, the value of its K_{sp} is:
(1) $4.00 \times 10^{-6}\ M^3$ (2) $4.00 \times 10^{-7}\ M^3$ (3) $5.00 \times 10^{-6}\ M^3$ (4) $5.00 \times 10^{-7}\ M^3$

59. The reaction of toluene with Cl_2 in presence of $FeCl_3$ gives 'X' and reaction in presence of light gives 'Y'. Thus, 'X' and 'Y' are:

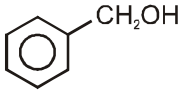
(1) X = Benzal chloride, Y = o-chlorotoluene

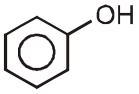
(2) X = m-chlorotoluene, Y = p-chlorotoluene

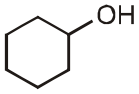
(3) X = o-and p-chlorotoluene, Y = Trichloromethyl benzene

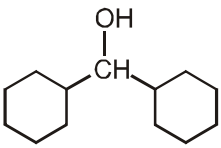
(4) X = Benzyl chloride, Y = m-chlorotoluene

60. Which one of the following compounds has the most acidic nature?

(1) 

(2) 

(3) 

(4) 

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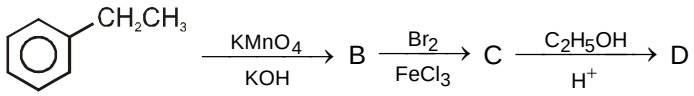
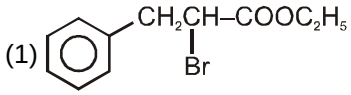
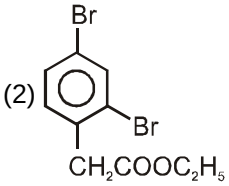
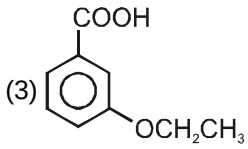
61. In a set of reactions, ethyl benzene yielded a product D.

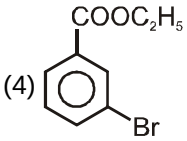


'D' would be :

(1) 

(2) 

(3) 

(4) 

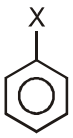
62. What is $[H^+]$ in mol/L of a solution that is 0.20 M in CH_3COONa and 0.10 M in CH_3COOH ? (K_a for CH_3COOH = 1.8×10^{-5})

(1) 3.5×10^{-4} (2) 1.1×10^{-5} (3) 1.8×10^{-4} (4) 9.0×10^{-6}

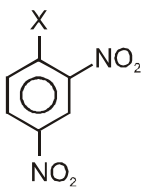
63. For an endothermic reaction, energy of activation is E_a and enthalpy of reaction is ΔH (both of these in kJ/mol). Minimum value of E_a will be:

(1) less than ΔH (2) equal to ΔH (3) more than ΔH (4) equal to zero

64. The correct order of increasing reactivity of C – X bond towards nucleophile in the following compounds is:



I



II

$(CH_3)_3C–X$

III

$(CH_3)_2CH–X$

IV

(1) I < II < IV < III (2) II < III < I < IV (3) IV < III < I < II (4) III < II < I < IV

65. For the reduction of silver ions with copper metal, the standard cell potential was found to be + 0.46 V at 25°C. The value of standard Gibbs energy ΔG° will be ($F = 96500\ C\ mol^{-1}$)

(1) – 89.0 kJ (2) – 89.0 J (3) – 44.5 kJ (4) – 98.0 kJ

66. In which of the following equilibrium K_c and K_p are not equal?

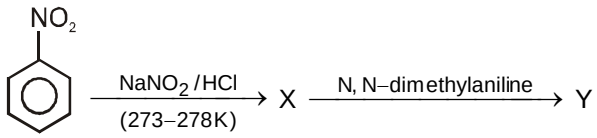
(1) $2NO(g) \rightleftharpoons N_2(g) + O_2(g)$ (2) $SO_2(g) + NO_2(g) \rightleftharpoons SO_3(g) + NO(g)$

(3) $H_2(g) + I_2(g) \rightleftharpoons 2HI(g)$ (4) $2C(s) + O_2(g) \rightleftharpoons 2CO_2(g)$

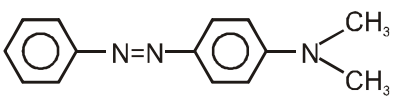
67. Which of the following ions will exhibit colour in aqueous solutions ?

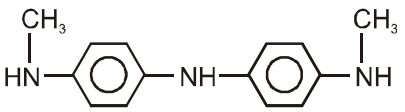
(1) La^{3+} (Z = 57) (2) Ti^{3+} (Z = 22) (3) Lu^{3+} (Z = 71) (4) Sc^{3+} (Z = 21)

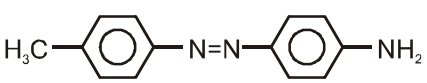
68. Aniline in a set of the following reactions yielded a coloured product 'Y'.

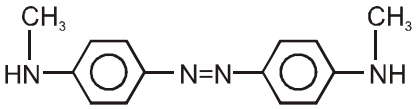


The structure of 'Y' would be :

(1) 

(2) 

(3) 

(4) 

69. Acetamide is treated with the following reagents separately. Which one of these would yield methyl amine ?
(1) $NaOH\text{-}Br_2$ (2) Sodalime (3) Hot conc. H_2SO_4 (4) PCl_5

70. An aqueous solution is 1.00 molal in KI. Which change will cause the vapour pressure of the solution to increase?
(1) Addition of NaCl (2) Addition of Na_2SO_4
(3) Addition of 1.00 molal KI (4) Addition of water

71. A solution of sucrose (molar mass = 342 g mol^{-1}) has been prepared by dissolving 68.5 g of sucrose in 1000 g of water. The freezing point of the solution obtained will be: (K_f for water = 1.86 K kg mol^{-1})
(1) – 0.372ºC (2) – 0.520ºC (3) + 0.372ºC (4) – 0.570ºC

72. Which of the following alkaline earth metal sulphates has hydration enthalpy higher than the lattice enthalpy?

(1) $CaSO_4$ (2) $BeSO_4$ (3) $BaSO_4$ (4) $SrSO_4$

73. Which of the following ions has electronic configuration $[Ar]3d^6$?

(1) Ni^{3+} (2) Mn^{3+} (3) Fe^{3+} (4) Co^{3+}

74. An increase in equivalent conductance of a strong electrolyte with dilution is mainly due to:

(1) increase in ionic mobility of ions.

(2) 100% ionisation of electrolyte at normal dilution.

(3) increase in both i.e. number of ions and ionic mobility of ions.

(4) increase in number of ions.

75. Crystal filed stabilization energy for high spin d^4 octahedral complex is :

(1) $-1.8\ \Delta_0$ (2) $-1.6\ \Delta_0 + P$ (3) $-1.2\ \Delta_0$ (4) $-0.6\ \Delta_0$

76. Oxidation states of P in $H_4P_2O_5$, $H_4P_2O_6$, $H_4P_2O_7$ are respectively :

(1) +3, +5, +4 (2) +5, +3, +4 (3) +5, +4, +3 (4) +3, +4, +5

77. Which of the following statements about primary amines is 'False'?

(1) Alkyl amines are stronger bases than aryl amines

(2) Alkyl amines react with nitrous acid to produce alcohols

(3) Aryl amines react with nitrous acid to produce phenols

(4) Alkyl amines are stronger bases than ammonia

78. The correct order of increasing bond angles in the following species are :

(1) $Cl_2O < ClO_2 < ClO_2^-$ (2) $ClO_2 < Cl_2O < ClO_2^-$

(3) $Cl_2O < ClO_2^- < ClO_2$ (4) $ClO_2^- < Cl_2O < ClO_2$

79. Among the given compounds, the most susceptible to nucleophilic attack at the carbonyl group is:

(1) CH_3COOCH_3 (2) CH_3CONH_2 (3) $CH_3COOCOCH_3$ (4) CH_3COCl

80. 25.3 g of sodium carbonate, Na_2CO_3 is dissolved in enough water to make 250 mL of solution. If sodium carbonate dissociates completely, molar concentration of sodium ion, Na^+ and carbonate ions, CO_3^{2-} are respectively (Molar mass of Na_2CO_3 = 106 g mol^{-1})

(1) 0.955 M and 1.910 M (2) 1.910 M and 0.955 M

(3) 1.90 M and 1.910 M (4) 0.477 M and 0.477 M

81. In a buffer solution containing equal concentration of B^- and HB, the K_b for B^- is 10^{-10}. The pH of buffer solution is:

(1) 10 (2) 7 (3) 6 (4) 4

82. The existance of two different coloured complexes with the composition of $[Co(NH_3)_4Cl_2]^+$ is due to :

(1) linkage isomerism (2) geometrical isomerism

(3) coordination isomerism (4) ionization isomerism

83. Property of the alkaline earth metals that increases with their atomic number:

(1) Solubility of their hydroxides in water (2) Solubility of their sulphates in water

(3) Ionization energy (4) Electronegativity

84. During the kinetic study of the reaction, $2A + B \rightarrow C + D$, following results were obtained:

Run	[A]/mol L^{-1}	[B]/mol L^{-1}	Initial rate of formation of D/mol L^{-1} min^{-1}
I	0.1	0.1	6.0×10^{-3}
II	0.3	0.2	7.2×10^{-2}
III	0.3	0.4	2.88×10^{-1}
IV	0.4	0.1	2.40×10^{-2}

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

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

85. Which of the following pairs has the same size ?

(1) Fe^{2+}, Ni^{2+} (2) Zr^{4+}, Ti^{4+} (3) Zr^{4+}, Hf^{4+} (4) Zn^{4+}, Hf^{4+}

86. The correct order of the decreasing ionic radii among the following is electronic species are:

(1) $Ca^{2+} > K^{+} > S^{2-} > Cl^{-}$ (2) $Cl^{-} > S^{2-} > Ca^{2+} > K^{+}$

(3) $S^{2-} > Cl^{-} > K^{+} > Ca^{2+}$ (4) $K^{+} > Ca^{2+} > Cl^{-} > S^{2-}$

87. In which one of the following species the central atom has the type of hybridization which is not the same as that present in the other three?

(1) SF_4 (2) I_3^- (3) $SbCl_5^{2-}$ (4) PCl_5

88. Standard entropies of X_2, Y_2 and XY_3 are 60, 40 and 50 $JK^{-1}\ mol^{-1}$ respectively. For the reaction

$$\frac{1}{2}X_2 + \frac{3}{2}Y_2 \rightleftharpoons XY_3; \qquad \Delta H = -30\ kJ,$$

to be at equilibrium, the temperature should be:

(1) 750 K (2) 1000 K (3) 1250 K (4) 500 K

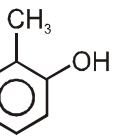
89. Which of the following represents the correct order of increasing electron gain enthalpy with negative sign for the elements O, S, F and Cl ?

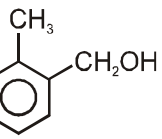
(1) Cl < F < O < S (2) O < S < F < Cl (3) F < S < O < Cl (4) S < O < Cl < F

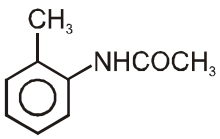
90. Which one of the following compounds is a peroxide ?

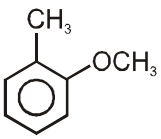
(1) KO_2 (2) BaO_2 (3) MnO_2 (4) NO_2

91. Which one is most reactive towards electrophilic reagent ?

(1) 

(2) 

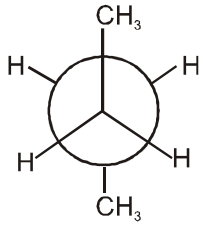
(3) 

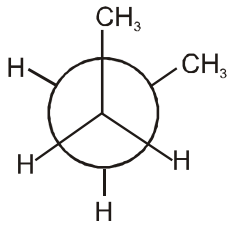
(4) 

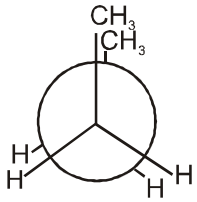
92. Which one of the following is employed as a Tranquilizer drug?

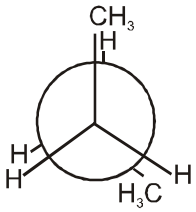
(1) Promethazine (2) Valium (3) Naproxen (4) Mifepristone.

93. In the following the most stable conformation of *n*-butane is :

(1) 

(2) 

(3) 

(4) 

94. Which of the following reactions will not result in the formation of carbon-carbon bonds?

(1) Reimer-Tieman reaction (2) Cannizaro reaction

(3) Wurtz reaction (4) Friedel-Crafts acylation

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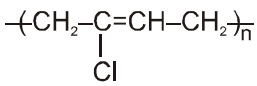
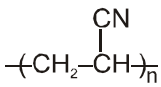
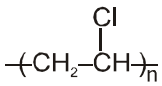
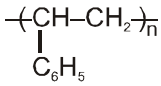
95. Which of the following structures represents Neoprene polymer ?

(1) 

(2) 

(3) 

(4) 

96. Which one is most reactive towards S_N1 reaction?

(1) $C_6H_5CH(C_6H_5)Br$ (2) $C_6H_5CH(CH_3)Br$ (3) $C_6H_5C(CH_3)(C_6H_5)Br$ (4) $C_6H_5CH_2Br$

97. AB crystallizes in a body centred cubic lattice with edge length 'a' equal to 387 pm. The distance between two oppositively charged ions in the lattice is:

(1) 335 pm (2) 250 pm (3) 200 pm (4) 300 pm

98. The number of atoms in 0.1 mol of a triatomic gas is: ($N_A = 6.02 \times 10^{23}$ mol^{-1})

(1) 6.026×10^{22} (2) 1.806×10^{23} (3) 3.600×10^{23} (4) 1.800×10^{22}

99. Which one of the following molecular hydrides acts as a Lewis acid ?
(1) NH_3 (2) H_2O (3) B_2H_6 (4) CH_4

100. The tendency of BF_3, BCl_3 and BBr_3 to behave as Lewis acid decreases in the sequence :
(1) $BCl_3 > BF_3 > BBr_3$ (2) $BBr_3 > BCl_3 > BF_3$ (3) $BBr_3 > BF_3 > BCl_3$ (4) $BF_3 > BCl_3 > BBr_3$

PART- C (BIOLOGY)

101. Apomictic embryos in citrus arise form :
(1) Maternal sporophytic tissue in ovule (2) Antipodal cells
(3) Diploid egg (4) Synergids

102. If due to some injury the chordae tendinae of the tricuspid valve of the human heart is partially non-functional, what will be the immediate effect
(1) The pacemaker will stop working
(2) The blood will tend to flow into the leftatrium
(3) The flow of blood into the pulmonary artery will be reduced
(4) The flow of blood into the aorta will be slowed down

103. The nerve centres which control the body temperature and the urge for eating are contained in
(1) Pons (2) Cerebellum (3) Thalamus (4) Hypothalamus

104. The plasma membrane consists mainly of
(1) Proteins embedded in a phospholipid bilayer (2) Proteins embedded in a polymer of glucose molecules
(3) Proteins embedded in a carbohydrate bilayer (4) Phospholipids embedded in protein bilayer

105. In unilocular ovary with a single ovule the placentation is
(1) Basal (2) Free Central (3) Axile (4) Marginal

106. The genetically-modified (GM) brinjal in India has been developed for

(1) Enhancing shelf life (2) Enhanicing mineral content

(3) Drought-resistance (4) Insect-resistance

107. Ringworm is humans is caused by

(1) Fungi (2) Nematodes (3) Viruses (4) Bacteria

108. Which one of the following pair is incorrectly matched

(1) Somatostatin - Delta cells (Source) (2) Corpusluteum - Relaxin (secretion)

(3) Insulin - Diabetes mellitus (disease) (4) Glucagon - Beta cells (source)

109. Widal test is used for the diagnosis of

(1) Pneumonia (2) Tuberculosis (3) Typhoid (4) Malaria

110. Which one of the following is an example of ex-situ conseryation

(1) Seed bank (2) Sacred groves (3) National park (4) Wildlife sanctuary

111. Whcih one of the following symbols and its representation used in human pedigree analysis is correct

(1) ○ = Unaffected male (2) □ = unaffected female

(3) ◆ = male affected (4) □═○ = mating between relatives

112. The permissible use of the technique amniocentesis is for

(1) Artificial insemination

(2) Transjfer of embryo into the uterus of a surrogate mother

(3) Detecting any genetic abnormality

(4) Detecting sex of the unborn foetus

113. Some hyperthermophilic organisms that grow in highly acidic (pH2) habitats belong to the two groups

(1) Cyanobacteria and diatoms (2) Protists and mosses

(3) Liverworts and yeasts (4) Eubacteria and archaea

114. Which one of the following statements in regard to the excretion by the human kidneys is correct

(1) Distal convoluted tubule is incapable of reabsorbing HCO_2^-

(2) Nearly 99 per cent of the glomerular filtrate is reabsorbed by the renal tubules

(3) Ascending limb of loop of Henle is impermeable to electrolytes

(4) Descending limb of loop of Henle is impermeable to water

115. Which one of the following is not lateral meristem
(1) Interfascicular cambium (2) Phellogen
(3) Intercalary meristem (4) Intrafascicular cambium

116. Single-celled eukaryotes included in
(1) Fungi (2) Archaea (3) Monera (4) Protista

117. C_4 plants are more efficient in photosynthesis than C_3 plants due to
(1) Presence of larger number of chloroplasts in the leaf cells
(2) Presence of thin cuticle
(3) Lower rate fo photorespiration
(4) Higher leaf area

118. Which one of the following is used as vector for cloning genes into higher organisms
(1) Salmonell typhimurium (2) Rhizopus nigricans
(3) Retrovirus (4) Baculovirus

119. Which one of the following is not a micronutrient
(1) Magnesium (2) Zinc (3) Boron (4) Molybdenum

120. One example of animal having a single opening to the ouside that serves both as mouth as well as anus is
(1) Asterias (2) Ascidia (3) Fasciola (4) Octopus

121. Which one of the following structure between two adjacent cells is an effective transport pathway
(1) Plastoquinones (2) Endoplasmic reticulum
(3) Plasmalemma (4) Plasmodesmata

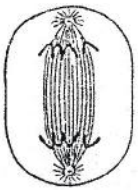
122. Which one of the following does not follow the central dogma of molecular biology
(1) Mucor (2) Chlamydomonas (3) HIV (4) Pea

123. Which one of the following is not used in organic farming
(1) Earthworm (2) Oscillatoria (3) Snail (4) Glomus

124. Study the four statements (a-d) given below and select the two correct ones out of them
(a) A lion eating a deer and a sparrow feeding on grain are ecologically similar in being consumers
(b) Predator star fish pisaster helps in maintaining species diverstiy of some invertebrates
(c) Predators ultimately lead to the extinction of pery species
(d) Production of chemicals such as nicotine, strychnine by the plants are metabolic disorders
The two correct statements are
(1) (c) and (d) (2) (a) and (d) (3) (a) and (b) (4) (b) and (c)

125. Toxic agents present in food which interfere with thyroxine synthesis lead ot the development of
(1) cretinism (2) simple goitre (3) thyrotoxicosis (4) toxic goitre

126. Which stages of cell division do the following figures A and B represent respectively


A
Fig. A


B
Fig. B

(1) Telophase – Metaphase (2) Late Anaphase – Prophase
(3) Prophase – Anaphase (4) Metaphase – Telophase

127. A common biocontrol agent for the control of plant disease is
(1) Bacillus thruingiensis (2) Glomus (3) Trichoderma (4) Baculovirus

128. Carrior ions like Na^+ facilitate the absorption of substances like
(1) glucose and fatty acids (2) fatty acids and glycerol
(3) fructose and some amino acids (4) amino acids and glucose

129. The first movements of the foetus and appearance of hair on its head are usually observed during which month of pregnancy
(1) Fifth month (2) Sixth month (3) Third month (4) Fourth month

130. Which two of the following changes (a-d) usually tend to occur in the plain dwellers when they move to high altitudes (3,500 m or more)
(a) Increase in red blood cell size
(b) Increase in red blood cell production
(c) Increased breathing rate
(d) Increase in the thrombocyte count
Changes occurring are
(1) (c) and (d) (2) (a) and (d) (3) (a) and (b) (4) (b) and (c)

131. Which one of the following kinds of animals are triploblastic
(1) Sponges (2) Ctenophores (3) Corals (4) Flat worms

132. Stirred-tank bioreactors have been designed for
(1) Purification of the product
(2) Ensuring anaerobic conditions in the culture vessel
(3) Availability of oxygen throughout the process
(4) Addition of preservatives to the product

133. The kind of epithelium which forms the inner walls of blood vessels is
(1) columnar epithelium
(2) ciliated columnar epithelium
(3) squamous epithelium
(4) cuboidal epithelium

134. Some of the characteristics of Bt cotton are
(1) Medium yield, long fibre and resistance to beetle pests
(2) High yield and production of toxic protein crystals which kill dipteran pests
(3) High yield and resistance to bollworms
(4) Long fibre and resistance to aphids

135. Which one of the following statments about certain given animals is correct
(1) Molluscs are acoelomates
(2) Insects are pseudocoelomates
(3) Flat worms (Platyhelminthes) are coelomates
(4) Round worms (Aschelminthes) are pseudocoelomates

136. Cu ion released from copper-releasing Intra Uterine Devices (IUDs)
(1) increase phagocytosis of sperms
(2) suppress sperm motility
(3) prevent ovulation
(4) make uterus unsuitable for implantation

137. The second maturation division of the mammalian ovum occurs
(1) Until after the ovum has been penetrated by a sperm
(2) Until the nucleus of the sperm has fused with that of the ovum
(3) In the Graafian follicle after the first maturation division
(4) Shortly after ovulation before the ovum makes entry into the fallopian tube

138. Infectious proteins are present in
(1) Prions (2) Viroids (3) Satellite viruses (4) Geminal viruses

139. Low Ca^{++} in the body fluid may be the cause of
(1) Anaemia (2) Angina pectoris (3) Gout (4) Tetany

140. Which one of the following statements about morula in humans is correct
(1) It has far less cytoplasm as well as less DNA than in an uncleaved zygote
(2) It has more or less equal quantity of cytoplasm and DNA as in uncleaved zygote
(3) It has more cytoplasm and more DNA than an uncleaved zygote
(4) It has almost equal quantiity of cytoplasm as an uncleaved zygote but much more DNA

141. Select the two correct statements out of the four (a-d) given below about lac operon.
(a) Glucose or galactose may bind with the repressor and inactivate it
(b) In the absence of lactose the repressor binds with the operator region
(c) The Z- gene codes for permease
(d) This was elucidated by Francois Jacob and jacque Monod
The correct statements are
(1) (a) and (c) (2) (b) and (d) (3) (a) and (b) (4) (b) and (c)

142. During mitosis ER and nucleolus begin to disappear at
(1) Early metaphase (2) Late metaphase (3) Early Prophase (4) Late prophase

143. Seminal plasma in human males is rich in
(1) glucose and calcium (2) DNA and testosterone
(3) ribose and potassium (4) fructose and calcium

144. Virus envelope is known as
(1) Virion (2) Nucleoprotein (3) Core (4) Capsid

145. Satellite DNA is useful tool in
(1) Sex determination (2) Foretic engineering (3) Genetic engineering (4) Organ transplantation

146. An element playing important role in nitrogen fixation is
(1) Copper (2) Manganese (3) Zinc (4) Molybdenum

147. Breeding of crops with high level of minerals, vitamins and proteins is called
(1) Biofortification (2) Biomagnification (3) Micropropagation (4) Somatic hybridisation

148. Keel is characteristic of the frowers of
(1) Cassia (2) Calotropis (3) Bean (4) Gulmohur

149. Which one of the following cannot be explained on the basis of Mendel's Law of Dominance
(1) Out of one pair of factors one is dominant, and the other recessive
(2) Alleles do not show any blending and both the characters recover as such in F_2 generation.
(3) Factors occur in pairs
(4) The discrete unit controlling a particular character is called a factor

150. ABO blood groups in humans are controlled by the gene I. It has three alleles - I^A, I^B and i. Since there are three different alleles, six different genotypes are possible. How many phenotyes can occur
(1) One (2) Four (3) Two (4) Three

151. The one aspect which is not a salient feature of genetic code, is its being
(1) Ambiguous (2) Universal (3) Specific (4) Degenerate

152. Consider the following four statements (a-d) regarding kidney transplant and select the two correctones out of these.
(a) Even if a kidney transplant is proper the recipient may need to take immunosuppresants for a long time
(b) The cell-mediated immune response is responsible for the graft regection
(c) The B- lymphocytes are responsible for rejection of the graft
(d) The acceptance or rejection of a kidney transplant depends on specific interferons
The two correct statements are
(1) (c) and (d) (2) (a) and (c) (3) (a) and (b) (4) (b) and (c)

153. Sertoli cells are found in
(1) adrenal cortex and secrete adrenaline
(2) Seminiferous tubules and provide nutrition to germ cells
(3) Pancreas and secrete progesterone
(4) Ovaries and secrete progesterone

154. Which one of the following palindromic base sequences in DNA can be easily cut at about the middle by some particular restriction enzyme
(1) 5' ——— GATATG ——— 3' , 3' ——— CTACTA ——— 5'

(2) 5' ——— GAATTC ——— 3' , 3' ——— CTTAAG ——— 5'

(3) 5' ——— CACGTA ——— 3' , 5' ——— CTCAGT ——— 3'

(4) 5' ——— CGTTCG ——— 3' , 3' ——— ATGGTA ——— 5'

155. The two gases making highest relative contribution to the greenhouse gases are
(1) CH_4 and N_2O (2) CFC_5 and N_2O (3) CO_2 and N_2O (4) CO_2 and CH_4

156. Select the correct statement form the ones given below with resprect to dihybrid cross.
(1) Genes far apart on the same chromosomes show very few recombinations
(2) Genes loosely linked on the same chromosome show similar recombinations as the tightly linked ones
(3) Tightly linked genes one the same chromosome show very few recombinations
(4) Tightly linked genes on the same chromosomes show higher recombinations

157. The energy-releasing metabolic process in which substrate is oxidised without an external electron acceptor is called.
(1) Fermentation (2) Aerobic respiration (3) Photorespiration (4) Glycolysis

158. Phototropic curvature is the result of uneven distribution of
(1) Phytochrome (2) Cytokinins (3) Auxin (4) Gibberellin

159. Select the correct statement from the following
(1) Methanobaeterium is aerobic bacterium found in rumen of cattle
(2) Biogas, commonly called gobar gas, is pure methane
(3) Activated sludge-sediment in settlement tanks of sewage treatment plant is a rich source of aearobic bacteria
(4) Biogas is produced by the activity of aerobic bacteria on animal waste

160. dB is a standard abbreviation used for the quantitative expression of
(1) A particular pollutant (2) The dominant Bacillus in a culture
(3) A certain pesticide (4) The density of bacteria in a medium

161. Male and female gametophytes are independent and free-living in
(1) Castor (2) Pinus (3) Sphagnum (4) Mustard

162. The biomass available for consumption by the herbivores and decomposers is called
(1) Secondary productivity (2) Standing crop
(3) Gross primary productivity (4) Net primary productivity

163. The principal nitrogenous excretroy compound in humans is synthesised
(1) In kidneys as well eliminated by kidneys
(2) In liver and also eliminated by the same throught bile
(3) In the liver, but eliminated mostly through kidneys
(4) In kidneys but eliminated mostly through liver

164. The chief water conducting elements of xylem in gymnosperms are
(1) Fibres (2) Transfusion tissue (3) Tracheids (4) Vessels

165. Injury to adrenat cortex is not likely to affect the secretion of which of the following
(1) Both Androstendione and Dehydroepiandroserone
(2) Adrenaline
(3) Cortisol
(4) Aldosterone

166. The technical term used for the androecium in a flower of China rose (Hibiscus rosa-sinensis) is
(1) Diadelphous (2) Polyandrous (3) Polyadelphous (4) Monadelphous

167. PGA as the first CO_2 fixation product was discovered in photosynthesis of

(1) Gymnosperm (2) Angiosperm (3) Alga (4) Bryophyta

168. The main arena of various types of activities of a cell is

(1) Mitochondria (2) Cytoplasm (3) Nucleus (4) Plasma membrane

169. Darwin's finches are a good example of

(1) Connecting link (2) Adaptive radiation (3) Convergent evolution (4) Industrial melanism

170. Which one of the following statements about all the four of Spongilla, Leech, Dolphin and Penguin is currect

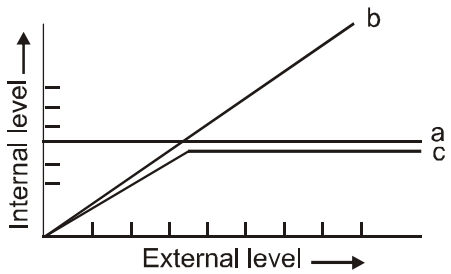
(1) Leech is a fresh water form while all others are marine

(2) Spongilla has special collared cells called choano cytes, not found in the remaining three

(3) All are bilaterally symmetrical

(4) Penguin is homoiothermic while the remaining three are poikilothermic

171. The figure given below is a diagrammatic representation of response of organisms to abiotic factors. What do a, b and c represent respectively



(a)	(b)	(c)
(1) regulator	partial regulator	Conformer
(2) parital regulator	regulator	Conformer
(3) regulator	conformer	partial regulator
(4) conformer	regulator	partial regulator

172. Algae have cell wall made up of

(1) Hemicellulose, pectins and proteins (2) pectins, celluose and proteins

(3) Cellulose, hemicellulose and pectins (4) Cellulose, galactans and mannans

173. An improved variety of transgenic basmati rice

(1) gives high yield and is rich in vitamin A

(2) is completely resistant to all insect pests and diseases of paddy

(3) gives high yield but has no characteristic aroma

(4) does not require chemical fertilizers and growth hormones

174. In vitro ferilisation is a technique that involves transfer of which one of the following into the fallopian tube
(1) Either zygote or early embryo upto 8 cell stage
(2) Embryo of 32 cell stage
(3) Zygote only
(4) Embryo only, upto 8 cell stage

175. Listed below are four respiratory capacities (a-d) and four jumbled respiratory volumes of a normal human adult

Respiratory capacites	Respiratory volumes
(a) Residual volume	2500 mL
(b) Vital capacity	3500 mL
(c) Inspiratory reserve volume	1200 mL
(d) Inspiratory capacity	4500 mL

Which one of the following is the correct matching of two capacities and volumes
(1) (c) 1200 mL, (d) 2500 mL
(2) (d) 3500 mL, (a) 1200 mL
(3) (a) 4500 mL, (b) 3500 mL
(4) (b) 2500 mL, (c) 4500 mL

176. Membrane - bound organelles are absent in
(1) Streptococcus (2) Chlamydomonas (3) Plasmoldium (4) Saccharomyces

177. The scutellum observed in a grain of wheat or maize is comparable to which part of the seed in other monocotyledons
(1) Endosperm (2) Aleurone layer (3) Plumule (4) Cotyledon

178. Coiling of garden pea tendrils around any support is an example of
(1) Thigmonasty (2) Thigmotropism (3) Thermotaxis (4) Thigmotaxis

179. Restriction endonucleases are enzymes which
(1) Recognize a specific nueleotide sequence for binding of DNA ligase
(2) Restrict the action of the enyme DNA polymerase
(3) Remove nucleotides from the ends of the DNA molecule
(4) Make cuts at specific positions within the DNA molecule

180. If for some reason our goblet cells are non-functional, this will adversely affect
(1) secretion of sebum from the sebaceous glands
(2) maturation of sperms
(3) smooth movement of food down the intestine
(4) production of somatostatin

181. Transfer of pollen grains from the anther to the stigma of another flower of the same plant is called
(1) Geitonogamy (2) Karyogamy (3) Autogamy (4) Xenogamy

182. One of the free-living anaerobic nitrogen-fixer is
(1) Rhodospirillum (2) Rhizobium (3) Azotobacter (4) Beijernickia

183. Photoperiodism was first characterised in
(1) Potato (2) Tomato (3) Cotton (4) Tobacco

184. Vasa efferentia are the ductules leading from
(1) Rete testis to vas deferens (2) Vas deferens to epididymis
(3) Epididymis to urethra (4) Testicular lobules to rete testis

185. Which one of the following has its own DNA
(1) Dictyosome (2) Lysosome (3) Peroxisome (4) Mitochondria

186. Select the correct statement from the ones given below
(1) Morphine is often given to persons who have undergone surgery as a pain killer
(2) Chewing tobacco lowers blood pressure and heart rate
(3) Cocaine is given to patients after surgery as it stimulates recovery
(4) Barbiturates when given to criminals make them tell the truth

187. What is true about RBCs in humans
(1) They transport 99.5 per cent of O_2
(2) They transport about 80 per cent oxygen only and the rest 20 per cent of it is transported in dissolved state in blood plasma
(3) They do not carry CO_2 at all
(4) They carry about 20-25 per cent of CO_2

188. Which one of the following statements about human sperm is correct.
(1) The sperm lysins in the acrosome dissolve the egg envelope facilitating fertilisation
(2) Acrosome serves as a sensory structure leading the sperm towards the ovum
(3) Acrosome seves no particular function
(4) Acrosome has a conical pointed structure used for piercing and penetrating the egg resulting in fertilisation.

189. The signals for parturition originate from
(1) Placenta as well as fully developed foetus (2) Oxytocin released from maternal pituitary
(3) Fully developed foetus only (4) Placenta only

190. The common nitrogen- fixer in paddy fields is
(1) Azospirillum (2) Oscillatoria (3) Frankia (4) Rhizobium

191. Wind pollinated flowers are
(1) Small, producing large number of dry pollen grains
(2) Large producing abunant nectar and pollen
(3) Small, producing nectar and dry pollen
(4) Small, brightly coloured, producing large number of pollen grains

192. Ovary is half-inferior in the flowers of
(1) Plum (2) Brinjal (3) Cucumber (4) Guava

193. Genetic engineering has been successfully used for producing
(1) Transgenic models for studying new treatments for certain cardiac diseases
(2) Transgenic Cow-Rosie which produces high fat milk for making ghee
(3) Animals like bulls for farm work as they have super power
(4) Transgenic mice for testing safety of polio vaccine before use is humans

194. Which one of the following is one of the characteristics of a biological community
(1) Natality (2) Mortality (3) Sex-ratio (4) Stratification

195. The genotype of a plant showing the dominant Pheotype can be determined by
(1) Dihybrid cross (2) Pedigree analysis (3) Back cross (4) Test cross

196. DNA or RNA segment tagged with a radioactive molecule is called
(1) Probe (2) Clone (3) Plasmid (4) Vector

197. Which one of following statements is correct with respect of AIDS
(1) Drug addicts are least suceptible to HIV infection
(2) AIDS patinets are being fully cured cent per cent with proper care and nutrition
(3) The causative HIV retrovirus enters helper T-lymphocyte thus reducing their numbers
(4) The HIV can be transmitted through eating food together with an infected person.

198. Heartwood differs from sapwood in
(1) Absence of vessels and parenchyma (2) Having dead and non-conducing elements
(3) Being susceptible to pests and pathogens (4) Presence of rays and fibres

199. A renewable exhaustible natural resource is
(1) Petroleum (2) Minerals (3) Forest (4) Coal

200. The part of Fallopian tube closest to the ovary is
(1) Infundibulum (2) Cervix (3) Ampulla (4) Isthmus