1. In an atom of hydrogen, which of the following orbitals has the lowest energy for an electron present in it?
(1) $2p$ (2) $2s$ (3) $4p$ (4) None of these

2. The filling of electrons in different orbitals of an atom in increasing order of their energy is called
(1) Aufbau principle. (2) Joule's statement.
(3) Uncertainty principle. (4) Pauli's exclusion principle.

3. Two electrons occupying the same orbital are distinguished by
(1) magnetic quantum number. (2) azimuthal quantum number.
(3) principal quantum number. (4) spin quantum number.

4. Rutherford α-particles scattering experiment eventually led to the conclusion that
(1) the point of impact of matter can be determined.
(2) electrons occupy space around the nucleus.
(3) neutrons are not present in the nucleus.
(4) mass and energy are related.

5. The most probable valency of an element with electronic distribution of $1s^2$, $2s^2$, $2p^6$, $3s^2$ $3p^1$ is
(1) +3 (2) -2 (3) -3 (4) +2

6. Which of the following is wrong about electron?
(1) It has a particle nature.
(2) It has a dual nature.
(3) It gives out energy while moving in orbits.
(4) Its motion is affected by electric field.

7. On moving across a period from left to right the ionisation energy increases because
(1) value of principal quantum number increases.
(2) effective nuclear charge increases.
(3) atomic size increases.
(4) nuclear charge increases.

8. With the increase in atomic number in a period of the periodic table
(1) electron affinity decreases. (2) metallic character decreases.
(3) ionization energy decreases. (4) atomic mass decreases.

9. Periodicity in the properties of the elements is due to
(1) regular decrease in atomic weight of the elements.
(2) periodicity in the electronic configuration of elements.
(3) regular increase in atomic number of the element.
(4) regular increase in atomic size of the elements.

10. The elements in a vertical group in a periodic table show similarity in chemical behavior because all of them
    (1) form ions by the loss of electrons.
    (2) have similar valence shell electronic configuration.
    (3) are either metals or non-metals.
    (4) None of these

11. In the first transition series, the incoming electron enters
    (1) 2*d* orbital (2) 4*d* orbital (3) 3*d* orbital (4) None of these

12. The atoms of elements placed in a group must have the same
    (1) number of mesons. (2) number of electrons in valence shell.
    (3) number of electrons in inner shell. (4) number of protons in valence shell.

13. An element A has atomic number 7. It will have properties similar to the element with atomic number
    (1) 85 (2) 57 (3) 26 (4) 51

14. Covalent character of an ionic compound increases with
    (1) decrease in anion size . (2) decrease in cation size.
    (3) increase in cation size . (4) decrease in both cation and anion size.

15. Which of the following is the name given to the pairs of valence electrons that do not participate in bonding diatomic oxygen molecule?
    (1) unvalenced pair (2) inner pair (3) outer pair (4) unshared pair

16. The increase in bond order results in
    (1) increase in bond length and bond energy.
    (2) decrease in bond length and bond energy.
    (3) decrease in bond length and increase in bond energy.
    (4) None of these

17. When a polar molecule attracts the electron in a nonpolar molecule
    (1) a dipole is induced. (2) an ionic bond forms.
    (3) a crystal lattice forms. (4) a Lewis structure forms.

18. Smaller the size of ion
    (1) lesser is the degree of hydration. (2) lesser is the polarizing power.
    (3) greater is the electron affinity. (4) greater is the degree of hydration.

19. Among the alkaline earth metals, the element that forms mainly covalent compounds is
    (1) beryllium (2) magnesium (3) calcium (4) zinc

20. Which of the following is soluble in ether?
(1) $SrCl_2$ (2) $CaCl_2$ (3) $BaCl_2$ (4) $BeCl_2$

21. Sodium reacts with water more vigorously than lithium because it
(1) is more electropositive. (2) has more electronegativity.
(3) has higher atomic mass. (4) None of these

22. Biodegradable pollutant is
(1) Plastic (2) Asbestos (3) Sewage (4) Mercury

23. The main pollutant in the waste water of leather tanneries is due to the salt of
(1) lead (2) chromium (VI) (3) copper (4) chromium (III)

24. Which of these reactions in the atmosphere leads to acid rain?
(1) Magnesium + Oxygen → Magnesium dioxide
(2) Sulphur + Oxygen → Sulphur dioxide
(3) Carbon dioxide + Hydrogen → Hydrogen carbonate
(4) Sulphur dioxide + Water → Sulphuric acid

25. Which one of the following is mainly responsible for depletion of ozone layer?
(1) Water vapour (2) Carbon dioxide (3) Methane (4) Chlorofluorocarbons

26. Smog is essentially caused by the presence of
(1) O_2 and O_3 (2) O_3 and N_2
(3) Oxides of sulphur and nitrogen (4) O_2 and N_2

27. Which of the following is least likely to be an effect of global warming?
(1) Loss of fertile delta regions for agriculture
(2) Change in global patterns of precipitation
(3) Extinction of some species that have narrow temperature requirements
(4) None of these

28. Which one of the following is the major greenhouse gases?
(1) carbon dioxide, nitrogen and ozone
(2) chlorofluorocarbons and nitrogen
(3) carbon dioxide, methane, ozone and water vapour
(4) chlorine, ozone and water vapour

29. The increase in equivalent conductivity of strong electrolytes on dilution is due to
(1) increase in number of ions per ml. (2) increase in inter-ionic attraction.
(3) decrease in inter-ionic attraction. (4) increased dissociation.

30. An electrochemical cell can be changed into an electrolytic cell by
(1) changing the electrolytes in two half cells.
(2) changing the conc. of the electrolytes.
(3) providing higher potential from outside.
(4) reversing the electrodes.

31. The increase in rate of reaction with temperature is due to
(1) increase in the number of active molecules.
(2) increase in the average kinetic energy of the reacting molecules.
(3) decrease in activation energy.
(4) increase in number of collisions.

32. Which of the statements is false regarding catalyst?
(1) It increases the rate of the forward reaction, but does not alter the reverse reaction rate
(2) Alters the mechanism of reaction.
(3) Alters the activation energy.
(4) Increases the rate of reaction, but is not consumed.

33. Which of the following statements is in accordance with the Arrhenius equation?
(1) Rate of a reaction has no effect with increase in temperature.
(2) Rate of a reaction increases with decrease in activation energy.
(3) Rate constant decreases exponentially with increase in temperature.
(4) Rate of reaction decreases with decrease in activation energy.

34. Which of the following statements is not correct about order of reaction?
(1) The order of a reaction can be a fractional number.
(2) Order of a reaction is experimentally determined quantity.
(3) The order of a reaction is always equal to the sum of the stoichiometric coefficients of reactants in the balance chemical equation for a reaction.
(4) The order of a reaction is the sum of the powers of molar concentration of the reactants in the rate law expression.

35. Which of the following metals is extracted from the ore by the process of electrolysis?
(1) Hg (2) W (3) Al (4) Sn

36. Refractory metals are used in the construction of furnaces because
(1) they possess great structural strength.
(2) they can withstand high temperature.
(3) they are chemically inert.
(4) they do not require replacement.

37. The most characteristic property of metals is their tendency to
(1) form basic oxides .
(2) form acidic oxides.
(3) lose electrons.
(4) gain electrons.

38. Which of the following is most electro-negative?
(1) Carbon (2) Silicon (3) Lead (4) Tin

39. Acidified potassium permanganate solution is decolourised by
(1) bleaching powder (2) white vitriol (3) Mohr's salt (4) Nessler's reagent

40. Which of the following can reduce both Tollen's reagent and Fehling's solution?
(1) Benzaldehyde (2) Acetaldehyde (3) Acetone (4) Both (1) & (2)

41. Which of the following will give an aldehyde on oxidation?
(1) Methoxy ethane (2) 2-Methanal (3) 2-Methyl propane (4) 1-Propanol

42. Which of the following functions is not associated with proteins?
(1) Contraction (2) Providing structural material
(3) Information storage (4) Specific binding

43. Carbohydrates are
(1) polyhydroxy aldehydes and phenols (2) polyhydroxy aldehydes and ketones
(3) polyhydroxy ketones and phenols (4) polyhydroxy phenol and alcohols

44. Cellulose is made up of repeating units of
(1) β-1-4 linkage between D-glucose units (2) β-1-2 linkage between D-glucose units
(3) α-1-4 linkage between D-glucose units (4) α-1-2 linkage between D-glucose units

45. Which of the following is a reducing sugar?
(1) Glucose (2) Dihydroxyacetone (3) Erythulose (4) None of these

46. A nucleoside is composed of
(1) a base + a sugar (2) a base + a sugar + phosphate
(3) a base + a phosphate (4) None of these

47. Which of the following RNA serves as adaptor molecule during protein synthesis?
(1) rRNA (2) mRNA (3) tRNA (4) None of these

48. Which of the following is known as anti-hemorrhagic vitamin?
(1) Vitamin E (2) Vitamin K (3) Vitamin D (4) Vitamin C

49. Bakelite is made by the action of
(1) ethylene glycol and phthalic acid (2) melamine and formaldehyde
(3) urea and formaldehyde (4) phenol and formaldehyde

50. Cordite is a/an
(1) sedative (2) synthetic fibre (3) antifreeze (4) explosive

51. Let P(n) : $n^2 < 2^n$. The smallest positive integer n for which P(n) is true is

(1) 5 (2) 2 (3) 3 (4) 0

52. The area of a triangle with vertices (0, 0), (3, 3) and (-3, 3) is ___

(1) 9 (2) –9 (3) 3 (4) 6

53. If $\begin{vmatrix} x & 4 \\ 16 & x \end{vmatrix} = \begin{vmatrix} 8 & 4 \\ 16 & 8 \end{vmatrix}$, then x is equal to

(1) 8 (2) ±8 (3) –8 (4) 0

54. The principal value branch of the function $\cos^{-1}$ is

(1) $[0, \pi]$ (2) $[-1,1]$ (3) $\left[\frac{-\pi}{2}, \frac{\pi}{2}\right]$ (4) $\left[0, \frac{\pi}{2}\right]$

55. The f(x) = [x], where [x] denotes the greatest integer function, is continuous at, ____

(1) –2 (2) 1.2 (3) 4 (4) 1

56. $\frac{d}{dx}(\sin x + 5) = \cos x; x \in I$, then sin x+5 denotes

(1) a family of anti derivates of cos x (2) an anti-derivative of cos x

(3) derivative of cos x (4) None of these

57. Let P(n) : $x^{2n} - y^{2n}$ is divisible by x + y. The smallest natural number n for which P(n) is true is

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

58. In a linear programming problem the number of minimum (or maximum) points attained by an objective function can be

(1) 2 (2) more than 1 (3) only 1 (4) only 2

59. The slope of a line which passes through the origin and the mid-point of the line segment joining the point P(0, –6) and Q(6,0) is

(1) 1 (2) –1 (3) 0 (4) 1/2

60. $k\begin{vmatrix} a_1 & b_1 & c_1 \\ a_2 & b_2 & c_2 \\ a_3 & b_3 & c_3 \end{vmatrix} =$ _____, where k is a constant. Which of the following is not the correct value?

(1) $\begin{vmatrix} ka_1 & kb_1 & kc_1 \\ ka_2 & kb_2 & kc_2 \\ ka_3 & kb_3 & kc_3 \end{vmatrix}$ (2) $\begin{vmatrix} ka_1 & kb_1 & kc_1 \\ a_2 & b_2 & c_2 \\ a_3 & b_3 & c_3 \end{vmatrix}$

(3) $\begin{vmatrix} a_1 & kb_1 & c_1 \\ a_2 & kb_2 & c_2 \\ a_3 & kb_3 & c_3 \end{vmatrix}$ (4) $\begin{vmatrix} a_1 & b_1 & c_1 \\ ka_2 & kb_2 & kc_2 \\ a_3 & b_3 & c_3 \end{vmatrix}$

61. The principal value of $\tan^{-1}(-\sqrt{3})$ is _____

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

62. If the function f defined by $f(x) = \begin{cases} ax+2 & \text{if } x \le 4 \\ bx+3 & \text{if } x > 4 \end{cases}$

is continuous at x = 4, then the relation between 'a' and 'b' is

(1) $a = b + 4$ (2) $a + b = \frac{1}{4}$ (3) $a - b = \frac{1}{4}$ (4) $a = \frac{1}{4} - b$

63. $\int \frac{1}{\sin^2 x \cos^2 x} dx$ is equal to

(1) $\tan x - \cot x + c$ (2) $\tan x + \cot x + c$ (3) $(\tan x + \cot x)^2 + c$ (4) $\tan^2 x + \cot^2 x + c$

64. Let $P(n):(41)^n-(14)^n$ is a multiple of k, be true for all $n \in N$, the value of k is ___

(1) 41 (2) 14 (3) 27 (4) 55

65. Let A be a square matrix of order 3×3, then $|k^2A|$ is equal to ....., where [| A | → determinant of A].

(1) $k^2|A|$ (2) $k|A|$ (3) $k^6|A|$ (4) $2k|A|$

66. It is true that $\sin^{-1}\left(\frac{1}{x}\right) = \text{cosec}^{-1} x$ for

(1) $x \le 1$ or $x \ge -1$ (2) $x \ge 0$ or $x \le 1$ (3) $x \ge 1$ or $x \le -1$ (4) $x > 0$

67. The function sec (tan $\sqrt{x}$) has derivative -

(1) $\sec\left(\sec^2\sqrt{x}\right)$ (2) $\sec^2\left(\sec\sqrt{x}\right)$

(3) $\frac{\sec\left(\tan\sqrt{x}\right)}{2\sqrt{x}}$ (4) $\frac{\sec(\tan\sqrt{x})\tan\left(\tan\sqrt{x}\right)\sec^2\left(\sqrt{x}\right)}{2\sqrt{x}}$

68. The corner points of the feasible region determined by the system of linear constraints are (0,3) (1,1) and (3,0). Let z = px+qy where p,q>0. Condition on p and q so that the minimum of z occurs at (3,0) and (1,1) is

(1) p = 3q (2) q = 3p (3) p = q (4) p = q/2

69. Probability that A speaks truth is 4/5. A coin is tossed. A reports that a head appears. The probability that actually there was a head is _____

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

70. The side CD of a parallelogram ABCD lies along the x-axis. The perpendicular distance between AB and CD is 4 units. The equation of AB is ____

(1) x+y = 4 (2) x=4 (3) y=4 (4) x=y+4

71. $3\sin^{-1}x = \sin^{-1}$.....for $x\in\left[-\frac{1}{2},\frac{1}{2}\right]$

(1) $4x-3x^3$ (2) $3x^3-4x$ (3) $3-4x^3$ (4) $3x-4x^3$

72. For $y=\tan^{-1}\left(\frac{3x-x^3}{1-3x^2}\right);\frac{1}{\sqrt{3}}\le x<\frac{1}{\sqrt{3}};\frac{dy}{dx}$ is equal to

(1) $\frac{3}{1+x^2}$ (2) $\frac{3}{1-3x^2}$ (3) $\frac{1}{1+x^3}$ (4) $\frac{1-3x^2}{3x-x^3}$

73. "If P(n): $49^n + 16^n + k$ is divisible by 64 for all $n\in N$" is true then the least integral value of k is

(1) –1 (2) –2 (3) –3 (4) –5

74. The feasible region for LPP is always a _____

(1) convex polygon (2) concave polygon
(3) quadrilateral (4) hexagon

75. The mean of the numbers obtained on throwing a die having written 1 on three faces, 2 on two faces and 5 on one face is

(1) 2 (2) 1 (3) 1/3 (4) 5

76. If three points (h,o), (a,b) and (o,k) lie on a line, then

(1) $\frac{a}{k}+\frac{b}{h}=1$ (2) $\frac{a}{h}+\frac{b}{k}=-1$

(3) ak+bh=1 (4) $\frac{a}{h}+\frac{b}{k}=1$

77. The derivative of $\frac{x}{\sin x}$ with respect to sin x is

(1) $\frac{1}{\cos x}$ (2) $\cos x$ (3) $\frac{\sin x - x\cos x}{\cos x.\sin^2 x}$ (4) $\frac{x\sin x - \cos x}{\sin^2 x}$

78. Which of the following is the conditional $p \Rightarrow q$?

(1) p is a necessary condition for q. (2) q is a necessary condition for p.

(3) $\sim p \Rightarrow \sim q$ (4) q only if p

79. A random variable X has the following probability distribution.

X	0	1	2	3	4	5	6	7
P(X)	0	K	2K	2K	3K	K^2	$2K^2$	$7K^2+K$

Value of K is

(1) –1 (2) 1/10 (3) 0 (4) 1

80. Equation of a line with slope 1/3 and passing through (–3,2) is

(1) x–3y+9=0 (2) x+3y – 9=0 (3) x–3y=0 (4) 3x+y – 9=0

81. Which of these matrices are singular?

(1) $\begin{bmatrix} 4 & 3 \\ 2 & 6 \end{bmatrix}$ (2) $\begin{bmatrix} 3 & 2 \\ 6 & 4 \end{bmatrix}$ (3) $\begin{bmatrix} 3 & 2 \\ 4 & 6 \end{bmatrix}$ (4) $\begin{bmatrix} 3 & 4 \\ 2 & 6 \end{bmatrix}$

82. If $\sin\left(\sin^{-1}\frac{1}{5}+\cos^{-1}x\right)=1$, then the value of x is ____

(1) $\frac{1}{2}$ (2) $\frac{1}{5}$ (3) $\frac{\pi}{2}$ (4) 1

83. A die is thrown 6 times. If 'getting an odd number' is a success, the probability of getting at most 5 successes is ____

(1) $\frac{23}{32}$ (2) $\frac{23}{64}$ (3) $\frac{63}{64}$ (4) $\frac{63}{32}$

84. If the line $\frac{x}{a}+\frac{y}{b}=1$ passes through (2,–3) and (4,–5) then a+b is ____

(1) –1 (2) –2 (3) 1 (4) 2

85. If M_{ij} is the minor of the element a_{ij}, then in the matrix $\begin{bmatrix} 2 & -4 \\ 0 & 3 \end{bmatrix}$, $M_{11}+M_{22}$ is ____

(1) 0 (2) 2 (3) 5 (4) 1

86. If $y=\log\left(x+\sqrt{a^2+x^2}\right)$, then $\frac{dy}{dx}=$_____

(1) $\left(a^2+x^2\right)^{-1/2}$ (2) $\frac{1}{a^2+x^2}$ (3) $\frac{x}{\sqrt{a^2+x^2}}$ (4) $1+\sqrt{a^2+x^2}$

87. An example of a statement P(n) which is true for all n>4 but P(1), P(2) and P(3) are not true is _____

(1) $n^2< 2^n$ (2) $2n < \lfloor n$ (3) $n^3 - n$ is divisible by 6 (4) $2n + 1 < 2^n$

88. For the following probability distribution

X	1	2	3	4
P(X)	1/10	1/5	3/10	2/5

The variance is

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

89. If $A=\begin{bmatrix}1 & \lambda & -2\\ 0 & 2 & 3\\ 1 & -1 & 4\end{bmatrix}$ then A^{-1} exists if

(1) $\lambda=-2$ (2) $\lambda=-15/2$ (3) $\lambda\neq 2$ (4) None of these

90. Which one is not a requirement of a binomial distribution?

(1) The outcomes must be dependent on each other

(2) There is a fixed number of trials

(3) There are 2 outcomes for each trial

(4) The probability of success must be the same for all the trials.

91. Let $x + y + z = 6$, $y + 3z = 11$, $x - 2y + z = 0$ be the system of equations for which

$$A=\begin{bmatrix}1 & 1 & 1\\ 0 & 1 & 3\\ 1 & -2 & 1\end{bmatrix}, X=\begin{bmatrix}x\\ y\\ z\end{bmatrix} \text{ and } B=\begin{bmatrix}6\\ 11\\ 0\end{bmatrix}$$

This can be written as

(1) $AX = B$ (2) $AB = X$ (3) $XB = A$ (4) $A = BX$

92. The value of 'c' in Mean value theorem for the function $f(x) = x(x-2)$ for $x \in [1,2]$ is _____

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

93. In order to show that $\sqrt{7}$ is irrational by method of contradiction we assume that

(1) $\sqrt{7}$ is not irrational (2) $\sqrt{7}$ is real

(3) 7 is not irrational (4) $\sqrt{7}$ is not rational

94. The distance between the parallel lines $4x-3y+5=0$ and $4x-3y-2=0$ is

(1) $\frac{7}{5}$ (2) $\frac{21}{5}$ (3) $\frac{2}{5}$ (4) 5

95. If A and B are invertible matrices then which of the following is not correct?

(1) $\det(A^{-1}) = (\det A)^{-1}$ (2) $(A-B)^{-1} = B^{-1} - A^{-1}$

(3) $(AB)^{-1} = B^{-1} A^{-1}$ (4) $\text{adj } A = |A| A^{-1}$

96. $\int_0^{2/3} \frac{dx}{4+9x^2}$ equals

(1) $\frac{\pi}{4}$ (2) $\frac{\pi}{24}$ (3) $\frac{\pi}{6}$ (4) $\frac{\pi}{12}$

97. If $10^n + 3.4^{n+2} + k$ is divisible by 9 for all $n \in N$, then the least positive integral value of k is _____

(1) 5 (2) 3 (3) 7 (4) 1

98. If $\sin^{-1}x = y$ then

(1) $0 < y < \pi$ (2) $-\frac{\pi}{2} \le y \le \frac{\pi}{2}$ (3) $-\frac{\pi}{2} < y < \frac{\pi}{2}$ (4) $-1<y<1$

99. $\int_0^{\pi/2} \frac{\sqrt{\text{Sinx}}}{\sqrt{\text{Sinx}} + \sqrt{\text{Cosx}}} dx$ equals _____

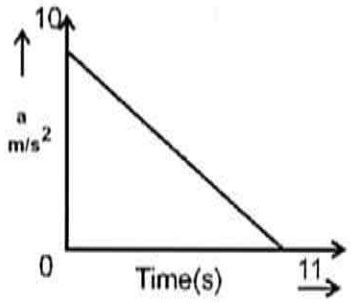
(1) $\frac{\pi}{2}$ (2) π (3) $\frac{\pi}{4}$ (4) 0

100. Which of the following is neither a contrapositive, converse or a contradiction?

(1) $(p \Rightarrow q)$ iff $(\sim q \Rightarrow \sim p)$ (2) $(p \Rightarrow q)$ then $(q \Rightarrow p)$

(3) p or q (4) To show p is true prove that $\sim p$ is false

101. A body starts from rest at time t=0, the acceleration time graph is shown in figure. The maximum velocity attained by the body will be



(1) 110 m/s (2) 55 m/s (3) 650 m/s (4) 550 m/s²

102. A man is sitting in a boat, which is floating on a pond. If the man drinks some water from the pond, the level of water in the pond will
(1) decreases.
(2) increases.
(3) remains unchanged.
(4) may increases or decreases depending on the weight of the man.

103. The total energy of particle performing SHM depends on the factors
(1) k, a, m (2) k, a (3) k, a, x (4) k, x

104. The X-Rays cannot be diffracted by means of ordinary grating because of
(1) high speed. (2) large wavelength.
(3) short wavelength. (4) None of these

105. A wire fixed at the upper end stretches by length 'l' by applying a force F, the work done in stretching is
(1) F/2l (2) Fl (3) 2Fl (4) Fl/2

106. If the length of a simple pendulum is increased by 2%, then the time period
(1) increases by 1%. (2) decreases by 1%.
(3) increases by 2%. (4) decreases by 2%.

107. The resistance of a wire is 5 Ω at 50°C and 6 Ω at 100°C. The resistance of the wire at 0°C will be
(1) 3Ω (2) 2Ω (3) 1Ω (4) 4Ω

108. A circuit has resistance of 12Ω and an impedance of 15Ω. The power factor of the circuit will be
(1) 0.8 (2) 0.4 (3) 1.25 (4) 0.125

109. The motion of a particle is described by the equation u = at. The distance travelled by particle in first 4s is

(1) 4a (2) 12a (3) 6a (4) 8a

110. There are two wires of same material and same length while the diameter of second wire is two times the diameter of first wire, then the ratio of extension produced in the wire by applying same load will be

(1) 1:1 (2) 2:1 (3) 1:2 (4) 4:1

111. If a wire is stretched to make it 0.1% longer, its resistance will

(1) increase by 0.05%. (2) increase by 0.2%.

(3) decrease by 0.2%. (4) decrease by 0.05%.

112. An electron is moving in a region of electric field and magnetic field, it will gain energy from

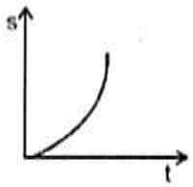
(1) electric field. (2) magnetic field.

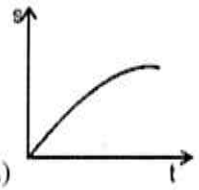
(3) Both (1) & (2) (4) None of these

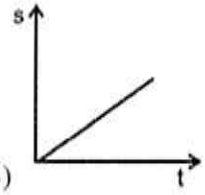
113. An electric bulb is rated 220V - 100W. The power consumed by it, when operated on 110 volt, will be

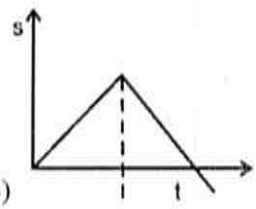
(1) 25 W (2) 50 W (3) 75 W (4) 40 W

114. Which graph pertains to uniform acceleration?

(1) 

(2) 

(3) 

(4) 

115. A stretched rubber has

(1) increased K.E. (2) increased P.E.

(3) decreased K.E. (4) decreased P.E.

116. During the phenomenon of resonance

(1) the amplitude of oscillation becomes large.

(2) the frequency of oscillation becomes large.

(3) the time period of oscillation becomes large.

(4) All these

117. In an ammeter, 10% of main current is passing through the galvanometer. If the resistance of the galvanometer is G, then the shunt resistance, in ohm is

(1) 9 G (2) G/9 (3) 90G (4) G/90

118. What is de-Broglie wavelength of an electron having energy 10 keV?

(1) 0.12Å (2) 1.2Å (3) 12.2Å (4) 0.012Å

119. A simple pendulum is vibrating in an evacuated chamber, it will oscillate with
(1) constant amplitude.
(2) increasing amplitude.
(3) decreasing amplitude.
(4) None of these

120. In potentiometer experiment, the balancing with a cell is at length 240 cm. On shunting the cell with a resistance of 2Ω, the balancing length becomes 120 cm. The internal resistance of the cell is
(1) 1Ω (2) 0.5Ω (3) 4Ω (4) 2Ω

121. If a current is passed through a spring, then the spring will
(1) expand. (2) compress. (3) remain same. (4) None of these

122. The core of transformer is laminated to
(1) prevent it from moisture.
(2) prevent it from noise.
(3) prevent it from heat.
(4) reduce the loss of energy.

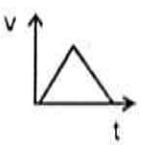
123. If there were no gravity, which of the following will not be there for a liquid?
(1) Viscosity
(2) Surface tension
(3) Pressure
(4) Archimedes upward thrust

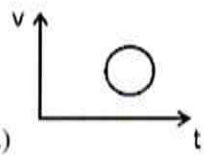
124. A beam of electrons and protons moves parallel to each other in the same direction then they
(1) attract each other.
(2) repel each other.
(3) neither attract nor repel.
(4) None of these

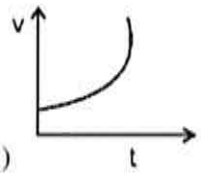
125. To manufacture the core of a transformer, the best material is
(1) stainless steel (2) hard steel (3) mild steel (4) soft iron

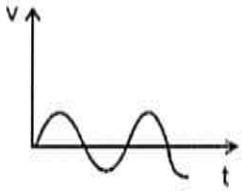
126. The speed of an electron having a wavelength of 10^{-10} m is
(1) 7.25×10^6 m/s (2) 6.26×10^6 m/s (3) 5.25×10^6 m/s (4) 4.24×10^6 m/s

127. Which of the following curves does not represents motion in one dimension?

(1) 

(2) 

(3) 

(4) 

128. The ratio of the terminal velocities of two drops of radii R and R/2 is
(1) 2 (2) 1 (3) 1/2 (4) 4

129. A force acting on a conductor of length 5 m carrying a current of 8 ampere is kept perpendicular to the magnetic field of 1.5 T is
(1) 100 N (2) 60 N (3) 50 N (4) 75 N

130. Domain formation is the necessary feature of
(1) diamagnetism. (2) paramagnetism. (3) ferromagnatisn. (4) All these

131. Velocity of a body on reaching the point from which it was projected upwards is
(1) $v = 0$ (2) $v = 0.5\ u$ (3) $v = 2u$ (4) $v = u$

132. Scent sprayer is based on
(1) Charles law. (2) Boyle's law.
(3) Archimedes' principle. (4) Bernoulli's theorem.

133. A magnetic needle is kept in a non-uniform magnetic field. It experiences
(1) a torque but not a force. (2) neither a force nor a torque.
(3) a force and a torque. (4) a force but not a torque.

134. When a plane electromagnetic wave enters a glass slab, then which of the following will not change?
(1) Wave length (2) Frequency (3) Speed (4) Amplitude

135. If a ball is thrown vertically upwards with 40 m/s its velocity after two seconds will be
(1) 10 m/s. (2) 30 m/s. (3) 20 m/s. (4) 40 m/s.

136. The quantity which does not change, when sound enters from one medium to another is
(1) wave-length. (2) speed. (3) frequency. (4) None of these

137. For a real object, which of the following can produce a real image?
(1) Plane mirror (2) Concave lens (3) Convex mirror (4) Concave mirror

138. Penetrating power is minimum for
(1) α-rays (2) γ-rays (3) β-rays (4) x-rays

139. Line spectrum can be obtained from
(1) Sun. (2) Candle.
(3) Mercury vapour lamp . (4) Electric bulb.

140. Solar energy is due to
(1) fusion reaction. (2) fission reaction. (3) combustion reaction. (4) None of these

141. A particle is acted upon by a force of constant magnitude which is always perpendicular to the velocity of the particle. The motion of the particle takes place in a plane. It follows that

(1) its velocity is constant.
(2) its acceleration is constant.
(3) its K.E. is constant.
(4) it moves in a straight line.

142. The waves produced by a motor boat sailing in deep water is

(1) transverse.
(2) longitudinal.
(3) longitudinal and transverse.
(4) stationary.

143. One milligram of matter converted into energy will give

(1) 9 J
(2) 9×10^3 J
(3) 9×10^5 J
(4) 9×10^{10} J

144. Dimensions of impulse are the same as that of

(1) force
(2) momentum
(3) energy
(4) acceleration

145. A person cannot clearly see distances more than 40 cm. He is advised to use lens of power

(1) –2.5 D
(2) 2.5 D
(3) –6.25 D
(4) 1.5 D

146. Suppose the number of turns in a coil be tripled the value of magnetic flux linked with it

(1) remains unchanged.
(2) becomes 1/3.
(3) is tripled.
(4) None of these

147. Which one of the following phenomena is not explained by Huygens' construction of wave front?

(1) Refraction
(2) Reflection
(3) Diffraction
(4) Origin of spectra

148. Momentum is closely related to

(1) force.
(2) impulse.
(3) velocity.
(4) K.E.

149. Which of the following wave does not carry energy?

(1) Stationary
(2) Progressive
(3) Transverse
(4) Electromagnetic

150. A person is sitting in a lift accelerating upwards measured weight of person will be

(1) less than actual weight.
(2) equal to actual weight.
(3) more than actual weight.
(4) zero.

Directions (Questions 151-160): *Study the passages below and answer the questions that follow each passage.*

Passage I

The slope of the land, climatic condition, quality and thickness of the soil cover, the nature of rocks and minerals, the availability of water help in deciding the land use in the particular area. Moreover, the lifestyle of the people, the location of a place and its accessibility with other regions also affects land use. It can also be modified by construction of new roads and railways in a particular area. For example, in the Prairies of North-America, construction of roads and railways led to the development of extensive cultivation of food crops. In some areas people have encroached upon community lands and are misusing it. The total amount of land available on the earth's surface is limited. However, the number of people and the demands are increasing. Thus, to get maximum benefits from land, we should prepare a plan for land use.

151. What led to the extensive cultivation of food crops?
(1) Construction (2) Environment
(3) Community (4) Thickness of soil

152. Which among the following is not the deciding factor for land use in a particular area?
(1) Climatic condition (2) Thickness of soil
(3) Lifestyle of people (4) Availability of water

153. What additional aspects help substantiate the decision taken on natural factors?
(1) Location (2) Construction of roads
(3) Lifestyle of people (4) All these

154. How can the land use in a particular area be changed?
(1) Cultivation (2) Construction (3) Preparing plan (4) None of these

155. What is limited as per the paragraph?
(1) Land (2) Climatic condition
(3) Construction (4) Availability of water

Passage II

An apple a day needn't always keep the doctor away. According to the survey, both apples and oranges were found to have banned pesticide levels 140% above permissible limits. The fruits are waxed with chemicals and pesticides to give them a longer life. Vegetables like cabbage and cauliflower, which are supposed to be very important for women's health, are dipped in two to three levels of pesticides to keep them fresh. Farming techniques like crop rotation have become a thing of the past", said Hema, a nutrition adviser. The solution lies in cleaning them thoroughly and buying from small vendors rather than supermarkets. Small vendors grow vegetables and fruit on a small scale and are not well-versed with the use of chemicals. Smaller the vegetable is in size, more organic it is. Kitchen gardening is the best solution to keep pesticides at bay. Vegetables can be grown easily in pots even if you live in an apartment.

156. Why should we purchase vegetables from small vendors?
(1) They sell at lower price than supermarkets. (2) They grow it on a small scale.
(3) They are less educated to use chemicals. (4) Both (2) and (3).

157. What is kitchen gardening?
(1) Washing the vegetables several times.
(2) Keeping pesticides away while growing vegetables.
(3) Planting vegetables in at home and even pots.
(4) Soak vegetables in salt water.

158. What is done to increase the life of vegetables?
(1) Use of pesticides. (2) Washing of vegetables several times.
(3) Keep vegetables in refrigerator. (4) Use crop rotation.

159. What has become a thing of the past?
(1) Use of pesticides (2) Gardening (3) Crop rotation (4) Small vendors

160. Which out of the following is the most appropriate solution?
(1) Kitchen gardening. (2) Purchasing from small vendor.
(3) Crop rotation. (4) Purchasing of small vegetables.

Directions (Questions 161-164): *Choose the word which best expresses the meaning of the underlined word in the sentence.*

161. She has an <u>insatiable</u> love for music.
(1) undesirable (2) unchanging (3) irreconcilable (4) unsatisfiable

162. Science has <u>revealed</u> the mysteries of nature to man.
(1) released (2) disclosed (3) opened (4) cleared

163. He would have been his close <u>associate</u> had he not been disloyal.
(1) employee (2) competitor (3) colleague (4) executive

164. Catching snakes can be <u>hazardous</u> for people untrained in the art.
(1) dangerous (2) difficult (3) harmful (4) tricky

Directions (Questions 165-168): *Choose the word which is closest to the opposite in meaning of the underlined word in the sentence.*

165. We must realise the <u>futility</u> of wars.
(1) urgency (2) value (3) usefulness (4) importance

166. Genuine drugs are available in most of the medical shops.
(1) harmful (2) wrong (3) dubious (4) spurious

167. He was asked to accelerate the pace of work.
(1) check (2) control (3) slacken (4) supervise

168. Everyone could see that it was a prejudiced decision.
(1) unbiased (2) candid (3) helpful (4) logical

Directions (Questions 169-172): *Fill in the blanks by choosing an appropriate word from the words given below each sentence.*

169. A/An _____ is a person who slips unnoticed into a plane or ship to travel secretly.
(1) emigrant (2) immigrant (3) stowaway (4) deserter

170. A person who writes regularly for a newspaper or a magazine is called a/an_____.
(1) copywriter (2) columnist (3) editor (4) author

171. A/An _____ is a person who believes that God does not exist.
(1) atheist (2) ascetic (3) evangelist (4) protestant

172. A _____ is involved with the study of earthquakes.
(1) meteorologist (2) geologist (3) cosmologist (4) seismologist

Directions (Questions 173-176): *Choose the option which best expresses the meaning of the underlined idiom/phrase in the sentence.*

173. The marketing manager advised his salesmen to be above board in their dealing with prospective customers.
(1) to be aggressive (2) to conceal facts
(3) to be knowledgeable (4) totally honest without any secrecy

174. Mohan thanked Ramesh for helping him financially and not leaving him in the lurch.
(1) to leave one in difficulty (2) to be supportive
(3) to compromise one's position (4) to make fun of

175. The question on everyone's mind is whether Sachin Tendulkar's son will be a chip of the old block.
(1) Perform badly (2) be casual and not focused
(3) be a worthy son of his worthy father (4) take life as it comes

176. The judge recused himself from hearing the case as he felt he had an axe to grind in the matter.
(1) nothing to do with (2) a private/personal end to serve
(3) not suitably qualified to deal with (4) inadequate time to take on

Directions (Questions 177-180): *Choose the option that is the plural form of the given word.*

177. Story
(1) Storys (2) Story (3) Stories (4) Storis

178. Thief
(1) Theives (2) Thieves (3) Thiefes (4) Thiefs

179. Series
(1) Series (2) Seriei (3) Seriess (4) Seried

180. Mango
(1) Mangose (2) Mango's (3) Mangoes (4) Mango

181. Which one of the following companies has setup an election portal in India, the largest democracy of the world?
(1) Wikipedia (2) Yahoo (3) WhatsApp (4) Google

182. Which among the following is the India's largest passenger carrier airline in the domestic circuit?
(1) IndiGo (2) Jet Airways (3) Go Air (4) Spice Jet

183. Which is the first Indian Fast Moving Consumer Goods (FMCG) brand that crossed 5000 crore Rupees mark in terms of retail sales in a year?
(1) Britannia Tiger (2) ITC Sun feast (3) Maggi (4) Parle G

184. Which one of the following banks has launched Kisan Card to provide crop loan through ATMs?
(1) State Bank (2) HDFC Bank (3) Axis Bank (4) Canara Bank

185. Who among the following is the youngest Member of Parliament in India?
(1) Hamdullah Sayeed (2) Agatha Sangma
(3) Ramya (4) Dimple Yadav

186. Which are the first two states that have been issued plastic Electors Photo Identity Card (EPIC) in March 2014 for ongoing Lok Sabha polls?
(1) Punjab and Haryana (2) Kerala and Tamil Nadu
(3) Nagaland and Assam (4) West Bengal and Odisha

187. Union Ministry of Corporate Affairs notified rules for _____ more chapters in the new Companies Act, 2013 which came into effect on 1 April 2014.
(1) six (2) eight (3) nine (4) ten

188. Name the second Indian Regional Navigation Satellite System (IRNSS) launched by the Indian Space Research Organization in April 2014?
(1) IRNSS-2A (2) IRNSS-1B (3) IRNSS-A2 (4) IRNSS-B2

189. Which multinational retail company recently launched its business in India?
(1) Carrefour (2) Amazon (3) Wal-Mart (4) Tesco

190. Who among the following is the current President of the World Bank?
(1) Sir James Wolfensohn. (2) Paul Wolfowitz.
(3) Jim Yong Kim. (4) Robert Zoellick.

191. In March 2014, European Parliament has voted to develop which common device for all mobile phones being sold in the continent of Europe?
(1) Head Phone (2) Battery (3) Charger (4) None of these

192. Who among the following sports person has become the brand ambassador of Canara Bank in March 2014?
(1) Deepika Kumari (2) Sushil Kumar
(3) Shikhar Dhawan (4) Viswanathan Anand

193. The Third Nuclear Security Summit was held from 24 to 25 March 2014 at
(1) Seoul. (2) Hague. (3) Washington. (4) Paris.

194. Which one of the following countries has agreed to develop the biggest cargo airport in Afghanistan on Herat Airport?
(1) UK (2) USA (3) Italy (4) France

195. The USA's First lady Michelle Obama, visited which of the following countries ahead of the official visit of the US President Barack Obama?
(1) South Korea (2) Japan (3) China (4) Taiwan

196. Recently which of the following financial company (ies) was/were granted principle approval by the Reserve Bank of India to set up a Bank?
(1) Bandhan Financial Services (2) IDFC
(3) Both (1) & (2) (4) None of these

197. Recently in USA, internet hackers stole 40 million credit and debit card numbers and personal information from customers of which of the following retail chains?
(1) Amaxon (2) Target (3) Walmart (4) Super Markets

198. The President of the Asian Development Bank (ADB) has always been from which of the following Asian countries?
(1) China (2) Japan (3) South Korea (4) India

199. ICC Women's World Twenty20 2014 was held in which of the following countries?
(1) Pakistan (2) Sri Lanka (3) Bangladesh (4) India

200. The XXII Olympic Winter Games were held in which country?
(1) Norway (2) Canada (3) Russia (4) Iceland