SRM UNIVERSITY
(Under section 3 of UGC Act 1956)

Model Questions

B.Tech and Under graduate programs in Health Sciences

Part 1 - Physics

1) Which of the following pairs does not have similar dimensions?
   a) Stress and pressure b) Angle and strain
   c) Tension and surface tension d) Plank's constant and angular momentum

2) In an electric circuit containing L,C,R which of the following does not denote the dimensions of frequency
   a) LC b) $\frac{1}{\sqrt{LC}}$ c) $\frac{1}{RC}$ d) $\frac{R}{L}$

3) A body is projected upwards under gravity with a speed of 15.3m/s. The maximum height which can be reached is
   a) 9.1m b) 21.8m c) 11.9m d) 15.8m

4) A body of mass 2 Kg has kinetic energy of motion 4J.Its linear momentum is equal to
   a) 6 Kgm/s b) 4 Kgm/s c) 8 Kgm/s d) 2 Kgm/s

5) A man goes 5m towards north, then 15m towards east. The displacement is
   a) 13.8 m b) 20 m c) 18.8 m d) 15.8 m

6) Two forces 20N and 12N act on a body of mass 2 kg. The minimum acceleration will be
   a) 6 m/s^2 b) 2 m/s^2 c) 4 m/s^2 d) 8 m/s^2

7) Two satellites X and Y go round a planet A in circular orbits having radii 8R and 2R respectively. If the speed of the satellite X is 2V, the speed of satellite Y will be
   a) 4 V b) 3V/2 c) ½ V d) 6 V

8) On mixing soluble salt with water, the surface tension of water will
   a) Increase b) Decrease c) Become zero d) Become infinity

9) If the radius of a soap bubble is 3 times that of another, the ratio of their pressure will be
   a) 5:2 b) 1:3 c) 3:1 d) 4:3

10) An elastic material of Young's modulus Y is subjected to stress S. The elastic energy stored per unit volume of the material is

a) $\frac{S}{Y}$ b) $\frac{S}{2Y}$ c) $\frac{S^2}{Y}$ d) $\frac{S^2}{2Y}$

11) A simple pendulum is made of a body which is hollow sphere containing mercury suspended by means of a wire. If a little quantity of mercury is drained off, the period of pendulum will

a) Remain unchanged b) Decrease
c) Become errata d) Increase

12) `A simple harmonic oscillator has a period of 0.03 sec and an amplitude of 0.6m.The magnitude of the velocity in m/s at the centre of oscillation is

a) 20л b) 40л c) 30л d) 60л

13) A spring has time period 'T'. It is cut into 4 equal parts. The time period of each part will be

a) $\frac{T}{2}$ b) $\frac{T}{\sqrt{2}}$ c) 2T d) T

14) In a water fall the water falls from a height of 150m.If the entire K.E of water is converted into heat, the raise in temperature of water will be

a)0.035^{o}C b) 3.5^{o}C c) 0.35^{o}C d) 0.45^{o}C

15) In an isothermal expansion, internal energy of a gas

a) Remains constant b) Increases
c) Decreases d) Become infinity

16) Newton's law of cooling is a special case of

a) Planck's law b) Stefan's law
c) Wien's law d) Raylight Jean's law

17) A beam of monochromatic light of wavelength 4300Ao travels in water fromair. Its wavelength in water will be

a) 2225 A^o b) 4225 A^o c) 3200 A^o d) 3225 A^o

18) An astronant in a space ship sees the outer space as

a) White b) Black c) Blue d) Red

19) When a white light passes through a hollow prism then,

a) There is no dispersion and no angular deviation
b) There is dispersion but no deviation

c) There is angular deviation but no dispersion
d) There is dispersion as well as deviation

20) The angle of a prism is 20^o and its refractive indices for red and violet colours are 1.4 and 1.5 respectively. The angular dispersion produced by the prism is
a) 1^o b) 0.5^o c) 2^o d) 1.5^o

21) Charge of 10C is given a displacement of 0.7m.The work done during the process is 20J.The potential difference between the two point will be
a) 1V b) 2V c) 0.5V d) 0.2V

22) A parallel plate capacitor is made by stacking 10 equally spaced plates connected alternately. If the capacitance between any two plate is 'C', then the resultant capacitance is
a) 10C b) 11C c) 9C d) C

23) A moving coil galvanometer of resistance 200Ω is converted to ammeter by a resistance of 0.3 Ω in the circuit. Galvanometer gives full scale deflection at 300μA. The minimum deflection is
a) 20.03mA b) 200.3mA c) 2003.0mA d) 2.003mA

24) Two batteries A and B each of e.m.f 3V, are connected in series to an external resistance R= 2 Ω. If the internal resistance of battery a is 2.9 Ω and that of Bis 1.9 Ω. What is the potential difference between the terminal of battery a?
a) 0.45V b) 0.54V c) 0.55V d) 0.35V

25) The angle between the Earths magnetic axis and the earths geographical axis is
a) Zero b) 17^o c) 15^o d) 23^o

26) Magnetic dipole moment is a vector quantity directed from
a) south to north b) north to south c) east to west d) west to east

27) Two electric bulbs are connected in parallel across a constant voltage source, having resistance in the ratio of 2:4. the powers dissipated in them have a ratio
a) 1:2 b) 1:4 c) 2:1 d) 1:1

28) A 40 watt 220 volt lamp and a 100 watt 220volt lamp are connected in series across a 220 volt line. Which electric lamp glow more bright?
a) 100 watt lamp b) 40 watt lamp
c) Both with same glow d) None of these

29) Bragg's equation will have no solution if
a) $\lambda < 2d$ b) $\lambda > 2d$ c) $\lambda < d$ d) $\lambda = d$

30) The threshold wavelength for photoelectric effect on sodium will be $4000A^{o}$. Its work function is

a) $6.9 \times 10^{-19}J$ b) $4 \times 10^{-14}J$

c) $4.95 \times 10^{-19}J$ d) $3.9 \times 10^{-21}J$

31) Quantum nature of light is explained by which of the following phenomenon?

a) Huygen's wave theory b) Photoelectric effect

c) Maxwell's electro magnetic theory d) De-Broglie theory

32) The spectral series of hydrogen spectrum that lies in the visible region is

a) Paschen series b) Lyman series

c) Balmer series d) Pfund series

33) The nucleus $_{48}Cd^{115}$ after two successive β decay will give

a) $_{50}Sn^{115}$ b) $_{46}Pa^{115}$

c) $_{50}Sn^{113}$ d) $_{49}In^{114}$

34) Which of the following atoms has the lowest ionization potential?

a) $_{8}O^{16}$ b) $_{18}Ar^{40}$ c) $_{7}N^{14}$ d) $_{55}Cs^{133}$

35) The inner most orbital of hydrogen atom has a diameter $2.05A^{o}$. The diameter of a 10th orbit is

a) $305A^{o}$ b) $502A^{o}$ c) $105A^{o}$ d) $205A^{o}$

Part 2 - Chemistry

36) An example for Frenkel defect is

a) NaCl b) AgBr c) CsCl d) FeS

37) If a gas diffuses at the rate of one-half as fast as O2, find the molecular mass of the gas.

a) 64 b) 32 c) 50 d) 128

38) How much volume of 10M HCl should be diluted with water to prepare 2.00L of 5M HCl

a) 1.00L b) 2.00L c) 0.05L d) 3.00L

39) Calculate the vapour pressure of the solution. The mole fraction of the solute is 0.25. The vapour pressure of the pure solvent is 0.8 atm.

a) 0.2atm b) 0.4atm c) 0.6atm d) 0.8atm

40) In which equilibrium pressure has no effect

a) $PCl_{5(g)}$  $PCl_{3(g)} + Cl_{2(g)}$

b) $H_{2(g)} + I_{2(g)}$  $2HI_{(g)}$

c) $2SO_{2(g)} + O_{2(g)}$  $2SO_{3(g)}$

d) $NH_4Cl_{(g)}$  $NH_{3(g)} + HCl_{(g)}$

41) Calculate the pH of 0.02M Ba(OH)2 aqueous solution assuming Ba(OH)2 as a strong electrolyte.

a) 14 b) 12.4 c) 12.6 d) 16

42) Calculate the standard emf of the reaction $Fe^{3+} + 3e^- \rightarrow Fe$. Given the emf values of $Fe^{3+} + e^- \rightarrow Fe^{2+}$ and $Fe^{2+} + 2e^- \rightarrow Fe_{(s)}$ as +0.771V and -0.44V respectively

a)0.405V b)0.331V c)0.245V d) 0.656V

43) Ionic conductance at infinite dilution of Al^{3+} and SO_4^{2-} are 1890 $ohm^{-1}\ cm^2.\ gm.\ equ^{-1}$ and 1600 $ohm^{-1}\ cm^2.gm.equ^{-1}$. Calculate equal conductance of the electrolyte at infinite dilution.

a) 143 $ohm^{-1}\ cm^2.gm.equ^{-1}$ b)156 $ohm^{-1}\ cm^2.gm.equ^{-1}$

c) 165$ohm^{-1}\ cm^2.gm.equ^{-1}$ d) 186 $ohm^{-1}\ cm^2.gm.equ^{-1}$

44) The phenomenon of Tyndall effect is not observed in

a) emulsion b) colloidal solution c) true solution d) None

45) In a first order reaction, it takes the reactant 40.5 minutes to be 25% decomposed. Find the rate constant of the reaction.

a) 8.5 $X10^{-3}\ min^{-1}$ b) 9.5 $X10^{-3}\ min^{-1}$ c) 7.1 $X10^{-3}\ min^{-1}$ d) 10 $X10^{-3}\ min^{-1}$

46) Which of the following is an extensive property?

a) volume b) density c) surface tension d) refractive index

47) Change in Gibbs free energy is given by

a) $\triangle G = \triangle H + T\triangle S$ b) $\triangle G = \triangle H - T\triangle S$

c) $\triangle G = \triangle HX\ T\triangle S$ d) None

48) Wooden artifacts and freshly cut tree having 7.6 and 15.2 counts $min^{-1}\ g^{-1}$ of carbon ($t_{½}$ = 5700 years) respectively. Calculate the age of artifact.

a) 5700 years b) 6000 years c) 6500 years d) 5900 years

49) $_{92}U^{235}$ nucleus absorbs a neutron and disintegrate into $_{54}Xe^{139}$, $_{38}Sr^{94}$ and X what will the product X ?

a) 3 nuetrons b) 2 neutrons c) α particle d) β particle

50) The compound used as smoke screen

a) PCl_3 b) PCl_5 c) PH_3 d) H_3PO_3

51) Excess of NaOH reacts with Zinc to form

a) ZnH_2 b) Na_2ZnO_2 c) ZnO d) $Zn(OH)_2$

52) The trend in the polarization of anions is

a) $F^- > Br^- > I^- > Cl^-$ b) $I^- > Br^- > Cl^- > F^-$ c) $F^- > Cl^- > Br^- > I^-$ d) $Cl^- > F^- > Br^- > I^-$

53) Acetylene molecule contains

a) 5 Sigma bonds

b) 4 σ and 1π bonds

c) 3 σ and 2π bonds

d) 2σ and 3 π bonds

54) H_2O_2 is a powerful ---- agent

a) dehydrating b) oxidising c) reducing d)desulphurising

55) Anaesthetic used for minor operation dentistry

a)Nitrous oxide b) Nitric oxide

c) Nitrous oxide + Oxygen d)Nitrogen dioxide

56) The colour of $[Ti(H_2O)_6]^{3+}$ ion is due to

a) d-d transition b) Presence of water molecule

c) Inter atomic transfer of electrons d)none

57) Silver salt used in photography is

a)AgCl b)$AgNO_3$ c)AgF d)AgBr

58) _____ is used in calico printing and dyeing

a) $K_2Cr_2O_7$ b)$KMnO_4$ c)$CuSO_4$ d)$AgNO_3$

59) For a transition metal ion, the effective magnetic moment in BM is given by the formula.

a) $\sqrt{n(n-1)}$ b) $\sqrt{n(n+1)}$ c) $\sqrt{n(n+2)}$ d) $\sqrt{n(n+1)(n+2)}$

60) An example of a chelating ligand is

a)NO_{2^-} b) Chloro c) bromo d)en

61) The coordination number of Ni(II) in $[Ni(CN)_4]^{2-}$ is
a)2 b) 4 c) 5 d)6

62) Which is optically active?
a) $CHCl_3$ b)CH_3CH_2OH c)CHIBrCl d)CH_4

63) Which is Lewis acid ?
a) H_2O b) BF_3 c)NH_3 d) R-NH_2

64) Alcohols can be dehydrated to Olefins using
a)H_2SO_4 b)Pd c) $SOCl_2$ d)Zn/Hg

65) Diels Alder Reaction is the reaction between
a) Diene and dienophile b) electrophile and Nucleophile
c) Oxidant and Reductant d) None

66) The active component of dynamite is
a)Keiselghur b) Nitroglycerine c)Nitrobenzene d)Trinitro toluene

67) Among the following the strongest acid is
a)$ClCH_2COOH$ b) Cl_3COOH c)CH_3COOH d)$Cl_2CHCOOH$

68) Nylon-66 is obtained from
a) Adipic acid & Hexamethylene diamine
b) Adipic acid & Tetramethylene diamine
c) Styrene & butadiene
d) none

69) _____ is used for the manufacture of rubber goods.
a)Polystyrene b)Buna-S c) Bakelite d)Polyethylene

70) Which is a mono-saccharide among the following ?
a)Sucrose b) Cellulose c)Maltose d)Glucose

Part 3 - MATHEMATICS

71) Sum of the roots of the equation $4^x - 3\,(2^{x+2}) + 128 = 0$ are

a) 5 b) 6 c) 7 d) 8

72) The positive integer n for which $2 \times 2^2 + 3 \times 2^3 + 4 \times 2^4 + \ldots\ldots\ldots + n \times 2^n = 2^{n+10}$ is

a) 510 b) 511 c) 512 d) 513

73) A and B are two sets having 3 and 4 elements respectively and having 2 elements in common. The number of relations which can be defined from A to B is

a) 2^5 b) $2^{10} - 1$ c) $2^{12} - 1$ d) none of these

74) The A.M of the observations 1.3.5, 3.5.7, 5.7.9, …….. (2n – 1) (2n+1) (2n+3) is

a) $2n^3 + 6n^2 + 7n - 2$ b) $n^3 + 8n^2 + 7n - 2$ c) $2n^3 + 5n^2 + 6n - 1$ d) $2n^3 + 8n^2 + 7n - 2$

75) If n is odd, the coefficient of x^n in the expansion of $\left(1 + \frac{x^2}{2!} + \frac{x^4}{4!} + \cdots\right)^2$ is

a) $2^n/n!$ b) $2^{2n}/(2n)!$ c) 0 d) $n^n/n!$

76) The point of intersection of the tangents drawn to the curve $x^2y = 1 - y$ at the points where it is met by the curve xy = 1 – y is given by

a) (0,-1) b) (1,1) c) (0,1) d) none of these

77) If $\int \frac{x \tan^{-1} x}{\sqrt{1 + x^2}}\,dx = \sqrt{(1 + x^2)}\, f(x) + k \log[(x + \sqrt{(x^2 + 1)}]$)+c then

a) f(x) = $\tan^{-1} x$, k = -1 b) f(x) = $\tan^{-1} x$, k = 1

c) f(x) = 2 $\tan^{-1} x$, k = -1 d) f(x) = 2 $\tan^{-1} x$, k = 1

78) Solution of the equation $\int_{\log 2}^{x} \frac{dx}{\sqrt{e^x - 1}} = \frac{\pi}{6}$ are

a) x = log 6 b) x = 2 log 2 c) x = 3 d) x = $1/2$

79) A solution of the differential equations $\left(\frac{dy}{dx}\right)^2 - x\frac{dy}{dx} + y = 0$ is

a) y = 2 b) y = 2x c) y = 2x – 4 d) y = $2x^2 - 4$

80) If a,b and c are unit vectors, then $|a - b|^2 + |b - c|^2 + |c - a|^2$ does not exceed

a) 4 b) 9 c) 8 d) 6

81) If the perpendicular distance of a point p other than the origin from the plane x+y+z=p is equal to the distance of the plane from the origin, then the coordinate of p are

a) (p, 2p, 0) b) (0, 2p, -p) c) (2p, p, -p) d) (2p,-p,2p)

82) If the relation R: A $\rightarrow$ B where A = {1,2,3,4} and B = {1,3,5} is defined by R = {(x,y):x<y, x$\in$ A, y$\in$ B} then ROR-1 is

a) {(1,3), (1,5), (2,3), (2,5), (3,5), (4,5)} b) {(3,1), (5,1), (5,2), (5,3), (5,4)}
c) {(3,3), (3,5), (5,3), (5,5)} d) None of these

83) If ω is a complex cube toot of unity, then a root of the equation

$$\begin{bmatrix} x+1 & \omega & \omega^2 \\ \omega & x+\omega^2 & 1 \\ \omega^2 & 1 & x+\omega \end{bmatrix} = 0 \text{ is}$$

a) $x = 1$ b) $x = \omega$ c) $x = \omega^2$ d) $x = 0$

84) If a,b,c are three complex numbers such that $a^2 + b^2 + c^2 = 0$ and

$$\Delta = \begin{bmatrix} b^2+c^2 & ab & ac \\ ab & c^2+a^2 & bc \\ ac & bc & a^2+b^2 \end{bmatrix} = ka^2b^2c^2$$ then the value of k is

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

85) The value of $\sin 12^\circ \ \sin 48^\circ \ \sin 54^\circ$ is

a) $\sin 30^\circ$ b) $\sin^2 30^\circ$ c) $\sin^3 30^\circ$ d) $\cos^3 30^\circ$

86) If the ratio of sums to n terms of two A.P's is (5n+7) : (3n+2) then the ratio of their 17th term is

a) 175:99 b) 172:101 c) 172:99 d) 175:101

87) The total number of permutations of n different things taken not more than r at a time, when a thing may be repeated any number of times is

a) $\frac{n}{n-1}\left(n^r - 1\right)$ b) $\frac{n^r-1}{n-1}$ c) $\frac{n^r+1}{n+1}$ d) $\frac{n^r+n}{n-1}$

88) An eight digit number divisible by 9 is to be formed by using 8 digits out of the digits 0,1,2,3,4,5,6,7,8,9 without replacement. The number of ways in which this can be done is

a) 9! b) 2(7!) c) 4 (7!) d) 36 (7!)

89) If p+q+r = a+b+c=0, then the determinant $\Delta = \begin{vmatrix} pa & qb & rc \\ qc & ra & pb \\ rb & pc & qa \end{vmatrix}$ equals

a) 0 b) 1 c) pa+qb+rc d) none of these

90) If a point (3,4) lies on the locus of the point of intersection of the lines $x\cos\alpha + y\sin\alpha = a$ and $x\sin\alpha - y\cos\alpha = b$ (α is a variable), the point (a,b) lies on the line $3x - 4y = 0$ then $|a + b|$ is equal to

a) 1 b) 7 c) 12 d) 5

91) An equation of a tangent to the hyperbola, $16x^2 - 25y^2 - 96x + 100y - 356 = 0$ which makes an angle $\frac{\pi}{4}$ with the transverse axis is

a) y=x+2 b) y=x+4 c) x=y+3 d) x+y+2=0

92) The normal at an end of a latus rectum of the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ passes through an end of the minor axis if

a) $e^4 + e^2 = 1$ b) $e^3 + e^2 = 1$ c) $e^2 + e = 1$ d) $e^3 + e = 1$

93) If $A = \begin{bmatrix} x & 3 & 2 \\ -3 & y & -7 \\ -2 & 7 & 0 \end{bmatrix}$ and $A = -A^t$, then x+y is equal to

a) 2 b) -1 c) 0 d) 12

94) The value of $\lim_{n\to\infty}\left(\frac{1}{1.3} + \frac{1}{3.5} + \ldots\ldots\ldots\ldots\ldots + up\ to\ n\ terms\right)$ is

a) ¼ b) ½ c) 1 d) none of these

95) Equation of the directrix of the parabola $y^2 + 4y + 4x + 2 = 0$ is

a) x = -1 b) x = 1 c) $x = -3/2$ d) $x = 3/2$

96) The area of the plane figure bounded by the interval $[-5\pi/6, \pi]$ of the x-axis, the graph of the function $y = \cos x$ and the segments of the straight lines x=$-5\pi/6$ and $x = \pi$ is

a) $3/2$ b) $5/2$ c) $3/4$ d) $7/2$

97) The area of the figure bounded by the lines $x = 0, x = \pi/2, f(x) = \sin x$ and $g(x) = \cos x$ is

a) $2(\sqrt{2} - 1)$ b) $\sqrt{3} - 1$ c) $2(\sqrt{3} - 1)$ d) $2(\sqrt{2} + 1)$

98) Solution of the differential equation $xdy - ydx - \sqrt{x^2 + y^2}\,dx = 0$ is

a) $y - \sqrt{x^2 + y^2} = cx^2$ b) $y + \sqrt{x^2 + y^2} = cx^2$

c) $x + \sqrt{x^2 + y^2} = cy^2$ d) $x - \sqrt{x^2 + y^2} = cy^2$

99) A particle moves along a curve so that its coordinates at time t are $x = t, y = \frac{1}{2}t^2, z = \frac{1}{3}t^3$. The acceleration at $t = 1$ is

a) $\hat{i} + 2\hat{k}$ b) $\hat{i} + \hat{k}$ c) $2\hat{j} + \hat{k}$ d) none of these

100) The plane $x - 2y + 7z + 21 = 0$ contains the line

a) $\frac{x-1}{-3} = \frac{y-3}{2} = \frac{z+2}{1}$ b) $\frac{x+1}{-3} = \frac{y+3}{2} = \frac{z+2}{1}$

c) $\frac{x+1}{-3} = \frac{y-3}{2} = \frac{z+2}{1}$ d) $\frac{x}{1} = \frac{y}{-2} = \frac{z}{7}$

101) Three identical dice are rolled. The probability that the same number appears on each of them is

a) $1/6$ b) $1/36$ c) $1/18$ d) $3/28$

102) Sets A and B have 3 and 6 elements each. What can be the minimum number of elements in $A \cup B$?

a) 3 b) 6 c) 9 d) 18

103) If Z1, Z2, Z3 are complex numbers such that

$|Z_1| = |Z_2| = |Z_3| = \left|\frac{1}{Z_1} + \frac{1}{Z_2} + \frac{1}{Z_3}\right| = 1$ then $|Z_1 + Z_2 + Z_3|$ is

a) equal to 1 b) less than 1 c) greater than 3 d) equal to 3

104) If $y = x$ and $3y + 2x = 0$ are the equations of a pair of conjugate diameters of an ellipse, then the eccentricity of the ellipse is

a) $\sqrt{2}/3$ b) $1/\sqrt{3}$ c) $1/\sqrt{2}$ d) $2/\sqrt{5}$

105) Coefficient of x^n in the expansion of $x/((x-a)(x-b))$ $(|x| < \min\{|a|, |b|\})$ in ascending powers of x is

a) $\frac{a^n - b^n}{a - b}$ b) $\frac{a^n - b^n}{(a-b)a^n b^n}$ c) $\frac{a^n + b^n}{a + b}$

d) none of these.

Part 4 - Biology

71) Glucagon:
a) is a positive inotrope
b) is produced by the beta cells of the pancreas
c) stimulates production of cholesterol in the blood
d) stimulates glycogen synthesis

72) Ablation of the stellate ganglion causes:
a) dilatation of the ipsilateral pupil
b) vasodilatation of the ipsilateral arm
c) postural hypotension
d) loss of consensual light reflex

73) The following occur in the proximal tubules of the nephron:
a) excretion of glucose
b) reabsorption of most of the water
c) secretion of bicarbonate
d) action of aldosterone resulting in sodium reabsorption.

74) Cerebrospinal fluid:
a) is produced mainly by the lateral, third and fourth ventricles
b) is reabsorbed mainly into the lymphatics
c) production is dependent of the blood pressure
d) has a pressure of 70-110mm H2O

75) Antibiotics that inhibit cell wall synthesis include:
a) Cefuroxime
b) Erythromycin
c) Ciprofloxacin
d) Sulphonamide

76) The following contain live attenuated vaccines except
a) Polio
b) Hepatitis A
c) Yellow fever
d) Measles

77) The following are true about culture media for microbes:
a) Lowensten-Jensen medium is used to isolate mycobacteria
b) Thioglycolate broth allows only anaerobes to grow
c) MacConkey agar prevents the growth of Gram negative bacteria
d) Sabouraud's culture is useful for culturing bacterial infection

78) One who recognized the role of phagocytes in combating bacterial infections is
a) Koch
b) Edward jenner
c) Philipp Semmelweis
d) Elie Metchnikoff

79) Ig G:
a) has a molecular weight of 970000
b) is the principal immunoglobulin in primary immune response
c) is important in mucosal immunity
d) is the only immunoglobulin capable of crossing the placenta

80) In the thymus:
a) the majority of cortical thymocytes express either CD4 or CD8.
b) CD4/CD8 double positive cells are eliminated by a process of negative selection.
c) a proportion of alpha/beta+ thymocytes undergo isotype switching to produce gamma/delta+ T cells.
d) thymocytes whose TcR bind with high affinity to self Ag/MHC complexes are clonally detected)

81) Graft rejection occurs in
a) Autografts
b) Isografts
c) Allografts
d) All the above

82) The following are true about the offsprings of a female carrier of an X- linked recessive disorder and a normal male:
a) half of their children will symptomatic
b) half of their daughters will be symptomatic
c) half of their sons will be asymptomatic carriers
d) half of their daughters will be carriers

83) The cloning vectors consist of the following except
a) Multiple cloning site
b) Histidine tag
c) Selectable marker
d) Origin of replication

84) Example of oligo potent stem cells
a) Lymphoid stem cells
b) Erythropoietic stem cells

c) Muscle stem cells
d) None of the above

85) Chromosome 21:
a) is the shortest chromosome
b) is dicentric
c) is in the A group of chromosomes
d) carries the gene for growth hormone.

86) Example of Protein structure classification database is
a) PIR
b) PROSITE
c) SCOP
d) OWL

87) Demographic transition explains the pattern of population growth where
a) there is little sustained death than growth of the population in the first stage (earlier period)
b) death rates decline but birth rates remain high in the second stage
c) birth rates decline to approach the low death rate in third stage
d) low birth and death rates ensue in final stage

88) The following informations are true about global warming except
a) temperatures in the lower troposphere have increased between 0.12 and 0.22 °C per decade.
b) land temperatures have increased about twice as fast as ocean temperatures.
c) increased greenhouse gases are expected to warm the troposphere while it should cool the stratosphere.
d) Increased greenhouse gases are expected to cool the troposphere while it should warm the stratosphere.

89) Biodiversity
a) is conserved by monoculture (Agricultural Biodiversity)
b) conservation yield rich health resources
c) provide many ecosystem services like regulating the chemistry of life and water supply.
d) all the above

90) World water council decided to take measure/s for the improved water supply that is/are
a) decentralize the responsibility for water
b) increase and improve financing
c) evaluate and monitor water resources
d) all the above

91) The cattle breed which yield around 7200 -9000 Kg of milk
a) Kangayam
b) Sahiwal
c) Holstein Friesian
d) Ongole

92) Sphygmomanometer was invented by
a) Rene Theophile
b) Samuel Siegfried
c) Harvey Cushing
d) Louis-Charles

93) One small block of the ECG paper can translate into
a) 0.2 sec
b) 0.02 sec
c) 0.4 sec
d) 0.04 sec

94) Autoanalyser is used for
a) for the determination of blood glucose
b) for the determination chemicals during extraction, filtration etc
c) for water analysis
d) all the above

95) According to the Neo Darwinism, evolution occurs by
a) Natural selection
b) Genetic mutation and recombination results in variation in evolution
c) individuals inheriting the traits of their ancestors
d) All the above

96) Sympatric speciation in one in which
a) geographically isolated sub-populations diverge
b) species as a group of interbreeding or potentially interbreeding populations that were reproductively isolated from all other populations
c) geographical isolation was a prerequisite for building up intrinsic isolating mechanisms.
d) All the above

97) Name the scientist who discovered the five kingdom system
a) Darwin
b) Robert Koch
c) R.H Whittaker

d) M.L Wheelis

98) Match the following

1) Z scheme	a) Ipomea
2) Lacunate collenchyma	b) Kreb's cycle
3) Amphibolic process	c) Rice
4) Bran Wax	d) Non-cyclic electron transport

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

99) DNA can be cut at specific site by

a) Topoisomerase
b) Restriction enzyme
c) Helicase
d) Primase

100) Match the following

1. endarch and closed vascular bundle	a) Pericycle
2. outer most layer of stele	b) Monocot stem
3. dorsiventral leaf	c) Monocot root
4. conjunlive tissue are sclerenchyma	d) Dicot leaf

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

101) Gossypium hirsulum is the botanical name of

a) Rice
b) Cotton
c) Papaya
d) Green gram

102) Monocot plants do not show the phenomenon of secondary thickening because

a) they do not have meristem
b) they do not have secondary meristem
c) there is no need for them to increase the thickness
d) they increase in height

103) Agrobacterium does not infect monocots, because of the absence of

a) Acetosyringone
b) Salycylic acid
c) Gibberellin

d) Reverositol

104) Plant grows in size because of
a) addition of cells
b) increase in size of cells
c) enlargement of cells
d) elongation of cells

105) Chromosome theory of inheritance was propounded by
a) Sutton and Boveri
b) Mendel
c) Muller
d) Beadle and tatum

106) DNA is a double helical structure proposed by
a) Darwin
b) Scleiden
c) Watson and Crick
d) Robert Koch

107) Who coined the name gene?
a) Mendel
b) De vries
c) Jacob and Monod
d) Johannsen

108) Unwinding of DNA is performed by
a) DNA polymerase
b) RNA polymerase
c) Topoisomerase
d) Ligase

109) Direct gene transfer method is
a) Virus
b) Plasmid
c) Microinjection
d) Liposome

110) Which is the molecular scissor in genetic engineering
a) Antibody
b) Vaccine
c) Endonuclease
d) Polymerase

111) Golden rice contains
a) Vitamin B
b) Vitamin A
c) Vitamin C
d) Vitamin K

112) Cross pollination takes place, if you produce
a) Breeding
b) Transgenic
c) Hybridization
d) Heterosis

113) The growth of mango tree is
a) Monopodial
b) Sympodial
c) Dichotomous
d) Pseudopodial

114) Plants grown in darkness show
a) Stout stem
b) Long internodes
c) Bigger leaves
d) No growth at all

115) Fruit ripening is because of
a) Auxin
b) Cytokinin
c) Ethylene
d) Gibberellin

116) Insectivorous plants capture insects for
a) Phosphorus
b) Calcium
c) Nitrogen
d) Carbon

117) Recently approved GM crop in India
a) Potato
b) Tomato
c) Brinjal
d) Onion

118) Which of following plant produce vinblastine

a) Neem
b) Tobacco
c) Catharanthus
d) Grape

119) Fusarium is a
a) Fungus
b) Bacteria
c) Biopesticide
d) Nematode

120) Gossipium hirsutum is the botanical name of
a) Rice
b) Cotton
c) Papaya
d) Green gram

Answer

Q.No	Phy	Q.No	Che	Q.No	Mat	Q.No	Bio
1	C	**36**	B	**71**	**C**	**71**	**A**
2	A	**37**	D	**72**	**D**	**72**	**B**
3	C	**38**	A	**73**	**D**	**73**	**B**
4	B	**39**	C	**74**	**D**	**74**	**A**
5	D	**40**	B	**75**	**C**	**75**	**A**
6	C	**41**	C	**76**	**C**	**76**	**C**
7	A	**42**	B	**77**	**A**	**77**	**A**
8	A	**43**	A	**78**	**B**	**78**	**D**
9	B	**44**	C	**79**	**C**	**79**	**D**
10	D	**45**	C	**80**	**B**	**80**	**D**
11	D	**46**	A	**81**	**C**	**81**	**C**
12	B	**47**	B	**82**	**C**	**82**	**D**
13	A	**48**	A	**83**	**D**	**83**	**B**
14	C	**49**	B	**84**	**D**	**84**	**A**
15	A	**50**	C	**85**	**C**	**85**	**A**
16	B	**51**	B	**86**	**B**	**86**	**C**
17	D	**52**	B	**87**	**A**	**87**	**A**
18	B	**53**	C	**88**	**D**	**88**	**D**
19	A	**54**	B	**89**	**A**	**89**	**A**
20	C	**55**	C	**90**	**B**	**90**	**D**
21	B	**56**	A	**91**	**A**	**91**	**C**
22	C	**57**	D	**92**	**A**	**92**	**B**
23	D	**58**	A	**93**	**C**	**93**	**D**
24	A	**59**	C	**94**	**B**	**94**	**D**

25	B	**60**	D	**95**	**D**	**95**	**B**
26	A	**61**	B	**96**	**D**	**96**	**C**
27	C	**62**	C	**97**	**A**	**97**	**C**
28	B	**63**	B	**98**	**B**	**98**	**A**
29	B	**64**	A	**99**	**A**	**99**	**B**
30	C	**65**	A	**100**	**C**	**100**	**C**
31	B	**66**	B	**101**	**B**	**101**	**A**
32	C	**67**	B	**102**	**B**	**102**	**B**
33	A	**68**	A	**103**	**A**	**103**	**A**
34	D	**69**	B	**104**	**B**	**104**	**A**
35	D	**70**	D	**105**	**B**	**105**	**A**
						106	**C**
						107	**D**
						108	**C**
						109	**C**
						110	**C**
						111	**B**
						112	**B**
						113	**B**
						114	**B**
						115	**C**
						116	**C**
						117	**C**
						118	**C**
						119	**A**
						120	**B**