Model Question Paper

B.Tech, B.Des and UG programs in Health Sciences

Part 1 – Physics

1. A bus travels at 110 km/hr (kilometers per hour) on open highway. Its speed in meteres per second is

   a) 30.6m/s b) 60.2m/s c) 40m/s d) 50.4m/s

2. A spherometer has 20 threads per cm.Its circular scale has 100 divisions.The least count of the sphere is

   a) 5µm b) 50µm c) 0.5µm d) 0.05µm

3. Which one of the following physical quantities does not have unit?

   a) luminous intensity b) momentum

   c) current d) refractive index

4. The prefix atto means

   a)10^{-21} b)10^{-15} c)10^{-18} d) 10^{-12}

5. To enable a particle to describe circular motion the angle between its velocity and acceleration is given by

   a) 180 ˚ b) 90 ˚ c)45˚ d) 0˚

6. Torque per unit moment of inertia is equal to

   a) angular velocity b) angular acceleration

   c) radius of gyration d) inertia

7. If momentum is decreased by 20% kinetic energy will decrease by

   a)40% b) 18% c) 36% d) 8%

8. Average density of the earth

a) does not depend on g b) is a complex function of g

c) is directly proportional to g d) is inversely proportional to g

9. A bomb blasts on moon. Its sound will be heard on earth after

a) 3,7min b) 10 min

c) 138min d) sound will never be heard

10. If a tensile force is suddenly removed from a wire then its temperature will

a) decrease b) increase

c) become 0 d) remains constant

11. The physical quantity conserved in simple harmonic motion is

a) time period b) total energy

c) displacement d) force

12. Two waves each of loudness L superimpose to produce beats.The maximum loudness of beats will be

a) 4L b) L c) 2L d) 5L

13. If a projectile has a velocity greater than the escape velocity, which trajectory will it follow?

a) elliptic b) hyperbolic

c) vertical straight d) parabolic

14. A body of weight W_1 is suspended from the ceiling of a room through a chain of weight W_2 . The ceiling pulls the chain by a force

a) W_1 b) W_2 c) W_1+W_2 d) $\frac{W_1+W_2}{2}$

15. Two gases having same pressure P and volume V are mixed at a temperature T.If the mixture is at a temperature T and occupies the same volume then pressure of the mix would be

a) P b) 2P c) P/2 d) 3P

16. The specific heat capacity of body depends on

a) the heat given b) the temperature raised

c) man of the body d)the material of the body.

17. Two systems are in thermal equilibrium. The quantity which is common for them is

a) heat b) momentum c) specific heat d) temperature

18. When an unpolarized light of intensity I_0 is incident on a polarizing sheet, the intensity of light which does not get transmitted is

a) $I_0/2$ b)$I_0/4$ c) zero d) I_0

19. A ray deviates at 90˚ after suffering reflection from a mirror.The angle of incidence is

a) 90˚ b) 30˚ c) 60˚ d) 45˚

20. To a fish under water, viewing obliquely a fisher-man standing on the bank of a lake, does appear as

a) slightly shorter b) taller

c) with no change in height d) with half the original height.

21. Fraunhofer lines observed in the solar spectrum are due to

a) photosphere

b) Corona

c) ozone layer

d) layer of cooler gases between photosphore and chromosphere

22. A girl is standing 7m from a plane mirror. The distance of the girl from her image in the mirror is

a) 3.5 m b) 7 m c) 10.5 m d) 14 m

23. A man with normal near point (25 cm) reads a book using a magnifying glass of focal length 5 cm. The closest distance at which he can read the book when viewing through the magnifying glass is

a) -4.2cm b) -3.6cm c) -1.6cm d) -2.5cm

24. A magnet of pole strength *m* and length *l* is broken into two pieces. The pole strength of each piece is

a) m b)m/2 c) 2m d)m/4

25. The resultant flow of current in a conductor in the absence of electric field is

a) minimum b) zero

c) maximum d) has a negative value

26. Moderator is used to

a) accelerate the bombarding neutrons

b) slow down the bombarding neutrons

c) to eject more electrons

d) to arrest the nuclear reaction

27. The decay constant which is the reciprocal of the time duration for which the number of the atoms of radioactive substance falls to

a) 17% of its original value b) 27% of its original value

c) 37% of its original value d) 47% of its original value

28. Electron behaves as wave because they can be

a) deflected by an electric field b) deflected by magnetic field

c) diffracted by a crystal d) they ionise a gas.

29. The speed of X-rays is the same as that of visible light. Hence its wavelength is

a) same as that of visible light b) larger than that of visible light

c) smaller than that of visible light d) equal to that of visible light

30. In a superconductor, critical magnetic field

a) increases if temperature decreases b) does not depend on temperature

c) increases if temperature increases d) remains constant

31. For a particle of mass m moving with kinetic energy E the debroglie wavelength is

a) h/2mE b) h√2mE c) h/√2mE d) h√2/mE

32. A band rejection filter with a sharp narrow response suitable for suppressing heterodynes in the audio stages of a receiver is called

a) an envelope detector b) a discriminator

c) a radio detector d) an audio notch filter

33. The logical equation y=A.B represents

a) AND gate b) OR gate c) XOR gate d) NAND gate

34. In a ferroelectric material, as the applied field is gradually reduced to zero, the polarization still left is known as

a) remanent polarization b) coercive polarization

c) zero polarization d) positive polarization.

35. 6.4 × 10–19 joule is approximately

a) 4 electron volt b) 6 electron volt c) 8 electron volt d) 1 electron

Part 2 - Chemistry

36. The bond length of Br-Br in Br_2 molecule is equal to

a) 0.74 A° b) 1.54 A°

c) 1.98 A° d) 2.28 A°

37. The structure of NO_3^- ion is

a) triangle b) tetrahedral

c) equilateral triangle d) planar

38. Which is used as flux in metallurgy ?

a) CaF_2 b) SF_6

c) UF_6 d) NaF

39. The major constituents of mish metal are

a) Ce – 45%, Fe -20% and impurities

b) Ce – 50%, La -25%, Nd -15% and Pr – 10%

c) Ce – 60% and La -40%

d) La - 40%, Nd – 10% and Ce -50%

40. The number of cations produced by Mohr's salt in solution is

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

41. μ = 4.90 Bohr magneton for

a) $[Ni(NH_3)_4]^{2+}$ b) $[Ni(CN)_4]^{2-}$

c) $[FeF_6]^{4-}$ d) $[Fe(CN)_6]^{3-}$

42. The half life period of cobalt 60 is 5.26years. Calculate the percentage activity after 4 years.

a) 75% b) 59% c) 15% d) 72%

43. The number of CsCl units per unit cell of it is

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

44. The value of electrical resistance at super conductivity state is

a) 100 b) 0 c) Low d) High

45. Calculate the change of entropy for the process, water (liquid) to water (vapour) involving ΔH_{vap}= *40850 Jmol^{-1} at 373K.*

a) ΔS_{vap} = 98.5 JK^{-1}mol^{-1} b) ΔS_{vap} = 109.52 JK^{-1}mol^{-1}

c) ΔS_{vap} = 89 JK^{-1}mol^{-1} d) ΔS_{vap} = 72 JK^{-1}mol^{-1}

46. The unit of activation energy is

a) Sec^{-1} b) JK^{-1}mol^{-1} c)Jmol^{-1} d)K^{-1}mol^{-1}

47. The number of moles of H_2O in one litre is

a) 50.5 b) 55 c) 55.05 d) 55.55

48. Calculate the pH of 0.1M CH_3COOH solution. Dissociation constant of acetic acid is 1.8X10^{-5}M.

a) 2.87 b) 3.52 c) 2.62 d) 6.54

49. $\Lambda c = \mu c$ for

a) NaCl b) KCl c) KNO_3 d) All of these

50. In a first order reaction, it takes 40.5 minutes for the reactant e to be 24% decomposed. Find the rate of the reaction.

a) 9.4x10^{-3}min^{-1} b)7.1x10^{-3}min^{-1}

c) 25.2x10^{-3}min^{-1} d) 10.5x10^{-3}min^{-1}

51. The standard emf of Zn-Cu voltaic cell is

a) 2.1V b) 2.8V c) 1.2V d) 1.1V

52. Geometrical isomerism is exhibited by (i) 1-pentene (ii) 2-pentene (iii) 2-chloro-2-pentene (iv) 3-methyl-2-pentene

a) (i) and (ii) b) (ii) and (iii)

c) (iii) and (iv) d) (ii), (iii) and (iv)

53. Equatorial alcohol is more stable than axial alcohol to an extent of

a) 11 Kcal b) 0.7 Kcal c) 11.7 Kcal d) 10.3 Kcal

54. A compound that is positive for iodoform test is

a) 1-pentanol b) 2-pentanol c) 3-pentanol d) Pentanol

55. Which one of the following is optically active?

a) n-butyl alcohol b) Iso butyl alcohol

c) 2-butanol d) tertiary butyl alcohol

56. The mechanism involved in the preparationof glycol from 1,2-dihaloethane using aqueous Na_2CO_3 is

a) S_N^1 attack by OH- b) S_N^2 attack by Br-

c) S_N^2 attack by OH- d) S_N^1 attack by Br-

57. Which of the following is the strongest acid?

a) $C_6H_5CH_2OH$ b) $C_6H_5COCH_3$

c) C_6H_5OH d) CH_3OH

58. Which among the following has both local anaesthetics and antiseptic properties?

a) Benzyl benzoate b) Phenol

c) Benzyl alcohol d) n-propyl alcohol

59. Which reaction is used in Zeisel's method of detection and estimation of alkoxy group?

a) Alkyl halide + sodium alkoxide
b) Natural products + excess of HI
c) Ether + O_2
d) Alcohol +acid

60. Derivatives of ammonia act as

a) Nucleophiles
b) Electrophiles
c) Hydrophiles
d) Lyophiles

61. Which order of arrangement is correct in terms of the strength of the acid ?

a) $CH_3CH_2COOH>CH3COOH<HCOOH<ClCH_2COOH$
b) $ClCH_2COOH<HCOOH <CH_3COOH <CH_3CH_2COOH$
c) $CH_3CH_2COOH<CH_3COOH<HCOOH<ClCH_2COOH$
d) $HCOOH> CH_3CH_2COOH<CH_3COOH> ClCH_2COOH$

62. $CH_3MgI + CO_2 \rightarrow A \rightarrow B$, B is

a) HCOOH
b) $CH_3COCOOH$
c) CH_3COOH
d) CH_3CHO

63. Basic strength of amines is in the order of

a) $NH_3>CH_3NH_2>(CH_3)_2NH$
b) $(CH_3)_2NH>CH_3NH_2>NH_3$
c) $CH_3NH_2>(CH_3)_2NH>NH_3$
d) $NH_3>(CH_3)_2NH>CH_3NH_2$

64. $C_6H_5NH_2 + C_6H_5CHO \rightarrow C_6H_5N=CHC_6H_5$ involves

a) Addition / elimination
b) Substitution
c) Addition
d) Elimination

65. Which among the following contains triglyceride ?

a) Wax
b) Cooking oil
c) Essential oil
d) Albumin

66. The medicines which prevent nausea, vomiting and motion sickness is

a) Antibiotics b) Antacids

c) Antispasmodics d) All of these

67. Hot drink cups are made up of

a) polythene b) PVC

c) polystyrene d) polypropylene

68. What term is used to describe the process by which proteins are synthesised from a genetic code?

a) Reproduction b) Replication

c) Translation d) Transcription

69. To which of the following does thymine form hydrogen bonds in DNA ?

a) Adenine b) Thymine

c) Cytosine d) Guanine

70. A drug that commonly causes oral candidiasis is

a) Sympathomimetics b) Antimuscarinic agents

c) Antibiotics d) Antiseptics

71. The differential equation of the family of curves $x^2 + y^2 - 2ay = 0$ where a is an arbitrary constant is

a) $2(x^2 - y^2)y' = xy$ b) $2(x^2 + y^2)y' = xy$

c) $(x^2 - y^2)y' = 2xy$ d) $(x^2 + y^2)y' = 2xy$

72. If $Im\left(\frac{2z+1}{iz+1}\right) = -2$, then the locus of the point representing z in the complex plane is

a) a circle b) a straight line c) a paratola d) None of these

73. Let $\vec{u} = \hat{\imath} + \hat{\jmath}$ $\vec{v} = \hat{\imath} - \hat{\jmath}$, $\vec{w} = \hat{\imath} + 2\hat{\jmath} + 3\hat{k}$. If $\hat{n}$ is a unit vector such that $\vec{u}.\hat{n} = 0$, $\vec{v}.\hat{n} = 0$. Then $|\vec{w}.\hat{n}| =$

a) 0 b) -2 c) -4 d) 3

74. If $f(2) = 4$ and $f'(2) = 4$, $then$ $\lim_{x\to 2}\left(\frac{xf(2)-2f(x)}{x-2}\right)$ is equal to

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

75. If $x^y = e^{x-y}$, $then$ $\frac{dy}{dx} =$

a) $\frac{1+x}{1+logx}$ b) $\frac{1-logx}{1+logx}$ c) not defined d) $\frac{logx}{(1+logx)^2}$

76. The sum to infinity of the series $\frac{2}{1!} + \frac{3}{2!} + \frac{4}{3!} +$ ... ... ∞ is

a) 2e-1 b) e^2-1 c) $2e^2$ d) 2e

77. The equation of common tangent to the parabola $y^2 = 4ax$ and $x^2 = 4ay$ is

a) x+y=0 b) x-y+a=0 c) x+y+a=0 d) None of these

78. $\lim_{n\to\infty}\left(1+\frac{1}{x}+\frac{1}{x^2}\right)^{2x}$ is equal to

a) e^2 b) e c) 2e d) $2e^2$

79. The chairs at an auditorium are to be labelled with a letter and a positive integer not exceeding 100. The largest number of chairs that can be marked differently is equal to

a) 1600 b) 2600 c) 260 d) 600

80. Let f: $\mathbf{R}\to\mathbf{R}$ be a function defined by $f(x)=|x|+1$. Then which of the following is true?

a) f $is\ 1-1\ and\ onto$ b) f $is\ neither\ 1-1\ nor\ onto$

c) f $is\ onto\ but\ not\ 1-1$ d) $f^{-1}\ exists$

81. $If\ \ A=\begin{bmatrix}1 & 0\\ 0 & 1\end{bmatrix}\quad B=\begin{bmatrix}0 & 1\\ -1 & 0\end{bmatrix},\quad C=\begin{bmatrix}cos\theta & sin\theta\\ -sin\theta & cos\theta\end{bmatrix}$ then

a) $C=A\ cos\theta-B\ sin\theta$ b) $C=A\ sin\theta+B\ cos\theta$

c) $C=A\ sin\theta-B\ cos\theta$ d) $C=A\ cos\theta+B\ sin\theta$

82. If $\overrightarrow{A}=4\hat{\imath}+3\hat{\jmath}+\hat{k}$, $\overrightarrow{B}=2\hat{\imath}+\hat{\jmath}+2\hat{k}$, the angle between $\overrightarrow{A}$ and $\vec{B}$ is given by

a) $\sin^{-1}\frac{\sqrt{185}}{3}$ b) $\cos^{-1}\frac{\sqrt{185}}{3}$ c) $-\sin^{-1}\frac{\sqrt{185}}{3}$ d) $\frac{\sqrt{185}}{3\sqrt{26}}$

83. $x+2$ is a factor of

a) x^4+2 b) x^4-x^2+12 c) x^4-2x^3-x+2

d) x^4+2x^3-x-2

84. The coefficient of x^{10} in the expansion of

$\left(1+\frac{x^2}{2!}+\frac{x^4}{4!}+\ \ldots\ldots\ \infty\right)^2+\left(\frac{x}{1!}+\frac{x^3}{3!}+\cdots\ \infty\right)^2=$

a) $\frac{2^6}{9!}$ b) $\frac{2^8}{10!}$ c) $\frac{2^9}{10!}$ d) None of these

85. In a series of observations half of them equal a and remaining half equal –a.
If the S.D of the observations is 2, then $|a|$=

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

86. $1+\frac{1}{3}+\frac{1.3}{3.6}+\frac{1.3.5}{3.6.9}+\ldots\ldots\ldots\infty\ =$

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

87. $\begin{vmatrix} 21 & 17 & 7 & 10 \\ 24 & 22 & 6 & 10 \\ 6 & 8 & 2 & 3 \\ 6 & 7 & 1 & 2 \end{vmatrix}$ =

a) 0 b) 2 c) -1 d) 3

88. The principal value of i^i is equal to

a) e b) $e^{-\pi/2}$ c) $e^{-3\pi/2}$ d) None of these

89. A unit vector perpendicular to -$\hat{\imath}+\ 2\hat{\jmath}+2\hat{k}$ and making equal angles with $x\ and\ y$ axes can be

a) $\frac{1}{3}(2\hat{\imath}+2\hat{\jmath}-\hat{k})$ b) $\frac{1}{3}(2\hat{\imath}-2\hat{\jmath}-\hat{k})$ c) $\frac{1}{3}(2\hat{\imath}+2\hat{\jmath}+\hat{k})$ d) $\frac{1}{3}(2\hat{\imath}-2\hat{\jmath}+\hat{k})$

90. The domain of the function $f(x)=\frac{sin^{-1}(x-3)}{\sqrt{9-x^2}}$ is

a) [2,3] b) [2,3) c) [1,2] d) [1,2)

91. The mean and the variance of a binomial distributions are 4 and 2 respectively. Then the probability of 2 sucesses is

a) $\frac{37}{256}$ b) $\frac{219}{256}$ c) $\frac{128}{256}$ d) $\frac{28}{256}$

92. 5 boys of class VI , 6 boys of class VII and 7 boys of class VIII sit in a row. The number of ways they can sit so that boys of the same class sit together is

a) (5!) (6!) (7!) b) (3!) (5!) (6!) (7!) c) 18! (5! 6! 7!) d) (4!)(5!)(6!)

93. If $f(x) = \frac{x}{x-1}$, $f(3x)$ in terms of $f(x)$ is

a) $\frac{3f(x)}{3f(x)-1}$ b) $\frac{3f(x)}{3f(x)-3}$ c) $\frac{3f(x)}{2f(x)+1}$ d) $3f(x) - 1$

94. The S.D of 4,5,6,7,……13 is x , then the S.D of 14,15,….,23 is

a) x b) 10*x* c) *x*+10 d) $x + \sqrt{10}$

95. If $\mathrm{A}^2 - \mathrm{A} + \mathrm{I} = 0$, then the inverse of A is

a) A+I b) A c) A-I d) I-A

96. The line $y = 4x + c$ touches the parabola $y^2 = 4x$ if

a) C=0 b) C= $^1/_4$ c) C=4 d) 2

97. The area bounded by the curves $y^2=x$ and $y=x^2$ is

a) $^7/_3$ b) $^1/_3$ c) $^5/_3$ d) 1

98. A point diametrically opposite to the point P(1,0) on the circle $x^2 + y^2 + 2x + 4y - 3 = 0$ is

a) (3,-4) b) (-3,4) c) (-3,-4) d) (3,4)

99. The third term of a G.P is 15. Then the product of its first five terms is

a) $(15)^2$ b) $(15)^3$ c) $(15)^4$ d) $(15)^5$

100. If $y = e^x + \sin x$ $then$ $\frac{d^2x}{dy^2}$ is equal to

a) $e^x - \sin x$ b) $-(e^x - \cos x)^{-2}$ c) $-(e^x - \sin x)(e^x + \cos x)^{-2}$

d) $(\sin x - e^x)(\cos x + e^x)^{-3}$

101. If w is an imaginary cube root of unity, then $(1+ w- w^2)^7$ equals

a) 128 w b) -128w c) 128w^2 d) -128w^2

102. $tan^{-1}\left(\frac{1}{4}\right) + tan^{-1}\left(\frac{2}{9}\right)$ =

a) $\frac{1}{2}\ cos^{-1}\left({}^3/_5\right)$ b) $\frac{1}{2}\ sin^{-1}\left({}^3/_5\right)$ c) $\frac{1}{2}\ tan^{-1}\left({}^3/_4\right)$ d) $tan^{-1}\left({}^1/_2\right)$

103. If the lines $\frac{x-1}{2} = \frac{y+1}{3} = \frac{z-1}{4}$ and $\frac{x-3}{1} = \frac{y-k}{2} = \frac{z}{1}$ intersect , then k equals

a) ${}^3/_2$ b) ${}^9/_2$ c)$-{}^2/_9$ d) $-{}^3/_2$

104. If z_1, z_2 are two non-zero complex numbers such that $|z_1 + z_2| = |z_1| + |z_2|$, then $arg(z_1) -$ arg (z_2) is equal to

a) $-\frac{\pi}{2}$ b) 0 c) -π d) $\frac{\pi}{2}$

105. If $\vec{a} = \hat{\imath} + \hat{\jmath} + \hat{k}$ $\vec{b} = \hat{\imath} - \hat{\jmath} + \hat{k}$, $\vec{c} = \hat{\imath} + 2\hat{\jmath} - \hat{k}$ then $\begin{vmatrix} \vec{a}.\vec{a} & \vec{a}.\vec{b} & \vec{a}.\vec{c} \\ \vec{b}.\vec{a} & \vec{b}.\vec{b} & \vec{b}.\vec{c} \\ \vec{c}.\vec{a} & \vec{c}.\vec{b} & \vec{c}.\vec{c} \end{vmatrix}$ =

a) 2 b) 4 c) 16 d) 64

Part 4 – Biology

71. Which of the following cells is haploid?

a) Ovum b) embryo

c) red blood cell d) skin cell

72. What cell organelle is responsible for the production of ATP?

a) Chloroplast b) Nucleus

c) Vesicle d) Mitochondrion

73. Sorting of protein to mitochondria and chloroplasts is

a) cotranslational b) post-translational

c) pretranslational d) quasitranslational

74. Ribosomes have

a) 1 subunit b) 2 subunits

c) 3 subunits d) 4 subunits

75. Plants differ from animals in that plants have

a) An endoplasmic reticulum b) A central vacuole

c) Golgi complex d) Mitochondria

76. Passage through pores in the nuclear envelope is restricted primarily to

a) proteins, RNA, and protein-RNA complexes

b) lipids and glycolipids

c) DNA and RNA

d) RNA and protein-carbohydrate complexes

77. The rough ER is so named because it has an abundance of _____ on it

a) mitochondria b) lysosomes

c) Golgi bodies d) Ribosomes

78. Within chloroplasts, light is captured by

a) grana within cisternae b) thylakoids within grana

c) cisternae within grana d) grana within thylakoids

79. The smooth ER is especially abundant in cells that synthesize extensive amounts of

a) Toxins b) proteins

c) lipids d) nucleic acids

80. The cytoplasm of a bacterium

a) is supported by the cytoskeleton b) is supported by microtubules

c) is supported by keratin d) has no internal support structure

81. Which of these is not a living fossil?

a) Archaeopteryx b) Duck-billed platypus

c) Lungfish d) Frog

82. Name the scientist who cut off the tails of mice of successive generations to prove Lamarck's theory was wrong _____.

a) Weismann b) Haeckel

c) Darwin d) Wallace

83. Speciation is the evolutionary process by which _____.

a) a new gene pool is formed

b) evolutionary paths of species converge

c) hybrids species form

d) Shows up differences in physical traits

84. Non geographic speciation can be found in _____.

a) parapatric speciation b) peripatric speciation

c) allopatric speciation d) sympatric speciation

85. Evidences of evolutionary relationships is found in _____.

a) atmosphere b) fossils

c) ocean beds d) rocks

86. Which of the following are not energy sources but necessary for enzymatic reactions, for protein complexes, or as precursors for biomolecules?

a) minerals and vitamins b) carbohydrates

c) lipids d) proteins

87. Which one of the following is not an amino acid?

a) aspartic acid b) glutamine

c) palmitic acid d) leucine

88. Obesity is a condition where

a) energy intake exceeds energy output over time

b) energy intake is lower than energy output over time

c) energy input is unaltered

d) energy output is unaltered.

89. The long bones of the body are

a) humerus and femur b) patella

c) scapula. d) ribs

90. The proteins that are responsible for contracting the muscles are

a) actin and troponin b) actin and myosin

c) myosin and tropomyosin d) actin and tropomyosin

91. T lymphocytes mature and differentiate in

a) thymus b) bone marrow

c) spleen d) lymph node

92. B lymphocytes mature and differentiate in

a) thymus b) bone marrow

c) spleen d) lymph node

93. Antibodies are produced by

a) plasma cells of the humoral immune system

b) T lymphocyte

c) Dendritic cells

d) Macrophages

94. Antigens are processed by the

a) Macrophages

b) Dendritic cell

c) macrophages, dendritic cells and B cells

d) Neutrophils

95. Primary lymphoid organ is

a) Spleen

b) thymus

c) lymph node

d) gut-associated lymphoid tissue

96. What was the first bacterium shown to cause human disease?

a) Anthrx b) Mycobacterium

c) Diphteria d) Streptococus

97. Living, unstained cells and organisms can be observed best using

a) Fluorescent microscope b) TEM

c) Phase contrast Microscope d) SEM

98. Which of the following statements is most correct about the differential Gram stain?

a) Crystal violet differentially stains Gram positive cells

b) Acetone differentially destains Gram negative cells

c) Gram's iodine differentially stains Gram positive cells

d) Safranin differentially stains Gram negative cells

99. Which of the following is NOT equivalent to 10 micrometers?

a) 0.0001cm b) 0.01mm

c) 10,000nm d) 100,000 Angstoms

100. Plasmids are important to the genetics of many bacteria. This is because

a) they are inherited from one generation to the next

b) they may carry genes that give their host a selective advantage

c) they can render bacteria drug-resistant

d) All of the above

101. The 70S procaryotic ribosomes consist of

a) two 40S subunits b) a 50S and a 30S subunit

c) a 40S and a 30S subunit d) a 50S and a 20S subunit.

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c) lipids d) nucleic acids

106. The cytoplasm of a bacterium

a) is supported by the cytoskeleton b) is supported by microtubules

c) is supported by keratin d) has no internal support structure

107. The most important form of water to plants is

a) Hygroscopic water b) Capillary water

c) Combined water d) Gravitational water

108. Which among the following is not a passive factor for affecting soil formation?

a) Rainfall b) Time

c) Topography d) Parent material

109. What causes 'A' horizon to become a dark coloured?

a) Melanization b) Chelation

c) Gleization d) Laterization

110. Soil texture is determined by

a) The relative proportion of mineral particles of different size

b) The varying degree of weathering of parental rock

c) The soil organisms

d) None of these

111. Who for the first time coined the term succession for the closely changes in communites?

a) Clements b) Hult

c) Cowles d) Tansely

112. Which of the following is not a component of plant species of a hydrosere?

a) Rooted submerged stage b) Herb stage

c) Rooted floating stage d) Red-swamp stage

113. "Trangene" was coined by

a) Gordon and Ruddle b) Watson and crick

c) Mendal and Darwin d) Mary and Rosellin

114. Which of the following is not a natural medium?

a) Amniotic fluid b) Ascitic and plural fluids

c) Coconut milk d) Phosphate buffer saline

115. What is the voltage range used in electroporation?

a) 20-30 b) 200-300

c) 2000-3000 d) 20000-30000

116. Which of the following is not a isoenzyme?

a) G6PDH b) LDH

c) NP d) ATPase

117. Restriction endonucleases hydrolyzes polynucleotide from

a) Only the 5' end

b) From either terminal

c) At an internal phosphodiester bond

d) A phosphodiester bond within a specific sequence

118. Bacteria protect themselves from viruses by fragmenting viral DNA upon entry with

a) Methylase
b) Endonucleases
c) Ligases
d) Exonucleases

119. Restriction endonucleases are

a) Used for *in vitro* DNA synthesis
b) Synthesized by bacteria as part of their defense mechanism
c) Present in mammalian cells for degradation of DNA when the cell dies
d) Used in genetic engineering for ligating two DNA molecules

120. Which of the following processes require energy?

a) Ligation
b) Transformation
c) Restriction digestion
d) Hybridization

Answer

		Physics			Chemistry			Math			Biology		
1	a		36	d		71	c		71	a			
2	a		37	c		72	b		72	d		106	d
3	d		38	a		73	d		73	b		107	b
4	c		39	b		74	c		74	b		108	a
5	b		40	c		75	d		75	b		109	a
6	b		41	c		76	a		76	a		110	a
7	c		42	b		77	c		77	d		111	b
8	c		43	a		78	a		78	b		112	b
9	d		44	b		79	b		79	c		113	a
10	b		45	b		80	c		80	d		114	d
11	b		46	c		81	d		81	a		115	c
12	a		47	d		82	d		82	a		116	d
13	b		48	a		83	d		83	a		117	d

14	c	49	d	84	c	84	a	118	b
15	b	50	b	85	c	85	b	119	b
16	d	51	d	86	a	86	a	120	a
17	d	52	d	87	a	87	c		
18	a	53	b	88	c	88	a		
19	d	54	b	89	a	89	a		
20	b	55	c	90	b	90	b		
21	d	56	c	91	d	91	a		
22	b	57	c	92	b	92	b		
23	a	58	c	93	c	93	a		
24	b	59	b	94	a	94	c		
25	b	60	a	95	d	95	b		
26	b	61	c	96	b	96	a		
27	c	62	b	97	b	97	c		
28	c	63	b	98	c	98	b		
29	c	64	a	99	d	99	a		
30	a	65	b	100	d	100	d		
31	c	66	c	101	d	101	b		
32	d	67	c	102	d	102	a		
33	a	68	c	103	b	103	d		
34	a	69	a	104	b	104	b		
35	b	70	c	105	c	105	c		