



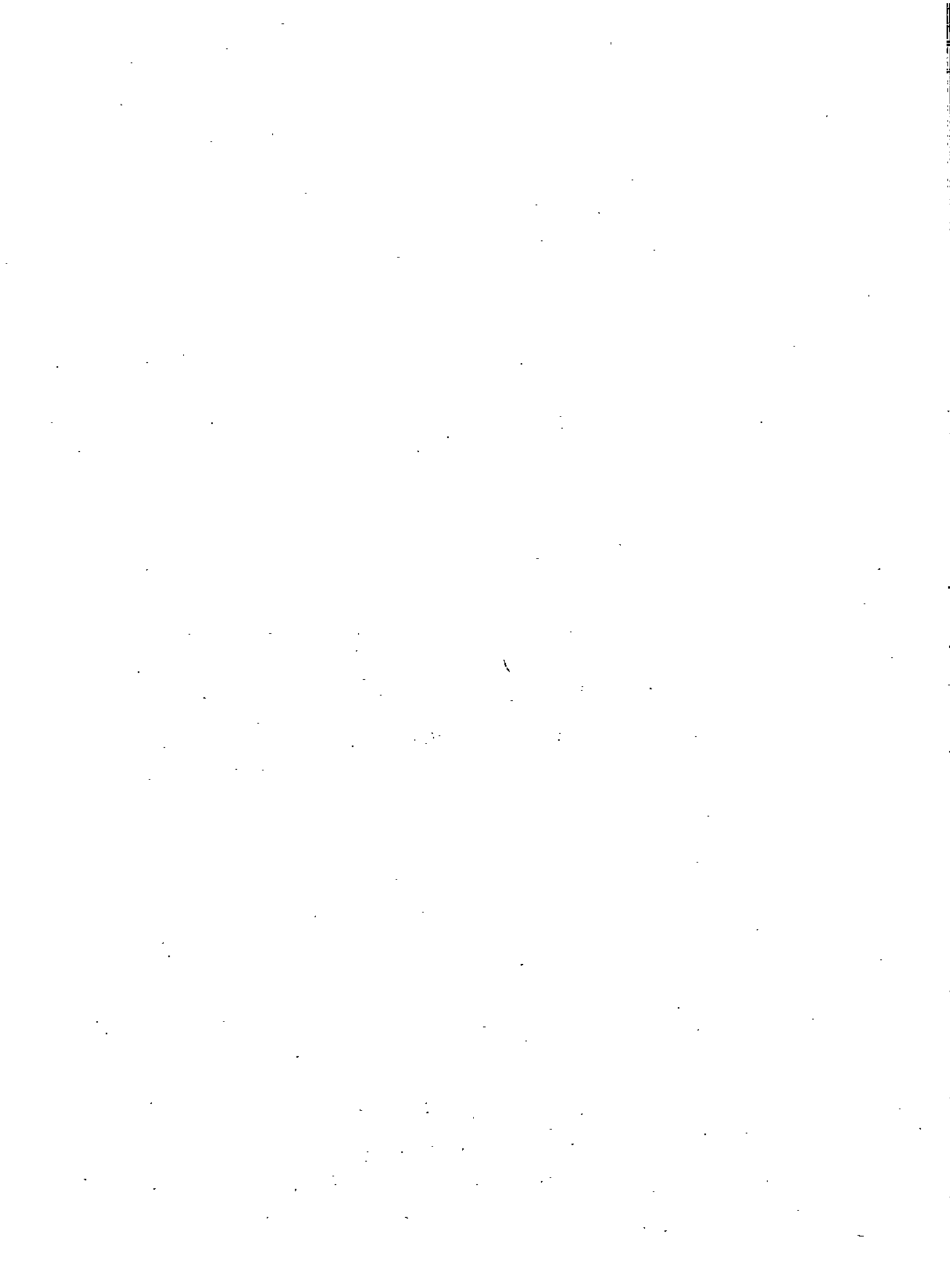
**INDIAN INSTITUTE OF SCIENCE
BANGALORE - 560012**

ENTRANCE TEST FOR ADMISSIONS - 2010

**Program : Integrated Ph.D
Entrance Paper : Biological Sciences
Paper Code : BS**

Day & Date
SUNDAY, 25TH APRIL 2010

Time
2.00 P.M. TO 5.00 P.M.



1. The following data refer to the hydrolysis of various tripeptides into their N-terminal amino acids and C-terminal dipeptides.

substrate	k_{cat} (s^{-1})	K_m (mM)
A. L-Pro-Gly-Gly	385	1.3
B. L-Leu-Gly-Gly	190	0.55
C. L-Ala-Gly-Gly	365	1.4
D. L-Ala-L-Ala-L-Ala	298	0.52

Which substrate (A, B, C, or D) would be hydrolysed most rapidly in the early stages of reaction if a sample of enzyme was added to a mixture of all four substrates in equimolar concentration ?

2. An enzyme with a K_M of 1.2×10^{-4} M was assayed at an initial substrate concentration of 0.02 M. By 30 sec, 2.7 micro moles/liter of the product had been produced. How much product will be present at 3 min?
- A. 16.2 moles per litre
 B. 16.2 nano moles per litre
 C. 16.2 micromolar
 D. 16.2 pico moles per litre
3. According to the sequential model for allosteric proteins, which of the following statements is true for hemoglobin?
- A. Each of the four subunits in hemoglobin changes one at a time from the low affinity state to the high affinity state
 B. The alpha subunits followed by the beta subunits change from the low affinity to the high affinity state
 C. The beta subunits followed by the alpha subunits change from the low affinity to the high affinity state
 D. Each of the four subunits in the hemoglobin tetramer is either in a low affinity state or a high affinity state
4. The $1/v$ axis of a reciprocal plot is labeled v^{-1} : (nmoles per liter per min) $\times 10^2$. The $1/[s]$ axis is labeled $[s]^{-1}$: (M) $^{-1} \times 10^{-4}$. The plot intersects the two axes at "2" and "4" respectively. The V_{max} and K_m values are:
- A. 50 moles /L/ min; 2.5×10^{-4} M
 B. 50 micro moles /L/ min; 2.5×10^{-4} M
 C. 50 nano moles /L/ min; 2.5×10^{-4} M
 D. 50 pico moles /L/ min; 2.5×10^{-4} M

5. Evolutionary homology is similarity due to common ancestry. Which of the following characters are evolutionary homologies?
- A. wing of a bird and a bat
 - B. beak of a vulture and an eagle
 - C. fin of a fish and a whale
 - D. webbed feet of a duck and a frog
6. Locus A in a diploid organism has two alleles A1 and A2, where A1 is dominant over A2. Additionally A2 is deleterious in the homozygous condition. Allele A2 takes a long time to get eliminated from the population because
- A. A1 is harbored in the heterozygotes
 - B. A1 is harbored in the homozygotes
 - C. A2 is harbored in the heterozygotes
 - D. A2 is harbored in the homozygotes
7. In a population of 100 diploid individuals, the frequency of neutral alleles A1 and A2 are 0.4 and 0.6 respectively. Assuming Hardy-Weinberg equilibrium and no change in population size, the frequency of heterozygotes after five generations is:
- A. 0.36
 - B. 0.32
 - C. 0.16
 - D. 0.48
8. Which of the following ions is a critical player in the event of neurotransmitter release at synapses between neurons?
- A. Na⁺
 - B. K⁺
 - C. Ca⁺⁺
 - D. Mg⁺⁺
9. Myelination of axons results in
- A. An increase in the frequency of firing of action potentials
 - B. A decrease in the frequency of firing of action potentials
 - C. A decrease in the velocity of conduction of action potentials
 - D. An increase in the velocity of conduction of action potentials
10. A songbird species produces specific alarm calls in the presence of aerial predators such as eagles. On hearing an alarm call, individual songbirds drop what they are doing and fly into trees. In an observational field study, the

number of eagle alarm calls produced in different contexts was recorded and the results are shown below:

Behavioural context	Number of eagle alarm calls observed/day
Presence of eagles	35
Absence of eagles, songbirds foraging	10
Absence of eagles, songbirds not foraging	0

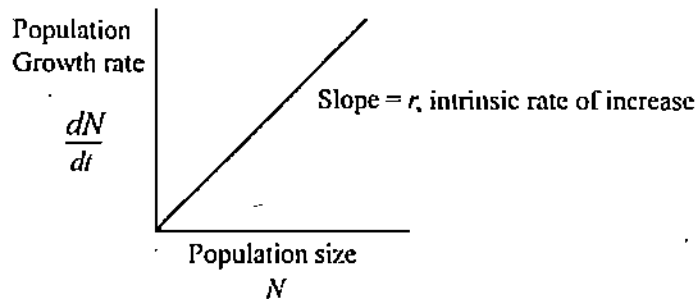
The above results may be construed as evidence for

- A. Mimicry
- B. Advertisement
- C. Deception
- D. Camouflage

11. In angiosperm plants, the gametophyte phase is represented by
- A. The seed
 - B. The anther
 - C. The pollen tube
 - D. The flower
12. If the main determinant of human height was a one-locus, two-allele system, the distribution of heights in the population would be
- A. Normal
 - B. Bimodal
 - C. Binomial
 - D. Poisson
13. Cheetahs in the Serengeti population in Africa show very low levels of heterozygosity. Which of the following processes is least likely to cause such a pattern?
- A. A founder effect
 - B. A bottleneck event
 - C. Frequent migration events between connected populations
 - D. Frequent breeding events between close relatives
14. Rapid climate change is predicted to expose organisms to new environmental conditions. Which of the following combinations of life history traits is most likely to help populations cope with novel environment conditions and thereby prevent population extinctions?

- A. long generation times and high intrinsic rates of increase
- B. long generation times and low intrinsic rates of increase
- C. short generation times and low intrinsic rates of increase
- D. short generation times and high intrinsic rates of increase

15. The figure below shows the relationship between population growth rate and population size.



Which of the following statements is TRUE for such a population?

- A. Per capita growth rate is greatest when population size is small.
 - B. Per capita growth rate is greatest when population sizes are moderate.
 - C. Per capita growth rate is constant
 - D. Per capita growth rate is smallest when population size is large
16. Which of the following best represents the ordering of some major biomes of the planet according to decreasing net primary production (Highest to lowest)?
- A. Tropical rain forests, Mixed broad/needle leaf forests, Savannas, Tundra
 - B. Savannas, Mixed broad/needle leaf forests, Tropical rain forests, Tundra
 - C. Tropical rain forests, Mixed broad/needle leaf forests, Tundra, Savannas
 - D. Tropical rain forests, Savannas, Mixed broad/needle leaf forests, Tundra
17. DNA from which taxon would be the best to use to prove the connection between India and Seychelles Islands in the Indian Ocean in geological time
- A. Bats
 - B. Birds
 - C. Frogs
 - D. Sharks
18. The peppered moth (*Biston betularia*) is a classic example of industrial melanism. Which of the following best describes industrial melanism in the peppered moth?

- A. The frequency of dark phenotypes decreased when airborne pollution during the industrial era which changed the bark color on trees.
 - B. The frequency of dark phenotypes decreased throughout the species range when airborne pollution which changed the bark color on trees near industrial areas.
 - C. The frequency of dark phenotypes increased with the level of airborne pollution during the industrial era which changed the bark colour on trees.
 - D. The frequency of dark phenotypes increased throughout the species range when airborne pollution during the industrial era which changed the bark colour on trees near industrial areas.
19. Plants bend toward a light source as a result of
- A. the increased amount of food synthesized by their leaves
 - B. an unequal auxin distribution in their stems
 - C. the necessity of light for transpiration
 - D. an inability to synthesize chemical regulators
20. Light of which colour is least important to a green plant during photosynthetic activities?
- A. green
 - B. yellow
 - C. blue
 - D. orange
21. What percentages can be expected in the offspring of a cross between a female carrier for colour blindness and a male with normal colour vision?
- A. 25% normal male, 25% colour blind males, 25% normal females, 25% carrier females
 - B. 25% normal males, 25% colour blind males, 25% carrier females, 25% colour blind females
 - C. 75% normal males, 25% carrier females
 - D. 50% colour blind males, 50% colour blind females
22. Which enzyme is the target of the cholesterol lowering drugs known as statins?
- A. DNA polymerase
 - B. Cathepsin
 - C. RNA polymerase
 - D. HMG-CoA synthase
23. What is the main target of non-steroidal anti-inflammatory drugs (NSAIDs)?
- A. 20S proteasomes
 - B. Cyclooxygenase

- C. DNA polymerase
- D. RNA polymerase

24. Which cytokine is induced by T cells upon activation and acts as an autocrine growth factor?
- A. IL-1
 - B. IL-2
 - C. IL-5
 - D. IL-10
25. Filariasis is caused by
- A. *Leishmania tropicana*
 - B. *Entamoeba histolytica*
 - C. *Wucheria bancrofti*
 - D. *Toxoplasma gondii*
26. In which cells is expression of the IgE receptor seen during allergy?
- A. T lymphocytes
 - B. B lymphocytes
 - C. Mast cells
 - D. Neutrophils
27. From which layer of the mammalian embryo does the nervous system form?
- A. Ectoderm
 - B. Mesoderm
 - C. Endoderm
 - D. Choroid
28. A salient principle of the neuronal network organization in the brain is that
- A. Neurites are fused together to form a continuous network
 - B. Neurites are not continuous and communicate by contact
 - C. Neurons in a network may not have dendrites
 - D. Axons are always myelinated
29. Which of the following correctly describes nerve cells?
- A. In comparison to copper wires, nerve cells are better conductors of electricity.
 - B. Nerve cells are similar in their electrical conduction properties to copper wires.

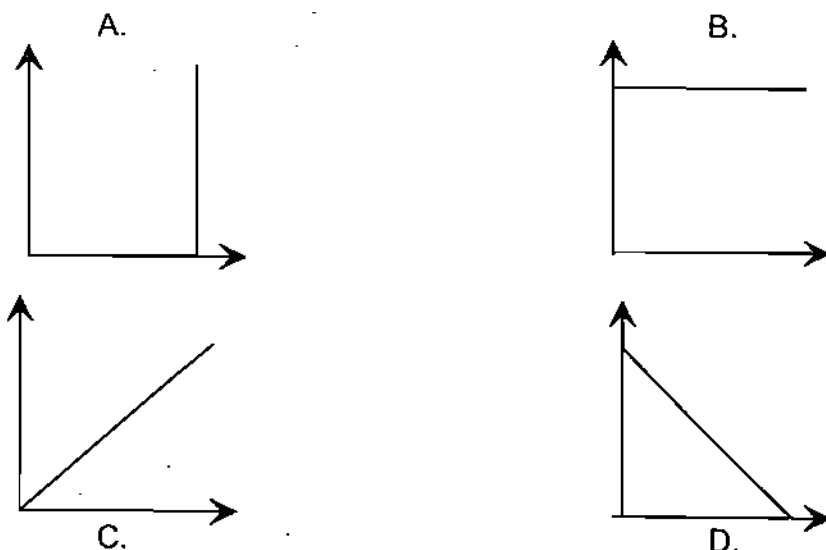
- C. Nerve cells are electron sinks: they absorb many electrons, but no electricity comes out of them.
- D. In comparison to copper wires, nerve cells are poorer conductors of electricity.
30. During development of the nervous system:
- A. The neurons of the central nervous system arise from the neural crest, and the neurons of the peripheral nervous system arise from the neural tube.
 - B. The three vesicles that give rise to the brain are called the telencephalon, diencephalon, and the cerebrum.
 - C. The cerebrospinal fluid distributes the neurons of the nervous system.
 - D. The neurons of the central nervous system arise from the neural tube, and the neurons of the peripheral nervous system arise from the neural crest.
31. What law best describes the upper limit to the conductance of an ion channel?
- A. Ohm's law
 - B. Nernst's law
 - C. Faraday's law
 - D. Newton's law
32. Ion channels in the cochlear hair cells produce an electrical signal in response to sound waves. Their ion channels work by:
- A. Opening in response to a physical membrane deformation
 - B. Sensing sound directly
 - C. Converting sound into an electromagnetic signal
 - D. Increasing their voltage in response to sound
33. White matter of the brain is composed of:
- A. Glial cells
 - B. Neurons
 - C. Axons
 - D. Dendrites
34. Bacteria known to be naturally competent for transformation by foreign DNA are
- A. *Mycobacterium tuberculosis* and *Escherichia coli*
 - B. *Yersinia pestis* and *Mycobacterium smegmatis*
 - C. *Bacillus subtilis* and *Haemophilus influenzae*
 - D. *Escherichia coli* and *Yersinia pestis*
35. During prokaryotic transcription
- A. DNA gyrase introduces negative supercoils and DNA Topoisomerase I removes negative supercoils

- B. Both DNA gyrase and DNA topoisomerase introduce negative supercoils
 C. DNA Topoisomerase I introduces negative supercoils and DNA gyrase removes negative supercoils
 D. Both DNA gyrase and DNA Topoisomerase I remove supercoils
36. A recessive allele t is responsible for a condition called Dystonia. A man who has this condition has children with a woman who does not have this condition. One of their four children has Dystonia. What are the possible genotypes of the man and woman?
- A. The father is Tt ; the mother is TT .
 B. The father is tt ; the mother is TT .
 C. Both parents are tt .
 D. The father is tt ; the mother is Tt .
37. Which of the following compounds would have the highest boiling point?
- A. $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_3$
 B. CH_3NH_2
 C. CH_3OH
 D. CH_2F_2
38. The presence of many genes on the same chromosome results in the violation of
- A. Mendel's law of dominance
 B. Mendel's law of segregation
 C. Mendel's law of independent assortment
 D. Darwin's theory of evolution
39. The critical aspect of DNA that allows faithful copying of genetic information is
- A. its double helical structure
 B. complementarity of bases
 C. presence of the genetic code
 D. presence of an RNA intermediate
40. The presence of a nonsense mutation in a gene can give rise to
- A. a shorter polypeptide due to premature termination of translation
 B. a modified protein with completely different amino acids
 C. transcription goes beyond the normal 3' end
 D. translation goes beyond the normal C-terminal
41. Evolution by natural selection means
- A. selection is responsible for the introduction of variations
 B. the processes of selection and generation of variations are independent
 C. selection is more significant than the variations
 D. variations are more significant than selection

42. The generation time for the bacterial strain A is 30 minutes and strain B is 60 minutes. If a culture containing an equal mixture of A and B is grown, after 10 hours, the culture will consist predominantly of
- A. A cells
 - B. B cells
 - C. An equal mixture of A and B
 - D. Dead cells
43. Replication of chromosomal DNA is
- A. continuous on both strands
 - B. discontinuous on both strands
 - C. continuous on one strand and discontinuous on the other strand
 - D. random on both strands
44. Which of the following is not a monosaccharide?
- A. Glucose
 - B. Lactose
 - C. Fructose
 - D. Mannose
45. The Na^+ ion has
- A. One electron less than the Na atom
 - B. One proton more than the Na atom
 - C. One proton and one neutron more than the Na atom
 - D. One electron and one neutron less than the Na atom
46. Which of the following is correct? Those with blood group AB
- A. can donate to those with blood group A
 - B. can donate to those with blood group B
 - C. can donate to those with blood group O
 - D. can receive from those with blood group O
47. Chitin is a polymer of
- A. $-\text{GlcNAc}\beta 1,4\text{GlcNAc}-$
 - B. $-\text{Gal}\beta 1,4\text{Gal}-$
 - C. $-\text{Gal}\alpha 1,4\text{Gal}-$
 - D. $-\text{GlcNAc}\beta 1,3\text{GlcNAc}-$

48. The largest possible circle is inscribed in a square. The ratio of the perimeter of the square and the circle is:
- $4: \pi$
 - $4: \pi/2$
 - $4: 1$
 - $4: \frac{1}{2}$
49. Let us consider $m^{\log n}$ and $n^{\log m}$ where m and n are two integers with $m > n$. Which one of the following statements is true?
- $m^{\log n}$ is greater than $n^{\log m}$
 - $m^{\log n}$ is smaller than $n^{\log m}$
 - $m^{\log n}$ and $n^{\log m}$ are equal
 - No general statement can be made on the relative magnitude of $m^{\log n}$ and $n^{\log m}$
50. Imagine 20 residues of a protein spans the membrane of a cell in an α -helical conformation. Given that there are 3.6 residues per turn of the helix and the pitch of the helix is 5.4\AA calculate the thickness of the transmembrane in \AA units.
- 15
 - 30
 - 45
 - 60
51. As θ takes values very close to $\pi/2$ what is the value of the function $\cos\theta/\sin 2\theta$?
- 0
 - 0.5
 - 1
 - indeterminate
52. Identify the amino acid with the most hydrophobic side chain.
- Tyrosine
 - Tryptophan
 - Histidine
 - Proline
53. How many hydrogen bonds stabilize a 2000 long B-DNA when 30% of all the bases in the DNA are Guanine?
- 2300
 - 2700
 - 4600
 - 5400

54. Which one of the following represents the plot between $\sin^2\theta$ (along X-axis) and $\cos^2\theta$ (along Y-axis)?



55. Identify the amino acid with more than one chiral centre.

- A. Isoleucine
- B. Valine
- C. Arginine
- D. Proline

56. The most favourable conformation for glucose is

- A. Planar structure
- B. Half chair form
- C. Chair form
- D. Boat form

57. A boy rides his bicycle from home to school and his cycle wheels are of the same diameter of 70 cm. He covers the total distance of 2.2 kilometers in 7 minutes. What is the approximate number of rotations made by one of the wheels of the bicycle?

- A. 500
- B. 1000
- C. 2000
- D. 4000

58. The maximum absorption for a protein molecule would be at

- A. 340 nm
- B. 280 nm
- C. 220 nm
- D. 190 nm

59. The diffusion coefficient for a molecule at infinite dilution in a non-interacting solvent depends upon
- A. The shape of the molecule.
 - B. The viscosity and shape of the molecule.
 - C. Viscosity, shape and temperature
 - D. Independent of these parameters at infinite dilution
60. At a constant velocity, the wavelength corresponding to an electron is
- A. greater than that of a neutron
 - B. less than that of a neutron
 - C. dependent on whether the electron is de-localized
 - D. same as that of a neutron
61. A sphere and a cylinder having the same mass and radius start from rest and roll down the same incline. Which of the following is true?
- A. The sphere gets to the bottom first
 - B. The cylinder gets to the bottom first
 - C. The sphere and cylinder reach the bottom at the same time
 - D. The answer would depend upon the length of the cylinder
62. The most symmetrical arrangement would be in a
- A. Hexagonal system
 - B. Orthorhombic system
 - C. Cubic system
 - D. Rombohedral system
63. Tissue which attaches skin to underlying muscles is called:
- A. Ligament
 - B. Areolar tissue
 - C. Adipose tissue
 - D. Reticular fibres
64. Which of the following animals belongs to the class Gastropoda ?
- A. Mussel
 - B. Cuttlefish
 - C. Clam
 - D. Slugs

65. In a healthy individual almost 3 litres of fluid and some blood proteins diffuse out of the capillaries each day. The lost fluid is returned to the circulatory system by
- Diffusion from the interstitial fluid in to the capillaries
 - Active transport in the endothelial cells of the capillary wall.
 - Absorption by the cells lining the intestine
 - The lymphatic system
66. If you mix equal volumes of two buffers at pH 6 and pH 8 of identical ionic strengths, what will be the resultant pH of the mixture?
- 7
 - ~8.3
 - ~6.3
 - ~14
67. The method to produce plants homozygous for all traits is
- Tissue culture
 - Anther culture
 - Embryo culture
 - Meristem culture
68. Identify the correct statement
- Plants adapted to a cold environment have more unsaturated fatty acids in their cell membranes
 - Plants adapted to a hot environment have more saturated fatty acids in their cell membrane
 - Plants adapted to cold & hot environments have more saturated fatty acids in their cell membranes
 - Plants found at high altitudes are always tall
69. Match the following
- | | |
|---|-----------------------------|
| p. Handicap principle | 1. R. K. Pachauri |
| q. Telomeres | 2. Venkatraman Ramakrishnan |
| r. Structure of translational machinery | 3. Elizabeth Blackburn |
| s. Global warming & climate change | 4. Amotz Zahavi |
- p-1, q-4, r-2, s-3
 - p-3, q-1, r-4, s-2
 - p-4, q-3, r-2, s-1
 - p-2, q-4, r-3, s-1
70. Bt brinjal is a genetically modified variety where

- A. A bacterial toxin gene has been introduced to make the plant more resistant to herbicides
- B. A bacterial gene has been introduced to make the fruit rich in protein
- C. A gene has been introduced to make it more drought resistant
- D. A bacterial toxin gene is introduced to make the plant more resistant to certain insect pests

71. Ribosomes can be completely destroyed by which of the following treatments?

- A. Ribonuclease
- B. Trypsin and ribonuclease
- C. DNase and ribonuclease
- D. Chymotrypsin

72. Which of the following mixtures would form two phases?

- A. Methanol and Water
- B. Formaldehyde and water
- C. Chloroform and water
- D. Acetic acid and water

73. Rank the following compounds in the order of decreasing oxidation state of the atom that undergoes a redox change:

- p. Potassium dichromate ($K_2Cr_2O_7$)
- q. Potassium permanganate ($KMnO_4$)
- r. Manganese dioxide (MnO_2)
- s. Potassium chlorate ($KClO_3$)

- A. $q > p > s > r$
- B. $r > p > q > s$
- C. $p > q > s > r$
- D. $s > r > p > q$

74. What is the maximum number of proteins of size 333 or more amino acids that can be coded for by a double stranded 1000 base pair long DNA?

- A. 3
- B. 1
- C. 6
- D. 9

75. Which of the following viruses establishes latent infection in neuronal cells?

- A. Poliovirus
- B. Herpes Simplex virus
- C. Japanese encephalitis
- D. Dengue virus

76. The genome of M13 bacteriophage consists of
- A. ssDNA
 - B. ssRNA
 - C. dsDNA
 - D. dsRNA
77. Which of the following proteins is present in nails and hoofs?
- A. Collagen
 - B. Elastin
 - C. Gelatin
 - D. Keratin
78. Which of the following chemical reagents cannot damage DNA?
- A. Ethyl methyl sulphate
 - B. Nitrosoguanidine
 - C. Ethylnitrosourea
 - D. Sodium dodecyl sulphate
79. Which of the following reagents can be used to distinguish between DNA and RNA?
- A. Congo Red
 - B. Pyridine
 - C. Methylene blue
 - D. Sodium hydroxide
80. Which of the following molecules can form a homopolymer?
- A. Bactoprenol phosphate
 - B. N-acetyl glucosamine
 - C. N-acetyl muramic acid
 - D. Teichoic acid
81. Okazaki fragments were prepared from an *E. coli* strain harboring pBR322 plasmid. These fragments were then hybridized to single stranded DNA molecules prepared by carefully separating the two strands of the *E. coli* chromosome and the plasmid. The Okazaki fragments would anneal to
- A. Both the strands of the chromosome and the plasmid
 - B. Both the strands of the chromosome but only one strand of the plasmid
 - C. One strand of the chromosome but both the strands of the plasmid
 - D. One strand each of the chromosome and the plasmid

82. If an rRNA sample was degraded into its constituent nucleotides, the absorbance of this sample at 260 nm would
- decrease if the degradation was effected by alkaline digestion but increase if the same was treated with ribonuclease
 - increase if the degradation was effected by alkaline digestion but decrease if the same was effected by a ribonuclease
 - remains unaltered, irrespective of the method
 - increase irrespective of the use of either chemical or enzymatic means
83. A plasmid of 2200 bp size was isolated from *E. coli* and found to have a linking number (L_k) of 190. The negative value of the writhe (W_r) for this plasmid would
- be more if the DNA adopted an A-form structure than if it did a B-form structure
 - be less if the DNA adopted an A-form structure than if it did a B-form structure
 - be independent of the A-form or the B-form structures of the DNA
 - vary only if the DNA in the plasmid adopted a Z-form structure
84. The Shine-Dalgarno sequence found upstream to the initiation codon in eubacterial mRNAs facilitates binding to the
- 30S ribosomal subunit via the 16S rRNA
 - 50S ribosomal subunit via the 23S rRNA
 - 30S ribosomal-subunit via the 5S rRNA
 - 50S ribosomal subunit via the 5S rRNA
85. The resolving power of the human eye with normal vision is about
- 1 metre
 - 0.1 metres
 - 1 millimetre
 - 0.1 millimetres
86. Over a number of meiotic cycles, it is seen that genes A and B are always associated with each other. This means that they are likely to be
- in nuclear DNA
 - in mitochondrial DNA
 - on the same chromosome
 - on different sides of the centromere
87. The cross between a mutant female mouse and a normal male mouse gives rise to offspring that are all mutant; the reciprocal cross gives rise to offspring that are all normal. This means that the mutation is likely to be

- A. in the mitochondrial genome
- B. in the nuclear genome
- C. dominant
- D. recessive

88. If the average molecular weight of one amino acid is 110, the molecular weight of a peptide made up of 10 amino acids is expected to be

- A. 1100
- B. 938
- C. 876
- D. 744

89. If the polar ice melts entirely because of global warming, the rate at which the earth rotates around its own axis should

- A. slow down
- B. speed up
- C. vary cyclically
- D. remain unchanged

90. Many organisms can synthesize all the 20 common amino acids, but humans cannot. The likely cause behind this is that

- A. humans get all the amino acids they need from food
- B. humans need proteins, not amino acids
- C. humans are getting used to synthetic foods
- D. human evolution was preceded or accompanied by the inactivation of some genes

91. Hydrogen and helium are the two most common elements in the universe, but they are missing from the earth's atmosphere. This is believed to be because

- A. The earth is not massive enough to retain them
- B. They have been used up in chemical reactions
- C. They were absorbed by the outer crust
- D. The primitive earth was not hot enough

92. Assume that an animal generates heat at a rate proportional to its volume and can radiate heat at a rate proportional to its body surface area. Which of these animals would be best at maintaining its body temperature in a cold climate?

- A. Mouse
- B. Rabbit

- C. Fox
- D. Bear

93. In a binary chemical reaction $A + B \rightarrow C$, the concentrations of both A and B are doubled. Then the rate at which C is formed will
- A. Quadruple
 - B. Triple
 - C. Double
 - D. Remain constant
94. Compared to active transport, diffusion is more efficient over
- A. Short distances
 - B. Short times
 - C. Large distances
 - D. Large times
95. As the atomic number of an element increases, the orbital radius of a ground state electron
- A. Decreases
 - B. Increases
 - C. Stays the same
 - D. Becomes impossible to measure
96. The Weber-Fechner law states that the magnitude of a perceived sensation increases as the logarithm of the stimulus intensity. Assume a background stimulus level of 1 unit. Suppose this is increased to 10 units (situation A) or to 100 units (situation B). Then the perceived sensation in situation B is stronger than the sensation perceived in situation A by a factor of
- A. 1
 - B. 2
 - C. 10
 - D. 100
97. Which one of the following is not optically active?
- A. mesotartaric acid
 - B. dextro tartaric acid
 - C. Levotartaric acid
 - D. alanine
98. Which one of the following is not an auto immune disease
- A. Systemic lupus erythromatosis

- B. Multiple sclerosis
- C. Myasthenia gravis
- D. Alzheimer's disease

99. Present day pregnancy tests utilize immunoassays that can detect one of the following in the blood/urine within a few days after embryo transplantation

- A. Oxytocin
- B. Human chorionic gonadotropin
- C. Progesterone
- D. Follicle stimulating hormone

100. Which protease is involved in programmed cell death?

- A. Chymotrypsin
- B. Calreticulin
- C. Caspase
- D. Cathepsin