**150 THINGS TO KNOW FOR THE AP BIOLOGY TEST**

**TEST HINTS:**

1. Realize that you will not know everything but no penalty for guessing so answer each m/c

2. Narrow the m/c to 2 answers

3. Don’t know anything about the m/c , take your best stab at an answer and move on.

4. Don’t screw up on your bubble sheet!

4. Essays: write something on all essays

1. remember on graphs: independent and dependent variable

2. write in essay form in order of the questions.

3. Put the letter of the question before the essay a,b,c,d,etc.

4. Use specific terminology and explain in as much detail as possible.

1. **Punctuated Equilibrium:** macro evolution ( major groups disappear and appear in the fossil record)

Ex. Flowering plants, dinosaurs, vascular plants

1. **Endo-symbiont** theory
2. **Reverse Transcriptase**: retro virus
3. Cell respiration vs Photosynthesis equation

O2 + C6H12O6 🡨--🡪 6CO2 + 6H2O

1. **Adaptive radiation**: organisms adapt to new niches w/in the same habitat due to Selective pressures
2. Spermatogenesis vs Oogenesis
3. Cohesive and Adhesive factors of water (also high specific heat)
4. Respiration vs Transpiration vs perspiration
5. BOD and Dissolved oxygen
6. **Agonistic behavior**: aggressive or submissive behaviors towards other animals
7. **Taxis vs kinesis** movement due to a stimulus vs random movement
8. **Hardy Weinberg equilibrium:** 5 conditions met then there will be no change in gene frequencies
9. p2 + 2pq + q2 = 1 : p + q = 1 where p = dominant allele frequency in pop and q = recessive freq.
10. **Chi Square** X = ∑( o – e )2 Degrees of freedom for science probability use 0.05

e

1. Homology vs analogy
2. Stomata : place on bottom of leaf where gas transfer occurs ( guard cells)
3. Guttation vs transpiration
4. Plant hormones: (auxin, gibberellins, cytokinins) stims (ethylene, abscisic acid) inhibs
5. Xylem vs phloem = vascular tissues in plants
6. Meristems: actively dividing cells in plants ( apical and lateral meristems)
7. Allosteric vs regular enzymes active sites vs regulatory sites
8. Lac Operon a set of genes that regulates the metabolism of lactose in *Escherichia Coli*
9. Convergent vs divergent evolution Convergent: bird wing: fly wing Divergent Whale flip: horse leg
10. Chemiosmosis : Chemiosmotic phosphorylation :oxidative phosphorylation
11. Electrochemical gradient
12. pH = concentration of hydronium ions H+
13. Q 10 = 10 degree increase in temperature double enzymatic activity
14. C-3 , C-4 , CAM plants: adaptations and types C-4 stores 1 extra carbon
15. Dihybrid cross 9:3:3:1 phenotypic ratios unless linkage is happening
16. Lysogenic vs lytic cycles of viruses
17. Antibiotics interfere with the cell wall construction of bacteria
18. Vaccines : are an injection of attenuated virus that triggers the secondary immune response
19. Primary and Secondary immune response: b-lymphocytes and t-lymphocytes
20. DNA polymerase works to put nucleotides together in a 5’ to 3’ direction ( reads the 3’to 5’)
21. Lagging strand leading strand during DNA replication
22. Okazaki fragments :
23. Genetic drift
24. Founder effect
25. Introns and exons : found on DNA ( removed in RNA)
26. Photosynthetic pigments: chlorophyll a, chlorophyll b , carotenoids (carotene)
27. Cytochrome system ( is the electron transport system) ( cytochrome pigments embedded in the plasma membrane that moves electrons )
28. P 680 p700 (photosystem I and photosystem II)
29. Kreb cycle is the citric acid cycle
30. Cladograms : ingroup, outgroup, taxon
31. 3 domains: archaea eubacteria eukarya
32. DNA enzymes : Primase, helicase, topoisomerase, polymerase
33. Fatty acid ---- phospholipid----- triglyceride structures
34. Unsaturated vs saturated fatty acids
35. Fluid mosaic model of plasma membranes
36. Active transport vs passive transport vehicles ( pumps)
37. Endocytosis vs exocytosis
38. Carbohydrates, lipids, nucleic acids , proteins
39. Cho, cho, chonp, chons
40. Protein structure: primary , secondary, tertiary, quaternary
41. Ph and temperature graphs of enzyme activity
42. Stanley Miller and Harold Urey experiment: early earth’s atmosphere CH4, H2,NH3, H2O no free O2
43. Nephron
44. Sodium potassium pump , calcium pump
45. Reverse transcriptase ( retroviruses)
46. Cell tonicity : iso, hypo, hyper, osmotic potential
47. LUCA last universal common ancestor
48. coccus , bacillus, spirillum
49. Prokaryotes vs Eukaryotes
50. Cyanobacteria are believed to have produced the first free oxygen on earth
51. Microtubules, Microfilaments, intermediate filaments
52. Cytoskeleton vs cytosol
53. Restriction enzymes
54. Prokaryotes: 1 replication bubble
55. Eukaryotes: many replication bubbles
56. Heterotrophs vs autotrophs ( chemoautotrophs vs photoautotrophs)
57. Leaf structure
58. Oxidation vs reduction (if it gains an H it is most likely reduced) LEO goes GER
59. Energy intermediates ATP & GTP
60. 7kcals /n per bond 2 high energy bonds per ATP molecule
61. 3 parts of a nucleotide
62. Basal body of a cilium or flagellum
63. Four main plant tissues: meristem , ground tissues, epidermis, vascular
64. Levels of organization and a phylum at each cellular, tissue, organ , system
65. Protostomate and deuterostomate
66. Aerobic vs anaerobic respiration
67. fermentation
68. Glycolysis pyruvate acetyl Co A , Citric Acid , Oxaloacetic acid , NADH, FADH2
69. Stoma vs Stroma
70. Calvin cycle : dark rxns of photosynthesis ( carbon fixation)
71. Eutrophication cultural vs natural
72. Oligotrophic lakes and eutrophic lakes
73. photophosphorylation
74. PGA and PGAL
75. C4 plants outcompete C3 in high sunlight because they store extra Carbon to use when CO2 conc low.
76. CAM plants are desert succulents ( cactus) stomata close during day open at night to avoid dessication) ( C3 and C4 plants stomata opened up during day)
77. C4 uses 5ATP per molecule C3 only use 3ATP per molecule ( more efficient)
78. C4 sugarcane, corn
79. Telomere: region of repetitive DNA at the end of DNA molecule ( increases longevity of the molecule
80. Bacterial transformation
81. Transposable elements
82. Repetitive DNA
83. TATA box: usually followed by 3 adenine bases usually binding site of RNA polymerase ( virtually unchanged over time) 5’- TATAAAA-3’
84. Plasmid
85. Sticky ends of DNA
86. Introns are removed in the process of transcription
87. Replication, transcription, translation , translocation
88. Codons, anticodons, aminoacyl attachment site stop codons 3 start codon 1 aug
89. Methylation keeps genes turned off
90. Proto-oncogenes and oncogenes
91. Totipotent and multipotent
92. Asexual reproduction parthenogenesis, binary fission, budding
93. Nondisjunction
94. Humoral and cellular immune responses
95. Specific and nonspecific immune responses
96. Primary and secondary immune responses
97. Striated, cardiac, smooth muscle tissue
98. Endocrine system: thalamus, hypothalamus, pituitary
99. Platelets, erythrocytes, leukocytes
100. Open and closed circulatory systems
101. Double loop circulatory systems
102. PMAT
103. Chiasmata , crossing over
104. G1, S G2
105. Interkinesis
106. Cytokinesis
107. Neurochemical transmitters acetyl choline
108. Synaptic gap
109. Neuron 3 parts
110. Clearly know Mendel’s laws: (1st) Law of Segregation, (2nd) Law of Independent assortment
111. Linkage groups
112. Codominance (both alleles expressed, incomplete dominance(blending),
113. sex linked traits, sex influenced traits
114. Invertebrate phyla porifera, cnidaria, platyhelminthes, nematode, mollusca,

Arthropoda, annelida, echinodermata

1. Acoelomate, pseudocoelomate, coelomate
2. Translocation and nondisjunction
3. Behavioral, structural , physiological adaptations
4. R Strategists, k strategists
5. Primary succession, secondary succession
6. Flower parts: Pistil= stigma + style : anther stamen
7. Climax community
8. S curve, j curve ( predator prey curves)
9. Biomes and ecosystems
10. Temperate , tropical , polar
11. Excretory fluids, ammonia, uric acid, urea
12. Gymnosperms vs angiosperms
13. Dicotyledons vs monocotyledons
14. Fire maintained ecosystems
15. Biomass pyramid
16. Producers, consumers, decomposers
17. Homeothermic organisms poilikothermic organisms ( endo vs ecto)
18. Trophic levels
19. Deuterostomates vs protostomate development
20. Ontogeny recapitulates phylogeny
21. SnRNPs: spliceosomes (small nuclear ribonucleoproteins) : These are segments of protein and RNA

that are responsible for removal of Introns

1. HOX genes: shows that the same genes common across a large number of species: supports the idea of evolution