

mean = $\frac{25}{38} = 66\%$

Bio 203 fall 2013 test 2
Your section (circle one) 2:00 / 5:00

Name Mr. Key
Your lab TA _____

1 Which of the following groups did Ernest Williams use to establish the concept of the ecomorph?

- A**
- a Caribbean *Anolis* lizards
 - b sufferers of Chronic Fatigue Syndrome
 - c crocoducks
 - d *Drosophila*
 - e none of the above

$\frac{30}{38}$ to $\frac{38}{38} = A - \text{or } A$

2 Prokaryotes ...

- D**
- a are a paraphyletic group
 - b include Archaea and Bacteria
 - c have a cell wall
 - d a, b, and c

$\frac{26}{38} - \frac{29}{38} = B - \text{or } B^{\text{or}} B^{\text{T}}$

3 A Cnidarian is...

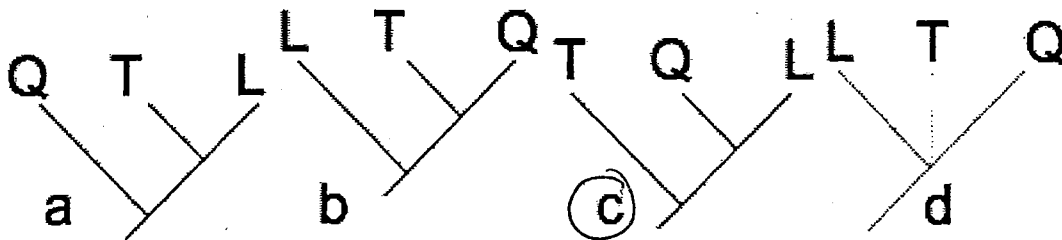
- C**
- a a prokaryote
 - b a fungus
 - c an animal
 - d a symbiosis between fungi and prokaryotes

$\frac{21}{38} - \frac{25}{38} = C - \text{or } C^{\text{or}} C^{\text{T}}$

4 Which of the following describes the life cycle of seed plants?

- B**
- a. gametophyte -> spores -> sporophyte -> gametes
 - b. gametophyte -> gametes -> sporophyte -> spores
 - c. gametophyte -> spores -> gametes -> sporophyte
 - ~~d. gametophyte -> sporophyte -> gametes -> spores~~

5 Lando is HIV positive. He has unprotected sex with Ted Wallingford III and passes the HIV virus to him. Lando then has sex with LaQuisha Jones and passes the virus to her. Which of the following trees best represents the relationships of the viral strains in Lando (L), Ted (T), and LaQuisha (Q)?



6 Which of the following would you expect to be true of early human development?

- A**
- a. blastopore forms anus
 - b. cell walls form
 - c. diploblastic tissue development
 - d. a motile aquatic larval stage

7 Which of the following is characteristic of Phylogenetic taxonomy but not of Linnaen taxonomy?

- a. the 'Scale of Nature' is rejected
- b. Vertebrata is defined as "animals with a backbone (vertebral column)"
- c. taxon names are defined with reference to relationships
- d. mammals, birds, and lizards are all Orders (not Classes)
- e. Vertebrata is defined as "animals that have evolved a backbone (vertebral column)"

8 Pheneticists...

- a. classify species according to evolutionary relationship
- b. group species according to overall similarity
- c. classify species according to evolutionary relationship and other characters thought to be significant
- d. do not use quantitative methods to reconstruct phylogeny
- e. order species according to their 'godliness'

9 How have the goals of taxonomy changed from Aristotle's time to the present?

- a. early taxonomists used morphology to figure out evolutionary relationships, recent taxonomists use genetic data for this purpose
- b. early taxonomists attempted to group species according to Biblical considerations of God's plan, later taxonomists studied morphology and then DNA to deduce God's plan.
- c. early taxonomists attempted to group species according to God's plan, later taxonomists attempted to group species according to evolutionary relationship
- d. early taxonomists were fueled by liquor, moxie, and testosterone, whereas recent taxonomists mostly just use liquor

Question 10
discarded

it for an association between

are endothermic, test whether an

ndothermy has evolved in vertebrates,
n the presence of endothermy
othermy as phylogenetic characters,

endothermy tend to have offspring

11 What's a coelom?

- a. a cross section of an organism
- b. a body cavity lined by mesoderm
- c. a layer of tissue between endoderm and ectoderm
- d. a layer of tissue that forms the digestive tract

12 Which of the following is a difference between parsimony methods and likelihood-based methods for reconstructing phylogeny?

- a. parsimony methods are suitable for morphology; likelihood methods are suitable for DNA
- b. likelihood methods require construction of a pairwise distance matrix
- c. parsimony methods require use of an outgroup
- d. likelihood methods require specification of a model of evolutionary change
- e. a and c
- f. c and d
- g. a, c, d

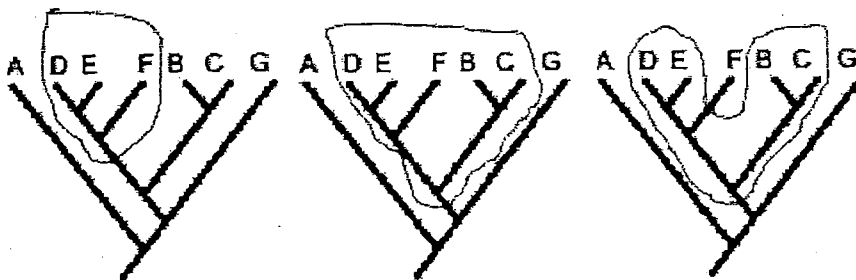
- 13 Taxonomy is the study of
- a. reconstructing evolutionary relationships
 - b. biological variation
 - c. grouping and naming organisms
 - d. natural theology
 - e. metabolism

Question 14
discarded

- 15 About when did life originate?

- a. 4.5 billion years ago
- b. 4.5 million years ago
- c. 1.2 billion years ago
- d. 1.2 million years ago
- e. 3.5 billion years ago
- f. 3.5 million years ago
- g. a few thousand years ago

- 16 Which of the following circled groups is paraphyletic?



- a left tree
- b middle tree
- c right tree
- d left and middle trees
- e middle and right trees
- f none of the above
- g all of the above

- 17 "Evolution teaches that energy, such as lightning or heat, plus matter, can occasionally create new life. Yet, our entire food industry rests on the fact that this can never happen. If we examine a jar of peanut butter, it contains matter. And it [the jar of peanut butter] is exposed to light and heat. But we never find new life inside [the jar], unless an outside life contaminates it."
"If the theory of evolution was viable, then I should, occasionally, by subjecting this [a jar of peanut butter] to energy, end up having new life."

Why is this statement a poor critique of the theory of evolution?

- G
- a its purported evidence claim is incorrect: actually, we do occasionally find life from nonlife in jars of peanut butter (e.g., ants, mold).
 - b it is not a poor critique of evolutionary theory; the theory of evolution falls apart once the peanut butter argument is taken seriously.
 - c transitional forms such as *Archaeopteryx* demonstrate that evolution has occurred.
 - d life is expected to be able to form from nonlife only under a particular set of environmental conditions; these conditions are not met in a jar of peanut butter.
 - e the theory of evolution is about changes occurring among life; not about how life first arose
 - f c and e
 - g d and e
 - h c, d, and e

18 Flowers are a _____ of Angiosperms.

- A
- a synapomorphy
 - b plesiomorphy
 - c homoplasy
 - d b and c

19 The presence of mitochondria in plants and animals is an instance of...

- A
- a homology
 - b convergence
 - c reversal in animals
 - d homoplasy
 - e b and d
 - f b, c, and d

20 You notice that closely related frogs of the genus *Eleutherodactylus* live on four islands of the Lesser Antilles—Nevis, Montserrat, Guadeloupe, Dominica—and differ in body size and call (=the sound made when a male tries to attract a female). On each island, there is a large, a medium, and a small species. No frog species is present on more than one island. What evidence would suggest an adaptive radiation?

- C
- a all large species form an adaptive clade
 - b all small species form an adaptive clade
 - c the species on Nevis form a clade
 - d species with the same call form clades
 - e species of the same size form clades
 - f a and/or b
 - g d and/or e
 - h. a, b, or e
 - i a, b, d, and/or e
 - j all of the above
 - k none of the above

21 What are hyphae?

- C
- a the organelles of the cell that package and transport proteins
 - b the cell walls of plants
 - c the body elements of fungi
 - d membrane-bound organelles
 - e a and d

- 22 Which of the following is a central message of de Queiroz and Gauthier's (1992) paper?
- a too few Kingdoms are recognized
 - b too many Kingdoms are recognized
 - c the Linnaean system is inadequate for taxonomic representation of evolutionary history
 - d the Linnaean taxonomic system is based on Natural Theology
 - e the Phylogenetic Taxonomic system is based on cladistics rather than phenetics
 - f the Phylogenetic Taxonomic system is based on evolutionary taxonomy, not Natural Theology

- 23 How many different sets of phylogenetic relationships exist for 50 taxa?
- a 3
 - b 50
 - c 2.75×10^{76}
 - d cannot be calculated

- 24 Which of the following statements most accurately characterizes the atmosphere of the earth when life first evolved, vs. the atmosphere of the earth now?
- a early and current atmospheres are similar
 - b early atmosphere was rich with oxygen; current atmosphere contains oxygen, nitrogen, carbon dioxide, and some methane
 - c early atmosphere was dominated by carbon dioxide; current atmosphere is dominated by oxygen
 - d my cat's breath smells like cat food

- 25 Which of the following is an appropriate node-based definition for the group name Eukaryota?
- a. The most common recent ancestor of plants and animals and all its descendants
 - b. The most recent common ancestor of fungi and plants and all its descendants
 - c. All species more closely related to fungi than to plants
 - d. All species more closely related to plants than to fungi
 - e. All species more closely related to plants than to Archaea
 - f. All species with circular chromosomes as their primary DNA
 - f. All species with membrane-bound organelles

- 26 Kirk Cameron claims the following: "Science has never found a genuine transitional form that is one kind of animal crossing over into another kind, either living or in the fossil record. And there are supposed to be billions of them..."
- Which of the following best counters this argument?

- a Actually, scientists have discovered lots of transitional forms
- b What the f- would Kirk Cameron know about evolution?
- c Evolution does not require the existence of transitional forms; this argument is an example of a 'Red Herring' argument
- d Evolution does not require the existence of transitional forms; this argument is an example of a 'Straw Man' argument
- e Evolution does not require the existence of transitional forms; this argument is an example of a 'Hasty Generalization' argument
- f The crocoduck is not a real animal
- g a and b
- h b and c
- i b and d
- j b and e

a, b, or c

- 27
- a
- b
- c

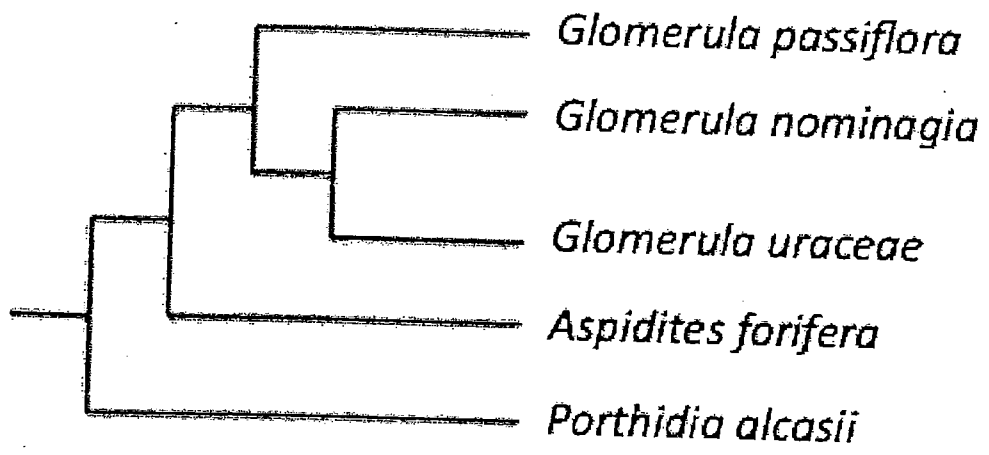
I would prefer that Seth Newsome's tests be easier than the first two 203 tests.
 true
 false
 who is Seth Newsome?

C

- 28
- a
- b
- c
- d

Which of the following did NOT happen during the first 3000000000 years of the history of life?
 evolution of sex
 evolution of photosynthesis
 evolution of vertebrates
 evolution of photosynthetic organisms

29 Imagine that a substance that may be converted to a cure for Restless Legs Syndrome is found in *Glomerula nominagia*. Which other taxon would be most likely to possess this substance, given the following phylogeny?



B

- a *G. passiflora*
- b *G. uraceae*
- c *P. alcasii*
- d a or b
- e Crocoduck
- f a, b, or c

30 Which of the following is evidence for the endosymbiotic theory of the origin of mitochondria?

- a. mitochondria can photosynthesize
- b. mitochondria have a nuclear membrane
- c. mitochondria are the 'power plants' of the cell
- d. mitochondria have circular chromosomes

31, 32 For the following data matrix of characters 1-4...

taxon	Data
A	0010
B	1001
C	0111
Outgroup	1101

31 What is the best parsimony tree for these data?

- B
- a A and B form a clade separate from C
 - b A and C form a clade separate from B
 - c B and C form a clade separate from A
 - d the relationships cannot be determined from these data

32 What is the length (# of steps, number of evolutionary changes, parsimony score) of the best parsimony tree for these data?

- A
- a 5
 - b 6
 - c 7
 - d 8
 - e infinite
 - f cannot be determined from this information

33. Which of the following is an argument attributable to Eugenie Scott?

- F
- a evolution is a process of chance; chance may result in the whole of biological diversity
 - b creationism is legitimate philosophically, but biological evidence for creationism is weak
 - c public schools need to 'teach the controversy' of evolution and creationism
 - d microevolution is scientifically tenable; macroevolution is not.
 - e Archaea photosynthesize; Bacteria do not.
 - f. evolution is a fact; other theories lack credence.

34. Texas lists standards required of its high school biology students. These standards are intended to be taken into account in the selection of textbooks for use in class. One proposed amendment to these standards goes like this:

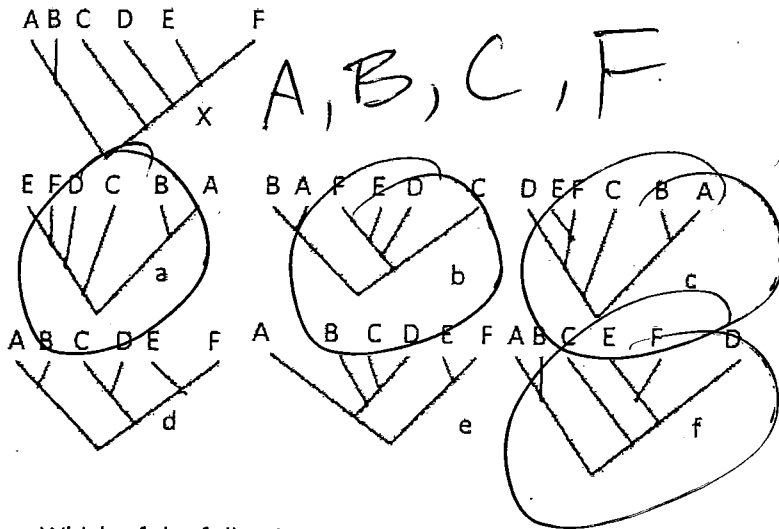
d

"In all fields of science, analyze, evaluate and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations so as to encourage critical thinking by the student."

Which part of this amendment is an addition by creationists in an attempt to allow the inclusion of anti-evolutionary statements in textbooks?

- a
- b
- c
- d
- e
- a. "In all fields of science..."
 - b. "...evaluate and critique scientific explanations by using empirical evidence..."
 - c. ~~"...evaluate and critique scientific explanations by using...logical reasoning..."~~
 - c. "...examining all sides of scientific evidence..."
 - d. "...encourage critical thinking..."

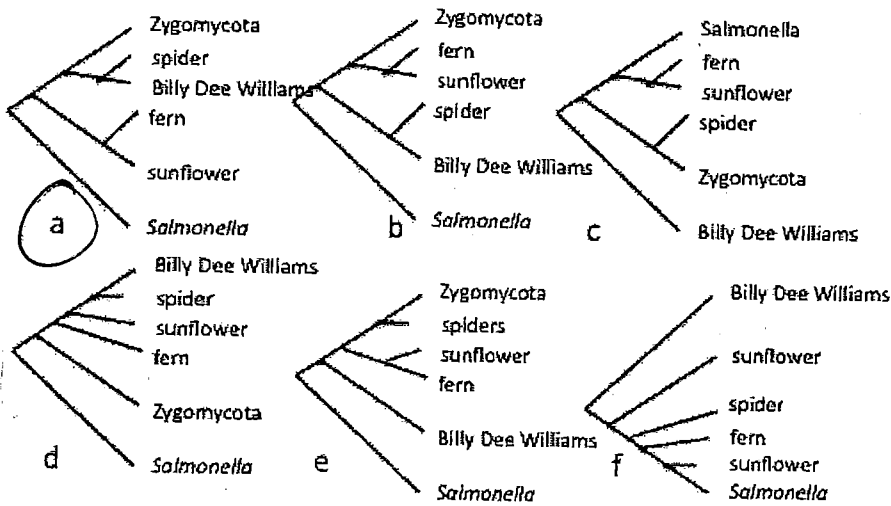
35 List the tree or trees that show the same relationships as tree X.



A, B, C, F

(need all to get the point)

36 Which of the following trees shows the most realistic phylogeny for these taxa?



A

37 Which of the following is a disadvantage of morphological characters relative to DNA sequence characters as evidence for phylogeny reconstruction?

- a DNA sequence characters are molecular, and thus are more reliable
- b DNA sequence characters are more likely to be homologous
- c there are likely to be fewer morphological characters than DNA sequence characters
- d morphological characters are more likely to be convergent
- e all of the above

38 Miller and Urey's experiments on the origin of life demonstrated that

- a RNA was probably the original genetic material
- b the early atmosphere was very different from our current atmosphere (reducing versus oxidizing)
- c organic macromolecules may form under conditions thought to be similar to our early atmosphere
- d complex protobionts called liposomes probably were the precursors to cell membranes
- e under the right conditions, amino acids may spontaneously bond and thus form polymers similar to modern proteins.

39 The " Dr. Jack Szostak" video presented a...

- a comprehensive model of abiogenesis
- b summary of recent work on membrane formation
- c summary of recent work on the evolution of multicellularity
- d humorous defense of creationism

40 Which of the following is a synapomorphy of Eukaryota?

- a nuclear membrane
- b circular genome
- c seeds
- d septae
- e hyphae
- f karyosis

Extra Credit

X1 Why did Rick James punch Charlie Murphy in the forehead?

- a. He wanted to leave a "unity" imprint on Charlie's forehead.
- b. Charlie had stolen some of Rick's cocaine.
- c. Rick was not a fan of Charlie's brother Eddie's movies.
- d. Cocaine is a hell of a drug.
- e. He thought Charlie was unappreciative of the pancakes prepared by Prince after their basketball game.
- f. It is unclear why he did this.

X2 Zozobra is a fiesta that celebrates the destruction of

- a. Old Man Gloom
- b. Captain Chlamydia
- c. high, high prices
- d. "Evolution"
- e. Rocky the Rudeness Bear
- f. Carnies