BIOL 1400
Biology for General Education

NAME:_____

LAB: _____

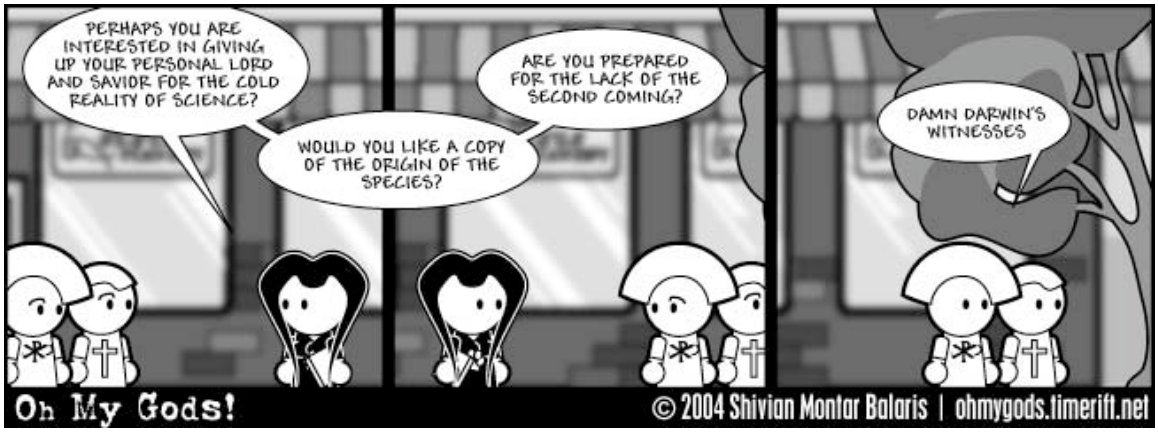
Final Exam

This exam consists of one hundred multiple-choice questions. Each one has only one right answer. Read each question and all possible answers carefully before answering. If you have any difficulty understanding a question, raise your hand and I will answer as best I can (without giving away the answer, that is).

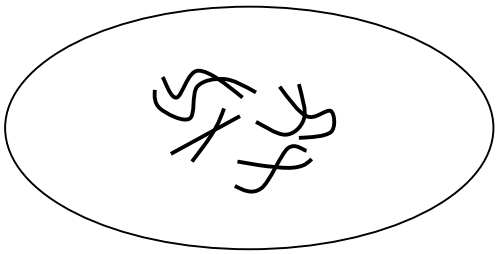
Please mark your answers on the Scantron form provided, using only #2 lead pencil. If you erase an answer, make sure you erase it fully, or the machine may mark it incorrect. Check continually to ensure that your answers are on the correct rows on the Scantron form. Please keep your eyes on your own work: the penalty for cheating, if detected, will be an automatic grade of zero on this exam.

Turn in **both** the Scantron form **and** the test paper when you are finished. Make sure your name **and your lab section date and time** are on both. You may write on the test itself if you wish, but anything you write on the test paper will not be graded.

Good luck.



1. Suppose you look at a eukaryotic cell through a microscope and see this:



This cell is likely to be in _____ of mitosis.

A. interphase
B. prophase
C. metaphase
D. anaphase
E. telophase

2. The squiggly things in the drawing in question #1 are

A. mitochondria.
B. chloroplasts.
C. ribosomes.
D. chromosomes.
E. endoplasmic reticulum.

3. You'd have a hard time seeing them easily with the light microscope, but there are structures inside the cell in question #1 called *spindle fibers*. What do spindle fibers do?

A. They provide energy to the cell.
B. They make proteins for the cell.
C. They support the endoplasmic reticulum.
D. They allow the cell to sense signals from the outside world.
E. They move the chromosomes around.

4. The next thing that the squiggly structures in the cell are going to do is

A. move to the midline of the cell.
B. dissolve.
C. split into two pieces each.
D. form a new nucleus.
E. just sit there and do nothing.

5. The cell pictured above doesn't have a *cell wall*. This means that it could not have come from a/an

A. plant.
B. animal.
C. eukaryote.
D. vertebrate.
E. human.

6. Every day, in your body, over 50 billion cells die in an orderly, "programmed" fashion—a process called

A. mitosis.
B. apoptosis.
C. meiosis.
D. induction.
E. differentiation.

7. An example of a completely proved theory in science would be

A. Darwin's theory of evolution.
B. Mendel's laws of heredity.
C. Pasteur's germ theory of disease.
D. Steno's laws of superposition.
E. a trick question—there are no proved theories in science.

8. Cells in your pancreas make many digestive enzymes and export them out of the cells (and ultimately into your small intestine, where the enzymes break down substances in your food). We would expect to find a lot of _____ inside these cells.

A. DNA
B. rough ER (endoplasmic reticulum)
C. chloroplasts
D. nuclei
E. cytoskeleton

9. The two strands that make up a molecule of DNA are wrappped around each other in a shape known as the

A. "Jacob's Ladder".
B. "Quaternary Structure".
C. "Beta-Sheet".
D. "Paired Chromatids".
E. "Double Helix".

10. These two strands stick to each other thanks to weak chemical bonds called

A. hydrogen bonds.
B. peptide bonds.
C. ionic bonds.
D. phosphodiester bonds.
E. barry bonds.

11. The shape mentioned in question 9 was worked out by

A. Darwin and Wallace.
B. Schleiden and Schwann.
C. Crick and Watson.
D. Garrod and Griffiths.
E. Boudreaux and Thibodeaux.

12. How many different amino acids are used in the assembly of proteins?

A. Four.
B. An infinite number.
C. Sixty-four.
D. Twenty.
E. Forty-six.

13. Nucleic acid bases are "read" in groups of three called

A. codons.
B. nucleotides.
C. carboxyl groups.
D. amino groups.
E. R groups.

14. The two major groups of plants, the Bryophyta and the Tracheophyta, are defined based on the presence or absence of

A. leaves.
B. roots.
C. chlorophyll.
D. vascular tissue.
E. hyphae.

15. In which human organs or structures would you expect to find cells undergoing *meiosis*?

A. The skin webs between the fingers of a developing embryo.
B. The ovaries and testes of a mature adult.
C. The muscles of a weightlifter in training.
D. A cancerous tumor.
E. Everywhere in the body.

16. The percentage of guanine plus cytosine in the DNA of brewer's yeast is 38%. What's the percentage of guanine alone in yeast DNA?

A. 38%
B. 62%
C. 31%
D. 19%
E. It's impossible to tell from this information.

17. The percentage of guanine in the DNA of a certain bacterium called *Streptomyces coelicolor* is 36%. What's the percentage of thymine in this bacterium's DNA?

A. 36%
B. 72%
C. 28%
D. 14%
E, 7%

18. A *catalyst* is any substance that

A. blocks a chemical reation from taking place.
B. is used up in a chemical reaction.
C. lowers the activation energy of a chemical reaction.
D. is made up of amino acids.
E. breaks down food molecules in the digestive tract.

19. Most of the catalysts in living organisms are

A. DNA molecules.
B. chromosomes.
C. ribosomes.
D. nucleotides.
E. enzymes.

20. Human Growth Hormone (HGH) is a protein that stimulates human growth. If you insert the gene for HGH into a bacterium, the bacterium will

A. not produce HGH, because its genetic code is different from humans'.
B. not produce HGH, because it has no nucleus.
C. produce HGH, because its genetic code is basically the same as humans'.
D. produce HGH, because the bacterium's own DNA is inside its nucleus.
E. not produce HGH, because it has no ribosomes.

21. People whose bodies don't make HGH may have inherited a faulty _____.

A. nucleotide.
B. enzyme.
C. phenotype.
D. virus.
E. allele.

22. The basic rules of how inheritance works were developed by

A. Watson.
B. Mendel.
C. Griffiths.
D. Darwin.
E. Garrod.

23. "Embryonic stem cells" can potentially develop into any mature cell type in the body. Such cells are said to be

A. totipotent.
B. diploid.
C. polyvalent.
D. epithelial.
E. omnipotent.

24. A *prion* is

A. a eukaryotic cell.
B. a type of virus.
C. a misfolded protein.
D. a prokaryotic cell.
E. a gas/electric hybrid car.

Stonefish are tropical Pacific marine fish with spines that secrete very toxic venom. A person who steps on a stonefish will suffer agonizing pain, and may die.

25. Stonefish live in warm, tropical ocean waters and feed on smaller fish. This describes their ecological

A. pyramid.
B. niche.
C. cladogram.
D. cycling.
E. r-selection.

26. Stonefish venom contains a protein known as *stonustoxin*. Stonustoxin is made up of two polypeptides fitted together; this describes its _____ structure.

A. primary
B. secondary
C. tertiary
D. quaternary
E. quinary

27. One of the polypeptide chains of stonustoxin has the amino acid sequence *methionine-proline-serine-aspartic acid-isoleucine-leucine*. . . . seven hundred amino acids in all. This describes its _____ structure.

A. primary
B. secondary
C. tertiary
D. quaternary
E. quinary

28. Each amino acid listed above is a _____; the entire chain of amino acids is therefore a _____.

A. nucleotide; nucleic acid
B. polymer; monomer
C. peptide; enzyme
D. monomer; polymer
E. nucleic acid; nucleotide

29. If you step on a stonefish, the best first-aid treatment is to soak the wound in hot water. Heat will cause the toxin molecule to change its shape, or in other words, heat will _____ the toxin.

A. transcribe.
B. denature.
C. metabolize.
D. translate.
E. differentiate.

30. The stonefish is known to biologists as *Synanceia horrida*. This custom of giving species two-part Latin names was invented by the Swedish scientist

A. Linnaeus.
B. Darwin.
C. Wallace.
D. Griffith.
E. Steno.

31. In the name *Synanceia horrida*, the term *horrida* designates the

A. genus.
B. order.
C. species.
D. niche.
E. kingdom.

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32. You can get extra credit in this class by

A. writing a term paper,
B. writing a book report.
C. presenting a signed note from your doctor.
D. signing up to donate blood.
E. Trick question! You can't get extra credit in this class.

33. Which of the following statements is not true?

A. DNA is only found in the nucleus, while RNA is found in the cytoplasm.
B. DNA is found only in eukaryotes, while RNA is found in all cells.
C. DNA uses the base *thymine*, while RNA uses the base *uracil*.
D. DNA is found in most viruses, while RNA is present in *retroviruses*.
E. DNA contains the sugar *deoxyribose*, while RNA contains *ribose*.

34. Two kinds of animals called *barnacles* live attached to rocks on rocky, wave-swept shorelines of the north Pacific. They're called *Balanus* and *Chthamalus*. On submerged rocks with both species growing, *Balanus* rapidly outcompetes *Chthamalus* and soon takes over the entire surface of the rocks. This looks like a case of

A. logistic growth.
B. competitive exclusion.
C. nutrient cycling.
D. artificial selection.
E. symbiosis.

35. In many oceanic ecosystems, starfish are food for large fish such as sharks and stingrays. Starfish themselves feed on clams and snails and keep their numbers low, allowing beds of algae to grow. If the starfish are removed, the entire ecosystem changes rapidly. Starfish are probably

A. R-selected.
B. primary producers.
C. a keystone species.
D. competitively excluded.
E. ecological decomposers.

36. Many people with arthritis wear copper bracelets. They claim that the bracelets make them feel better, even though copper has never been shown to be an effective arthritis treatment in any scientific study. This is probably an example of

A. the placebo effect.
B. the naturalistic fallacy.
C. the supernatural.
D. an aesthetic judgment.
E. a control group.

37. *Homeotic* genes are genes that

A. never mutate.
B. don't code for proteins.
C. control the basic pattern of a developing embryo.
D. maintain equilibrium in the body.
E. violate Mendel's laws.

38. The disease *diphtheria* is caused by *Corynebacterium diphtheriae*. This bacterium is a *bacillus*, meaning that it's shaped like a

A. dot.
B. spiral.
C. comma.
D. shapeless blob.
E. rod.

39. To be certain that *Corynebacterium diphtheriae* caused the disease diphtheria, the first of Koch's Postulates would be to

A. find *C. diphtheriae* in all patients with the disease.
B. discover an antibiotic that could kill *C. diphtheriae*.
C. inject *C. diphtheriae* into laboratory animals.
D. examine *C. diphtheriae* under the microscope.
E. try to develeop a vaccine against *C. diphtheriae*.

40. *Corynebacterium diphtheriae* produces a protein that is an *exotoxin*.This means that the protein

A. is not composed of amino acids.
B. acts only on the host cell membrane.
C. "takes over" a host cell.
D. leaves the bacterium and travels throughout the patient's body.
E. is created outside of the bacterium's endoplasmic reticulum (ER).

41. Of all the food that a cow eats, roughly how much mass is actually converted to cow tissues?

A. 90%
B. 50%
C. 10%
D. 1%
E. 0%

42. If you were to compare a cell in your liver and a cell in your brain, you would find that

A. the cells have different sets of chromosomes.
B. one cell is haploid and the other is diploid.
C. one cell carries out transcription and one carries out translation.
D. the cells have exactly the same chromosomes.
E. each cell is missing different parts of its DNA.

43. Which of these is *not* one of the four basic chemical elements found in all the living things we know?

A. iron
B. carbon
C. nitrogen
D. hydrogen
E. oxygen

In parrots, gray color (**G**) is dominant over green (**g**). A second gene determines how dark the base color is (whatever the base color is: gray, green, or something else). The dark allele (**D**) is incompletely dominant over the light (**d**) allele, so that a bird with the **Dd** genotype has a medium-intensity color.

44. What would a bird look like that had the genotype **ggDD**?

A. Light green.
B. Dark gray.
C. Light gray.
D. Medium green.
E. Dark green.

45. What genotype(s) would a light gray bird have?

A. **Ggdd** or **GGdd**.
B. **Ggdd** or **ggdd**.
C. **GGDd** or **GGDD**.
D. **GGdd** only.
E. **GgDd** or **GgDD.**

45. Suppose you crossed two medium-green birds. Predict what the offspring would look like:

A. 1 medium green : 1 light green.
B. 3 dark green : 1 light green.
C. 3 light green : 1 dark green.
D. 1 dark green : 2 medium green : 1 light green.
E. 9 dark gray : 3 dark green : 3 light gray : 1 light green.

46. Now suppose you crossed a homozygous gray parrot that was medium gray with a medium green parrot. Predict the results of this cross:

A. 1 dark gray : 1 light green.
B. 1 dark gray : 2 medium gray : 1 light gray.
C. 3 light gray : 1 dark green.
D. 3 dark green : 1 light green.
E. 9 dark gray : 3 dark green : 3 light gray : 1 light green.

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47. If we think of a eukaryotic cell as beling like a protein “factory”, the main assembly line would be

A. the nucleus.
B. the mitochondria.
C. the endoplasmic reticulum (ER)
D. the nucleolus.
E. the cell wall.

48. If we think of a eukaryotic cell as beling like a protein "factory", the Packing and Shipping Department would be

A. the nucleolus.
B. the chloroplasts.
C. the endoplasmic reticulum (ER)
D. the Golgi body.
E. the mitochondria.

49. Brain cells make up an example of _____ tissue.

A. epithelial
B. connective
C. nervous
D. muscle
E. endodermal

50. The University of Central Arkansas is located in the state of

A. Arkansas.
B. Euphoria.
C. Intoxication.
D. Denial.
E. Shock.

HANG ON! YOU'RE HALFWAY DONE!

51. In 1987, a cat breeder in Montana named Jeri Newman adopted a cat from an animal shelter—a cat with an unusual curly-haired coat. This trait had never been seen before, which suggests that it resulted from a chance alteration in a gene's DNA sequence, or a _____.

A. translation.
B. covariance.
C. mutation.
D. meiotic drive.
E. transcription.

52. Ms. Newman bred her curly-haired cat to a straight-haired Persian cat that had no family history of ever having curly-haired ancestors. Suppose that straight hair is dominant to curly hair. What's the best prediction of the results of this mating?

A. All the kittens should have curly hair.
B. Three-fourths of the kittens should have straight hair; the rest should be curly.
C. Three-fourths of the kittens should have curly hair; the rest should be straight.
D. Half the kittens should have straight hair; half should be curly.
E. All the kittens should have straight hair.

53. The actual results of the above mating were: three curly-haired kittens and three straight-haired kittens. What does this suggest about the curly-haired allele?

A. It's recessive to the straight-haired allele.
B. It's dominant to the straight-haired allele.
C. It's incompletely dominant to the straight-haired allele.
D. It's codominant with the straight-haired allele.
E. We can't tell anything about this allele.

54. What does this say about the genotype of the original curly-haired cat?

A. She was heterozygous.
B. She was homozygous for the curly allele.
C. She was homozygous for the straight allele.
D. She was hemizygous for the curly allele.
E. We can't tell anything about this cat's genotype.

55. Ms. Newman actively bred her curly-haired cats, gave them to other breeders who bred them further. . . and today, the curly-haired cats make up the officially recognized Selkirk Rex breed of cat. This is an example of

A. mutation.
B. artificial selection.
C. genetic drift.
D. niche partitioning.
E. Lamarckian inheritance.

56. Imagine that some Selkirk Rex cats run away from their owners and go back to living in the wild. In a very cold winter, more Selkirk Rex cats might survive and breed than shorthaired cats. This would be a case of

A. exponential growth.
B. competitive exclusion.
C. genetic drift.
D. Mendelian inheritance.
E. natural selection.

57. Cats in the wild eat smaller animals such as mice. Ecologically, this makes them

A. primary producers.
B. decomposers.
C. primary consumers.
D. secondary or higher consumers.
E. secondary producers.

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58. The protein "shell" or "coat" of a virus is called its

A. genome.
B. cell membrane.
C. cell wall.
D. nuclear membrane.
E. capsid.

59. Although many scientists don't consider viruses to be alive, viruses do share features with living things, including the following:

A. Viruses are made up of cells.
B. Viruses have nuclei.
C. Viruses contain nucleic acids.
D. Viruses carry out photosynthesis.
E. Viruses are prokaryotes.

60. When a protein is being made, the individual amino acids are brought to the right place by

A. enzymes.
B. transfer RNAs.
C. Golgi bodies.
D. spontaneous generation.
E. spindle fibers.

61. Which of these cells are *haploid*?

A. Muscle cells.
B. Nerve cells.
C. Sperm cells.
D. Bone cells.
E. Skin cells.

62. Some genetic diseases, such as *Down's syndrome*, result from an extra chromosome in a patient's cells. This extra chromosome could come from either parent, and could result from _____ during meiosis.

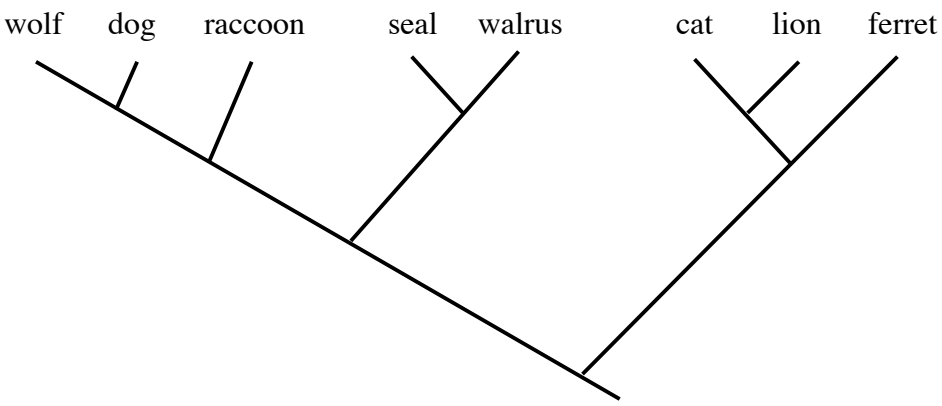
A. chromosomes not supercoiling correctly in prophase I
B. chromosomes failing to separate in anaphase I
C. chromosomes not crossing over in metaphase II
D. chromosomes failing to duplicate properly in telophase I
E. chromosomes not being synthesized in interphase

63. If the hydrogen bonds break, a piece of DNA will

A. fall apart into a bunch of nucleotides.
B. break up into a bunch of free atoms.
C. fall off the ribosome.
D. "unzip" into two separate strands.
E. coil in on itself.

64. When you were an embryo about the size of a small bean, you had blocks of cells arranged along what would become your spine. These cells are called *somatic mesoderm*. These cells later changed into muscle cells, a process called

A. differentiation.
B. apoptosis.
C. mitosis.
D. exfoliation.
E. meiosis.



65. The diagram on the previous page is called a

A. phenogram.
B. cell lineage chart.
C. cladogram.
D. radiogram.
E. telegram.

66. Such a diagram is best defined as

A. proof of evolution.
B. a description of the action of natural selection.
C. a demonstration of artificial selection.
D. a hypothesis of common evolutionary ancestry.
E. a description of the alleles that each organism has.

67. Which of the following is true, according to the cladogram?

A. Seals evolved from walruses.
B. Cats and dogs share a unique common ancestor.
C. Ferrets evolved from wolves.
D. Wolves are completely unrelated to raccoons.
E. Seals and walruses both evolved from a unique common ancestor.

68. Cladograms are based on

A. random chance.
B. the organisms' shared characters.
C. the fossil record only.
D. guesswork.
E. the theory of natural selection.

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69. Which of the following statements about viruses is *not* true?

A. All viruses contain DNA.
B. Some viruses are enclosed in a piece of host cell membrane.
C. Isolated from their host cells, viruses do nothing.
D. Some viruses infect prokaryotes.
E. No viruses have nuclei.

70. If you have a strand of RNA that reads UAGACACCUUGUA, the *complementary* strand of DNA would read:

‘ A. UAGACACCUUGUA
B. AUGUUCCACAGAU
C. AUCUGUGGAACAU
D. ATCTGTGGAACAT
E. TAGACACCTTGTA

71. Honeybees depend on flowers to provide the pollen and nectar they need for food. Flowers depend on honeybees to spread their pollen to other flowers. This sort of mutually beneficial relationship is called

A. mutualism.
B. parasitism.
C. predation.
D. pathogenesis.
E. germination.

Grains of wheat are usually colored brown. Occasionally, colorless (i.e. white) grains of wheat turn up.

72. The gold color of wheat grains is produced by a certain *enzyme*, which is a _____ that is _____.

A. trait; recessive
B. phenotype; inherited
C. protein; a catalyst
D. gene; transcribed
E. chromosome; duplicated

73. We'll just call the enzyme in question Enzyme A. The gene for Enzyme A comes in two *alleles*, which are

A. homologous chromosomes.
B. organelles within the cell.
C. different forms of the same basic gene.
D. polymers of nucleotides and amino acids.
E. symbiotic bacteria living in the host cells.

74. One allele of Enzyme A, which we can abbreviate as **A**, codes for a working enzyme. The other, which we'll call **a**, codes for an enzyme that doesn't work. **A** is completely dominant to **a**. The result is that

A. only **AA** plants will have colored grains.
B. **Aa** plants will have weakly colored grains.
C. **aa** plants will have colored grains.
D. all **aa** plants will have white grains.
E. **Aa** plants will be spotted with white spots.

75. As luck would have it, wheat has a second enzyme, Enzyme B, which also produces gold color in wheat, and also comes in two alleles, **B** (which produces a functional enzyme) and **b** (which does not). What is the *phenotype* of a wheat plant with the genotype **aaBb**?

A. All grains are gold-colored.
B. All grains are white.
C. Half the grains are gold, and half are white.
D. Three-quarters of the grains are white, and one-quarter are colored.
E. There is no way to tell from the information given.

76. Suppose you crossbreed two plants, both of which have the genotype **AaBb.** How many of the offspring would have the genotype **AaBb**?

A. One-quarter.
B. None.
C. Three-sixteenths.
D. All.
E. Nine-sixteenths.

77. How many of the offspring would have the genotype **AaBB?**

A. One-half.
B. None.
C. One-eighth.
D. All.
E. Three-sixteenths.

78. What ratio of phenotypes would you predict in the offspring?

A. 3 colored: 1 white.
B. 1 colored: 1 white.
C. 9 colored: 7 white.
D. 3 white: 1 colored.
E. 15 colored: 1 white.

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79. Which of these processes happens only in prophase I of meiosis?

A. crossing over
B. cytokinesis
C. DNA replication
D. translation
E. chromosome supercoiling.

80. The part of a transfer RNA molecule that is complementary to bases on the messenger RNA is the

A. 3-prime end.
B. phi loop.
C. anticodon.
D. base pair.
E. sugar-phosphate backbone.

81. The Central Dogma of Molecular Biology states that information is stored in the molecule _____, copied to the molecule _____, and then used to make _____.

A. RNA; DNA; protein
B. protein; RNA; ribosomes
C. DNA; RNA; protein
D. chromosomes; protein; ribosomes
E. RNA; DNA; viruses

82. What's the major exception to the Central Dogma of Molecular Biology?

A. Viruses, because they don't have RNA.
B. Bacteria, because they don't have a nucleus.
C. Retroviruses, because they cause reverse transcription.
D. Bacteria, because they have no DNA.
E. Retroviruses, because they have no RNA.

83. The reason you have to get a flu shot every year is that the influenza virus is constantly varying. Some of the variant flu viruses are more effective at causing illness and spreading, and those become common—and this keeps on happening. This sounds like

A. directed evolution.
B. non-Darwinian evolution.
C. uniformitarianism.
D. Koch's third postulate.
E. natural selection.

84. *Vestigial structures* are parts of an organism which

A. have no function, but did have a function in the organism's ancestors.
B. are highly "advanced" from an evolutionary standpoint.
C. allow organisms to function as predators.
D. promote *niche partitioning*.
E. are found only in fossils.

85. James Watson and Francis Crick (using data from Rosalind Franklin) worked out that

A. DNA is the "transforming principle".
B. DNA is found in the nucleus of cells.
C. DNA molecules have a "double helix" shape.
D. DNA is absent in prokaryotes.
E. DNA is made up of nucleotides.

86. *Fossils* are

A. bones of extinct dinosaurs.
B. found only in the oldest rocks of all.
C. identical with living species today.
D. useless for demonstrating that evolution has happened.
E. any remains at all of any once-living organisms.

87. In some rocks of northern Arkansas, you can find tiny toothlike fossils called *Paraprionodus*. In rock layers above these, there are different toothlike fossils called *Phragmodus*, and in even higher rock layers, there are yet different fossils called *Aphelognathus*. This order of appearance is the same anywhere that these fossils are found. This is an example of

A. Lyell's principle of uniformitarianism.
B. Darwin's theory of natural selection.
C. Koch's postulates.
D. Smith's law of succession.
E. Schleiden and Schwann's cell theory.

88. The *alpha-helix* and *beta-sheet* are parts of a protein's

A. tertiary structure.
B. secondary structure.
C. quaternary structure.
D. primary structure.
E. double helical structure.

89. For the past thirty years or so, the United States has generally had a strong economy whenever the President has been a Democrat, and has had to deal with recessions and other difficulties whenever the President has been a Republican. Some people say that electing Republicans to be President causes the economy to tank. This is

A. basically true.
B. an untested hypothesis.
C. a well-tested theory.
D. the *post hoc* logical fallacy.
E. an unrepeated observation.

90. In 1963, a volcano erupted off the south coast of Iceland. The volcano continued erupting until it had built a small island, named Surtsey. Originally the island was made of barren rock, but today there are over 60 species of plants, and hundreds of species of insect and spider, living on Surtsey. This is an example of

A. niche partitioning.
B. primary ecological succession.
C. competitive exclusion.
D. carbon cycling.
E. binomial nomenclature.

91. Which of the following is *not* part of Darwin's theory of natural selection?

A. Organisms pass on their traits to later generations.
B. Organisms can potentially multiply and increase population size indefinitely.
C. All living things are trying to become more complex.
D. All members of a species vary.
E. Not all organisms that are born survive to reproduce.

92. Because of *biological magnification*, some seafood contains levels of the toxin mercury which may make them unsafe for humans to eat. Which of the following sushi dishes is the most dangerous?

A. *uni*—sea urchin, which grazes on seaweed
B. *nori*—edible seaweed
C. *maguro*—tuna, a predator that eats smaller fish
D. *ebi*—shrimp, which feeds on microscopic algae
E. All of these are about equally risky to consume.

93. "Rough endoplasmic reticulum" is called "rough" because

A. it is tightly folded.
B. it consists of membranes.
C. it is only found in prokaryotes.
D. it does not function very well.
E. it has many ribosomes bound to it.

94. What happens at the structures inside a cell known as *ribosomes*?

A. The cell generates energy.
B. The cell makes proteins.
C. The cell exports proteins to the outside.
D. The cell undergoes the process of *meiosis*.
E. The cell stores genetic information.

95. "In any sequence of layered rocks, the oldest are on the bottom and the youngest are on the top, unless some geologic force has altered the rocks" is a statement of

A. Koch's Postulates.
B. Steno's Law.
C. Darwin's Theory of Evolution.
D. Lyell's Theory of Uniformitarianism.
E. Chargaff's Rules.

96. Chromosomes in the stage of division known as *prophase* are

A. coiling and coiling in on themselves.
B. uncoiling as new nuclei form.
C. moving to opposite sides of the cell.
D. moving to the center line of the cell.
E. undergoing translation for protein synthesis.

97. An example of the *mycelium* of a fungus would be

A. a mushroom.
B. a puffball.
C. the fuzzy network of filaments growing on spoiled food.
D. the yeast cells in bread dough.
E. the microscopic spores that float through the air.

98. In breeding season, male bluegills (a type of fish) develop beautiful bright red and gold coloration on their sides and bellies. Females prefer to mate with the brightest males. This is an example of

A. natural selection.
B. stabilizing selection.
C. artificial selection.
D. sexual selection.
E. disruptive selection.

99. The sun's energy is the direct driving force behind the _____ cycle.

A. carbon
B. nitrogen
C. hydrologic
D. phosphate
E. Kawasaki

100. The University of Central Arkansas is located in the city of

A. Conway.
B. R'yleh.
C. Barad-Dûr.
D. Melniboné.
E. Ankh-Morpork.

YOU HAVE FINISHED THE FINAL EXAM.

MAY WHATEVER HOLIDAY YOU CELEBRATE AT THIS TIME OF YEAR BE ENJOYABLE, FULFILLING, RESTFUL, AND MERRY.