**Exam One**

**Bio 181**

**Chapters 1-4**

Please read each question carefully**. I will not be able to answer questions during the exam**. If you have a question, please answer on the Op-Scan with your best response, and then you may leave me a message on the exam about how you interpreted the question. There are 50 questions on the exam; you will be graded on 47 of them which means your extra credit options will be automatically figured in to your score.

Some of the questions appear in the following format:

**Example Only**

**Ex: On which weekdays does BSC 181 meet for class? (Identify the correctly numbered responses and find them in the five lettered options below. You will indicate only ONE letter for a correct response.)**

1. **Monday**
2. **Tuesday**
3. **Wednesday**
4. **Thursday**
5. **Friday**

**a. 1 and 2 are correct**

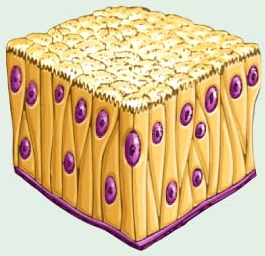
**b. 2 and 4 are correct**

**c. 1, 3, and 5 are correct**

**d. 2, 4, and 5 are correct**

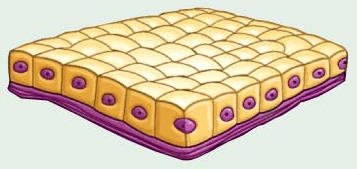
**e. 2, 3, and 4 are correct**

**For this question, you would indicate (c) for a correct response.**

1. In order to maintain homeostasis, nervous system and the endocrine system work together. The nervous system communicates by \_\_\_\_\_\_\_\_ while the endocrine system uses \_\_\_\_\_\_\_\_
   1. Electrical impulses; hormones
   2. Hormones; chemicals
   3. Sound waves; light pulses
   4. Chemotaxis; circulatory system
   5. Action potentials; carbohydrate-based messengers
2. Using the Octet rule, which of these atoms would be most likely to **lose** **two** electrons?
   1. Nitrogen (Atomic Number =7)
   2. Neon (Atomic Number =10)
   3. Magnesium (Atomic Number =12)
   4. Chlorine (Atomic Number =17)
   5. Carbon (Atomic Number =6)
3. If Iodine (Atomic Number =53) gains an electron, it would be considered
   1. An isotope
   2. Inert
   3. A cation
   4. Radioactive
   5. An anion
4. Which of the following describes a **peroxisome**?
   1. The right-angle structures associated with cell division
   2. Interconnected membranes that function as a communication system
   3. Assists in the detoxification and neutralization of hazardous chemicals within a cell
   4. Double membrane organelle that is the “powerhouse” of the cell
   5. Membranous sac that contains powerful enzymes that break down debris
5. Which of the following lists bests illustrates the **levels of organization** with increasing levels of complexity?
   1. Organs 🡪 organelles 🡪 systems 🡪 cells 🡪 tissues
   2. Tissues 🡪 cells 🡪 organs 🡪 organelles 🡪 systems
   3. Organelles 🡪 cells 🡪 tissues 🡪 organs🡪 systems
   4. Cells 🡪 tissues 🡪 organelles 🡪 organs 🡪 systems
6. The peripheral chemoreceptors have sensed a change in the oxygen concentration in the blood, and relay that information to the brain. The brain sends a response down the Phrenic Nerve for the diaphragm to contract so breath rate increases. Which of the above mentioned things is acting as an **effector**?
   1. The peripheral chemoreceptors
   2. The oxygen
   3. The phrenic nerve
   4. The diaphragm
   5. The brain
7. In **dehydration synthesis** of a carbohydrate
   1. A large molecule is changed into two smaller ones
   2. Two small monosaccharides join to create a more complex carbohydrate and water
   3. Water molecules join together to create a monosaccharide
   4. A large molecule is changed into carbon dioxide and water
   5. Is not feasible within a biological system
8. The **atomic mass (mass number)** of an element whose atoms contain 3 protons, 4 neutrons, and 3 electrons will be
   1. 3
   2. 4
   3. 6
   4. 7
   5. 10
9. What does the **pH scale** measure?
   1. The number of hydrogen ions in a solution
   2. The strength of an electrical current carried by a solution
   3. The number of hydroxide ions in water
   4. The weight of the electrons in an atom
   5. The amounts of salts dissolved in a solution
10. An **isotope** differs from its original atom by what?
    1. The number of nuclei
    2. The number of neutrons
    3. The number of electrons
    4. The number of valence shells surrounding the nucleus
    5. The number of protons
11. The end result of **mitosis and cytokinesis** is
    1. Two daughter cells that are distinct in size, shape, and DNA
    2. Two daughter cells that have identical DNA
    3. Four daughter cells with half of the chromosome number in each cell
    4. One daughter cell whose DNA is identical to the parent cell
    5. One daughter cell that has DNA different from the parent cell
12. Which of the following will cause a chemical reaction to proceed more quickly?
    1. Low pressure
    2. Low concentrations
    3. High altitude
    4. High temperature
    5. Large particles
13. Which **two** materials will we find the **most** in a plasma membrane?
    * 1. Phospholipids
      2. Nucleic acids
      3. Carbohydrates
      4. Proteins
      5. Lipoproteins
14. 2 and 3 are correct
15. 3 and 5 are correct
16. 1 and 2 are correct
17. 1 and 4 are correct
18. 1 and 5 are correct
19. Characteristics of a lipid include 
    * 1. Hydrophilic
      2. Hydrophobic
      3. Include fats, steroids, and cholesterols
      4. Building blocks include amino acids
      5. Excess is stored as glycogen
20. 2 and 3 are correct
21. 2, 3, and 5 are correct
22. 1, 2 and 4 are correct
23. 3, 4, and 5 are correct
24. 1 and 3 are correct
25. Which of the following events would you expect to use a **carrier protein** to get materials from one side of a plasma membrane (outside, for example) to another (inside)?
    1. Pinocyctosis
    2. Active transport
    3. Transcytosis
    4. Diapedesis
    5. Phagocytosis
26. A sequence of events in which the presence of a substance encourages the production of more of that substance is called
    1. Negative feedback
    2. Lateral feedback
    3. Positive feedback
    4. Homeostasis
    5. Glycogenesis
27. Which two of the following are **true** regarding **RNA**?
28. Mostly located and active in the nucleus
29. Contains a 5-carbon sugar called ribose
30. Is a double stranded molecule
31. Includes a version that transfers amino acids
32. Includes a version that makes up nucleoli
33. 1, 2 and 5
34. 1, 3, and 5
35. 4 and 5
36. 2 and 3
37. 2 and 4
38. Which of the following is considered **passive** and requires no energy?
    1. Pinocytosis
    2. Phagocytosis
    3. Diffusion
    4. Active transport
    5. Homeostasis
39. **Organic** substances have to have \_\_\_\_\_\_\_ present in rings or in chains
    1. Phosphorus
    2. Potassium
    3. Carbon
    4. Oxygen
    5. Calcium
40. The **endoplasmic reticulum** is
    1. A membranous sac that contains peroxidase
    2. A lipid-rich cellular inclusion
    3. A formless liquid within the nucleus
    4. A network of membranes, some associated with ribosomes
    5. A network of membranes that distributes materials to their final destinations
41. Which of the following **nitrogenous bases** is present in RNA, but not in DNA
    1. U
    2. C
    3. T
    4. A
    5. G
42. The long, slender microscopic **tubes** that form the **internal skeleton** for a cell are called
    1. Microfilaments
    2. Cytofilaments
    3. Cytofibers
    4. Microtubules
    5. Microskeleton
43. What is the name of the bond that holds **amino acids** together to form proteins?
    1. Cofactor bond
    2. Hydrolitic bond
    3. Glycemic bond
    4. Peptide bond
    5. Ionic bond
44. A **covalent** bond is
    1. Based on the polar nature of hydrogen
    2. Held together by one ion having a negative charge while the other has a positive charge
    3. Held together by shared electrons
    4. Rare in nature and not commonly found
    5. Similarly charged atoms being attracted to one another
45. Which **organelles** are found associated with the **endoplasmic reticulum**?
    1. Mitochondria
    2. Ribosomes
    3. Nucleolus
    4. Peroxisomes
    5. Lysosomes
46. Which molecule will most easily be used as an **energy source**?
    1. H20
    2. Phosphate
    3. AMP
    4. ADP
    5. ATP
47. **DNA** replication
    1. Creates a completely new and different sequence of DNA
    2. Is responsible for the production of the sex cells
    3. Takes place in the cytoplasm
    4. Involves only a region of DNA (gene only)
    5. Involves the entire DNA molecule
48. In **mRNA**, **the three nitrogenous bases** that are “read” as a unit to determine the amino acid needed are referred to as
    1. Codex
    2. Codon
    3. Nucleotide
    4. Triplex
    5. Homologue
49. The building blocks for **carbohydrates** are \_\_\_; while the building blocks for **nucleic acids are** \_\_\_\_
    1. Glycogen, fatty acids
    2. Monosaccharides, fatty acids
    3. Amino acids, nucleic acids
    4. Fatty acids, amino acids
    5. Monosaccharides, nucleotides
50. Steroids and eicosanoids belong to which organic compound category?
    1. Carbohydrates
    2. Lipids
    3. Proteins
    4. Nucleic acids
    5. Amino acids
51. Cartilage is slow in healing from injuries because
52. cartilage cells have no nuclei and therefore can not make repairs
53. most cartilage lacks a direct blood supply
54. cartilage cells are surrounded by intercellular fluids
55. cartilage is packed with cells and healing is impaired due to crowding
56. the initial statement is false and cartilage has a normal healing rate
57. Which type of tissue fits this description?

* **A single layer of cells that appears to be layered**
* **has nuclei at several levels**
* **may have cilia or goblet cells.**

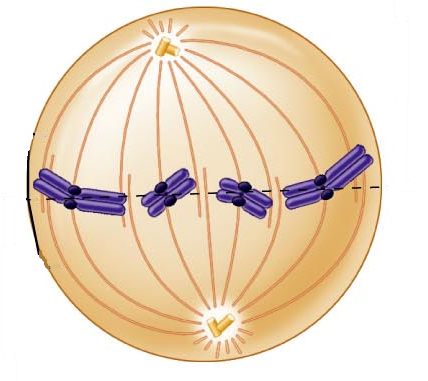
1. simple cuboidal
2. simple squamous
3. pseudostratified columnar
4. stratified columnar
5. transitional
6. The type of cartilage that is found at the end of joints as well as the soft portions of the nose is
7. fibrocartilage
8. myocartilage
9. keratin
10. elastic
11. hyaline
12. Which type of tissue fits this description?

* **A single layer of relatively square cells.**
* **Can be found in ovaries and kidney tubules**
* **Function includes secretion**

1. transitional
2. simple cuboidal
3. simple squamous
4. stratified columnar
5. pseudostratified columnar
6. Which type of secretion results from a **rupture** of the cell?
   1. Merocrine
   2. Apocrine
   3. Eccrine
   4. Holocrine
   5. Endocrine
7. Which connective tissue is being described?

**Composed of largely collagen fibers with very few elastin fibers. Collagen arranged in a parallel format. Major cell type is the fibroblast. Found in tendons**

* 1. Areolar connective tissue
  2. Adipose tissue
  3. Dense regular connective tissue
  4. Dense irregular connective tissue
  5. Reticular connective tissue

1. Which type of muscle tissue is being described? It is **Voluntary** and **Striated**.
   1. Cardiac muscle
   2. Smooth muscle
   3. Skeletal muscle
   4. Visceral muscle
   5. All muscle tissues share the above description.
2. Identify the true statements regarding tRNA
   * 1. “t” stands for transcription
     2. “t” stands for translation
     3. “t” stands for transfer
     4. tRNA is found only in the nucleus
     5. tRNA brings amino acids to the mRNA
3. 1 and 4 are correct
4. 2, 4, and 5 are correct
5. 3 and 4 are correct
6. 2 and 5 are correct
7. 3 and 5 are correct
8. At which stage of mitosis do the spindle fibers pull apart the chromosomes?
   1. Interphase
   2. Telophase
   3. Prophase
   4. Metaphase
   5. Anaphase
9. Identify the stage of mitosis indicated by the image:
   1. Interphase
   2. Telophase
   3. Prophase
   4. Metaphase
   5. Anaphase
10. Given a DNA sense strand that reads TTTAACGCA, if you were to **transcribe** that code, what would the new sequence read?
    1. AAATTGCGT
    2. TGCGTTAAA
    3. UUUUUGCGU
    4. AAAUUGCGU
    5. UUUAAGCGU
11. In the following sequence of RNA, how many **codons** are present: CAGAGAUUU
    1. Twelve
    2. Three
    3. Seven
    4. Four
    5. None. RNA does not have codons
12. The only **unicellular** **exocrine** gland that was discussed was the (hint: it secretes mucus)
    1. Ceruminous gland
    2. Fibroblast
    3. Pancreatic cell
    4. Goblet cell
    5. Mast cell
13. Osteoblasts are responsible for
    1. Production of cartilage
    2. Production of fibers
    3. Production of red blood cells
    4. Production of bone
    5. Production of chondrates
14. What type of tissue is the epiglottis constructed of?
    1. Loose areolar connective tissue
    2. Reticular cartilage
    3. Dense irregular connective tissue
    4. Adipose tissue
    5. Elastic cartilage
15. This type of cartilage is found in the pubic symphysis as well as the intervertebral discs. It functions for protection and acts as a shock absorber. What type is it?
    1. Fibrocartilage
    2. Hyaline cartilage
    3. Elastic cartilage
    4. Reticular cartilage
    5. Dense irregular cartilage
16. Identify the correct statement below
    1. The fingers are superior to the wrist
    2. The ear is medial to the eye
    3. The cranial cavity is superior to the vertebral cavity
    4. The oral cavity is superficial to the nasal cavity
    5. The vertebral cavity is anterior to the pelvic cavity
17. Which of the following is an example of a colloid?
    1. Whole blood
    2. Salt water
    3. Milk
    4. Muddy water
    5. Urine

1. All of the components in our bodies are organized into four main types of tissue. Into which category does blood fall?
   1. Epithelial
   2. Connective
   3. Muscle
   4. Nerve
   5. Blood is not considered a tissue and does not belong in any of these categories.
2. Some of the proteins in our cells are designed to adhere one cell to the next. In which type of junction do we see the proteins adhering as “staples” or “spot-welds” to keep one cell connected to the next?
   1. Tight junction
   2. Gap junction
   3. CAMs
   4. Desmosome
   5. Conjunction junction (what’s your function?)

**When you are done with the exam, you are free to go. If you have a comment that you’ve left on this exam packet, be sure to put it in a separate pile from the others so I can find and read it. Also be sure to include your name. You will not keep or get this exam packet back.**

**Double check your Opscan form:**

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**Course: 181**