



Examination of Histology (First Semester)

Time allowed: 2 hours

Marks: 25

Date: January 22, 2017

Please answer all questions

Question I. For each question, pick the one best answer and explain why you have excluded the other choices? (7 Marks)

1. An aged mitochondrion needs to be "recycled" by the cell. Its final remnants show up in the cytoplasm as:
A) Storage granules B) Autophagic vacuole C) Lipofuscin pigments D) Pinosomes
2. A multicellular gland has the following features: a branching duct system, "flask-shaped" secretory units, and a secretory product that is released in membrane-bound granules. This gland is properly characterized as:
A) A simple, tubuloalveolar, apocrine gland B) A compound, alveolar, merocrine gland
C) A compound, acinar, holocrine gland D) A simple, tubular, merocrine gland
3. Mast cells and basophils are similar in one of the followings
A) The size of granules B) Their granules display metachromasia
C) Both have lobulated nuclei D) Both are phagocytic
4. In comparison to hyaline cartilage, the elastic cartilage
A) Is less flexible B) Has few cell nests C) Has abundant matrix D) Present at articular surfaces
5. All the following cells are presented in the bone except
A) Osteoprogenitor cells B) Osteocyte C) Megakaryocyte D) Osteoclast
6. A cow develops a cough and is found to have a bacterial lung infection. Which peripheral blood cell is most likely to be increased?
A) Lymphocytes B) Eosinophil C) Neutrophil D) Monocyte
7. In skeletal muscle, where does the T-tubule intercept the sarcomere?
A) At the I - H band junction B) At the A - I band junction
C) At the I band D) At the A band

Question II. Fill in the missing spaces

(3 Marks)

1. Glands are classified according to the type of secretion into _____, _____, _____, and _____
2. Cell theory consists of three concepts that are _____, _____, and _____
3. The wandering or free Cells of connective tissue are _____, _____, _____, and _____
4. Neuroglial cells that reside in the CNS include _____, _____, _____, and _____

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Question III. The invention of the microscope enabled scientist to see and draw the first cells. Suppose you are looking at EM section of a normal cell. Please answer the following questions (3 Marks)

1. Name the major components of this cell, and describe how they interact?
2. Enumerate the cell organelles involved in the secretory activity of this cell.
3. What is the possible functions of this cell if it contains abundant sER?

Question IV. While spending a time in the Histology lab reviewing your slides. You have been requested to review a section of hollow organ. Even though you have NO idea exactly what the organ is, you are able to deduce that it is most likely from an area of the body and composed of the tissues you studied in the general histology. Please answer the following questions (5 Marks)

1. What are the basic tissues that constitute this organ?
2. How can you differentiate between epithelium and connective tissue of this organ?
3. What are the main differences between collagen fibers and smooth muscle fibers in this organ?
4. Could you please suggest some possible functions to this organ?

Question V. Give a scientific definition to the following histological terms (3 marks)

1. Endocytosis
2. Cytoplasmic Inclusion.
3. Neuroepithelium
4. Howship's lacuna.
5. Axo-dendritic synapse.

Question VI. Identify, draw, and label the descriptions of the following histological slides (4 Marks)

1. **Slide 1:** contains EM section of an organelle with elongated or spherical shape. This organelle is surrounded by an outer smooth and inner folded membranes. Intermembrane space is also seen between the outer and inner membrane. The matrix of this organelle has many electron-dense granules.
2. **Slide 2:** contains LM section of a tissue consists of more than one type of cell, of varied size and shape. All cells contact an underlying basement membrane, but only some reach the free surface. The cells extend to the free surface are either ciliated or goblet cells.
3. **Slide 3:** contains LM section of a tissue formed of complex of concentric lamellae and central canal. This canal is surrounded by concentrically arranged 4-10 layers of lamellae. This tissue also contains mature cells which are trapped inside lacunae situated within lamellae. These cells are interconnected by canaliculi containing their dendritic processes.
4. **Slide 4:** contains LM section of a tissue containing connective tissue investments and striated fibers. The connective tissue septa subdivide this tissue internally into bundles, or fascicles, each containing several fibers. These fibers are elongated cylindrical cells and are enveloped by an external lamina and reticular fibers. They are multinucleated and the nuclei are oval or elongated and occupying peripheral positions underneath the cell membrane.

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Good Luck

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