Medical Technology

HTL

Histotechnologist Certification Examination

Latest Version: 6.0

Question: 1

Chromatolysis, as demonstrated by the cresyl echt violet method, is a sign of which of the following?

A.Injury of a neuron
B.Proliferation of astrocytes
C.Loss of myelin sheath
D.Activation of microglia

Answer: A

Explanation:
The cresyl echt violet method is used to visualize the Nissl substance of neurons. Nissl bodies stain darkly because of the high rough endoplasmic reticulum content, which contains RNA. Injury of a neuron causes the Nissl substance to disappear. This pathological change is referred to as chromatolysis.

Question: 2

Which of the following microbial stains would be the BEST to detect and diagnose a suspected mycobacteria infection?

A.Gram stain
B.Kinyoun acid—fast stain
C.Chromic acid-Schiff
D.Warthin-Starry technique

Answer: B

Explanation:
Acid-fast stains are often used to detect mycobacteria. Mycobacteria possess a capsule that contains mycolic acid (a fatty acid) that takes up carbolfuchsin and resists decolorization with a dilute acid rinse, hence the term acid-fast. Examples of medically important mycobacteria include Mycobacterium tuberculosis and Mycobacterium leprae.

Question: 3

Hall staining of liver tissue can be used to demonstrate the presence of which of the following pigments?

A.Bilirubin
B.Lipofuscin
C.Melanin
D.Hemosiderin

Answer: A

Explanation:
Hall bilirubin stain can be used to demonstrate a pathological excess of bile as seen in patients with liver failure or hemolytic anemia, or when there is an obstruction in the flow of bile from the liver. One advantage of Hall stain is that it can differentiate bilirubin pigments from lipofuscin pigments.

Question: 4

Mast cells stained with toluidine blue will appear_____.

A.blue
B.yellow
C.purple
D.orange

Answer: C

Explanation:
Metachromasia refers to a change in stain coloring that occurs in certain tissue components. Although toluidine blue stains most background components blue, in mast cells the dye changes to purple. Other examples of dyes that can produce metachromatic effects include methylene blue and azure A.

Question: 5

In long-term smokers, the cells lining the airways can change from pseudostratified columnar ciliated epithelium to squamous epithelium. This change in cell type is referred to as_____.

A.hypoplasia
B.anaplasia
C.hyperplasia
D.metaplasia

Answer: D

Explanation:
Metaplasia is defined as the reversible replacement of one differentiated cell type with another differentiated cell type. Anaplasia refers to when cells change

from a differentiate form to an undifferentiated, or immature, form. Hypoplasia refers to when cell numbers are below normal. Hyperplasia refers to when cell numbers are higher than normal.

Question: 6

Which of the following can be used as a "bluing" agent for alum hematoxylin when performing an H&E stain?

A.0.05% ammonia in distilled water
B.Glacial acetic acid
C.Glycerin
D.Copper

Answer: A

Explanation:
Alum hematoxylins stain nuclei red originally. They do not produce the familiar blue color until after the tissue section has been washed in a weak alkali solution. Hard tap water is usually alkaline enough to work, but other reagents that could be used include 0.05% ammonia in distilled water or saturated lithium carbonate.

Question: 7

Which of the following stains is the BEST for demonstrating reticular fibers in a paraffin section?

A.Rhodizonate method
B.H&E
C.Gomori stain
D.Giemsa stain

Answer: C

Explanation:
Reticular fibers are fine fibers that provide a mesh framework for the more cellular organs such as the spleen, liver, and lymph nodes. By the Gomori method, potassium permanganate is used to oxidize the hexose sugars of reticulin fibers to aldehydes. Ferric ammonium sulfate is then used as a sensitizer, which is then replaced by silver. Formalin is used to reduce the silver to its visible form.

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