

Examination Model

The American Society for Clinical Pathology Board of Certification (ASCP BOC) HT and HTL certification examinations are composed of 100 questions given in a 2-hour 30-minute time frame. All examination questions are multiple-choice with one best answer. The examinations are administered using the format of computer adaptive testing (CAT). More information is available on the ASCP BOC website.

The examination questions may be both theoretical and/or procedural. Theoretical questions measure skills necessary to apply knowledge, calculate results, and correlate reactions/patient results to histology. Procedural questions measure skills necessary to select/perform appropriate laboratory methods and follow quality assurance protocols.

Examination Content Areas

The examination questions encompass the following content areas within histotechnology. Each of these content areas comprises a specific percentage of the overall 100-question examination.

Content Area	Examination Percentage
Fixation	15 – 25%
Processing	10 – 20%
Embedding/Microtomy	15 – 25%
Staining	30 – 40%
Laboratory Operations	10 – 15%

For a more detailed overview of the HT and HTL examinations, refer to the content outline starting on page 2.



Examination Content Outline

- Regulatory questions on the examination are based on U.S. sources (e.g., AABB, FDA, CLIA, etc.).
- The examples provided in this content outline (as indicated by e.g.,) are not limited to those listed.

I. Fixation

15 – 25% of total examination

A. Tissues

1. Morphology/anatomy
2. Cell/component preservation
3. Pathology (**HTL ONLY**)
4. Biochemistry principles/theories (**HTL ONLY**)

B. Procedures

1. Light microscopy
2. Electron microscopy
3. Special stains
4. Frozen sections/tissues
5. Enzyme histochemistry
6. Immunofluorescence
7. Immunohistochemistry
8. Artifacts/precipitates/pigments
9. Quality control
10. Cytologic specimens
11. *In situ* hybridization

C. Parameters

1. Size of specimen
2. Volume of specimen/fixative
3. Time of fixation
4. Temperature of specimen/fixative
5. Other (e.g., pH)

D. Reagents

1. Types/components
2. Properties/functions/actions
3. Quality control
4. Chemistry principles/theories (**HTL ONLY**)

E. Instrumentation (e.g., microwave)

1. Components
2. Use
3. Maintenance
4. Troubleshooting
5. Quality control

II. Processing

10 – 20% of total examination

A. Tissues

1. Morphology/anatomy
2. Cell/component preservation

B. Procedures

1. Light microscopy
2. Frozen sections/tissues
3. Enzyme histochemistry
4. Calcified/decalcified tissue
5. Immunohistochemistry
6. Immunofluorescence
7. Quality control
8. Cytologic specimens (e.g., cell blocks, touch preps)
9. *In situ* hybridization

C. Instrumentation

1. Components
2. Use
3. Maintenance
4. Troubleshooting
5. Quality control

D. Reagents

1. Types/components
2. Properties/functions/actions
3. Quality control
4. Chemistry principles/theories (**HTL ONLY**)

III. Embedding/Microtomy

15 – 25% of total examination

A. Tissues

1. Morphology/anatomy
2. Cell/component demonstration

B. Procedures

1. Paraffin
2. Frozen section
3. Gelatin/adhesive
4. Quality control

5. Preparation for molecular testing (e.g., RNAase-free area, scrolls, laser capture microdissection) **(HTL ONLY)**

C. Instrumentation

1. Components
2. Use
3. Maintenance
4. Troubleshooting
5. Quality control

IV. Staining

30 – 40% of total examination

A. Tissues

1. Morphology/anatomy
2. Cell/component demonstration
3. Function
4. Pathology **(HTL ONLY)**
5. Biochemistry principles/theories **(HTL ONLY)**

B. Procedures

1. Nucleus/cytoplasm (e.g., H&E)
2. Bone marrow
3. Carbohydrates
4. Connective/supporting tissue
5. Lipids
6. Microorganisms
7. Nerve
8. Pigments/minerals/granules
9. Tissues/cells/components (e.g., fibrin, mast cells)
10. Enzyme histochemistry **(HTL ONLY)**
11. Immunohistochemistry (e.g., basic staining theory, retrieval techniques, selection of controls **[HTL ONLY]**, antibody preparation **[HTL ONLY]**)
12. Quality control
13. Preliminary screening of histochemical special stains **(HTL ONLY)**
14. Cytological stains (e.g., Papanicolaou)
15. *In situ* hybridization (FISH, CISH) **(HTL ONLY)**

C. Instrumentation

1. Components
2. Use

3. Maintenance
4. Troubleshooting
5. Quality control

D. Reagents/Dyes

1. Types/components
2. Properties/functions/actions
3. Quality control
4. Chemistry principles/theories **(HTL ONLY)**

E. Mounting Procedures

1. Media
2. Coverslip
3. Refractive index **(HTL ONLY)**

V. Laboratory Operations

10 – 15% of total examination

A. Safety

1. Storage
2. Disposal
3. Hazards
4. Regulations
5. Procedures
6. Quality control

B. Laboratory Mathematics

1. Metric system
2. Percent solutions/dilutions
3. Molar solutions

C. Ancillary Equipment/Instruments (e.g., microwave, computers, pH meter, solvent recovery)

1. Components
2. Use
3. Maintenance
4. Troubleshooting
5. Quality control

D. Management **(HTL ONLY)**

1. Theories
2. Procedures

E. Education **(HTL ONLY)**

1. Theories
2. Procedures

F. Regulations **(HTL ONLY)**

1. Federal government
2. Accrediting agencies

HT/HTL Summary of Stains

The following list is not all-inclusive but does contain most stains that may be encountered on the HT/HTL examinations.

- Alcian blue
- Alcian blue-PAS
- Alcian yellow
- Bielschowsky
- Carbol-fuchsin (Kinyoun, Ziehl-Neelsen, Fite, auramine-rhodamine)
- Colloidal iron
- Congo red
- Crystal violet
- Enzyme histochemistry (ATPase, cytochrome oxidase, succinic dehydrogenase, NADH, esterase, acid phosphatase)
- Fontana-Masson
- Giemsa
- Gram
- Grocott/Gomori methenamine-silver (GMS)
- Melanin bleach
- Hematoxylin & eosin (H&E)
- Immunohistochemical stains*
- Immunofluorescence*
- *In situ* hybridization (FISH, CISH)
- Luxol fast blue (LFB/cresyl echt violet)
- Movat pentachrome
- Mucicarmine
- Oil red O
- Papanicolaou
- PAS-digestion (PASD)
- PAS-hematoxylin (PASH)
- Periodic acid-methenamine silver (PAMS) / Jones
- Periodic acid-Schiff (PAS)
- Prussian blue (iron)
- Reticulin/reticulum
- Rhodanine
- Romanowsky
- Spirochete (Steiner and Steiner, Warthin-Starry)
- Tolidine blue

- Trichrome (Gomori, Masson)
- Verhoeff-van Gieson (VVG)
- von Kossa

*In addition, the HT exam includes questions about basic immunology principles, including antigen retrieval and immunohistochemistry staining theory. The HTL exam includes questions about immunohistochemistry quality control and more detailed questions about principles, antigen retrieval, and immunostaining procedures.

END OF CONTENT GUIDELINE