

HISTOTECHNICIAN AND INTERNATIONAL HISTOTECHNICIAN, HT(ASCP) AND HT(ASCPⁱ)

HISTOTECHNOLOGIST AND INTERNATIONAL HISTOTECHNOLOGIST, HTL(ASCP) AND HTL(ASCPⁱ)

EXAMINATION CONTENT GUIDELINE

EXAMINATION MODEL

The HT(ASCP), HT(ASCPⁱ), HTL(ASCP), and HTL(ASCPⁱ) certification examinations are composed of 100 questions given in a 2 hour 30 minute time frame. All exam questions are multiple-choice with one best answer. The certification exams are administered using the format of computer adaptive testing (CAT).

With CAT, when a person answers a question correctly, the next test question has a slightly higher level of difficulty. The difficulty level of the questions presented to the examinee continues to increase until a question is answered incorrectly. Then a slightly easier question is presented. In this way, the test is tailored to the individual's ability level.

Each question in the test bank is calibrated for level of difficulty and is classified by content area. The content area aligns with the examination specific content outline. The examinee must answer enough questions correctly to achieve a measure above the pass point in order to successfully pass the certification examination. There is no set number of questions one must answer to pass, nor is there a set percentage one must achieve to pass. If at the end of the exam the examinee's score is above the pass point, then he or she passes the exam.

EXAMINATION CONTENT AREAS

The HT and HTL exam questions encompass the following content areas within Histotechnology: Fixation, Processing, Embedding/Microtomy, Staining, and Laboratory Operations. Each of these content areas comprises a specific percentage of the overall 100-question exam. The content areas and percentages are described below:

CONTENT AREAS	EXAM PERCENTAGES
FIXATION	15 – 25%
PROCESSING	10 – 20%
EMBEDDING/MICROTOMY	15 – 25%
STAINING	30 – 40%
LABORATORY OPERATIONS	10 – 15%

For a more specific overview of the HT and HTL exams, please refer to the **CONTENT OUTLINE** starting on page 2.

HISTOTECHNICIAN AND INTERNATIONAL HISTOTECHNICIAN, HT(ASCP) AND HT(ASCPⁱ)

HISTOTECHNOLOGIST AND INTERNATIONAL HISTOTECHNOLOGIST, HTL(ASCP) AND HTL(ASCPⁱ) EXAMINATION CONTENT OUTLINE

Examination questions, which are related to the subtest areas outlined below, may be both theoretical and 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. Additionally, regulatory questions are based on U.S. sources (e.g., AABB, FDA, CLIA, etc.).

I. FIXATION (15 – 25%)

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%)

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%)

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%)

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%)

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

Examples provided (as indicated by e.g.) are not limited to those listed.

All Board of Certification examinations use conventional and SI units for results and reference ranges.

HT/HTL SUMMARY OF STAINS

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

- 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)
- Toluidine 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