ASCP BOARD OF CERTIFICATION

VALID ONLY FOR BB(ASCP), BB(ASCP^i), SBB(ASCP), AND SBB(ASCP^i) TESTING DATES BEGINNING JAN 1, 2024

TECHNOLOGIST AND INTERNATIONAL TECHNOLOGIST IN BLOOD BANKING, BB(ASCP) AND BB(ASCP^i)
SPECIALIST AND INTERNATIONAL SPECIALIST IN BLOOD BANKING, SBB(ASCP) AND SBB(ASCP^i)

EXAMINATION CONTENT GUIDELINE

EXAMINATION MODEL

The BB(ASCP), BB(ASCP^i), SBB(ASCP), and SBB(ASCP^i) 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 BB and SBB exam questions encompass the following content areas within Blood Banking: Blood Products, Blood Group Systems, Immunology and Physiology, Serologic and Molecular Testing, Transfusion Practice, 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 AREA	DESCRIPTION	EXAM PERCENTAGE
BLOOD PRODUCTS	Donors, processing, storage, types of blood components, blood component quality control	**BB: 15 – 20%** **SBB: 10 – 15%**
BLOOD GROUP SYSTEMS	Genetics, biochemistry/antigens, role of blood groups in transfusion	**BB: 15 – 20%** **SBB: 15 – 20%**
IMMUNOLOGY AND PHYSIOLOGY	Immune response, immunoglobulins, antigen-antibody interactions, complement, physiology of blood, hemostasis and coagulation, HDFN, cytopenias, transplantation	**BB: 10 – 20%** **SBB: 15 – 25%**
SEROLOGIC AND MOLECULAR TESTING	Routine tests, reagents, application of special tests and reagents, quality assurance	**BB: 20 – 25%** **SBB: 20 – 25%**
TRANSFUSION PRACTICE	Indications for transfusion, component therapy, adverse effects of transfusion, apheresis and extracorporeal circulation, blood administration and patient blood management	**BB: 15 – 20%** **SBB: 15 – 20%**
LABORATORY OPERATIONS	Quality assessment/troubleshooting, safety, laboratory mathematics, instrumentation, laboratory administration **(SBB ONLY)**	**BB: 5 – 10%** **SBB: 10 – 15%**

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

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EXAMINATION CONTENT OUTLINE

Examination questions, which are related to the subtest areas outlined below, may be both theoretical and/or procedural. Theoretical questions measure skills necessary to apply knowledge, calculate results, and correlate patient results to disease states. Procedural questions measure skills necessary to perform laboratory techniques and follow quality assurance protocols. Additionally, regulatory questions are based on U.S. sources (e.g., AABB, FDA, CLIA, etc.).

NOTE ABOUT DONOR ELIGIBILITY QUESTIONS: the exam questions are based on current regulations as of June 2023.

I. BLOOD PRODUCTS
(BB: 15 – 20% of total exam)
(SBB: 10 – 15% of total exam)

A. Donors
1. Qualification
2. Collection methods
3. Adverse reactions
4. Special donations (e.g., autologous)

B. Processing
1. FDA, AABB requirements
2. Testing
3. Labeling

C. Storage
1. Anticoagulants/additives
2. Temperature requirements
3. Transportation
4. Properties of stored products
5. Expiration

D. Blood Components
1. Red blood cells
2. Cryoprecipitated AHF
3. Platelets
4. Plasma
5. Granulocytes
6. Leukocyte-reduced components
7. Frozen/deglycerolized red blood cells
8. Apheresis products
9. Fractionation products
10. Whole blood
11. Washed red blood cells
12. Rejuvenated red blood cells
13. Irradiated components
14. Hematopoietic progenitors

E. Blood Component Quality Control

II. BLOOD GROUP SYSTEMS
(BB AND SBB: 15% – 20% of total exam)

A. Genetics
1. Basic
2. Molecular
3. Inheritance of blood groups

B. Biochemistry/Antigens
1. ABO
2. Lewis
3. Rh
4. MNS
5. P1PK/Globoside(P)
6. Ii
7. Kell
8. Kidd
9. Duffy
10. Lutheran
11. Other blood group systems
12. Antigens of high prevalence
13. Antigens of low prevalence
14. HLA
15. Platelet-specific
16. Granulocyte-specific

C. Role of Blood Groups in Transfusion
1. Immunogenicity
2. Antigen prevalence

III. IMMUNOLOGY AND PHYSIOLOGY
(BB: 10 – 20% of total exam)
(SBB: 15 – 25% of total exam)

A. Immunology
1. Immune response
   a. Primary and secondary response
   b. B and T cells, macrophages
   c. Genetics

2. Immunoglobulins
   a. Classes and subclasses
   b. Structure
   c. Biologic and physical properties
3. Antigen-antibody interactions
   a. Principles
   b. Testing
      1) Principles
      2) Methods
4. Complement
   a. Classical and alternative pathway mechanisms
   b. Biologic properties

B. Physiology and Pathophysiology

1. Physiology of blood
   a. Circulation and blood volume
   b. Composition and function of blood
      1) Normal function
      2) Abnormal physiology
   c. Cell survival
   d. Cell metabolism
2. Hemostasis and coagulation
   a. Coagulation factors and disorders
      1) Coagulation factor assay result interpretation
   b. Platelet functions and disorders
3. Hemolytic disease of the fetus and newborn
   a. Pathophysiology
   b. Detection
   c. Treatment
   d. Prevention
4. Cytopenias
   a. Anemia (immune and nonimmune)
      1) Pathophysiology
      2) Detection
      3) Treatment
   b. Thrombocytopenia (immune and nonimmune)
      1) Pathophysiology
      2) Detection
      3) Treatment
   c. Neutropenia
      1) Pathophysiology
      2) Detection
      3) Treatment
5. Transplantation
   a. Solid organ
   b. Hematopoietic progenitor cell (HPC)

IV. SEROLOGIC AND MOLECULAR TESTING (BB AND SBB: 20 – 25% of total exam)

A. Routine Tests

1. Blood grouping tests
2. Compatibility tests
   a. Antibody detection
   b. Crossmatch
3. Antibody identification/clinical significance
4. Direct antiglobulin testing

B. Reagents

1. Antiglobulin sera
2. Blood grouping sera
3. Reagent red blood cells

C. Special Tests and Reagents

1. Enzymes
2. Enhancement media
3. Lectins
4. Adsorptions
5. Elutions
6. Titrations
7. Cell separations
8. ELISA
9. Molecular techniques
10. Neutralization/inhibition
11. Use of thiol reagents
12. Immunofluorescence
13. Solid phase
14. Column agglutination test
15. Chloroquine diphosphate
16. EDTA-glycine acid

D. Quality Assurance

1. Blood samples
2. Reagents
3. Test procedures

V. TRANSFUSION PRACTICE (BB AND SBB: 15 – 20% of total exam)

A. Indications for Transfusion

B. Component Therapy

C. Adverse Effects of Transfusion
   1. Immunologic reactions
   2. Nonimmunologic reactions
   3. Transfusion-transmitted diseases

D. Apheresis and Extracorporeal Circulation

E. Blood Administration and Patient Blood Management

VI. LABORATORY OPERATIONS
(BB: 5 – 10% of total exam)
(SBB: 10 – 15% of total exam)

A. Quality Assessment/Troubleshooting
1. Preanalytical, analytical, postanalytical
2. Quality control
3. Regulation (e.g., proficiency testing, competency assessment, accreditation standards)

B. Safety
1. Safety programs and practices
   a. Prevention of infection with bloodborne pathogens
   b. Use of personal protective equipment (PPE)
   c. Safe work practices
   d. Safety data sheets (SDS) for chemicals and reagents
2. Emergency procedures (e.g., needlesticks, splashes to mucous membranes, fire)

C. Laboratory Mathematics

D. Instrumentation
1. Microscope
2. Centrifuge
3. Cell washer
4. Irradiator
5. Automated analyzer

E. Laboratory Administration (SBB ONLY)
1. Financial
   a. Budgets
   b. Capital equipment acquisition
   c. Cost analysis and reimbursement
   d. Purchasing and inventory
2. Operations
   a. Customer service
   b. Facility management (e.g., laboratory design, utilities)
   c. Information technology
   d. Data management (e.g., research, outcomes)
   e. Test verification/validation
3. Personnel
   a. Staffing and productivity
   b. Performance standards (e.g., training, competency assessment)
   c. Counseling, disciplinary action, and conflict resolution
   d. Education and training
4. Quality management
   a. Continuous quality improvement
   b. Individualized Quality Control Plan (IQCP)
   c. Risk management/medical-legal issues
5. Tissue management storage and distribution

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.

END OF CONTENT GUIDELINE