



SAUDI FELLOWSHIP TRAINING PROGRAM

Clinical Pharmacy

Final Written Examinations

Examination Format:

The Saudi subspecialty fellowship and diplomas final written examination shall consist of one paper with 80-120 multiple-choice questions (single best answer out of four options). 10 unscored items can be added for pretesting purposes.

Passing Score:

The passing score is 70%. However, if the percentage of candidates passing the examination before final approval is less than 70%, the passing score must be lowered by one mark at a time aiming at achieving 70% passing rate or 65% passing score whichever comes first. Under no circumstances can the passing score be reduced below 65%.

Blueprint outlines

1. Pediatric Pharmacy Specialty

No.	Sections	Percentage %
1	Immunizations / Vaccines	5
2	Cardiovascular ¹	6
3	Respiratory ²	9
4	Parenteral and Enteral Nutrition	4
5	Gastroenterology ³	7
6	Neurology/ Psychiatry ⁴	9
7	Pediatric Anticoagulation, Anemia	4
8	Infectious Diseases ⁵	17
9	Immunology ⁶	5
10	Renal/Endocrinology ⁷	8
11	Pediatric Critical Care ⁸ /Pain management	18
12	Research, Ethics, Professionalism and Patient Safety	8
	Total	100%

¹Cardiovascular: including hypertension, & Congenital Heart Disease

²Respiratory: including bronchiolitis, Asthma, Pneumonia, Neonatal Respiratory Distress Syndrome, & Apnea of Prematurity

³Gastroenterology: including gastroesophageal Reflux Disease, diarrhea and constipation

⁴Neurology/ Psychiatry: including seizure disorders, ADHD, Autism Disorders, & Pediatric Depression

⁵Infectious Diseases: including neonatal sepsis, meningitis in Infants and Children, cellulitis, osteomyelitis, acute Otitis Media and Upper Respiratory Tract Infections, Infectious Diarrhea, Lower Respiratory Tract Infections, Urinary Tract Infections in Children

⁶Immunology: including Kawasaki Disease

⁷Renal/Endocrinology: including nephrotic Syndrome, osteogenesis imperfecta, Diabetes Mellitus, & Vitamin D analogues / metabolism

⁸Pediatric Critical Care: including Fluids/ Electrolytes Management, Acid / Base disorder, Inotropes, DKA, Management of head injuries, sepsis/septic shock, sedation and analgesia

Note:

- Blueprint distributions of the examination may differ up to +/-3% in each category.
- Percentages and content are subject to change at any time. See the SCFHS website for the most up-to-date information.

Suggested References:

1. Pediatric Pharmacotherapy. Sandra Benavides, Pharm.D., and Milap C. Nahata, Pharm.D, FCCP, Lead Editors
2. Lexicomp Pediatric & Neonatal Dosage Handbook. Carol K. Taketomo, PharmD
3. Advanced Pediatric Therapeutics. Lea Eiland, PharmD, BCPS, FASHP, FPPAG Timothy Todd, PharmD, FPPAG
4. Red book by AAP
5. Pediatric practice guidelines developed by professional societies (AAP, GINA, AHA, PPAG)
6. Professionalism and Ethics, Handbook for Residents, Practical guide, Prof. James Ware, Dr. Abdulaziz Fahad Alkaabba, Dr. Ghaiath MA Hussein, Prof. Omar Hasan Kasule, SCFHS, Latest Edition.
7. Essentials of Patient Safety, SCHS, Latest Edition.

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Blueprint Outlines:

2. Cardiology Pharmacy Specialty

No.	Sections	%
1	Acute care cardiology ¹	20
2	Medical cardiology ²	20
3	Cardiac devices and heart transplantation ³	10
4	Preventive cardiovascular medicine ⁴	15
5	Surgical cardiology ⁵	15
6	Ambulatory care cardiology ⁶	6
7	Interventional cardiology ⁷	6
8	Research, Ethics, Professionalism and Patient Safety	8
	Total	100%

¹Acute care cardiology: including acute coronary syndrome, arrhythmias, acute decompensated heart failure, cardiogenic shock

²Medical cardiology: including ischemic heart disease, heart failure, valvular heart disease and endocarditis, pulmonary hypertension and anticoagulation

³Cardiac devices and heart transplantation: including ventricular assist devices, intra-aortic balloon pump, ECMO, Implantable cardioverter defibrillator/pacemakers

⁴Preventive cardiovascular medicine: including dyslipidemia, diabetes and hypertension

⁵Surgical cardiology: including CABG, valve and shunts

⁶ Ambulatory care cardiology: including anticoagulation and heart failure clinic

⁷ Interventional cardiology: including stenting and TAVI

Note:

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- Percentages and content are subject to change at any time. See the SCFHS website for the most up-to-date information.

Suggested References:

1. Braunwald's Heart Disease: A Textbook of Cardiovascular Medicine
2. ECGs Made Easy by Barbara J Aehlert
3. Professionalism and Ethics, Handbook for Residents, Practical guide, Prof. James Ware, Dr. Abdulaziz Fahad Alkaabba, Dr. Ghaiath MA Hussein, Prof. Omar Hasan Kasule, SCFHS, Latest Edition.
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Blueprint Outlines:**3. Critical Care Pharmacy Specialty**

No.	Sections	%
1	Hemodynamic and shock ¹	20
2	Gastroenterology ²	10
3	Infectious Diseases ³	17
4	Neurology critical care ⁴	10
5	Pulmonary diseases ⁵	10
6	Renal, Endocrine and metabolic disorders	15
7	Surgery/trauma/transplantation critical care	10
8	Research, Ethics, Professionalism and Patient Safety	8
	Total	100%

¹Hemodynamic and shock: including cardiogenic, hypovolemic and septic shock

²Gastroenterology: including gastrointestinal bleeding, nutritional support and hepatic diseases

³Infectious Diseases: including central nervous system infections; pneumonias; intra-abdominal infections; urinary tract infections; skin and soft tissue infections, central line associated blood stream infections

⁴Neurology critical care: including ischemic and hemorrhagic stroke, subarachnoid hemorrhage, analgesia, sedation and delirium management

⁵Pulmonary diseases: including ventilation and ARDS

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Suggested References:

1. The ICU Book by Paul L Marino
2. Updated North American guidelines related to critical care illness
3. Professionalism and Ethics, Handbook for Residents, Practical guide, Prof. James Ware, Dr. Abdulaziz Fahad Alkaabba, Dr. Ghaiath MA Hussein, Prof. Omar Hasan Kasule, SCFHS, Latest Edition.
4. Essentials of Patient Safety, SCHS, Latest Edition.

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Blueprint Outlines:**4. Infectious Diseases Pharmacy Specialty**

No.	Sections	%
1	Bacterial infections	30
2	Fungal infections	15
3	Human immunodeficiency Virus (HIV) infection	10
4	Immunocompromised Host (Non-HIV Infections)	5
5	Therapeutic drug monitoring of antimicrobial therapy	5
6	Parasitic infections	5
7	Vaccinations	5
8	Viral infections	7
9	Sexually transmitted infections(STIs)	5
10	Clinical microbiology	5
11	Research, Ethics, Professionalism and Patient Safety	8
	Total	100%

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Suggested References:

1. Mandell, Douglas, and Bennett's. Principles and practice of infectious diseases. Latest edition
2. Panel on Antiretroviral Guidelines for Adults and Adolescents. Guidelines for the use of antiretroviral agents in HIV-1-infected adults and adolescents. Department of Health and Human Services. Latest edition
3. Antimicrobial stewardship program latest guidelines for implementation and the updated infectious diseases international guidelines (including but not limited to IDSA, AST, NCCN, CDC, NICE, others)
4. Nelson Textbook of Pediatrics. Latest edition
5. David Greenwood. Medical Microbiology: A Guide to Microbial Infections: Pathogenesis, Immunity, Laboratory Diagnosis and Control. Latest edition
6. Professionalism and Ethics, Handbook for Residents, Practical guide, Prof. James Ware, Dr. Abdulaziz Fahad Alkaabba, Dr. Ghaiath MA Hussein, Prof. Omar Hasan Kasule, SCFHS, Latest Edition.
7. Essentials of Patient Safety, SCHS, Latest Edition.

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Blueprint Outlines:

5. Internal Medicine Pharmacy Specialty

No.	Sections	%
1	Allergy/Immunology and adult immunization ¹	5
2	Cardiovascular/ Pulmonary ²	19
3	Endocrinology, Diabetes and Metabolism ³	20
4	Gastrointestinal/Hepatology ⁴	10
5	Hematology/Medical Oncology	5
6	Infectious diseases	15
7	Neuropsychiatry ⁵	5
8	Rheumatology and Renal ⁶	13
9	Research, Ethics, Professionalism and Patient Safety	8
	Total	100%

¹Allergy/Immunology and adult immunization: including urticaria, rhinitis and eczema

²Cardiovascular/ Pulmonary: including Asthma, COPD, hypertension, heart failure, pulmonary embolism, DVT

³Endocrinology, Diabetes and Metabolism: including diabetes, thyroid disorders, adrenal gland disorders, pituitary gland disorders, dyslipidemia, osteoporosis, osteoarthritis



⁴Gastrointestinal/Hepatology: including peptic ulcer disease, GERD, inflammatory bowel disease, hepatitis

⁵Neuropsychiatry: including stroke

⁶Rheumatology and Renal: including rheumatoid arthritis, renal failure

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- Percentages and content are subject to change at any time. See the SCFHS website for the most up-to-date information.

Suggested References:

1. Harrison's Principles of Internal Medicine 20th ed.
2. Internal Medicine: A Guide to Clinical Therapeutics
3. Updated guidelines for management of chronic diseases including but not limited to diabetes, hypertension and asthma/COPD
4. Professionalism and Ethics, Handbook for Residents, Practical guide, Prof. James Ware, Dr. Abdulaziz Fahad Alkaabba, Dr. Ghaiath MA Hussein, Prof. Omar Hasan Kasule, SCFHS, Latest Edition.
5. Essentials of Patient Safety, SCHS, Latest Edition.

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Blueprint Outlines:

6. Nephrology Pharmacy Specialty

No.	Sections	%
1	Acute kidney diseases	12
2	Acute kidney injury and Intensive Care Unit nephrology	10
3	Drug selection and management in kidney diseases	20
4	Chronic kidney diseases ¹	15
5	Kidney disease related complications ²	10
6	Renal replacement therapies	15
7	Kidney transplantation	10
8	Research, Ethics, Professionalism and Patient Safety	8
	Total	100%

¹Chronic kidney diseases: including tubular, interstitial and cystic disorders

²Kidney disease related complications: including electrolyte imbalance, anemia of chronic disease, line-related infections and renal osteodystrophy and secondary hyperparathyroidism

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Suggested References:

1. Comprehensive Clinical Nephrology, J. Feehally, J. Floege, R. Johnson, Latest edition
2. KDOQI and KDIGO updated guidelines
3. Harrison's, Principles of Internal Medicine, Latest edition
4. Pharmacotherapy (Dipiro), ACCP Updates in Therapeutics, Latest edition
5. Professionalism and Ethics, Handbook for Residents, Practical guide, Prof. James Ware, Dr. Abdulaziz Fahad Alkaabba, Dr. Ghaiath MA Hussein, Prof. Omar Hasan Kasule, SCFHS, Latest Edition.
6. Essentials of Patient Safety, SCHS, Latest Edition.

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Blueprint Outlines:
7. Hematology/Oncology Pharmacy Specialty

No.	Sections	%
1	Breast cancer	10
2	Gastrointestinal cancer	10
3	Genitourinary cancer	7
4	Gynecological cancer	7
5	Head/Neck cancer	5
6	Hematological diseases ¹	25
7	Lung cancer	5
8	Melanomas, Sarcomas	5
9	Neurooncology	8
10	Supportive care	10
11	Research, Ethics, Professionalism and Patient Safety	8
	Total	100%

¹Hematological diseases: including malignant and benign hematological disorders, lymphomas, and bone marrow transplantation

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Suggested References:

1. The American Society of Clinical Oncology updated guidelines
2. National Comprehensive Cancer Network (NCCN) updated guidelines
3. Multinational Association of Supportive Care in Cancer (MASCC) updated guidelines
4. Professionalism and Ethics, Handbook for Residents, Practical guide, Prof. James Ware, Dr. Abdulaziz Fahad Alkaabba, Dr. Ghaiath MA Hussein, Prof. Omar Hasan Kasule, SCFHS, Latest Edition.
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Blueprint Outlines:

8. Solid Organ Transplantation Pharmacy Specialty

No.	Sections	%
1	Pretransplant ¹	15
2	Perioperative ²	27
3	Post-transplant ³	30
4	Graft dysfunction	10
5	Ambulatory care	10
6	Research, Ethics, Professionalism and Patient Safety	8
	Total	100%

Solid Organ Transplantation includes liver (45%); kidney (45%); heart, lung, pancreas and islet cell and small bowel or combination of 2 or more organs (10%)

¹Pretransplant: including indications and contraindications and candidacy of transplantation; screening of donors and recipients; transplant immunology; prophylaxis of infections (laboratory testing and immunizations)

² Perioperative: including perioperative complications (donor and recipients); management of patients and donors pre- and immediately after transplant in ICU; prophylaxis and management of rejection; prophylaxis of infections (viral, bacterial, mycobacterial, parasitic and fungal)

³Post-transplant including but not limited to management of acute and chronic rejection (cellular and humoral); immunosuppressive medications and immunizations; infectious diseases prevention and management (bacterial, viral fungal, mycobacterial, parasitic infections); post-transplant complications {short and long term complications including but not limited to cardiovascular, chronic diseases, CNS, post-transplant lymphoproliferative disease(PTLD)}; adherence to medical regimen; recurrence of disease; post-transplant malignancy and indications for re-transplantation.

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Suggested References:

1. Textbook of Organ Transplantation 2014 John Wiley & Sons, Ltd.
Textbook of Organ Transplantation Editor(s): Allan D. Kirk, Stuart J. Knechtle, Christian P. Larsen, Joren C. Madsen, Thomas
2. The most recent American Society of Transplantation (AST) guidelines published by the American Journal of Transplantation (AJT)
3. Transplant Infections. Fourth Edition. Editors: Per Ljungman, David Snyderman, Michael Boeckh.2016



4. Professionalism and Ethics, Handbook for Residents, Practical guide, Prof. James Ware, Dr. Abdulaziz Fahad Alkaabba, Dr. Ghaiath MA Hussein, Prof. Omar Hasan Kasule, SCFHS, Latest Edition.
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9. Ambulatory Care Pharmacy Specialty

Blueprint Outlines:

No.	Sections	Percentage (%)
1	Chronic cardiovascular diseases ¹	20
2	Chronic Pulmonary diseases ¹	15
3	Endocrinology and Diabetes diseases ²	20
4	Thromboembolic diseases and anticoagulation therapy	20
5	Rheumatology and Renal ³	17
6	Research, Ethics and Professionalism and Patient Safety	8
Total		100%

¹Cardiovascular/ Pulmonary: including Asthma, COPD, hypertension, heart failure, ischemic heart disease, atrial fibrillation

²Endocrinology, Diabetes: including diabetes, thyroid disorders, dyslipidemia.

³Rheumatology and Renal: including rheumatoid arthritis, osteoarthritis, renal failure

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Suggested References:

1. Pharmacotherapy: A pathophysiology Approach, Latest edition. New York: McGraw Hill; Dipiro j, Talbert RL Yee CG, et.al
2. Harrison's Principles of Internal Medicine 20th ed.
3. Internal Medicine: A Guide to Clinical Therapeutics
4. Updated guidelines for management of chronic diseases including but not limited to diabetes, hypertension and asthma/COPD
5. Professionalism and Ethics, Handbook for Residents, Practical guide, Prof. James Ware, Dr. Abdulaziz Fahad Alkaabba, Dr. Ghaiath MA Hussein, Prof. Omar Hasan Kasule, SCFHS, Latest Edition.
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10. Drug Information Pharmacy Specialty

Blueprint Outlines:

No.	Sections	Percentage (%)
1	Drug Information Practice *	10
2	Drug information resources**	15
3	Formulary Management and medication use policies***	20
4	Evidence-based-medicine and literature evaluation	15
5	Medication use evaluations	10
6	Medication Misadventures ****	15
7	Medication management accreditation requirements	7
Research, Ethics and Professionalism and Patient Safety		8
Total		100%

*drug information functions, formulation of responses, documentation, communication

**type of literatures, resources, electronic resources, use of internet

*** P&T, medication use management, non-formulary, investigational medications, drug monograph evaluation

**** Medication safety, adverse drug reactions, medication errors, recalls, drug safety alerts, pharmacy informatics, risk management programs



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Suggested References:

1. Drug Information: A Guide for Pharmacists
2. ASHP related Best Practices guidelines , statements, and positions
3. Pharmacotherapy: A Pathophysiologic Approach
4. Applied Therapeutics: The Clinical Use of Drugs
5. Updated guidelines for management of chronic diseases including but not limited to diabetes, hypertension, asthma/COPD, and infectious disease
6. Professionalism and Ethics, Handbook for Residents, Practical guide, Prof. James Ware, Dr. Abdulaziz Fahad Alkaabba, Dr. Ghaiath MA Hussein, Prof. Omar Hasan Kasule, SCFHS, Latest Edition.
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Example Questions

EXAMPLES OF K1 QUESTIONS

Question 1

In addition to life style modification, which of the following is the first line therapy for diabetic patient with dyslipidemia but no documented heart disease?

- A. Pitavastatin 4 mg once daily
- B. Rosuvastatin 5 mg once daily
- C. Simvastatin 20 mg once daily
- D. Atorvastatin 40 mg once daily

EXAMPLES OF K2 QUESTIONS

Question 2

A 60-year-old man presented to a Cardiology Referral Centre with unstable angina started 6 hours' prior to presentation. The patient was diagnosed with non-ST segment elevation myocardial infarction (see lab results and report).

Cardiac Enzymes:

Test	Result	Normal value
CK-MB	18	(0-3 mcg/L)
Troponin T	1.2	(< 0.2 mcg/L)

Electrocardiogram:

Anterolateral ST-depression

Which of the following is the most appropriate approach?

- A. Cardiac catheterization
- B. Conservative management
- C. Revascularization with alteplase
- D. Revascularization with streptokinase