Scope of Knowledge for Surgery MedEx.

The pre-entrance examination consists of 60 True-False multiple choice questions. There is no negative marking within the question and the minimum score for each question is ZERO (0)

The duration of the examination is 3 hours.

Overview

The examination syllabus conforms to the syllabus for basic surgical training, which encompasses common diseases and procedures that trainees would encounter in a general surgical unit of a district hospital. The domains covered are:

C - cognitive (knowledge), P - psychomotor (skills), A - affective (attitudes and values).

Competency levels are classified as follows:

Level	Knowledge Levels Descriptor
1	No specific knowledge
2	Knows of
3	Knows basic concepts
4	Knows generally
5	Knows specifics in common scenarios
6	Knows specifically in uncommon scenarios

Competency attainment

The levels of knowledge that a trainee would be expected to demonstrate in this examination are listed below.

Subject	Level
Applied Surgical Anatomy	
1. Nervous system: Head and Neck Applied anatomy of the scalp, skull and intracranial contents, especially in relation to head injuries General organization and function of the autonomic nervous system Applied anatomy of the triangles of the neck	3
2. Cardiovascular System Applied anatomy of the heart, pericardium and coronary circulation, major arteries and veins	3

3. Respiratory System Applied anatomy of the thorax and mediastinum with special emphasis on airway and their clinical significance	3
4. Gastro-intestinal System Applied anatomy of the abdominal wall and its clinical relevance to surgical practice Applied anatomy of peritoneal cavity, esophagus, stomach, large and small bowel, pancreas, liver, biliary tree and spleen	4
5. Breast and Endocrine System Applied anatomy of the breasts and thyroid gland Applied anatomy of the adrenals, pituitary and parathyroid glands	 4 3
6. Genito-urinary System Applied anatomy of the urinary tract (kidneys, ureters, bladder, prostate and urethra) Applied anatomy of male and female genital tracts	 4 3
7. Musculoskeletal System Applied anatomy of the upper and lower limbs with special emphasis on trauma	 3
Applied Physiology	
1. General Overview of cellular physiology Fluid and electrolyte balance Acid base balance Immunity, infection and inflammation Nutrition Metabolic response to injury	3
2. Cardiovascular System General principles of cardiac and vascular function Cardiogenic shock	3
3. Respiratory System Principles of the mechanism of respiration Gas transport and exchange Assessment of pulmonary function and respiratory disorders Oxygen therapy and ventilatory support	3
4. Blood and the Reticulo-endothelial System Function of the haemopoietic and reticulo-endothelial systems. Haemostasis Transfusion of blood and blood products	3
5. Nervous System General principles of nerve conduction and neurotransmitters in the central and peripheral nervous systems.	2

Physiology of pain Cerebral circulation, cerebral perfusion and metabolism Intracranial pressure and herniation Spinal shock	
6. Gastro-intestinal System General principles of gastrointestinal secretion and absorption Gastrointestinal motility Endocrine function of the gastrointestinal tract Functions of the liver, biliary tree and pancreas	 3 2 2 3
7. Genito-Urinary System General principles of renal function and disorders Physiology of bladder function and disorders Testicular and prostate function	 3 2 2
8. Breast and Endocrine System General principles of breast function Function, secretion and control of hormones Endocrine functions of the pancreas Endocrine functions of the testis and ovary Endocrine functions of the thyroid, parathyroid and adrenal glands	 3 2 3 2 2
9. Musculo-skeletal system Physiology of muscle and joints Physiology of bones and calcium metabolism	 2 3
Applied general pathology	
1. Cell structure, cycle and response to injury	2
2. Acute and chronic inflammation	3
3. Immunology Immune response, Immunodeficiency and immuno-suppression Tissue transplantation and pathophysiology of rejection	 3 2
4. Temperature regulation	2
5. Fluid and electrolyte imbalance	
6. Wounds i Healing - normal and abnormal ii. Wound infections	 3 3
6. Neoplasia i. Principles of Carcinogenesis Normal cell replication Disordered cell replication	3

Behaviour of cancer cells ii. The Molecular Biology of Cancer The cell cycle and the human genome Mechanisms and pathways of tumour genesis Tumour markers Cellular mechanisms of invasion and metastasis	
7. Abnormalities of calcium metabolism	3
8. Disorders of endocrine function	3
9. Disorders of nutrition	3
10. Thrombo-embolic disorders	3
11. Ischaemia and infarction	3
12. Plasma proteins	3
13. Pigments of the body and their disorders	3
13. Diagnostic methods	3
14. Genetics in surgical practice	3
Principles of Surgery	
I. PERI-OPERATIVE CARE 1. Assessment of Fitness for Surgery Preoperative assessment and risk scoring systems Laboratory testing and imaging 2. Management of Associated Medical Conditions Organ specific diseases Issues related to medications General factors Surgery at the Extremes of Life Surgery in immunocompromised patients Surgery in Hepatitis and HIV carriers 3. Preparation for Surgery Informed consent Pre-medication Risk management 4. Principles of Anaesthesia General anaesthesia Local anaesthesia Regional anaesthesia 5. Monitoring and care of the Anaesthetised Patient Non-invasive monitoring Invasive monitoring	4 3 3 3 3

Care of the Patient Under Anaesthesia Positioning of the patient in surgery Avoidance of nerve injuries 6. Haematological Problems in Surgery Surgical aspects of disordered Haemopoiesis Haemolytic disorders Disorders of bleeding and coagulation 7. Blood Transfusion Preparation and components of blood products Indications for blood product transfusion Complications associated with blood transfusion Alternatives to blood transfusion	 3 3
II. CRITICAL CARE 1. Anaesthetic Management Postoperative monitoring Ventilatory support Pain control Intravenous drug delivery 2. Metabolic and Nutritional Support Fluid & electrolyte management Nutrition in the surgical patient 3. Postoperative Complications General surgical complications Respiratory failure Acute renal failure Systemic inflammatory response syndrome (SIRS) Multiple organ dysfunction syndrome (MODS)	 2 3 3
III. SURGICAL TECHNIQUES AND TECHNOLOGY 1. Surgical Wounds Classification of surgical wounds Principles of wound management Scars and contractures 2. Surgical Techniques Principles of safe surgery Sutures and ligature materials Basic surgical instruments Incisions Knotting & suturing techniques Energy: Electrosurgery (monopolar & bipolar), advanced bipolar, ultrasonic, laser Wound closure techniques Principles of anastomosis Haemostasis - materials & techniques 3. Surgical Procedures Minor surgical procedures Principles of daycare surgery	 4 4 4

Endoscopic surgery and laparoscopy 4. Tourniquets in the Operating Theatre Indications for tourniquet use Tourniquet application Effects and complications of tourniquets	3
IV. MANAGEMENT AND LEGAL ISSUES IN SURGERY 1. Evidence-Based Surgical Practice Statistics Principles of research and clinical trials Critical evaluation of surgical innovations 2. Management Aspects of Surgical Practice Clinical audit Clinical governance 3. Non-technical Skills Situational awareness Decision-making Teamwork & Communication skills Leadership 4. Medico-legal Aspects of Surgery Avoidance and management of errors Medical ethics Medical negligence	3 2 3 2
V. CLINICAL MICROBIOLOGY 1. Surgical Microbiology Sources of surgical infection Surgically important microorganisms Pathophysiology of sepsis 2. Prevention of Infection Principles of asepsis and antisepsis Sterilisation and disinfection Modern Antibiotic Usage Commonly used antibiotics Selecting the right antibiotic Antibiotic resistance Blood-borne viruses Universal precautions Surgical precautions Immunisation Management of sharps injuries	4 4
VI. EMERGENCY MEDICINE AND MANAGEMENT OF TRAUMA 1. Pathophysiology of Trauma Shock and cardiovascular physiology Metabolic response to injury Adult respiratory distress syndrome (ARDS)	4

Initial Assessment of the Trauma Patient Principles of pre-hospital care Major incident triage Clinical assessment and scoring systems Resuscitation after trauma 2. Management of the Unconscious Patient Brain injuries Assessment and resuscitation of the comatose patient 3. Traumatic Wounds Principles of management Gunshot and blast injuries Stab wounds Human and animal bites 4. Management of Skin Loss The wound Skin grafts Skin flaps 5. Traumatic Oedema and Compartment Syndrome Pathogenesis and Physiology Diagnosis and treatment 6. Environmental Emergencies Hypothermia Heat exhaustion Management of a radiation incident	3 3 2 3 2
VII. PRINCIPLES OF SURGICAL ONCOLOGY 1. Epidemiology of Common Cancers 2. Screening Programmes Screening for cancer: breast, prostate, colorectal 3. Clinico-Pathological Staging of Cancer 4. Principles of Cancer Treatment Surgery Radiotherapy Chemotherapy Hormone therapy Immunotherapy Palliative Care	3