

**शहीद धर्मभक्त राष्ट्रिय प्रत्यारोपण केन्द्र**  
मानव अङ्ग प्रत्यारोपण विकास समिति, प्रविधिक सेवा, सर्जरी समूह, युरोलोजी उपसमूह, आठौं तह, सिनियर  
रजिष्ट्रार/रजिष्ट्रार (युरोलोजी) पदको खुला तथा आन्तरिक प्रतियोगितात्मक परीक्षाको पाठ्यक्रम  
एवं परीक्षा योजना

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- २००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- ३०

**प्रथम चरण (First Phase) : लिखित परीक्षा योजना (Written Examination Scheme)**

Paper	Subject	Marks	Full Marks	Pass Marks	No Questions & Weightage	Time Allowed
I	Management	25	100	40	5 × 5 = 25 (Short answer)	3.00 hrs
	General Health Issues & Related Legislations	40			4 × 5 = 20 (Short answer) 2 × 10 = 20 (Long answer)	
	Human Organ Donation & Transplantation	35			3 × 5 = 15 (Short answer) 2 × 10 = 20 (Long answer)	
II	Technical Subject (Urology & Transplant Surgery)		100	40	6 × 10 = 60 (Short answer) 2 × 20 = 40 (Long answer)	3.00 hrs

**द्वितीय चरण (Second Phase) : अन्तर्वार्ता (Interview)**

Subject	Full Marks	Examination
Interview	30	Oral

**द्रष्टव्य :**

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुन सक्नेछ ।
- प्रथम र द्वितीय पत्रको लिखित परीक्षा छुट्टाछुट्टै हुनेछ ।
- लिखित परीक्षामा सोधिने प्रश्नसंख्या र अङ्कभार यथासम्भव सम्बन्धित पत्र/विषयमा दिईए अनुसार हुनेछ ।
- विषयगत प्रश्नमा एउटा लामो प्रश्न वा एउटै प्रश्नका दुई वा दुई भन्दा बढी भाग (Two or more parts of a single question) वा एउटा प्रश्न अन्तर्गत दुई वा बढी टिप्पणीहरू (Short notes) सोध्न सकिनेछ ।
- प्रथम र द्वितीय पत्रमा प्रत्येक खण्ड (Section) को लागि छुट्टाछुट्टै उत्तरपुस्तिकाहरू हुनेछन् । उम्मेदवारले प्रत्येक खण्ड (Section) को प्रश्नको उत्तर छुट्टाछुट्टै उत्तरपुस्तिकामा लेख्नुपर्नेछ ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जुन सुकै कुरा लेखिएको भए तापनि पाठ्यक्रममा परेका कानून, ऐन, नियम, विनियम तथा नीतिहरू परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- पाठ्यक्रम स्वीकृत मिति :- २०८१/०८/०४

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**Paper I: General Subject**

**(Management, Human Organ Donation & Transplantation, General Health Issues & Related Legislations)**

**Section (A)**

Short Questions	5 Question × 5 Marks = 25 Marks	<b>25 Marks</b>
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**1. Management**

- 1.1 Management: concept, principles, functions, scope, role, level and skills of managers
- 1.2 Participative management: concept, advantages and disadvantages, techniques of participation
- 1.3 Time management: concept, advantages, and disadvantages
- 1.4 Conflict management: concept, approaches to conflict, levels of conflict, causes of conflict and strategies for conflict management
- 1.5 Stress management: concept, causes and sources of stress, techniques of stress management
- 1.6 Planning: concept, principles, nature, types, instrument and steps
- 1.7 Motivation: concept, theories of motivation, reason for low productivity, techniques of employee motivation
- 1.8 Leadership: concept, functions, leadership styles, leadership and management effectiveness
- 1.9 Coordination: concept, need, types, techniques & approaches of effective coordination
- 1.10 Communication: concept, communication process and barrier to effective communication, techniques for improving communication
- 1.11 Decision making: Importance, types, rational process of decision making, problem solving techniques, improving decision making
- 1.12 Fundamental principles of healthcare institution and hospital management

**Section (B)**

Short Question	4 Question × 5 Marks = 20 Marks	<b>40 Marks</b>
Long Question	2 Question × 10 Marks = 20 Marks	

**2. General Health Issues (25 Marks)**

- 2.1 Present Constitution of Nepal (health and welfare issues)
- 2.2 International health agencies: role and responsibilities of WHO, UNICEF, UNFPA and interagency relationships
- 2.3 Medical ethics
- 2.4 Indigenous and traditional faith healing and health practices
- 2.5 Supervision, types and its usage in health sector
- 2.6 Monitoring and evaluation system in health Sector
- 2.7 Health management information system
- 2.8 Health insurance and financing in health care
- 2.9 Effects of environment in public health: air pollution, domestic pollution, noise pollution
- 2.10 Importance of water, sanitation and hygiene in public health

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- 2.11 Effects of disaster in public health: deforestation, landslide, flood, earthquake & fire
- 2.12 Health volunteers' involvement in health service delivery
- 2.13 Counseling: concept, type, importance and its application in health service delivery

**3. Related Legislations (Policy, Act and Regulations) (15 Marks)**

- 3.1 National Health Policy, 2076
- 3.2 Human Organ Transplantation (Regulation and Prohibition) Act, 2055 with amendment
- 3.3 Human Organ Transplantation Regulations, 2073
- 3.4 Guidelines on medical treatment of deprived citizens program, 2080
- 3.5 Human Organ Transplant Development Committee Personnel Administration Rules, 2069 (मानव अंग प्रत्यारोपण विकास समिति कर्मचारी प्रशासन नियमवाली, २०६९)
- 3.6 Human Organ Transplant Development Committee Formation Order, 2068 (मानव अंग प्रत्यारोपण विकास समिति गठन आदेश, २०६८)
- 3.7 Health Workers and Health Institutions Security Act, 2066 & Health Workers and Health Institutions Security Regulation, 2069
- 3.8 Health Insurance Act, 2074
- 3.9 Health Service Act, 2053
- 3.10 Public Health Service Act, 2075

**Section (C)**

Short Question	3 Question × 5 Marks = 15 Marks	<b>35 Marks</b>
Long Question	2 Question × 10 Marks = 20 Marks	

**4. General Concept of Solid Organ Donation and Transplantation**

- 4.1 Basic Concept of Transplant Science
  - 4.1.1 Transplant immunology
  - 4.1.2 Basic terminology : autologous graft, syngeneic graft, allogeneic graft, xenogeneic graft, alloantigen, alloreactive, immune rejection
  - 4.1.3 Types of graft rejection : hyper acute rejection, acute cellular rejection, acute antibody mediated rejection, chronic rejection
  - 4.1.4 Immunosuppressant drugs used in organ transplantation
  - 4.1.5 Evaluation of donor and recipient and management
  - 4.1.6 Organ preservation and procurement
  - 4.1.7 Role of immunological test in transplantation : Human leucocyte antigen (HLA), Donor specific antibodies (DSA), Panel reactive antibodies (PRA), Complement dependent cytotoxicity (CDC) cross match, flow cross match
  - 4.1.8 Complications among organ transplant recipients and management
- 4.2 Concepts of Organ Donation and Transplantation Process
  - 4.2.1 Demand vs. supply gap in transplantation
  - 4.2.2 Health promotion and prevention of organ failure
  - 4.2.3 Organ failure, organ donation, transplant etc
  - 4.2.4 Organ recovery process

## शहीद धर्मभक्त राष्ट्रिय प्रत्यारोपण केन्द्र

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- 4.2.5 Organ donation process
- 4.2.6 Brain death donation: definition, declaration & management
- 4.2.7 Contraindication of transplantation in brain death donation
- 4.2.8 Hurdles in brain death donation program
- 4.2.9 Brain death, criteria for certifying brain death and tests to confirm diagnosis
- 4.2.10 Concept of circulatory death : donation after circulatory death (DCD), types, different from brain death donation
- 4.2.11 Allocation of Kidneys, Liver, Heart and Lungs in Deceased donor transplantation
- 4.2.12 Preservation and transportation of retrieved organs
- 4.3 History of organ transplantation in Nepal
- 4.4 Role, scope and importance of Shahid Dharmabhakta National Transplant Center in organ transplantation
- 4.5 Religion and culture in organ donation and transplantation

## 5. Ethical Issues in Organ Donation and Transplantation

- 5.1 Patient confidentiality and privacy legislation
- 5.2 Patient autonomy
- 5.3 Principles of informed consent and decision making
- 5.4 Next of kin designation
- 5.5 End of life decision making
- 5.6 Organ procurement for transplantation
- 5.7 Management and review of adverse events
- 5.8 Communication with families in crisis

**Paper II: Technical Subject  
(Urology & Transplant Surgery)**

**Section A**

Short Question	3 Question × 10 Marks = 30 Marks	<b>50 Marks</b>
Long Question	1 Question × 20 Marks = 20 Marks	

- 1. Embryology and surgical anatomy & Uro Dynamic (10 marks)**
  - 1.1 Embryology and surgical anatomy
    - 1.1.1 Kidney
    - 1.1.2 Ureter
    - 1.1.3 Adrenal gland
    - 1.1.4 Other retroperitoneal structures
    - 1.1.5 Development of testes and congenital defects
    - 1.1.6 Congenital defects in urology with special reference to hypospadias, epispadias
  - 1.2 Urological laboratory investigations and role of uro-dynamics in the assessment of various urological disorders
  - 1.3 Genito-Urinary Tract Disorders
    - 1.3.1 Symptoms and signs of disorders of genito-urinary tract
    - 1.3.2 Radiological investigation of urinary tract and retroperitoneal structures
    - 1.3.3 Disorders of testes, scrotum, spermatic cord and external genitalia
    - 1.3.4 Male fertility and erectile dysfunction
- 2. Renal physiology and pathophysiology (10 marks)**
  - 2.1 Reno vascular hypertension
  - 2.2 Ischemic nephropathy,
  - 2.3 Obstructive uropathy
  - 2.4 Acute and chronic renal failures
  - 2.5 Urinary tract obstruction: obstructive uropathy including benign prostatic hyperplasia and prostatic cancer
  - 2.6 Physiology and pharmacology in urinary bladder and urethra
  - 2.7 Infection and Inflammation of urinary tract
  - 2.8 Voiding functions and dysfunction
  - 2.9 Neurourological evaluation
  - 2.10 Neuromuscular dysfunction of lower urinary tract
- 3. Urolithiasis and Neoplasm of genitor urinary system (20 marks)**
  - 3.1 Concept of common urological problem and their approaches in
    - 3.1.1 Hematuria
    - 3.1.2 Obstructive uropathy

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3.1.3 Retention of urine

3.2 Neoplasm of genito-urinary system

3.2.1 Renal cell carcinoma (RCC)

3.2.2 Transitional cell carcinoma (TCC)

3.2.3 Cancer penis

3.2.4 Testicular tumors

3.2.5 Adrenal tumors

3.3 Radiotherapy and chemotherapy in urology

**4. Genito urinary trauma, Endourology, Laparoscopy and Robotic Surgery (10 marks)**

4.1 Genito urinary trauma

4.1.1 Renal trauma

4.1.2 Ureteric trauma

4.1.3 Bladder trauma

4.1.4 Urethral trauma

4.1.5 Penile trauma

4.1.6 Scrotal trauma

4.2 Concept of Endourology, Laparoscopy and Robotic Surgery

**Section B**

Short Question	3 Question × 10 Marks = 30 Marks	<b>50 Marks</b>
Long Question	1 Question × 20 Marks = 20 Marks	

**5. Renal replacement therapy & Organ donation**

**(10 marks)**

5.1 Renal replacement therapy

5.1.1 Principles of renal replacement therapy

5.1.2 Hemodialysis and complications

5.1.3 Vascular access for hemodialysis- pre-operative evaluation of patients, techniques for complicated access

5.1.4 Peritoneal dialysis (PD)

5.1.5 Intermittent peritoneal dialysis

5.1.6 Continuous ambulatory peritoneal dialysis

5.1.7 Evaluation of patients for peritoneal catheter placement

5.1.8 Complication in Peritoneal dialysis

5.1.9 Indication for removal of Peritoneal dialysis catheter

5.2 Organ donation and Kidney/Pancreas transplantation

5.2.1 Basic concept of organ donation and transplantation

5.2.2 Indications for kidney/ Pancreas transplantation, explain the different disease processes resulting in end-stage renal disease, and describe the treatment options.

5.2.3 Assessment and investigations of the donor and recipient undergoing renal and Pancreas transplantation.

- 5.2.4 Kidney and Pancreas transplant: surgical techniques, complications and managements
- 5.2.5 Acute rejection (antibodies mediated and cell mediated) of the transplanted kidney/ pancreas
- 5.2.6 Chronic rejection: Cause and management
- 5.2.7 Concept of immunology and commonly used drugs used in renal and Pancreas transplantation with their side effects, Complications and their management in a renal and pancreas transplant recipient (CMV infection, BK virus infection, PJP infection, UTI, Pneumonia, Tuberculosis)

**6. Immunology in Transplantation & tissue typing (10 marks)**

- 6.1 Immunology in Transplantation
  - 6.1.1 Introduction to immunology
  - 6.1.2 Defense mechanism of the body
  - 6.1.3 Antigen and antibody – types
  - 6.1.4 Hypersensitivity reaction –types
  - 6.1.5 Concepts of basic immunology such as rejection, and immunosuppression
- 6.2 Tissue Typing and cross matching
  - 6.2.1 Concept of blood/ tissue typing and cross-matching (Human Leucocyte Antigen (HLA), Panel Reactive Antibodies (PRA), Donor Specific Antibodies (DSA), Complement dependent cytotoxicity (CDC) cross match test)
  - 6.2.2 Indications and contraindications for tissue typing and cross-matching
  - 6.2.3 Transplantation in ABO incompatibility
  - 6.2.4 Transplantation in MHC incompatibility

**7. Kidney transplantation & Immunosuppression Therapy (20 marks)**

- 7.1 Living donor kidney transplantation
  - 7.1.1 Advantages of living donor kidney transplantation
  - 7.1.2 Selection and evaluation of potential living kidney donors
  - 7.1.3 Living kidney donors with medical comorbidities
  - 7.1.4 Living donor nephrectomy: Open and laparoscopic
  - 7.1.5 Long term risks after living kidney donation
  - 7.1.6 Psychological impact of donor nephrectomy
- 7.2 Expanded criteria donors, Paired exchange living donor kidney transplantation, Altruistic living donor kidney transplantation
- 7.3 Recipient Surgery
  - 7.3.1 Preparation of kidney transplantation recipient
  - 7.3.2 Surgical technique for renal transplantation
  - 7.3.3 Preparation of bed
  - 7.3.4 Bench surgery
  - 7.3.5 Revascularization and reconstruction of the urinary tract
  - 7.3.6 Transplantation in abnormal urinary bladder
  - 7.3.7 Perioperative care of kidney recipient
- 7.4 Kidney Preservation
  - 7.4.1 Principles of cold storage preservation
  - 7.4.2 Clinically used solutions

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- 7.4.3 Hypothermic machine perfusion and normothermic perfusion
- 7.4.4 Reperfusion injury
  
- 7.5 Post-up Management
  - 7.5.1 Immediate Post-Transplant Care after organ (Kidney and Pancreas) transplantation
  - 7.5.2 Immediate Post-Transplant Management
  - 7.5.3 ICU management
  - 7.5.4 Surgical and Medical Complications
  - 7.5.5 Prophylactic Regimen
  - 7.5.6 Medication teaching
  - 7.5.7 Signs and symptoms of infection and rejection
  - 7.5.8 Monitoring for infection, rejection and changes in medical status
  - 7.5.9 Follow up care post discharge
- 7.6 Immunosuppression therapy
  - 7.6.1 Management of Acute Cellular Rejection and Antibody Mediated Rejection
  - 7.6.2 Management strategies of acute cellular rejection
  - 7.6.3 Management strategies of antibody mediated (humoral) rejection
  - 7.6.4 Acute Tubular Injury of the transplanted kidney
- 7.7 Complications after Kidney and Pancreas transplantation
  - 7.7.1 Vascular and lymphatic complications
  - 7.7.2 Urological complications after kidney transplantation
  - 7.7.3 Infection
  - 7.7.4 Malignancy
  - 7.7.5 Neurological complications
- 7.8 Long term outcomes in kidney and pancreas recipients and quality of life
  - 7.8.1 Renal transplantation in children
  - 7.8.2 Access of transplantation
  - 7.8.3 Timing of transplantation
  - 7.8.4 Recurrence of primary disease
  - 7.8.5 Physical and sexual growth after kidney transplantation
- 7.9 Combined organ transplantation including liver and Pancreas transplant

**8. Brain death and cardiac death (10 marks)**

- 8.1 Donor criteria
- 8.2 Organ allocation criteria
- 8.3 Care of deceased donor
- 8.4 Physiology of brain death
- 8.5 Clinical examination of brain-dead donor and cardiac dead donor
- 8.6 Management of potential donor
- 8.7 Cadaveric nephrectomy
- 8.8 Renal preservation in brain death donor