

**शहीद धर्मभक्त राष्ट्रिय प्रत्यारोपण केन्द्र**  
नेपाल स्वास्थ्य सेवा, सर्जरी समूह, कार्डियाथोरासिक उपसमूह, सिनियर रजिष्ट्रार / रजिष्ट्रार आठौं (८) तहको  
प्रतियोगितात्मक परीक्षाको लागि 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	General Subject	Part I: Management	35	100	40	3 × 5 = 15 (Short answer) 2 × 10 = 20 (Long answer)	3.00 hrs
		Part II: General Health Issues	35			3 × 5 = 15 (Short answer) 2 × 10 = 20 (Long answer)	
		Part III: Human Organ Donation & Transplantation	30			3 × 10 = 30 (Long answer)	
II	Technical Subject			100	40	10 × 10 = 100 (Long answer)	3.00 hrs

**द्वितीय चरण (Second Phase)**

Subject	Full Marks	Examination
Interview	30	Oral

**द्रष्टव्य :**

- यो परीक्षा योजनालाई प्रथम चरण (लिखित परीक्षा) र द्वितीय चरण (अन्तर्वार्ता) गरी दुई चरणमा विभाजन गरिएको छ ।
- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ ।
- प्रथम र द्वितीय पत्रको लिखित परीक्षा छुट्टाछुट्टै हुनेछ ।
- परीक्षामा सोधिने प्रश्नसंख्या, अङ्क र अङ्कभार यथासम्भव सम्बन्धित पत्र/विषयमा तोकिए अनुसार हुनेछ ।
- प्रथम पत्रको Part I, Part II र Part III को लागि छुट्टाछुट्टै (Part I को लागि एउटा, Part II को लागि एउटा र Part III को लागि एउटा) उत्तरपुस्तिका हुनेछ भने द्वितीय पत्रको लागि प्रत्येक खण्डका लागि छुट्टाछुट्टै उत्तरपुस्तिकाहरू हुनेछन् । परीक्षार्थीले प्रत्येक खण्डका प्रश्नहरूको उत्तर सोही खण्डका उत्तरपुस्तिकामा लेख्नुपर्नेछ ।
- यस पाठ्यक्रममा जे सुकै लेखिएको भएतापनि पाठ्यक्रममा परेका ऐन, नियमहरू, परीक्षाको मिति भन्दा ३ महिना अगाडी (संशोधन भएका वा संशोधित भई हटाईएका वा थप गरी संशोधित भई कायम रहेका) लाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनोट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- पाठ्यक्रम लागू मिति :-

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**Paper I: General Subject**

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

**Part I: Management**

1. Management: - concept, principles, functions, scope, role, level and skills of managers
2. Hospital management
3. Participative management: concept, advantages and disadvantages, techniques of participation
4. Time management: concept, advantages, and disadvantages
5. Conflict management: concept, approaches to conflict, levels of conflict, causes of conflict and strategies for conflict management
6. Stress management: concept, causes and sources of stress, techniques of stress management
7. Leadership: concept, functions, leadership styles, leadership and management effectiveness
8. Coordination: concept, need, types, techniques, and approaches of effective coordination
9. Communication: concept, communication process and barrier to effective communication, techniques for improving communication

**Part II: General Health Issues**

1. Present Constitution of Nepal (health and welfare issues)
2. National Health Policy, 2071
3. International health agencies: role and responsibilities of WHO, UNICEF, UNFPA and interagency relationships
4. Medical ethics in general and its application
5. Indigenous and traditional faith healing and health practices
6. Supervision, types and its usage in health sector
7. Monitoring and evaluation system in health
8. Health management information system
9. Health insurance and financing in health care
10. Effects of environment in public health: air pollution, domestic pollution, noise pollution
11. Importance of water, sanitation and hygiene in public health
12. Effects of disaster in public health: deforestation, land slide, flood, earthquake and fire
13. Health volunteers involvement in health service delivery
14. Counseling: - concept, type, importance and its application in health service delivery

**Part III: Human Organ Donation and Transplantation**

1. General concept of solid organ donation and transplantation
  - 1.1 History of organ transplantation in Nepal
  - 1.2 Immunology and immunosuppressant drugs used in organ transplantation
  - 1.3 Complications among organ transplant recipients and management
2. Human Organ Transplant Act and Regulations
  - 2.1 Human Organ Transplantation (Regulation and Prohibition) Act- 2055
  - 2.2 Human Organ Transplantation (Regulation and Prohibition) Act- 2072
  - 2.3 Human Organ Transplantation Regulations- 2073
  - 2.4 Concept and practice of international rules and regulations on organ donation and transplantation
3. General knowledge about Shahid Dharmabhakta National Transplant Center

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**Paper II: Technical subject**

**Section (A): 40 %**

1. **Applied Anatomy and Developmental Anatomy** of the chest wall Diaphragm, Pleura, Lungs, Mediastinum, Oesophagus, Heart, Pericardium, Great Vessel and its branches.
2. **Applied Physiology** – Respiration, gas exchange, Pulmonary function tests, ventilation, Cardiac cycle, Cardiac output, heart sounds and murmurs, regional circulation, Extracorporeal Circulation Hypothermia, cardiac metabolism, Acid base balance, Fluid Electrolyte Balance, Gastro Oesophageal reflux.
3. **Applied Pathology**- Thoracic injuries, Chest wall tumours, mediastinal tumours. Pleural diseases, disorders of Trachea, Bronchus & lung / Pulmonary suppuration, pulmonary tuberculosis, benign & malignant lesions of lungs, benign and malignant lesions of Oesophagus, strictures & motility disorders of Oesophagus, Diaphragmatic hernia, diseases of Heart and great vessels, pulmonary embolism
4. **Applied Microbiology** – pulmonary infections, infective endocarditis; infections following cardiac & thoracic surgery.
5. **Pharmacology**: Knowledge of medicines used in this specialty.
6. **Cardiovascular Engineering**: Concept of flow, pressure gradients, heart as a pump, efficiency of heart and valves, hemodynamic assessment, prosthetic and bioprosthetic heart valves, extra corporeal circulation, hypothermia, IABP, ECMO, Ventricular assist devices, materials in cardiovascular application and biocompatibility, pacemakers, defibrillation, Automated Implantable Cardioverter Defibrillator (AICD).
7. **Critical Care Medicine**: The management of critically ill cardio-vascular & thoracic surgical patients in the pre and post-operative periods. Cardiac arrest, Cardiopulmonary and cardio cerebral resuscitation, Ventilators, cardiac monitors, Swan - Ganz catheter and cardiac output measurement, Inotropes, renal failure and dialysis.
8. **Imaging**: X-Ray, USG, CT Scan, MRI, CT-Angio, PET. Nuclear Medicine, Perfusion scan
9. **Cardiac surgery** : Congenital cardiac surgery, Heart valve surgery, coronary artery bypass surgery, paediatric and neonatal cardiac surgery, Re - Do cardiac surgery.
10. **General thoracic surgery** – Surgery of chest wall Diaphragm, Mediastinum, trachea and bronchus, pleura and lungs, Oesophagus, chest trauma, neonatal cardio vascular thoracic emergencies.
11. **Vascular surgery** – Surgery of great vessel, peripheral vascular surgery, disease of veins – varicose veins, DVT, vascular trauma.
12. **Cardiothoracic Trauma** : The assessment and management of patients with minor and major cardio-vascular & thoracic trauma.
13. **General Management of a Patient Undergoing Thoracic Surgery**
  - 13.1 Patient selection and determination of suitability for major thoracic surgery and the pre- and post-operative management of a thoracic surgical patient

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- 13.2 The assessment and management of a patient by bronchoscopy including foreign body retrieval
- 13.3 The assessment and management of a patient by mediastinal exploration. Competence in performing appropriate thoracic incisions
- 14. **Thoracic endoscopies** – Bronchoscopy (Rigid and Fibre optic), Oesophagoscopy (Rigid and Fibre optic), Mediastinoscopy.
- 15. **Cardiothoracic Anaesthesia** - Anaesthesia techniques, single lung anaesthesia, Paediatric and neonatal cardiac anaesthesia, Perioperative analgesia and sedation, intra operative TEE
- 16. **Cardiology:** Noninvasive – ECG, Echocardiography, Invasive – Cardiac Cath and Angiography.
- 17. **Detailed knowledge of Recent Advances in Cardiac Surgery** – Heart Transplant. Lung Transplant. Myocardial revascularization, Laser surgery. Robotic surgery – Computer Aided Surgical Development – Genetic Engineering, Cardiac Disease Treatment, Cloning, etc.
- 18. **Video assisted Thoracic Surgery** - Principle, Indications, Techniques and Complications
- 19. **Cardiopulmonary Bypass, Myocardial Protection and Circulatory Support**
  - 19.1 The management of a patient undergoing cardiopulmonary bypass
  - 19.2 The management of myocardial protection during cardiac surgery
  - 19.3 The management of a patient requiring circulatory support

**Section (B): 40 %**

- 20. **Ischaemic Heart Disease**
  - 20.1 The assessment and management of patients with coronary heart disease, including elective and emergency presentations
  - 20.2 off pump and on pump strategies and arterial revascularization
  - 20.3 The preliminary assessment and initial management of patients with complications of myocardial infarction, including mitral regurgitation, aneurysm and septal defects
- 21. **Heart Valve Disease**
  - 21.1 The assessment and management of patients with valvular heart disease; including both isolated and combined aortic and mitral valve disease. The assessment and management of patients with combined coronary and valvular heart disease, including operative management.
- 22. **Aortovascular Disease**
  - 22.1 The preliminary assessment and initial management of patients with acute dissection of the ascending aorta.

**23. Neoplasms of the Lung**

23.1 The assessment and management of lung cancer, including the scientific basis of staging systems and techniques used in the determination of stage and fitness for surgery. Role of surgical treatment in the multidisciplinary management of lung cancer and other intrathoracic malignant diseases, including an appreciation of the principles of other treatment modalities and their outcomes

**24. Disorders of the Pleura**

24.1 The assessment and management of patients with pleural disease; including pneumothorax and empyema, and including both VATS and open strategies.

**25. Disorders of the Chest Wall**

25.1 The assessment and management of patients with chest wall abnormalities, infections and tumors.

**26. Disorders of the Diaphragm**

26.1 The assessment and management of patients' disorders of the diaphragm, including trauma to the diaphragm.

**27. Emphysema and Bullae**

27.1 The assessment and management of patients with emphysematous and bullous lung disease; including surgical management if appropriate and utilizing both VATS and open strategies.

**28. Disorders of the Pericardium**

28.1 The assessment and management of patients with disorders of the pericardium and pericardial cavity; including surgical management if appropriate and utilizing both VATS and open strategies.

**29. Disorders of the Mediastinum**

29.1 The assessment and management of patients with mediastinal tumours and masses; including surgical management if appropriate and utilising both VATS and open strategies.

**30. Disorders of the Airway**

30.1 The assessment and management of patients with disorders of the major airways. Including operative management in suitable cases.

**31. Dialysis access surgery**

31.1 Principles of dialysis access surgery, Creation of AF fistula, management of AV fistula related complications, Use of vascular grafts and tunneled long term dialysis catheters

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32. **Vascular emergency**

32.1 Principles of management of vascular emergencies, Thrombectomy and peripheral bypass

33. **Vascular aneurysm**

33.1 Principles of management of abdominal aortic aneurysm, Aneurysm surgery, endovascular interventional surgery for AAA, peripheral aneurysms

34. **Peripheral arterial diseases**

34.1 Diagnosis and management of peripheral arterial disease, open and endovascular management, Management of complications, Optimal medical therapy

**Section (C): 20 %**

35. **Organs (Kidney, Liver, Pancreas and others) donation and transplantation**

35.1 Basic concept of organ donation and transplantation

35.2 Assessment and investigations of the donor and recipient undergoing heart transplantation

35.3 Concept of immunology and commonly used drugs used in heart transplantation with their side effects

35.4 Complications and their management in a heart transplant recipient