

**Paper**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Marks</th>
<th>Full Marks</th>
<th>Pass Marks</th>
<th>No. Questions &amp; Weightage</th>
<th>Time Allowed</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Subject</td>
<td></td>
<td>35</td>
<td>100</td>
<td>40</td>
<td>3 × 5 = 15 (Short answer)</td>
</tr>
<tr>
<td>Part I: Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 × 10 = 20 (Long answer)</td>
</tr>
<tr>
<td>Part II: General Health Issues</td>
<td></td>
<td>35</td>
<td></td>
<td></td>
<td>3 × 5 = 15 (Short answer)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 × 10 = 20 (Long answer)</td>
</tr>
<tr>
<td>Part III: Human Organ Donation &amp; Transplantation</td>
<td></td>
<td>30</td>
<td></td>
<td></td>
<td>3 × 10 = 30 (Long answer)</td>
</tr>
<tr>
<td>II</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technical Subject</td>
<td></td>
<td>100</td>
<td>40</td>
<td></td>
<td>10 × 10 = 100 (Long answer)</td>
</tr>
</tbody>
</table>

**Second Phase**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Full Marks</th>
<th>Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interview</td>
<td>30</td>
<td>Oral</td>
</tr>
</tbody>
</table>

**Rule:**

1. यस पाठ्यक्रम योजनालाई प्रथम चरण (लिखित परीक्षा) र द्वितीय चरण (अन्तर्वार्ता) गरी दुई चरणमा विभाजन गरिएको छ।
2. लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा अन्य भाषालाई अनुसार हुनेछ।
3. प्रथम र द्वितीय पक्षको लिखित परीक्षा छात्रहरूको हुनेछ।
4. परीक्षामा संबंधित प्रश्नसूची, भज र अभिमान यथासम्मवेत सम्बन्धित पत्र/विषयमा तोक्का अनुसार हुनेछ।
5. प्रथम पक्षको Part I, Part II र Part III को लागि छात्रहरूको हुनेछ (Part I को लागि एउटा, Part II को लागि एउटा र Part III को लागि एउटा)। उत्तरपुस्तिका हुनेछ भने द्वितीय पक्षको लागि प्रथेक खण्डका लागि छात्रहरूको उत्तरपुस्तिकाहरू हुनेछ। परीक्षा आयतन तथा प्रथेक खण्डका प्रघनहरूको उत्तर संकेत खण्डका उत्तरपुस्तिकामा लेखिएका हुनेछ।
6. यस पाठ्यक्रममा जै माहिती लेखिएका भएका पाठ्यक्रममा परेका ऐन, नियमहरू, परीक्षाको संबंधित प्रश्नमा मिति भन्दा ३ महिना संगाइकी (संशोधन भएका र संशोधित भएका हटाइएका, बि थप गरी संशोधित भई कायम रहेका) जरूरी यस पाठ्यक्रममा परेका सम्बन्धित पर्दछ।
7. प्रथम चरणको परीक्षावाट छात्रहरूको उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराउनेछ।
8. पाठ्यक्रम लागू भएका हुनेछ।
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
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.


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 Cardiovertor 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 cerebral resuscitation, Ventilators, cardiac monitors, Swan-Ganz catheter and cardiac output measurement, ionotropes, 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.


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.
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
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 utilising 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.
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