



**MEHRAN UNIVERSITY  
INSTITUTE OF SCIENCE, TECHNOLOGY &  
DEVELOPMENT (MUISTD)  
JAMSHORO**

**For Admission in PhD in Science, Technology and Innovation Policy (STIP)**

This entry test is designed on the HEC – NTS Graduate Assessment Test (GAT – Subject for PhD programs) pattern. The format of MUET – GAT Subject Test is as follows:

Subject Knowledge (MCQs)	= 80 marks
Essay Writing	= 20 marks
Total Marks	= 100
Passing Score	= 70 marks
Total Test Time	= 120 Minutes (02 Hours)

**Test Contents:**

**Essay Writing:** 20 % of the total test; **Subject Knowledge** = 80 % of the Total Test  
Essay writing judges the writing skills of the candidate. The essay is of approximate length of 1500 words (3-4 paragraphs). The essay topics relate to the contemporary national/international socio-economic issues that seek the micro and macro-level solutions through science, technology and innovation policies.

<b>Subject Section: STIP (80 % of the Total Test)</b>		
<b>Sr. No.</b>	<b>Core Areas</b>	<b>Percentage</b>
1.	Theoretical Concepts: Science, Technology and Innovation	10%
2.	Innovation Systems	10%
3.	Sustainable Development &SDGs	10%
4.	Science, Technology and Innovation Indicators	10%
5.	STI Capacity Building	15%
6.	Principles of Public Policy	15%
7.	Methods and Skills for STI studies	15%
8.	STI structure in Pakistan	15%
	Total	100%

<b>STIP (Detailed)</b>		
<b>Sr. No.</b>	<b>Core Areas</b>	<b>Percentage</b>
<b>1.</b>	<p><b><u>Theoretical Concepts: Science, Technology and Innovation</u></b></p> <p><b>1.1 Science:</b> Sociological Perspective on Science and Technology, Information and Knowledge</p> <p><b>1.2 Technology:</b> Technology Life Cycle, Technology Development Trajectory</p> <p><b>1.3 Innovation:</b> Schumpeter's theories, Invention, Technology and Innovation System</p>	<b>10%</b>
<b>2.</b>	<p><b><u>Innovation System:</u></b></p> <p><b>2.1 Knowledge Systems:</b> Epistemology of Knowledge, Knowledge Generation and Exploitation Subsystems, Government Policies</p> <p><b>2.2 Innovation System Theories:</b> STI Governance, Constituents of Innovation System, Linkages among Institutes of Innovation System, Models of Innovation Systems (i.e. Japan, Brazil, USA, Ecosystem for entrepreneurship).</p> <p><b>2.3 Triple Helix Model (UIG model):</b> R&amp;D collaboration programs, Public policies for UIG</p>	<b>10%</b>

3.	<p><b><u>Sustainable Development &amp; SDGs:</u></b></p> <p><b>3.1 Economic Development</b> Economic policies, Micro/Macro Economic Indicators, Demand and Supply, Fiscal &amp; Monetary Policies</p> <p><b>3.2 Social Development:</b> Social Inclusion to achieve development indicators (i.e. health, poverty, education, unemployment...), Political Economy.</p> <p><b>3.3 Environmental Development:</b> Environmental policy instruments, Environmental Risks and Hazards, Industrial Structure, Environmental Degradation</p>	10%
4.	<p><b><u>Science, Technology and Innovation Indicators:</u></b></p> <p><b>4.1 Input indicators:</b> Public and Private R&amp;D expenditures, Indigenous Technological Capabilities Development, GERD and BERD</p> <p><b>4.2 Output indicators:</b> Public and Private R&amp;D, Patents, Publications, Number of Researchers, Engineers, Scientists.</p>	10%
5.	<p><b><u>STI Capacity Building:</u></b></p> <p><b>5.1 Technology:</b> Foreign Technology Transfer, Indigenous Technological Capabilities Development, imitation and innovation</p> <p><b>5.2 STI Human Resource:</b> STI Human Resource Pyramid, National Capacity</p>	15%
6.	<p><b><u>Principles of Public Policy</u></b></p> <p><b>6.1 Concepts:</b> Types of Public Policies, Level of Public Policies, Actors and instrument of Public Policy.</p> <p><b>6.2 Policy Cycle:</b> Agenda Setting, Policy Formation, Adoption, Implementation, Evaluation</p>	15%
7.	<p><b><u>Method and Skills for STI studies:</u></b></p> <p><b>7.1 Data Science:</b> Science and Technology Indicators, International indexes for assessment of S&amp;T, Evidence Generation for Policy</p>	15%

	<p>Development, Institutes dealing Data (e.g. PASTIC, National and Provincial Bureau of Statistics (PBS), International Science Council (ISC)), ICT Strategies &amp; Policies</p> <p><b>7.2 Quantitative and Quantitative Techniques:</b> Statistical Methods, Policy Analysis and Evaluation using Quantitative and Qualitative Analysis Techniques.</p>	
<b>8.</b>	<p><b><u>STI Structure of Pakistan:</u></b></p> <p><b>8.1 National S&amp;T :</b> Historical Perspective of S&amp;T Policies, Policy Institutes (i.e. PCST, PSF), S&amp;T Institutes (i.e. research labs, councils, standards and quality), Governance</p> <p><b>8.2 Provincial S&amp;T:</b> Provincial Dept. of S&amp;T, Policy Instruments, Strategies &amp; Plans, Advisory System</p> <p><b>8.3 Evolution of S&amp;T:</b> S&amp;T institutes, International Collaboration in STI</p>	<b>15%</b>
	<b>Total</b>	<b>100%</b>