INDIAN STATISTICAL INSTITUTE
Bangalore Centre
8th Mile, Mysore Road, Bengaluru - 560 059

Serial No. ....

Date. ....

(To be filled by CPC)

Requisition Form for Procurement of Goods or Services

PART I

(Financial Approval)

(Part - II should also be filled in before forwarding to the Competent Authority for approval)

1.   Name of Unit/Division. **Theoretical Statistics and Mathematics Unit** (SMU)

2.   Summary of items to be procured.

Serial No.	Item Description with specifications (in brief)	Quantity	Estimated total cost (inclusive of all taxes and charges applicable)	Objective
1.	High-performance workstation: i. Processor Generation - 12 or above ii. CPU - at least 16 cores, Intel Core i9 12900K iii. RAM - at least 64 GB, DDR4 iv. GPU - at least 16 GB memory (NVIDIA RTX series) v. Storage space - at least 2 TB	1	**₹3,90,000/-**	Fresh purchase

3.   Justification for procurement[1] (**Mandatory**. Attach extra sheets if required.)

Item No.	Justification
1.	The high-performance workstation is required to develop and test algorithms for the analysis of biomedical data, in the context of the proposed project for the Start-Up Grant. NVIDIA RTX series GPU's are needed to run/develop various machine learning algorithms.

(Please check attached sheets for a more detailed justification of the item specifications.)

4.   Mode of Purchase: □ Through GeM   □ Through e-procurement[2]   □ Through e-publishing

5.   Budget Details.

Financial Year: **2023-24**	A/c No.: **4320A**	Expense Type: **Capital**
Funding Source: **ISI Start-Up Grant**		
Amount allocated: **₹4,74,000/-**	Amount proposed for current requisition: **₹3,90,000/-**	
Amount spent/committed : **₹3,90,000/-** (including proposed one)	Balance: **₹84,000/-**	

Date: August 16, 2023   Signature of Project Leader:

Name: **Nama Upanama**
Phone No.: (+91) 41734 01734
Email address: `emailid@provider.com`

Recommendation by Head of Division/CE(A&F):
(if it is to be approved by Director/Deputy Director)

Approval of Competent Authority:
(Director/Deputy Director/Head of Division/Unit/CE(A&F))

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[1]In case of replacement/buy-back, mention details of existing item(s) to be exchanged, including date of purchase and accession number.
[2]Make sure goods or service to be procured is or is not available in GeM.

Justification for workstation specifications:

1. RAM requirements (at least 64 GB)– Genome alignment software such as STAR use upwards of 50 GB of RAM to store indexes created from the reference genome as preparation for alignment of RNA-Seq reads. This is a routine task in bioinformatics.

2. Storage requirements (at least 2 TB) – In a typical RNA-Seq dataset, the aligned files (SAM format) can be as big as 30 GB per sample. In a standard experiment with say 12 samples, this would amount to about 360 GB in a single run.

3. CPU requirements (at least 16 cores) – Many tasks in bioinformatics can take from several hours to several days to run. In order to reduce runtime, wherever possible, parallelization is encouraged. Having multiple cores in the CPU enables parallelization of tasks.

4. GPU requirements (at least 16 GB) – GPU's are optimized for training artificial intelligence and deep learning models as they have larger number of ALU (arithmetic-logic unit) cores and can process multiple computations simultaneously. Since computations in deep learning need to handle large amounts of data, the GPU's memory bandwidth becomes essential. Since I intend to study various deep learning algorithms used in genomics and proteomics with a view towards explainability via theoretical models, I want to be able to run these algorithms smoothly.

To supplement the justification given above, a summary of the project proposal for the Start-Up Grant is also attached.

The specifications of the desktop computer that is temporarily provided by the Stat-Math Unit (primarily for office purposes) are not sufficient to implement the proposed research project.

Signature:

Date: August 16, 2023