सत्यमेव जयते

GOVERNMENTOF PUDUCHERRY

Puducherry e-Governance Society (PeGS)
(A society under Directorate of Information Technology, Government of Puducherry)

Information Technology Manual
for
Procurement of Desktop / Laptop / Printer / Scanner / UPS
Government of Puducherry

Version 1.0.0

Puducherrye-Governance Society
505, II Floor, PRD Complex,
KamarajSalai,Saram,
Puducherry – 605 013.
TelNo:+91-0413-2246090

Email:dit@py.gov.in
Website: https://py.gov.in

DISCLAIMER

All information contained in this Technical Specifications Guide provided/ clarified is in good interest and faith. The information published in this document is not intended to be exhaustive.

Puducherry e-Governance Society (A society under Directorate of Information Technology, Government of Puducherry) reserves the right to this Technical Specifications Guide document.

The information prepared and provided in this document is applicable to all Government Organizations, Government aided Academic Institutions, Universities, Boards / Undertakings, Societies, Committees, Government departments, PSU's solely used for understanding orused for procurement purpose. Distributing, or Publishing information without concern department knowledge is not allowed as the Information provided in this document - Technical specifications, subjected to copyrights of Puducherry e-Governance Society under Directorate of Information Technology, Puducherry.

Document Control

Sl. No.	Document Version	Authors	Description	Release Date	Remarks(Yearly / Need basis)
1	V 1.0.0	M S Yuvaraj, Sr. Consultant, SeMT, NeGD	The Competent authorities practice for detailed IT procurement methodology with Technical specifications guidelines framed by categorizing Work and Utilization of the devices under different Segments to support the procurement of the required devices like Desktop / Laptop/ Printer / Scanner / UPS in the Government of Puducherry.	20-01-2025	First Document Release

Document Approval

Sl. No.	Document Approver	Approver Designation	Approver E-mail ID
1.	Mr. ShivrajMeena	Director (IT) – cum – Convenor (PeGS)	directorit@py.gov.in
2.			

Note:This document is drafted using version control and adopts version in numerical values (Versions V 1.0.0). Revisions will be made to update technical information,correct errors, or make other changes that are necessary to improve the document.

Version change for this document will happen based on the following changes.

1. Revision in IT hardware Asset Price range**(Page 33)**
2. Revision in the IT hardware Asset Technology
3. Revision in Hardware Features / Hardware Obsolete
4. Any Typo error.

Preface

1. **Compliance:**This Manual adheres to the relevant laws, GFR, and clarifications/ OMs issued by the Procurement Policy Division, Department of Expenditure, Ministry of Finance ('the Ministry') up to June 2024. In case of inconsistencies between this Manual and prevailing law or GFR, the extant law and GFR shall prevail.
2. **Instructions:**

a) This Information Technology Manual for Procurement of devices like Desktop, Laptop, Printer, Scanner and UPS provides the methodology to identify the relevant device procurement based on the work and usage. Hence, this manual comes under the internal practice creation for the competent authority to ensure "what, why and How" the decision points to be taken during procurement.

b) All information'sin this document is purely related to competent authorities practice for learning and execute practice internal to the organization. **Only the Technical specifications which is relevant to be mentioned during the tender or procurement portal.**

Glossary

Sl.No.	Abbreviation	Full Form
1.	3D	3 Dimension
2.	AC	Alternating Current
3.	Ah	Ampere-hour
4.	AI	Artificial Intelligence
5.	AMC	Annual Maintenance Cost
6.	AMD	Advanced Micro Device
7.	ATC	Additional Terms and Conditions
8.	AutoCAD	Automatic Computer-Aided Design
9.	AVR	Automatic Voltage Regulator
10.	BA	Business Analysis
11.	BE	Business Estimation
12.	BIS	Bureau of Indian Standards
13.	BEE	Bureau of Energy Efficiency
14.	BMP	Bitmap
15.	CAD	Computer-Aided Design
16.	CCD	Charge Coupled Device
17.	CIS	Contact Image Sensor
18.	CMYK	Cyan, Magenta, Yellow, and Key(black)
19.	CPM	Critical Path Method
20.	CPU	Central Processing Unit
21.	dB	Decibel
22.	DDR4	Double Data Rate Fourth Generation
23.	DevOps	Development and Operation
24.	DIMM	Dual In-line Memory Module
25.	DIT	Directorate of Information Technology
26.	Dpi	Dots Per Inch
27.	DVD	Digital Video Disc
28.	EDR	Endpoint Detection and Response
29.	e-HRMS	Electrical Human Resource Management System
30.	EPEAT	Electronic Product Environmental Assessment Tool
31.	EPR	Extended Producer Responsibility
32.	ERP	Enterprise Resource planning
33.	FAQ	Frequently Asked Questions
34.	FCC	Federal Communications Commission
35.	GB	Gigabyte
36.	GeM	Government e-Market
37.	GHz	Gigahertz
38.	GIF	Graphics Interchange Format
39.	GO	Government Order
40.	GPU	Graphics Processing Unit
41.	GST	Goods and Service Tax
42.	HD	High Definition
43.	HDD	Hard Disk Drive
44.	HDMI	High-Definition Multimedia Interface
45.	Hz	Hertz
46.	ICC	International Color Consortium
47.	IDF	Integrated Development Environment
48.	IEC	International Electro technical Commission
49.	ISO	International Organization for Standardization
50.	IT	Information Technology
51.	JPEG	Joint Photographic Experts Group

52.	**KVA**	kilovolt-amperes
53.	**LAN**	Local Area Network
54.	**LCD**	Liquid Crystal Display
55.	**LED**	Light Emitting Diode
56.	**LTSC**	Long-Term Servicing Channel
57.	**MATLAB**	Matrix Laboratory
58.	**MBPS**	Megabits Per Second
59.	**MF**	Multifunction Printer
60.	**MHz**	Megahertz
61.	**MIS**	Management Information System
62.	**MS**	Microsoft
63.	**MTS**	Multifunctioning Task Staffs
64.	**NCT**	National Capital Territory
65.	**nm**	Nanometer
66.	**NVMe**	Non-Volatile Memory Express
67.	**OCR**	Optional Character Recognition
68.	**OEM**	Original Equipment Manufacturer
69.	**OS**	Operating System
70.	**PC**	Personal Computer
71.	**PCL**	Printing Control Language
72.	**PDF**	Portable Document Format
73.	**PeGS**	Puducherry e-Governance Society
74.	**PMU**	Project Management Unit
75.	**PNG**	Portable Network Graphics
76.	**PPM**	Pages Per Minute
77.	**PSU**	Power Supply Unit
78.	**PSU's**	Public Sector Undertakings
79.	**RAM**	Random Access Memory
80.	**RFP**	Request for Proposal
81.	**RGB**	Red, Green, Blue
82.	**RoHS**	Restriction of Hazardous Substances
83.	**RTX**	Ray Tracing Texel Extreme
84.	**RJ**	Registered Jack
85.	**SCM**	Supply Chain Management
86.	**SeMT**	State e-Governance Mission Team
87.	**SNMP**	Simple Network Management Protocol
88.	**SPSS**	Statistical Package for Social Science
89.	**SQL**	Structured Query Language
90.	**SSD**	Solid State Drive
91.	**TB**	Terabyte
92.	**TIFF**	Tagged Image File Format
93.	**TWAIN**	Technology Without an Interesting Name
94.	**UHD**	Ultra-High Definition
95.	**UPS**	Uninterrupted Power Supply
96.	**USB**	Universal Serial Bus
97.	**UX/UI**	User Experience/ User Interface
98.	**VC**	Virtual Call
99.	**VGA**	Video Graphics Array
100.	**VM**	Virtual Machine
101.	**VR**	Virtual Reality
102.	**Wi-fi**	Wireless Fidelity
103.	**XPS**	XML Paper Specification

IT Procurement Manual - Major Topics

The Information Technology procurement manual has been prepared and covered under the following major topics for easy understanding purpose.

Sl.No.	Major Topics	Page No.
	Preface	04
1	Introduction	10
2	Knowledge Area	13
3	Methodology of Procurement	20
4	Market Analysis	33
5	Technical Specifications of Devices	38
6	General IT Asset Management – Procurement / Procedures / Policies	54
7	Conclusion	59
8	Frequently Asked Questions	61
9	Annexures	64

Table of Contents

PREFACE 4

1. INTRODUCTION 10

1.1. PROCUREMENT CONCERN BASED ON THE EXISTING METHODOLOGY 10

1.2. PROBLEM STATEMENT 11

1.3. SOLUTION STATEMENT 13

2. KNOWLEDGE AREA 13

2.1. APPLICATION SOFTWARE 13

2.2. CENTRAL PROCESSING UNIT (CPU) 14

2.3. INTEL CORE PROCESSOR 15

2.4. AMD CORE PROCESSOR 17

2.5. INTEL VS. AMD COMPARISON 18

2.6. HARD DISK VS SOLID STATE DRIVE (SSD) 19

3. METHODOLOGY FOR PROCUREMENT 19

3.1. THE DESKTOP/ LAPTOP MANUFACTURING IS BROADLY CATEGORIZED INTO FOUR SECTORS: 19

3.2. OPERATIONAL REQUIREMENTS 23

3.3. CONSOLIDATED EMPLOYEES SEGMENTATION BASED ON "WORK, UTILIZATION AND MOBILITY" 26

3.3.1. SEGMENT-I VS ENTRY-LEVEL VS MOBILITY 26

3.3.2. SEGMENT-II VS MID-LEVEL VS MOBILITY 26

3.3.3. SEGMENT-III VS HIGH-LEVEL VS MOBILITY 26

3.3.4. EXCEPTIONAL CASES: OPERATIONAL SUPPORT 27

3.3.5. CONCLUSION ON PROCUREMENT PROCEDURE 27

3.4. PREPARATION OF PROCUREMENT DEVICES BASED SEGMENT WISE SOFTWARE / APPLICATIONS USAGE BASED ON MOBILITY 28

3.4.1. CLAUSE ALLOWED: 29

3.5. AVERAGE COST REDUCTION 29

3.6. COMPETENT AUTHORITY PRACTICE 29

4. MARKET ANALYSIS 33

4.1. MAKE-IN-INDIA – MARKET PRICE 33

4.1.1. DISCLAIMER 33

4.2. STANDARD BRANDS – MARKET PRICE RANGE 34

4.2.1. SEGMENT-I DESKTOP PRICE RANGE 34

4.2.2. SEGMENT-II DESKTOP PRICE RANGE 34

4.2.3. SEGMENT-II LAPTOP PRICE RANGE 35

4.2.4. SEGMENT-III DESKTOP PRICE RANGE 35

4.2.5. SEGMENT-III LAPTOP PRICE RANGE 36

4.3. CONSOLIDATED AVAILABLE MARKET PRICE – DESKTOP / LAPTOP 37

5. TECHNICAL SPECIFICATIONS – DESKTOP / LAPTOP ..... ERROR! BOOKMARK NOT DEFINED.

5.1. SEGMENT – I - DESKTOP TECHNICAL SPECIFICATIONS ..... ERROR! BOOKMARK NOT DEFINED.

5.2. SEGMENT – II - DESKTOP TECHNICAL SPECIFICATIONS ..... ERROR! BOOKMARK NOT DEFINED.

5.3. SEGMENT – II - LAPTOP TECHNICAL SPECIFICATIONS ..... ERROR! BOOKMARK NOT DEFINED.
5.4. SEGMENT – III - DESKTOP TECHNICAL SPECIFICATIONS ..... ERROR! BOOKMARK NOT DEFINED.
5.5. SEGMENT – III - LAPTOP TECHNICAL SPECIFICATIONS ..... ERROR! BOOKMARK NOT DEFINED.
5.6. TECHNICAL SPECIFICATIONS – PRINTER ..... ERROR! BOOKMARK NOT DEFINED.
5.6.1. TECHNICAL SPECIFICATIONS – A4 – INK TANK MF PRINTER ..... ERROR! BOOKMARK NOT DEFINED.
5.6.2. TECHNICAL SPECIFICATIONS – A4 LASER JET TANK MF PRINTER ..... ERROR! BOOKMARK NOT DEFINED.
5.6.3. TECHNICAL SPECIFICATIONS – A3 MONO LASER PRINTER ..... ERROR! BOOKMARK NOT DEFINED.
5.7. TECHNICAL SPECIFICATIONS - SCANNER ..... ERROR! BOOKMARK NOT DEFINED.
5.7.1. TECHNICAL SPECIFICATIONS - FLAT FED SCANNER ..... ERROR! BOOKMARK NOT DEFINED.
5.7.2. TECHNICAL SPECIFICATIONS - SHEET FED SCANNER: ..... ERROR! BOOKMARK NOT DEFINED.
5.8. TECHNICAL SPECIFICATIONS – UNINTERRUPTED POWER SUPPLY (UPS) .... ERROR! BOOKMARK NOT DEFINED.
5.8.1. TECHNICAL SPECIFICATIONS - MODEL: 0.5 KVA LINE-INTERACTIVE UPS ERROR! BOOKMARK NOT DEFINED.
5.8.2. TECHNICAL SPECIFICATIONS - MODEL: 1KVA ONLINE DOUBLE CONVERSION UPS ERROR! BOOKMARK NOT DEFINED.
5.8.3. TECHNICAL SPECIFICATIONS - MODEL: 3 KVA ONLINE UPS ..... ERROR! BOOKMARK NOT DEFINED.
5.8.4. TECHNICAL SPECIFICATIONS - MODEL: 5 KVA ONLINE UPS ..... ERROR! BOOKMARK NOT DEFINED.
5.8.5. TECHNICAL SPECIFICATIONS - MODEL: 6KVA ONLINE UPS ..... ERROR! BOOKMARK NOT DEFINED.
5.8.6. TECHNICAL SPECIFICATIONS - MODEL: 10KVA ONLINE UPS ..... ERROR! BOOKMARK NOT DEFINED.
6. GENERAL IT ASSET MANAGEMENT – PROCUREMENT / PROCEDURES / POLICIES **38**
6.1. IMPORTANT FACTORS TO BE CONSIDERED DURING PROCUREMENT **53**
6.2. CHANGE OF ASSET **54**
6.3. WARRANTY **54**
6.4. DECOMMISSIONING **56**
6.5. DATA SECURITY ON DECOMMISSIONED COMPUTERS **56**
6.6. QUANTITY-BASED PROCUREMENT **56**
7. CONCLUSION **58**
8. FREQUENTLY ASKED QUESTIONS – FAQ'S **60**
9. ANNEXURES **63**
9.1. ANNEXURE- I- GUIDELINES FOR ANNUAL MAINTENANCE CONTRACT – AMC **63**
9.2. ANNEXURE – II: GOVERNMENT E-MARKET PLACE (GEM) **64**
9.3. ANNEXURE – III: GUIDELINES FOR CONDEMNATION & DISPOSAL OF IT EQUIPMENT(S) **67**
9.4. ANNEXURE – IV MODEL PROCUREMENT EXERCISE **68**

Manual
for
Procurement of Desktop / Laptop / Printer / Scanner / UPS

1. Introduction

IT assets (especially computers, printers, and scanners) are widely used in India across different industries, especially in government and business sectors handling massive data processes. IT assets help to improve work efficiency, simplify tasks, and support digital progress. In government, department users/officials aid in administrative functions, data handling, and offering services to citizens, while in business, they are essential for communication, productivity, and automation. These devices play a key role in digital initiatives like e-Governance and help organizations/companies manage their operations more effectively, leading towards **Digital India**.

In government organizations, computers are indispensable for a variety of administrative tasks:

- **Administrative Tasks**: They are used to create official documents, reports, and correspondence while also helping with the digital organization of records. Tools like *e-Office* automate workflows by facilitating document filing, tracking approvals, and internal communications, enhancing efficiency and reducing manual effort.
- **Data Management**: Computers handle the storage and processing of large datasets across sectors such as health, education, finance and other sectors. They are integral to systems like *Management Information Systems* (MIS), which track program performance, financial transactions, and public health metrics, enabling better decision-making.
- **Service Delivery**: One of the key area in executing e-Governance initiatives is achieving the Service Delivery. Computers plays a vital role in supporting the processing of requests for government services, such as issuing certificates, managing online portals, and resolving grievances. This digital approach streamlines the service delivery and ensures transparency.
- **Research and Development**: In research and development, computers are used to analyze data, run simulations, and access research databases. These tools are essential in shaping policies and the innovations in various sectors like healthcare, agriculture, satellite communications, aviation industry, the Air force, etc.
- **Surveys**: Computers are used to cover maps showing hills, rivers, towns, villages, forests etc., and are prepared using surveying techniques. Also for planning and estimating new engineering projects like water supply and irrigation schemes, mines, railroads, bridges, transmission lines, buildings etc., surveying is required.

1.1. Procurement concern based on the existing methodology

The government has observed that departments / boards/ corporate/ state government organizations are facing issues while procuring desktops/laptops due to repeated launching/availability of new

generations of processors, hardware upgrades with new features, and other electronic systems in the market. It has also been noticed that to meet the industry standards with current availability, various government departments lack full knowledge with respect to specifications and prices of multiple types of brandsavailable in the laptop and desktop market while performing the procurement. The Chief Secretary, Government of Puducherry, directed the Puducherry e-Governance Society (PeGS) – Directorate of Information Technology (DIT), Puducherry, to prepare a detailed technical Specifications guide for the procurement of desktop/laptop/printer/scanner/UPS accounting multiple new generation processors, types of printers, scanners, various range of UPS.

1.2. Problem Statement

Over a decade, major procurement is happening without understanding the basic essential needs of computers. For all cadres, the purchase of devices issame instead of based on the requirements.

For example,

(i) **Hard Disk:** The existing practice of buying computers is either with a minimum of 500 GB or 1 TB hard disk specifications. But if the asset team can deeply analyze, they could notice that less than 10% utilization of allocated hard disk space i.e., Less than 50 GB out of 500 GB, which is underutilized by the department user/official staff over a period of 5 years' life span of the IT asset.

(ii) **RAM:** While procurement, the default slot of Dual Slot for RAM is available. If a computer is brought with 8 GB RAM with 2 DIMM slot of each 8 GB, incase if the computer is identified as low processing or lagging to handle the video conference, the department can increase the RAM size alone by procuring "additional 8 GB RAM" and increase the speed of the computer without e-wasting the device.

(iii) **Processor:** Major procurement is happening without understanding the processor differences and its major utilization, like i3/i5/i7 or AMD 3/AMD 5/AMD 7, where each processor has its own features and purpose for which they have been designed. **For example**, a department user/official staff member performing clerical and administrative tasks, involving mostly Microsoft Office, Adobe Reader, an audio/video player, and a browser with an internet connection, might require only 5% of the CPU utilization where there is no scope to procure a higher hardware configuration of a desktop with a CPU (i5/i7 or AMD 5/AMD 7) as this department user/official staff member might not even perform multitasking activities. It can be noticed easily through the "Task Manager Console," where the CPU utilization is not being utilized (underutilized) to its maximum capacity. In such a scenario, it is recommended to procure the IT asset hardware based on the actual application usage and based on the nature of the work being performed.

(iv) **Warranty/AMC:** Most of the procured devices didn't follow the warranty to claim or AMC to be renewed in the stipulated time frame.

For Example:

a. While working on a computer, a hardware/software issue might arise, and the department user/official staff might ignore addressing the problem or might not update the procurement team/asset management team to rectify the problem. In some cases, the department user/official staff might have updated the procurement team/asset management team, and this team might not have raised the concern with the OEM vendor within the warranty period.

b. Over a period of time, the warranty of this asset gets expired, and the device will be scrapped, and a new procurement will be raised for the same department user/official staff. Also, either after the completion of 5 or 7 years' life span of procured IT assets or even before that, if the hardware becomes unusable/obsolete, it shall not be either covered under the warranty/AMC period, or the warranty/AMC shall be exhausted, and the entire computer will be declared as e-waste without utilizing its maximum capacity efficiently.

c. It has been noticed clearly that the procurements are done with 100% warranty, but around 5% of the warranty was claimed with stipulated time duration. The AMC for each device was performed, but the renewal of the AMC was not done with the stipulated AMC and was considered to procure only new devices. **For example, the 100% replacement of the product will be applicable on or before the end of the 15th or 30th day of the purchased device if the customer found a fault in the device. Such claim intimation needs to be done before the expiration of the 15th or 30th day from the purchase date.**

(v) **A Unique Procurement Scenario for Desktops and Laptops** - During bidding or huge volume procurement for an organization to address the resource requirements to perform the administrative tasks, while buying computers based on specific hardware configuration requirements like processor, memory (RAM), hard disk type, etc.,based on the guide reference on market-available price, few bidders might offer a better product (higher configuration) for the same price as the lower hardware specifications mentioned in the technical specifications guide. In such cases it is recommended to the procurement team that they proceed with selecting the bidder offering a higher-specification product. however, the key point is that even though the higher-specification product is being offered, its price must still stay within the original budget or price range allocated for the lower-specification product as per the technical specifications guide.

For example, if the procurement team plans to buy i5 Desktop specifications, but the bidder offers i7 Desktop specifications for the same market price as of i5 Desktop, then the procurement team can select the vendor as L1/procure the offered configurations.

1.3. Solution Statement

This guideline aims to enhance the knowledge in understanding the hardware specifications or IT assets and ease the process of procurement through the Government e-Market Place (GeM) portal and floating Request for Proposal (RFP) for large-scale procurement of IT assets by preparing the procurement of devices based

- ✓ on categorize the work (Segment-I, Segment-II, Segment-III),
- ✓ on consolidated usage of the devices (Entry Level, Mid-Level, High Level),
- ✓ on the need of device mobility
- ✓ on the consolidated market price range.

i.e., in each department, the competent authority (performing administrative decision-making on procurement) needs to categorize the devices according to the roles and responsibilities of the individual users and based on the work and usage.

Further, preparing the quantity of the procurement list along with the respective technical specification in each segment, the competent authority needs to ensure the budget by using the consolidated market price range and ensure the procurement for different hardware configurations

2. Knowledge Area

2.1. Application Software

Application software is that software without which our PC or laptop can run, i.e., this software is not necessary for a device to be operating. For example: Facebook, WhatsApp, games. There are many choices in application software, which is broadly classified into two categories: general applications and business applications. Some of the categories of this application software are listed below for reference.

General Applications	Administration / Business Applications
MS Office Suite	Customer Relationship Management software
Graphics software	Enterprise resource planning application software
Multimedia Software	Project Management Application software
Antivirus Software	Simulation software
Web browsers	Product-based software e.g. Database / Monitoring
In-house applications software	Educational based software
Device Drivers	Platform / Code / Open-source software
Audio/Video Music Software	Communication Software: Skype/Zoom/VC
OCR - Optical Character Recognition	Collaboration Software: Microsoft Teams, Trello
System default applications	Supply Chain Management (SCM) Software
Others	Accounting Software
	Human Resource Management Software
	Application Software: Android/Visual Studio, Eclipse
	Others

2.2. Central Processing Unit (CPU)

The Central Processing Unit (CPU) is the primary component of a computer that acts as its "control center." The CPU, also referred to as the "central" or "main" processor, is a complex set of electronic circuits that runs the machine's operating system and apps. The CPU interprets, processes, and executes instructions, most often from the hardware and software programs running on the device.

The CPU running multiple processes simultaneously, i.e., multitasking, which requires high performance. To determine the best CPU for a project, developers typically focus on the specific applications dependent on the CPU and identify the most important features through deciding on a CPU for office use:

- Number of cores required for the usage
- CPU speed required for the usage
- Total size cache (temporary storage) is required for quick retrieval
- If there is processor compatibility with the motherboard socket
- If an integrated GPU is required to support graphics

A. Core Count in Processor:

The core count of a processor indicates how many separate processing units (cores) are inside the CPU. Each core can process tasks on its own, allowing the processor to manage several tasks or threads at once. This feature is crucial for enhancing the overall speed and efficiency of a computer, particularly when multitasking or running demanding applications.

B. Clock Speed in Processor:

Clock speed (also known as clock rate) refers to the speed at which a processor can execute instructions. It is typically measured in Hertz (Hz), with higher values indicating faster performance. Clock speed is one of the key factors that influence the overall performance of a processor, especially for single-threaded tasks.

C. Graphics Card in Processor:

A graphics card (or GPU) in a processor is responsible for rendering visuals, videos, and animations for display on your screen. It processes all graphical tasks, and in many modern processors, this function is built directly into the CPU, known as Integrated Graphics.

Processors and its Categorizes:

Processors can be categorized in different ways depending on their attributes and functionalities.

Sl.no.	Core Types	Purpose of Processor
1	Single-core processor	A processor designed to process one thread at a time.
2	Dual-core processor	A processor that has two independent cores and can process two threads simultaneously.
3	Quad-core processor	A processor with four cores, allowing it to perform multiple tasks simultaneously and independently.
4	Octa-core processor	Has eight cores and can process multiple threads with even greater efficiency.

2.3. Intel Core Processor

Intel Core is a line of multi-core (with the exception of Core Solo and Core 2 Solo) central processing units (CPUs) for **midrange, embedded, workstation, high-end, and enthusiast computer** markets marketed by Intel Corporation. These processors displaced the existing mid- to high-end Pentium processors at the time of their introduction, moving the Pentium to the entry level. Identical or more capable versions of Core processors are also sold as Xeon processors for the server and workstation markets.

2.3.1.Processors Generations List – i3

The Intel Core i3 processor is part of Intel's Core series of microprocessors and represents one of the entry-level options in the Core family. The i3 is designed to offer a balanced mix of performance, energy efficiency, and affordability, making it an ideal choice for **basic computing tasks**, **light productivity applications, and casual gaming**. This processor is commonly used in budget laptops, desktops, and certain budget-oriented gaming or multimedia systems.

Sl. No	Generation (Year)	Model	Core Count	Clock Speed	Architecture	Graphic Card
1	1st Gen (2010)	Intel Core i3-530	Dual-core (2 threads)	2.93 GHz	45nm	HD Graphics (Iron Lake)
2	2nd Gen (2011)	Intel Core i3-2100	Dual-core (4 threads with Hyper-Threading)	3.10 GHz	32nm	HD Graphics 3000
3	3rd Gen (2012)	Intel Core i3-3220		3.30 GHz	22nm	HD Graphics 4000
4	4th Gen (2013)	Intel Core i3-4130		3.40 GHz	22nm	HD Graphics 4400/4600
5	5th Gen (2015)	Intel Core i3-5010U		2.10 GHz	14nm	Nil
6	6th Gen (2015)	Intel Core i3-6100		3.70 GHz	14nm	HD Graphics 510/520
7	7th Gen(2017)	Intel Core i3-7100		3.90 GHz	14nm	HD Graphics 610
8	8th Gen (2018)	Intel Core i3-8100	Quad-core (4 threads)	3.60 GHz	14nm	UHD Graphics 630
9	9th Gen (2019)	Intel Core i3-9100		3.60 GHz	14nm	Intel UHD 630
10	10th Gen (2020)	Intel Core i3-10100	Quad-core (8 threads with Hyper-Threading)	3.60 GHz	14nm	Intel UHD 630
11	11thGen (2020)	Intel Core i3-1115G4	Dual- core (4 threads with Hyper-Threading)	3.00 GHz	10nm	Intel Iris Xe
12	12thGen (2021)	Intel Core i3-12100	Quad-core (8 threads with Hyper-Threading)	3.30 GHz	10nm	UHD Graphics 730
13	13thGen (2022)	Intel Core i3-13100		3.40 GHz	10nm	UHD Graphics 730

2.3.2.Processors Generations List – i5

The Intel Core i5 is a mid-range processor in Intel's Core lineup, typically featuring 4 to 6 cores and 4 to 12 threads (depending on the generation), along with **Turbo Boost technology for enhanced performance** when needed. Core i5 Intel® processors are widely used in desktop and laptop computers. Core i5 processors typically have multiple cores, which allow them to handle multiple tasks

(multi-tasking) simultaneously. They also support Intel® Hyper-Threading technology.Absolutely, Core i5 processors can handle most modern games without issues. They offer sufficient processing power and are often paired with dedicated graphics cards for optimal gaming performance.

Sl. No	Generation (Year)	Model	Core Count	Clock Speed	Architecture	Graphic Card
1	1st Gen(2009)	Intel Core i5-760	4 cores, 4 threads	2.66 GHz	45nm	None
2	2nd Gen (2011)	Intel Core i5-2500K		3.30 GHz	32nm	HD Graphics 2000/3000
3	3rd Gen (2012)	Intel Core i5-3570K		3.40 GHz	22nm	HD Graphics 4000
4	4th Gen (2013)	Intel Core i5-4670K		3.40 GHz	22nm	HD Graphics 4600
5	5th Gen(2015)	Intel Core i5-5675C		3.10 GHz	14nm	Intel Iris 6100
6	6th Gen(2015)	Intel Core i5-6600K		3.50 GHz	14nm	HD Graphics 530
7	7th Gen (2017)	Intel Core i5-7600K		3.80 GHz	14nm	HD Graphics 630
8	8th Gen(2018)	Intel Core i5-8400	6 cores, 6 threads	3.60 GHz	14nm	UHD Graphics 630
9	9th Gen (2019)	Intel Core i5-9600K		3.70 GHz	14nm	Intel UHD 630
10	10th Gen (2020)	Intel Core i5-10600K	6 cores, 12 threads	4.10 GHz	14nm	Intel UHD 630
11	11th Gen(2020)	Intel Core i5-11600K		3.90 GHz	10nm	Intel Iris Xe
12	12th Gen(2021)	Intel Core i5-12400	10 cores (6P+4E), 16 threads	4.40 GHz	10nm	UHD Graphics 730
13	13th Gen (2022)	Intel Core i5-13600K	14 cores (6P+8E), 20 threads	3.5 GHz (boost up to 5.1 GHz)	10nm	UHD Graphics 770

2.3.3.Processors Generations List – i7

The i7 processors power high-end PCs with excellent CPU performance for **discrete-level graphics and AI acceleration**. A Core i7 will typically be better for **multitasking, media-editing and media-creation** tasks, high-end gaming, Software development and similar demanding workloads.Its high-performance cores and multithreading capabilities enable faster rendering times, smoother editing workflows, and better overall productivity when working with media-intensive applications.The Intel® Core™ i7 processors are highly capable of handling modern gaming demands. With their robust performance, multiple cores, and high clock speeds, they can provide a smooth gaming experience, especially when paired with a powerful graphics card.

Sl. No	Generation (Year)	Model	Core Count	Clock Speed	Architecture	Graphic Card
1	1st Gen(2008)	Intel Core i7-920	4 cores, 8 threads	2.66 GHz	45nm	None
2	2nd Gen(2011)	Intel Core i7-2600K		3.40 GHz	32nm	HD Graphics 2000/3000
3	3rd Gen(2012)	Intel Core i7-3770K		3.50 GHz	22nm	HD Graphics 4000
4	4th Gen (2013)	Intel Core i7-4770K		3.50 GHz	22nm	HD Graphics 4600

5	5th Gen(2015)	Intel Core i7-5775C		3.30 GHz	14nm	Intel Iris 6100
6	6th Gen(2015)	Intel Core i7-6700K		4.00 GHz	14nm	HD Graphics 530
7	7th Gen(2017)	Intel Core i7-7700K		4.20 GHz	14nm	HD Graphics 630
8	8th Gen (2018)	Intel Core i7-8700	6 cores, 12 threads	3.70 GHz	14nm	UHD Graphics 630
9	9th Gen (2019)	Intel Core i7-9700K	8 cores, 8 threads	3.60 GHz	14nm	Intel UHD 630
10	10th Gen(2020)	Intel Core i7-10700K	8 cores, 16 threads	3.80 GHz	14nm	Intel UHD 630
11	11th Gen (2020)	Intel Core i7-11657	4 cores, 8 threads (Laptop)	2.80 GHz	10nm	Intel Iris Xe
12	12th Gen(2021)	Intel Core i7-12700K	12 cores (8P+4E), 20 threads	4.90 GHz	10nm	UHD Graphics 770
13	13th Gen (2022)	Intel Core i7-13700K	16 cores (8P+8E), 24 threads	3.4 GHz (boost up to 5.4 GHz)	Hybrid	UHD Graphics 770

2.4. AMD core Processor

AMD Ryzen is the brand name for Advanced Micro Devices' line of desktop and mobile processors. More recently, Qualcomm's Arm processors have been amongst x86 vendors in the laptop space. In March 2017, it released the Ryzen line of desktop and notebook processors, replacing the Athlon and Opteron product lines. Ryzen's new architecture, named Zen, was a complete departure from its old server products.

2.4.1.Processors Generations List - Ryzen 3

The Ryzen 3 processors are positioned as the entry-level offering in AMD's Ryzen product stack, but they provide **solid performance for basic tasks, such as web browsing, word processing, video streaming, and light gaming.** The Ryzen 3 family typically features quad-core or hexa-core processors with multithreading support, making them capable of handling multiple tasks simultaneously without significant lag.

Sl. No	Generation (Year)	Model	Core Count	Clock Speed	Architecture	Graphics Card
1	1st Gen(2017)	1000 Series	4 cores / 4 threads	3.1 GHz – 3.4 GHz	14nm	None
2	2nd Gen(2018)	2000 Series		3.5 GHz – 3.7 GHz	12nm	Vega 8
3	3rd Gen (2019)	3000 Series		3.6 GHz – 4.0 GHz	7nm	Vega 8
4	4th Gen (2021)	4000 Series		3.8 GHz – 4.0 GHz	7nm	Vega 6
5	5th Gen (2022)	5300G	4 cores / 8 threads	4.0 GHz (boost up to 4.2 GHz)	7nm	Radeon Vega 6

2.4.2.Processors Generations List - Ryzen 5

Ryzen 5 (pronounced Rye-Zen Five) is a family of mid-range performance 64-bit quad and hexa-cores x86 microprocessors built on Zen micro-architecture. It was specifically designed **to reduce the overall power consumption as well as provide much better clock speeds.** The latest AMD Ryzen G-Series

processors feature best-in-class built-in graphics, so you can play virtually any PC game out there in high definition without the added expense of a graphics card.

Sl. No	Generation (Year)	Model / Series	Core Count	Clock Speed	Architecture	Graphics Card
1	Zen + (2017)	2600X	6 cores / 6-12 threads	3.4 GHz – 3.9 GHz	12nm	Not integrated
2	Zen 2 (2018)	3000	6 cores / 12 threads	3.1 GHz – 4.4 GHz	12nm	Not integrated
3	Zen 3 (2019)	3600		3.6 GHz – 4.2 GHz	7nm	Not integrated
4	Zen 4 (2020)	4600	6-8 cores/ 12-16threads	3.7 GHz (boost up to 4.2 GHz)	7nm	Integrated AMD Radeon Vega 7
5	Zen 5 (2022)	5600	6 cores / 12 threads	3.7 GHz (boost up to 4.6 GHz)	7nm	Integrated Radeon vega 7

2.4.3.Processors Generations List - Ryzen 7

The Ryzen 7 series is the ultimate utilization in PC gaming, with eight high-performance "Zen 5" processor cores and 16 processing threads ready to make quick work of gaming and productivity tasks with integrated graphics.It provides the power of "Zen 4", the all-new 5nm architecture on which AMD Ryzen 7000 Series processors are built. It was considered as advanced desktop processor, by offering up to 16 cores and 32 threads, boost clock speeds up to 5.7GHz, and up to 80MB of cache.

Sl. No.	Generation (Year)	Model / Series	Core Count	Clock Speed	Architecture	Graphics Card
1	Zen + (2017)	2000	8 cores / 8 threads	3.2 GHz (boost up to 4.3 GHz)	14nm	None (requires dedicated GPU)
2	Zen 2 (2018)	3000	8 cores / 16 threads	3.6 GHz (boost up to 4.4 GHz)	12nm	None (requires dedicated GPU)
3	Zen 3 (2019)	5700G		3.8 GHz (boost up to 4.7 GHz)	7nm	Radeon Vega 8
4	Zen 4 (2020)	7700X		4.2 GHz (boost up to 5.4 GHz)	5nm	Integrated RDNA 2

2.5. Intel vs. AMD comparison

Features	Intel	AMD
Main Series	Core i3, i5, i7, i9	Ryzen 3, 5, 7, 9
Low-End Models	Atom, Celeron, Pentium	Athlon
High-End Workstation	Xeon (comparable to Core i7 and i9)	Thread ripper
Performance	Depending on specific model; generally higher numbers mean higher performance	Performance improves with each new generation
Core Configuration	Varies (dual-core to high-core count)	Dual-core to high-core count
Threads	Varies (typically 2 to 16+ threads)	Typically, 4 to 32+ threads
Usage	General use to high-performance computing	General use to high-performance computing
Generational Performance	Newer generations offer improved performance	Performance improves with each new generation
Technology	Latest manufacturing technologies	Latest manufacturing technologies
Pricing	Generally comparable within similar performance tiers	Generally comparable within similar performance tiers
Special Versions	Core Ultra for premium versions	Ryzen PRO with additional business features

Note: Intel® Core™ i9 processors or AMD Ryzen 9 processors must be opted for only when uncompromising performance is required for tasks such as high professional content creation, advanced

competitive gaming, or heavy multitasking where it needs faster rendering times. Considering the present work nature in government entities, opting for Intel i9 or Ryzen R9 is not recommended. Hence, in this document discussion, it has been decided to exclude Intel i9 or Ryzen R9 from procurement considerations, and technical specifications have not been included. This information about Intel i9 or Ryzen R9 is provided solely for reference and knowledge purposes only.

2.6. Hard Disk Vs Solid State Drive (SSD)

The basic difference between a solid-state drive (SSD) and a hard disk drive (HDD) is that a solid-state drive stores the data in integrated circuits, and a hard disk drive stores data magnetically, through spinning disks. They can also be compared in terms of their speed, adaptability, technical modernity, and user experience. A hard disk drive is the commonly used storage disk, which uses a moving read/write head to access data. This is the traditional type of storage unit that is used in computer devices.On the other hand, a solid-state drive is a faster, no-motion, and more efficient secondary storage device that stores data using flash memory.

SSD vs HDD - Comparative Analysis

A tabulated comparison between the Hard Disk Drive and Solid State Drive is given below. Refer to the points of difference and analyses which among the two is better and more suitable for use.

DifferenceBetweenSSDand HDD	
Solid State Drive (SSD)	**Hard Disk Drive (HDD)**
FullForm: SolidStateDrive.	**FullForm:**HardDiskDrive.
Movement: Itisasoliddriveandnomovement occurs while its functioning.	**Movement:**Itisamovingdriveandtheharddisk spins when it is functioning.
Speed: Ithasfasterprocessingspeed.	**Speed:**Theprocessingspeedislowin comparison to SSD.
Latency: Ithaslowlatency.	**Latency:**Ithashighlatency.
I/O Operations: The number of Input/output functionsitcanperformpersecondishigherin comparison to HDD.	**I/O Operations:** The Input/output operations whichcanbeperformedpersecondbyHDDis lower.
R/WTime: IthasashorterRead/Write time.	**R/WTime:**IthasalongerRead/Write time.
Weight: In terms of weight, SSD is lighter in comparisontoHDD.Thisisbecausenoexternal mechanics or motor is attached to the drive.	**Weight:**HDDisheavier.
Components: There are no moving parts. It only as a memory chip which stores data into integrated circuits.	**Components:** HDD comprises moving components. It has one or more spinning disks which are placed on a spindle, which is motor-driven. These are called platters. Each platter is covered with a thin layer of magnetic substance.
Power Consumption: No motion results in less use of electricity or power while using these.	**Power Consumption:** Because of the spinning platters, more electricity and power is consumed
Cost: It is a modern storage drive and is costlier.	**Cost:** It is a traditional storage drive and a bit cheaper in comparison to SSD.
Size: It is smaller in size.	**Size:** It is larger in size.

***Note:** An SSD offers faster read/write speeds, consumes less power, generates less heat, and is more shock-resistant, it is recommended to procure hard disk type as SSD while procuring desktop/laptop.*

3. Methodologyfor Procurement

3.1. The desktop/ laptop manufacturing is broadly categorized into four sectors:

- Home Sector
- Administration/Business/ProfessionalSector
- Gaming Sector
- Workstation Sector
- Educational Sector
  - **Home Sector:** The **Home Sector** in PCs and laptops caters to everyday users with affordable, versatile devices designed for general tasks like web browsing, streaming, communication, and light productivity. These systems feature mid-tier performance, user-friendly designs, and moderate multimedia capabilities, making them ideal for personal and family use.

  - **Administration/Business/Professional Sector:** The **AdministrationSector** focuses on devices tailored for **professional environments, prioritizing reliability, security, and productivity**. These laptops and PCs are built to handle office tasks, data management, and collaboration tools, catering to businesses of all sizes. Preloaded tools like Microsoft office professional.

  - **Gaming Sector:** The Gaming sector in PC's and Laptops refers to a specialized category of computers designed and optimized for playing video games. These devices are built to handle high-performance requirements like fast processing, smooth graphics rendering, and low latency, ensuring an immersive gaming experience.

  - **Education Sector:** The education sector Focus on devices tailored for students, educators, and institutions to enhance learning experiences. These devices emphasize affordability, portability, and functionality, catering to both classroom and remote learning environments. With preloaded tools like Microsoft office students, google workspace. And educations applications

Among these, government organizations predominantly prefer devices from the Administration/Professional sector. This preference stems from the Administration sectors focus on reliability, security, and productivity, which are critical for government operations. Devices in this category often come equipped with enterprise-grade features such as enhanced data security, longer lifecycle support, robust build quality, and efficient management tools. These characteristics align well with the operational requirements of government offices, institutions, ensuring compliance, durability, and optimal performance in their day-to-day activities.

It is necessary to understand the list of activities to be covered by utilizing the computer and its relevant processor capacity compatible with built-in. **Hence, the Technical specification guidelines prepared based on Administration / Professional sector (Refer: Section 5).**

The Following two tablesprovides the detailed application usages with respect to different processor version to be procured based on the need of activities to be performed by different categories of resources in an administrative office.

- **Intel Processor core i3 / i5 / i7 Based Application Usage**

Sl. No	Category	Parameter	Intel Core i3	Intel Core i5	Intel Core i7
1.	Browsing & Office Applications	Web Browsing	Basic browsing, single tabs	Smooth multi-tab browsing	Seamless heavy multitasking
		Office Applications	Light tasks (Word, Excel)	Moderate (large spreadsheets)	Advanced tasks (complex sheets)
		Multitasking	Limited to light apps	Handles multiple applications smoothly	Ideal for heavy multitasking
2.	Media Consumption	Streaming	Full HD content	Full HD and 4K streaming	4K/8K streaming and multitasking
		Audio Playback	Basic playback	Smooth playback, minor editing	High-quality playback, fast editing
		Photo and Video Playback	Full HD playback	4K playback	Seamless 4K/8K playback
3.	Gaming	Casual Gaming	Basic games	Moderate gaming at medium settings	High settings, VR gaming
		AAA Gaming	Struggles with modern titles	Medium settings, good performance	High settings, fluid gameplay
4.	Video Conferencing	Video Call Quality	Call Resolution may change based on graphics card	Reliable for medium meetings	High-quality video for large calls
		Multitasking During Call	Limited	Runs 2-3 apps alongside	Handles heavy multitasking
		Larger Meetings	Adequate for participation	Reliable for hosting meetings	Seamless for webinars
5.	Educational & Learning Environment	Online Classes	Basic video classes	Smooth live classes	Multitasks online tools
		Academic Software	Limited to basic tools	Runs moderate apps (MATLAB, SPSS)	Ideal for heavy apps (AutoCAD)
		E-Books	Suitable for reading	Supports interactive tools	Excellent for annotated tools
6.	Administration Tasks	Productivity	Light productivity tasks	Moderate collaborative tasks	Heavy collaboration tools
		Collaborative Tools	Basic document sharing	Efficient for team projects	Seamless for complex workflows
		Editing and designing	Basic design tools (Canva)	Moderate tasks (Photoshop)	Advanced tools (Premiere Pro)
7.	Virtualization & Development	Programming	Basic coding tasks	Ideal for most development tasks	Smooth for large-scale projects
		Light Virtualization	Limited, struggles with Virtual Machines	Runs 2-3 Virtual Machines	Handles multiple Virtual Machines
		Software Development	Small projects	Medium apps and frameworks	Large-scale apps and frameworks

- **AMD Ryzen 3 / 5 / 7 Processors Based Application Usage**

Sl. No	Category	Parameter	AMD Ryzen 3	AMD Ryzen 5	AMD Ryzen 7
1.	Browsing & Office Applications	Web Browsing	Basic browsing, single tabs	Smooth multi-tab browsing	Seamless heavy multitasking
		Office Applications	Light tasks (Word, Excel)	Moderate (large spreadsheets)	Advanced tasks (complex sheets)
		Multitasking	Limited to light apps	Handles multiple apps smoothly	Ideal for heavy multitasking
2.	Media Consumption	Streaming	Full HD content	Full HD and 4K streaming	4K/8K streaming and multitasking
		Audio Playback	Basic playback	Smooth playback, minor editing	High-quality playback, fast editing
		Photo and Video Playback	Full HD playback	4K playback	Seamless 4K/8K playback
3.	Gaming	Casual Gaming	Basic games	Moderate gaming at medium settings	High settings, VR gaming
		AAA Gaming	Struggles with modern titles	Medium settings, good performance	High settings, fluid gameplay
4.	Video Conferencing	Video Call Quality	Call Resolution may change based on graphics card	Reliable for medium meetings	High-quality video for large calls
		Multitasking During Call	Limited	Runs 2-3 apps alongside	Handles heavy multitasking
		Larger Meetings	Adequate for participation	Reliable for hosting meetings	Seamless for webinars
5.	Educational & Learning Environment	Online Classes	Basic video classes	Smooth live classes	Multitasks online tools
		Academic Software	Limited to basic tools	Runs moderate apps (MATLAB)	Ideal for heavy apps (AutoCAD)
		E-Books	Suitable for reading	Supports interactive tools	Excellent for annotated tools
6.	Administration Tasks	Productivity	Light productivity tasks	Moderate collaborative tasks	Heavy collaboration tools
		Collaborative Tools	Basic document sharing	Efficient for team projects	Seamless for complex workflows
		Editing and designing	Basic design tools (Canva)	Moderate tasks (Photoshop)	Advanced tools (Premiere Pro)
7.	Virtualization & Development	Programming	Basic coding tasks	Ideal for most development tasks	Smooth for large-scale projects
		Light Virtualization	Limited, struggles with Virtual Machines	Runs 2-3 Virtual Machines	Handles multiple Virtual Machines
		Software Development	Small projects	Medium apps and frameworks	Large-scale apps and frameworks

3.2. Operational Requirements

The procurement of devices is based on the needs of the end-user/department official/executive management/board member, etc., and can be classified as follows:

- Based on the mobility/movement of work
- Based on the nature of the work
- Based on the usage of the applications (Software) / system (CPU/Memory)

3.2.1. Mobility: Mobility considerations often guide the choice of devices for professionals. Individuals who prioritize portability and frequently carry their devices typically prefer laptop, which offer the flexibility to work from various locations.

Non-Mobility: Officers whose roles are office-bound and do not require mobility may find a desktop, as these devices are optimized for stationary, in-office productivity

3.2.2. Work and Utilization:

a. Work: The work is purely based on the individual's role to complete his/her responsibility in the allocated activity. This can be classified into three Segments which are listed below:

- **Segment-I:Administrative Assistant:**The individual roles to support the administrative functions under the management resources in an office.

  An administrative assistant is a professional who supports the office and its employees by performing a variety of tasks, including:

  - ✓ **Clerical tasks:** Answering phones, scheduling appointments, managing files, and sorting mail
  - ✓ **Document preparation:** Writing and preparing documents, reports, and invoices
  - ✓ **Record keeping:** Organizing files and keeping records of both paper and virtual documents
  - ✓ **Communication:** Taking memos, communicating with coworkers and customers by phone, email, and mail
  - ✓ **Planning:** Helping with planning, organizing meetings, and planning events
  - ✓ **Travel:** Assisting with choosing a corporate travel agency and managing business travel
  - ✓ **Inventory:** Tracking office inventory, including ordering supplies and coordinating deliveries

  An administrative assistant typically reports to a manager or head of department. They work to ensure the smooth running of the office and a good work environment.

- **Segment**-II: **Executive Management:**The individual roles to ensure, manage, control the administrative office.

  An executive management is a leader who oversees an organization's developmental, strategic

and financial decisions. The Executives direct, plan, and coordinate operational activities for their organization or Project.

- ✓ **For Organization:**Responsible for creating the policies and strategies that meet organization goals. They establish department goals and budgets, implement policies and procedures, manage contracts and negotiations and handle personnel decisions.They often travel to meetings and conferences and visit regional, local, or national, branches and offices.
- ✓ **For Project:**In a project, it is a process of overseeing a team's work to achieve project goals within constraints like time, budget, and scope. The goal is to produce an end product that benefits the organization that initiated the project.
- ✓ **Management Consultant:**Management consultants are professional experts who provide solutions and strategies to improve the financial and operational health of an organization. The recommendations made by management consultants are backed by large amounts of research and data.

- **Segment-III: Core Technical Resources:**The individual roles to perform the proficiency of skills used in manufacturing or service activities which involve the application of scientific and systematic knowledge. Employees possessing such skills use the knowledge in their project work setting with expected to contribute to the creation, produce, maintain of such knowledge.

  The Technical roles in an organization are jobs that require specialized knowledge and skills in a particular area of technology. Technical roles often involve hands-on work with technology, such as:

  - ✓ Coding
  - ✓ Engineering
  - ✓ Configuring systems
  - ✓ Designing technical architectures
  - ✓ Troubleshooting issues
  - ✓ Analyzing technical data

b. Utilization: The Utilization of the devices is purely based on the individual's responsibility to complete his/her allocated activity. This can be classified into three Levels which are listed below:

- **Entry Level:** Here the work is limited to working in Microsoft Office, viewing/editing an Acrobat file (*.pdf), checking and responding to emails, or working in a spreadsheet, web browser utilization, etc., and their requirements typically do not go beyond certain limits.
- **Mid-Level:** Some department officials/staff may engage in more advanced work, including multitasking, but less frequently, and they need additional pre-installed software (like video conferencing, data analyzing, etc.) on their desktop/laptop to perform their day-to-day tasks.

Also, they require the mobility of the device due to the nature of work to visit multiple locations.

- **High-Level:** The users who carry out specified tasks such as systems engineering, database management, quantitative analysis, live data monitoring, graphical designing, video editing, social media-related work, weather forecasting analysis, etc., require computers with special software features and advanced CPU capabilities. The core nature of the work involves technical activity by creating/developing applications, high-level graphical interface requirements, etc.

c. Consolidated Segment Wise Software / Applications Usage

List of Software / Applications expected to be used	Entry Level	Mid-Level	High Level
Categorizing the Level into Segments based on Work &Utilization	**Segment – I**	**Segment – II**	**Segment – III**
Adobe Acrobat Software	Yes	Yes	Yes
Microsoft Office Suite – Word / PowerPoint / Excel	Yes	Yes	Yes
Accounting Software – Tally	Yes	Yes	No
Media Player – Audio / Video	Yes	Yes	Yes
Web Browsers – Chrome / Edge / Firefox / Opera	Yes	Yes	Yes
OCR - Optical Character Recognition Software	Yes	Yes	No
Antivirus Software – Licensed	Yes	Yes	Yes
Department Specific Software (e-Office Digital Sign)	Yes	Yes	No
MyGov, DigiLocker,	Yes	Yes	No
Default System Utilizing Applications / Software	Yes	Yes	Yes
Video Conferencing Software – Zoom / Google /Skype	Yes	Yes	Yes
Data Analyzing Software	No	Yes	Yes
Simulation Software	No	No	Yes
Any Desk Service Clients	No	No	Yes
Network Monitoring Software – Nagios, Datadog	No	No	Yes
Enterprise Application Software	No	No	Yes
Customer Relationship Management (CRM) – Zoho Desk	No	No	Yes
Microsoft OneNote / To do	No	No	Yes
Drop Box or Any cloud based software	No	No	Yes
ERP Software	No	Yes	Yes
Project Management Software	No	No	Yes
Graphics Software – Photoshop, Figma, Corel draw etc.	No	Yes	Yes
Database Software – My SQL, SQL, Mongo, Oracle etc.	No	Yes	Yes
Open Source Software for Application Development	No	Yes	Yes
Programming Languages – JAVA, ,NET, Python, PHP etc.	No	Yes	Yes
Overall CPU Utilization / Memory usage will be -	**< 50%**	**> 50% < 75%**	**>75%**

3.3. Consolidated Employees Segmentation based on "Work, Utilizationand Mobility"

3.3.1. Segment-I vs Entry-Level vsMobility

The **Segment-I** computer will have all the basic features to carry out tasks such as creating a document (e.g., Microsoft Word, OpenOffice Writer, etc.), a spreadsheet (e.g., Microsoft Excel, OpenOffice Calculations, etc.), and a presentation (e.g., Microsoft PowerPoint, OpenOffice Impress, etc.); checking and responding to emails; having the facility to use the internet for official purposes; attending video conferencing (when work demands); etc. The regular government applications like e-Office, Digital Signer, e-HRMS, and other applications shall be accessed to perform the daily routine tasks. The Segment-I computer is adequate for the purpose, and the system requirements shall not exceed.

Hence, Segment I computer is recommended for performing the basic data entry work/administrative work/clerical work/MTS work.

Sl. No.	Category	Level	Mobility Ratio (Desktop : Laptop)	Remarks
1	SegmentI	Entry Level	100 :0	No Mobility work, hence 0% in Laptop

3.3.2. Segment-II vs Mid-Level vs Mobility

The Segment-II computer will have all the basic features of Segment-I task.The Segment–II is categorized as Executive Management and is specifically related to work including the compilation of reports and documents (more frequently), video conferencing, meetings involving presentations with higher-ranking officials, data analyzing from multiple departments using specific packages for finance and management, scientific applications, etc. They establish department goals and budgets, implement policies and procedures, manage contracts and negotiations and handle personnel decisions.They often travel to meetings and conferences and visit regional, local, or national, branches and offices which requires physical movement of computer involvement is more in these categories.

Hence, Segment-II computers are recommended for the aforementioned nature of work. Apart from this, the Project management, Consultant etc., which fall under the executive officials.

Sl. No.	Category	Level	Mobility Ratio (Desktop : Laptop)	Remarks
1	Segment II	Mid- Level	10 : 90	10% desktop, due to Segment-I exceptional list, 90% laptop due to Mobility Work.

3.3.3. Segment-III vs High-Level vs Mobility

The **Segment-III computer will have all the basic features of Segment-I task, perform management-related work features of Segment-II, and, in addition,** perform special software applications that require advanced hardware resources.

In general, the Segment-III users are the **Core technical / Data Engineering Team**, **Experts in**

Technology / Professionals like Data Analytics / Engineering / Researchers / Scholars / Scientist, Project-based technical work like Core Software Programmers, Website application developers, Core Networking live monitoring, Enterprise level application, Survey, and Statistical Data handling developers, UX/UI designer for website, GIS developers, Graphics designing work, Video streaming, Social media content creator, Weather forecasting, running simulation software, developing graphical and gaming applications, etc., and most of the time the software requirements itself will consume high CPU/memory usage along with Processor speed and performing multi-tasking activities periodically.

Sl. No	Category	Level	Mobility Ratio (Desktop : Laptop)	Remarks
1	Segment-III	High - Level	90:10	90% desk work within office, 10% Mobility Work

3.3.4. Exceptional Cases: Operational Support

In general, the department's executive management identifies the talent among the individuals and allocates additional workloads or to implement a project across the different departments. They are,

a. to performing the additional allocated activity involving project coordination, nodal in charge for projects, nodal coordination for project implementation, etc.,
b. during creation of Project Management Unit (PMU) to perform implementation of project roll out across different departments / offices / regions etc., which may require to do stakeholder management, capacity building, technical helpdesk etc.,

which may require higher configuration to access the high-level applications, online video streaming, and special software features, etc., and they will be categorized as **operational support and can be allowed as mentioned below:**

- From Segment-I Desktop to Segment-II Desktop
- From Segment-III Desktop to Segment-III Laptop

Note: The Exceptional case is purely based on the approval of the competent authority.

3.3.5. Conclusion on Procurement Procedure

- **Segment-I** requires**only Desktop**
- **Segment-I Exceptional case** requires **Segment-II Desktop**
- **Segment-II** procurement **only on Laptops**
- **Segment-III** procurement **only on Desktops**
- **Segment-III Exceptional case** requires **Laptop in Segment-III**

- In general, the competent authority, need to procure most of the devices under the Segment-I for his/her administrative office.
- The Segment-II procurement on Laptop comes with less percentage considering the number of executive management roles in the administrative office.

- The Segment-III procurement only when there is a Project Management Unit for a dedicated project creation duration. Hence, the time to procure the Segment-III Desktop will be much less in this Segment-III for an administrative office.
- The overall ratio of Procurement of Devices is 90:10 ratios (Segment-I vs Segment-II).

3.4. Preparation of Procurement devices based Segment Wise Software / Applications Usage based on Mobility

<table>
<tr><td rowspan="5">Government Sector</td><td colspan="2">Entry-Level</td><td colspan="2">Mid-Level</td><td colspan="2">High-Level</td></tr>
<tr><td>Desktop</td><td>Laptop</td><td>Desktop</td><td>Laptop</td><td>Desktop</td><td>Laptop</td></tr>
<tr><td colspan="2">Mobility</td><td colspan="2">Mobility</td><td colspan="2">Mobility</td></tr>
<tr><td>No</td><td>Yes</td><td>No</td><td>Yes</td><td>No</td><td>Yes</td></tr>
<tr><td colspan="2">Usage Ratio</td><td colspan="2">Usage Ratio</td><td colspan="2">Usage Ratio</td></tr>
<tr><td>100%</td><td>0%</td><td>10%</td><td>90%</td><td>90%</td><td>10%</td></tr>
<tr><td>Segment-I</td><td colspan="2">▪ Superintendent
▪ Programmers
▪ Accounts Manager
▪ AccountsAssistant
▪ Personnel Secretary's
▪ Personnel Assistant’s
▪ Data Entry Operator's
▪ Office Assistant’s
▪ LDC/UDC Clerk’s</td><td colspan="4"></td></tr>
<tr><td>Segment-II</td><td colspan="2" rowspan="2"></td><td>Exceptional Case -
▪ Additional Technical Work
▪ Nodal / Additional in charge -projects
▪ PMU – Application Rollout</td><td>▪ Secretary's
▪ Director's
▪ Commissioner's
▪ HOD’s
▪ Chief Executing Officer
▪ Chief Technology Officer
▪ Chief Information Security Officer
▪ Management Consultants
▪ Program/Project Manager</td><td colspan="2"></td></tr>
<tr><td>Segment-III</td><td colspan="2"></td><td>▪ Architect
▪ Data Analyst
▪ Content Manager
▪ Social Media Manager
▪ Network Administrator
▪ System Administrator
▪ Developers
▪ Quality Eng.
▪ UX Designers
▪ Graphical Expert</td><td>Exceptional Case -
▪ Specific project requirement based Content Manager, Social Media Manager</td></tr>
</table>

3.4.1. Clause Allowed:

- During the Procurement of device, the Bill of Materials should contain the overall devices with its number of quantity required.
- The Technical Specification need to be taken from the "Technical Specification" (section 5) in this document.
- During the tender or purchase portal, if the bidder, provides the Segment-II desktop under the Segment-I category where the cost remains same of Segment-I, then the procurement can be allowed.
- Hence, it is request to mention the Technical Specification details, during update in the procurement portal, the competent authority need to mention the below lines correctly as:

    - For Segment-I – "Minimum Intel i3 / AMD Ryzen3 or higher"
    - For Segment-II – "Minimum Intel i5 / AMD Ryzen5 or higher"
    - For Segment-III – "Minimum Intel i7 / AMD Ryzen7 or higher"

3.5. Average Cost Reduction

The departments are encouraged to fully utilize the Average Cost Reduction (ACR) structure available for bulk procurement of laptops and desktops. These procurement practices are in generally offer cost benefits based on purchase volume, enabling the buyers to realize significant savings. The practice brings the process to understand the reduction of pricedue to increase in the quantity of the orders. ACR percentages may vary according to quantity of the single bill of materials. By strategically leveraging these cost reductions, government organizations can optimize their budgets, allocate resources efficiently, and maintain cost-effective procurement practices while meeting their technological needs. (*Refer Section 6.6*)

Average cost reduction	5%	10%	15%	20%	25%
Total number of devices to be procured	10	20	40	100	200

3.6. Competent Authority Practice

In General, the competent authority need to ensure the procurement of goods and for whom it is essential to understand the basic rules, standards and policies to be followed, which will enable them to understand the way forward mechanism to identify when, what and where they get right products with quality along with more benefits during purchase of goods for the purpose of office/branches/departments etc. The Following GFR rules are mandatory with respect to procurement of goods to be ensure by the Competent authority.

- **GFR – Rule 21:**Standards of financial propriety – Every officer is **expected to exercise the same vigilance in respect of expenditure incurred from public moneys** as a person of ordinary prudence would exercise in respect of expenditure of his own money.

  Competent Authority: The Rule 21 need to be ensure as it is mandatory.

  Solution: The best way forward mechanism is to be follow the new "Manual for Procurement"

provided by the Directorate of Information Technology (under this Section 3) which contains the following values:

a. Procurement based on Work
b. Procurement based on Usage
c. Procurement based on Value for money.

Hence, following the internal practice of "Manual for Procurement, will provide standard solution to achieve the "Rule 21" by every competent authority.

Also, as per Rule 149, it has been notice that it is mandatory to create an internal procurement practice procedure to each competent authority. (Rule 149 given below).

- **Rule 149. Government e-Market place (GeM) -** The Procurement of Goods and Services by Ministries or Departments will be mandatory for Goods or Services available on GeM. The credentials of suppliers on GeM shall be certified by DGS&D. The procuring authorities will certify the reasonability of rates. The GeM portal shall be utilized by the Government buyers for direct on-line purchases as under: -

  i. Up to Rs. 50,000/- through any of the available suppliers on the GeM, meeting the requisite quality, specification and delivery period.
  ii. Above Rs. 50,000/- and up to Rs.30,00,000/- through the GeM Seller having lowest price amongst the available sellers, of at least three different manufacturers, on GeM, meeting the requisite quality, specification and delivery period. The tools for online bidding and online reverse auction available **on GeM can be used by the Buyer if decided by the competent authority.**
  iii. Above Rs.30,00,000/- through the supplier having lowest price meeting the requisite quality, specification and delivery period after mandatorily obtaining bids, using online bidding or reverse auction tool provided on GeM.
  iv. The invitation for the online e-bidding/ reverse auction will be available to all the existing Sellers or other Sellers registered on the portal and who have offered their goods/services under the particular product/service category, as per terms and conditions of GeM.
  v. **The above mentioned monetary ceiling is applicable only for purchases made through GeM. For purchases, if any, outside GeM, relevant GFR Rules shall apply.**
  vi. The Ministries/Departments shall work out their procurement requirements of Goods and Services on either "OPEX" model or "CAPEX" model as per their requirement/ suitability at the time of preparation of Budget Estimates (BE) and shall project their Annual Procurement Plan of goods and services on GeM portal within 30 days of Budget approval.
  vii. **The Government Buyers may ascertain the reasonableness of prices before placement of order using the Business Analytics (BA) tools available on GeM including the Last Purchase Price on GeM, Department's own Last Purchase Price etc.**
  viii. **A demand for goods shall not be divided into small quantities to make piecemeal purchases to avoid procurement through L-1 Buying / bidding / reverse auction on**

GeM or the necessity of obtaining the sanction of higher authorities required with reference to the estimated value of the total demand.

- **GFR – Rule 149:**allows direct on-line purchases on GeM up to Rs. 25,000/- through any of the available suppliers on the GeM, meeting the requisite **quality, specification and delivery period**. However, this is subject to **procuring authorities certifying the reasonability of rates**.
- About Manufacturers Sector based Device releases in the market:

- All the manufacturers build the devices according to sector and sell the products. They are:
    - Home Sector
    - Administration/Business/ProfessionalSector
    - Gaming Sector
    - Workstation Sector
    - Educational Sector

  In this, it is the responsibility of the competent authority to ensure the product procured through GeMportal or tender portal are aligned with Administration/Business/Professional sector. As Administration sectors focus on reliability, security, and productivity, which are essential for government operations. For reference, detaileddescription is given in section 3 under "Methodology of Procurement". Hence, through the Technical specification, it is essential to mention the additional specifications as mandatory as per the **GFR Rule 149** ensure the required Technical Specification, Quality in place for procurement.

- The MeitY or the Directorate of Information Technology, Puducherry guidelines are the way to communicate the technical specification to procure the authenticated, legalized, ensuring the quality based procurement. Hence, the MeitY will provide the core mandatory specification will be mentioned in the guidelines. However, based on the core mandatory parameters, each state / UT, administration need to understand the procurement of devices with the features required to setup in the Administrative / Professional sector.

- The MS Office Professional license (MS Word, MS Excel, MS Power Point) is mandatory and must come along with the purchase of the computer as only licensed version of the software must be used in any Government department/office.

- Every product manufactured in India, the product certification compliance with Indian Standards like BIS, BEE, etc., is mandatory as per Government of India.

- The additional specifications listed in the GEM portal contains some of the mandatory requirements mentioned in this Technical Specification under Section 5, as every computer must be supported with video conferencing facility for the official's/department users to join any official meeting on need basis and to be decided by the Competent authority while procuring the devices for the employees.

- Sample: **Segment – I - Desktop Technical Specifications**

Sl. No	Parameters	Specifications
1.	Processor	Intel Core i3 **(OR)** AMD Ryzen 3
2.	Base Clock Speed	3.3 GHz **(OR)** 3.0 GHz
3.	Boost Clock Speed	Up to 4.3 GHz **(OR)** up to 4.0 GHz
4.	Chip set	Intel H610 or B660 **(OR)** AMD B520 or B550
5.	RAM	16GB DDR4 RAM (expandable up to 16 GB)
6.	Storage	512 GB SSD NVMe
7.	Graphic card	Intel UHD Graphics 730**(OR)**AMD Radeon Vega
8.	USB Ports	6 USB (2x USB 3.2, 4x USB 2.0), HDMI, RJ-45, Audio Jack
9.	Cooling Pad	Stock air cooling (option for third-party air or liquid cooling)
10.	Operating System	Windows 11 Professional
11.	Keyboard and Mouse	USB (OR) Wireless keyboard & Mouse,same PC make
12.	Bluetooth	Bluetooth 5.0
13.	Network	1 x Gigabit Ethernet
14.	Power Supply	350W to 450W, 80+ Bronze certified (depending on components)
15.	Display Resolution	1366x768 HD
16.	Display Size	19” or Higher
17.	Display Type	LED
18.	Warranty	3-Years onsite OEM comprehensive warranty with OEM manufacturer’s authorization certificate required
19.	MS Office	Microsoft Office Professional 2024 license
20.	Certificate	BIS/ BEE/ EPR/ RoHS or any other relevant Indian certificates

Mandatory Additional Specifications (as per GFR Rule 149 – “A demand for goods shall not be divided into small quantities to make piecemeal purchases to avoid procurement through L-1”)

21.	Display Output	HDMI, DisplayPort, or VGA depending on GPU and Motherboard capabilities
22.	DVD	Optional
23.	Camera	720p or 1080p HD Webcam with automatic light adjustment
24.	Audio	Yes
25.	Mic	Omnidirectional microphone with noise reduction capability
26.	Video Conference Support	Yes
27.	Use Case	Office productivity, web browsing, video conferencing

4. Market Analysis

As per the standard price catalog during the financial year 2024-2025, with respect to market trend analysis, only the stabilized product can be taken for analysis purposes.

4.1. Make-in-India –Market Price

Make-in-India products are available on the Government e-Market (GeM) portal, their corresponding technical specifications, strategies are still evolving and didn't stable in standard pricing with high fluctuation of selling prices in the market. However, supporting the Make-in-India initiatives remains a priority, and it is advised to refer to the original price of each Make-in-India product separately. Therefore, the department must refer to the provided technical specifications to ensure compliance when opting for Make-in-India products.

- **Segment I Desktop and Segment II Desktop and Laptop prices are shown below:**

SEGMENT I - DESKTOP – MARKET AVAILABLE PRICE RANGE					
Sl. No	Make In India Brands	Intel i3		AMD Ryzen 3	
		Minimum	*Maximum	Minimum	Maximum
1.	Dugong	₹ 2,29,999	NA	₹ 2,29,999	NA
2.	Fingertip	₹1,65,000	NA	₹1,65,000	NA
3.	Acxxel	₹ 33,490	NA	₹ 33,490	NA
4.	Cynix	₹ 80,000	NA	₹ 80,000	NA
5.	Voltriq	₹ 59,900	NA	₹ 59,900	NA
6.	RDP	₹1,85,00	NA	₹1,85,00	NA
Average Price		**₹ 94,731**	**NA**	**₹ 94,731**	**NA**

SEGMENT II - DESKTOP – MARKET AVAILABLE PRICE RANGE					
Sl. No	Make in India Brands	Intel - i5		AMD Ryzen 5	
		Minimum	Maximum	Minimum	Maximum
1.	Dugong	₹ 2,29,999	NA	₹ 2,29,999	NA
2.	Fingetrtip	₹1,65,000	NA	₹1,65,000	NA
3.	Acxxel	₹ 33,490	NA	₹ 33,490	NA
4.	Cynix	₹ 80,000	NA	₹ 80,000	NA
5.	Voltriq	₹ 59,900	NA	₹ 59,900	NA
6.	RDP	₹1,85,00	NA	₹1,85,00	NA
Average Price		**₹ 94,731**	**NA**	**₹ 94,731**	**NA**

SEGMENT II - LAPTOP – MARKET AVAILABLE PRICE RANGE					
Sl. No	Make In India Brands	Intel - i5		AMD Ryzen 5	
		Minimum	Maximum	Minimum	Maximum
1.	Fingertip	₹1,50,000	NA	₹1,50,000	NA
2.	Cynix	₹1,20,000	NA	₹1,20,000	NA
3.	RDP	₹1,35,000	NA	₹1,35,000	NA
4.	INP	₹1,00,000	NA	₹1,00,000	NA
Average Price		**₹ 1,26,250**	**NA**	**₹ 1,26,250**	**NA**

4.1.1. Disclaimer

- There shall be a **+/- 80%** variation upon the price ranges for devices based upon the market fluctuations, high-level discount offers, and not stabilised in developments.
- It is the responsibility of the respective departments to ensure the quality of the product along with the mandatory certification of the products during the procurement.

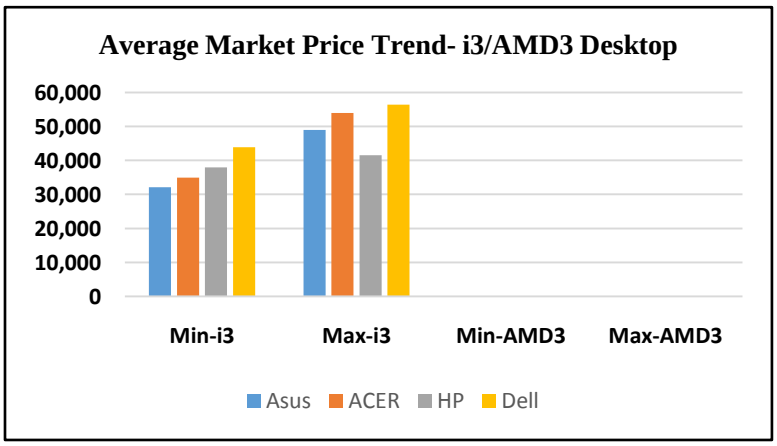
4.2. Standard Brands –Market Price Range

1. "NA" – means "Not available" – The rate under the administrative/Professional/business sectoris not available in Manufacturers site.
2. All rate mentioned under MRP – Maximum Retail Price.

4.2.1.Segment-I Desktop Price Range

➢ **Price Range for Intel i3 and AMD Ryzen 3 Desktop**

SEGMENT I - DESKTOP – MARKET AVAILABLE PRICE RANGE					
Sl. No	Standard Brands	Intel i3		AMD Ryzen 3	
		Minimum	Maximum	Minimum	Maximum
1.	Asus	₹32,110	₹48,999	NA	NA
2.	ACER	₹34,990	₹53,999	NA	NA
3.	HP	₹37,999	₹41,572	NA	NA
4.	Dell	₹43,898	₹56,415	NA	NA
Average Price		**₹37,249**	**₹50,246**	**NA**	**NA**

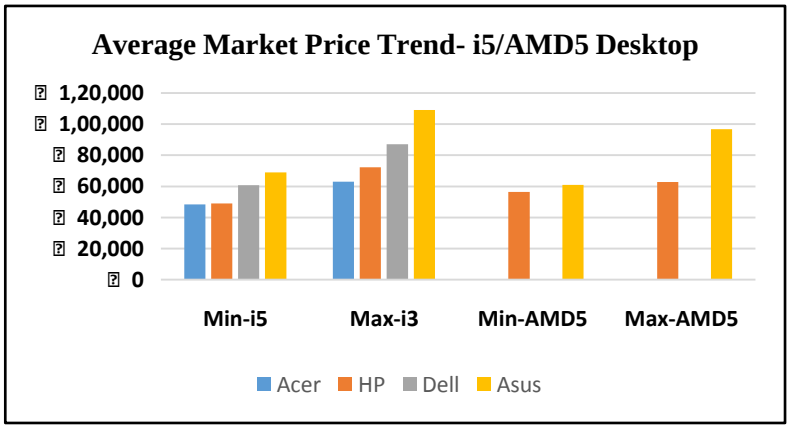


Market Trend Analysis
Indicates Average Price of Rs. 43,747/- per Desktop
Segment-I (Intel i3 / AMD Ryzen 3)

4.2.2. Segment-II Desktop Price Range

➢ **Price Range for Intel i5 and AMD Ryzen 5 Desktop**

SEGMENT II - DESKTOP – MARKET AVAILABLE PRICE RANGE					
Sl. No	Standard Brands	Intel - i5		AMD Ryzen 5	
		Minimum	Maximum	Minimum	Maximum
1.	Acer	₹ 48,390	₹ 62,999	NA	NA
2.	HP	₹ 48,912	₹ 72,145	₹ 56,414	₹ 62,746
3.	Dell	₹ 60,779	₹ 87,108	NA	NA
4.	Asus	₹ 68,952	₹ 1,08,992	₹ 60,990	₹ 96,748
Average Price		**₹ 56,758**	**₹ 82,811**	**₹ 58,702**	**₹ 78,869**

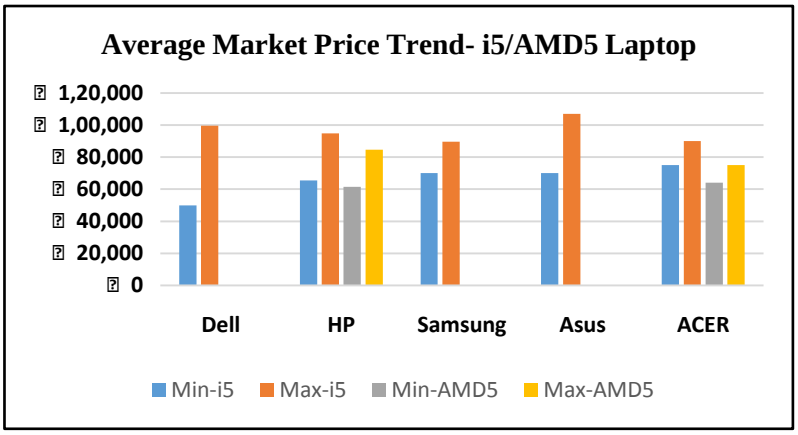


Market Trend Analysis
Indicates Average Price of Rs. 69,285/- per Laptop
Segment-II (Intel i5 / AMD Ryzen 5)

4.2.3.Segment-IILaptop Price Range

➢ **Price Range for Intel i5 and AMD Ryzen 5Laptop**

SEGMENT II - LAPTOP – MARKET AVAILABLE PRICE RANGE					
Sl. No	Standard Brands	Intel - i5		AMD Ryzen 5	
		Minimum	Maximum	Minimum	Maximum
1.	Dell	₹ 49,899	₹99,660	NA	NA
2.	HP	₹ 65,410	₹ 94,828	₹ 61,476	₹ 84,621
3.	Samsung	₹69,999	₹89,689	NA	NA
4.	Asus	₹69,999	₹1,06,990	NA	NA
5.	ACER	₹75,000	₹90,000	₹63,999	₹75,000
Average Price		**₹ 63,217**	**1,03,974**	**₹ 62,737**	**₹ 79,810**

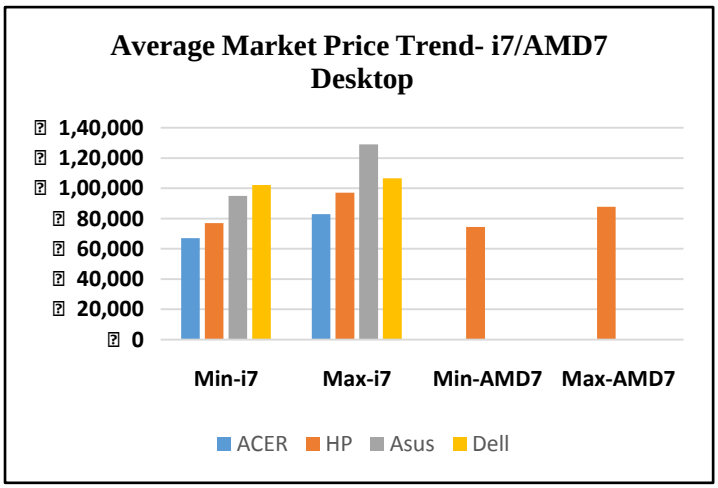


Market Trend Analysis
Indicates Average Price of Rs. 77,434/- per Laptop
Segment-II (Intel i5 / AMD Ryzen 5)

4.2.4.Segment-III Desktop Price Range

➢ **Price Range for Intel i7 and AMD Ryzen 7 Desktop**

SEGMENT III - DESKTOP – MARKET AVAILABLE PRICE RANGE					
Sl. No	Standard Brands	Intel - i7		AMD Ryzen 7	
		Minimum	Maximum	Minimum	Maximum
1.	ACER	₹66,990	₹82,999	NA	NA
2.	HP	₹77,026	₹97,023	₹74,427	₹87,758
3.	Asus	₹94,951	₹1,29,000	NA	NA
4.	Dell	₹1,02,059	₹1,06,518	NA	NA
Average Price		**₹ 85,256**	**₹ 1,04,635**	**₹ 74,427**	**₹ 87,758**

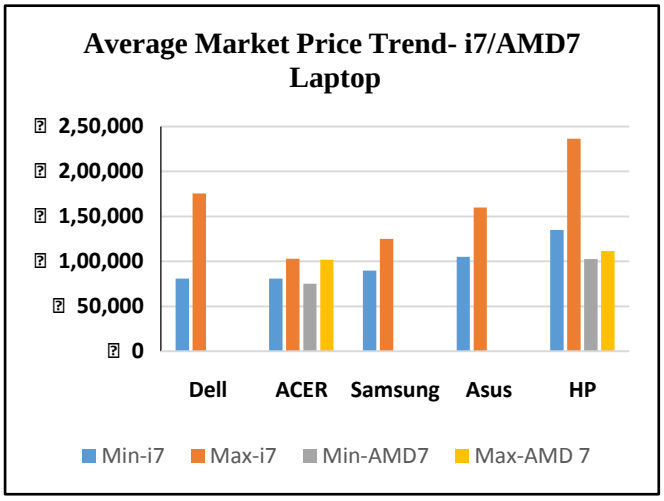


Market Trend Analysis
Indicates Average Price of Rs. 88,019/- per Desktop
Segment-III (Intel i7 / AMD Ryzen 7)

4.2.5.Segment-III Laptop Price Range

- **Price Range for Intel i7 and AMD Ryzen 7Laptop**

SEGMENT III - LAPTOP – MARKET AVAILABLE PRICE RANGE					
Sl. No	Standard Brands	Intel - i7		AMD Ryzen 7	
		Minimum	Maximum	Minimum	Maximum
1.	Dell	₹80,790	₹1,75,525	NA	NA
2.	ACER	₹80,999	₹1,02,990	₹74,990	₹1,01,999
3.	Samsung	₹89,689	₹1,24,997	NA	NA
4.	Asus	₹1,04,990	₹1,59,990	NA	NA
5.	HP	₹1,34,999	₹2,36,618	₹1,02,590	₹1,11,299
Average Price		**₹ 98,293**	**₹ 1,24,919**	**₹ 88,790**	**₹ 1,06,649**



Market Trend Analysis
Indicates Average Price of Rs. 1,04,662/- per Laptop
Segment-III (Intel i7 / AMD Ryzen 7)

4.3. Consolidated Available Market Price – Desktop / Laptop

Application Usage		INTEL CORE PROCESSOR			AMD PROCESSOR		
		Intel i3	**Intel i5**	**Intel i7**	**AMD Ryzen 3**	**AMD Ryzen 5**	**AMD Ryzen 7**
Basic Tasks (Browsing, Office Application)		Yes	Yes	Yes	Yes	Yes	Yes
Administration Tasks		Yes	Yes	Yes	Yes	Yes	Yes
Media Resolution	720p	Yes	Yes	Yes	Yes	Yes	Yes
	1080p	Yes	Yes	Yes	Yes	Yes	Yes
	4K	**No**	Yes	Yes	Yes	Yes	Yes
Gaming	Low	Yes	Yes	Yes	Yes	Yes	Yes
	Mid	**No**	Yes	Yes	**No**	Yes	Yes
	High	**No**	**No**	Yes	**No**	Yes	Yes
Video Conferencing		Yes	Yes	Yes	Yes	Yes	Yes
Educational and Learning Environments		Yes	Yes	Yes	Yes	Yes	Yes
Creation (Photo/ Video Editing)	Low	Yes	Yes	Yes	Yes	Yes	Yes
	Mid	**No**	Yes	Yes	**No**	Yes	Yes
	Advance	**No**	**No**	Yes	**No**	**No**	Yes
Development and Virtualization		**No**	Yes	Yes	Yes	Yes	Yes
Average Minimum – Price range for Standard Brand- Desktop		**₹37,249**	**₹56,758**	**₹85,256**	**NA**	**₹58,702**	**₹74,427**
Average Maximum – Price range for Standard Brand- Desktop		**₹50,249**	**₹82,811**	**₹1,04,635**	**NA**	**₹78,869**	**₹87,758**
Average Minimum – Price range for Standard Brand- Laptop		**NA**	**₹63,217**	**₹98,293**	**NA**	**₹62,737**	**₹88,790**
Average Maximum – Price range for Standard Brand- Laptop		**NA**	**₹1,03,974**	**₹1,24,919**	**NA**	**₹79,810**	**₹1,06,649**

4.1.1. Disclaimer:

- The price range has been derived by referencing standard brands in line with the prevailing Indian market rates, and all prices are inclusive of GST at the time of document preparations.
- There shall be a **+/- 10%** variation upon the price ranges for devices based upon the market fluctuations and period of procurement.
- It is the responsibility of the respective departments to ensure the quality of the product along with the mandatory certification of the products during the procurement.

5. Standard Technical Specifications for Procurement of Computer Hardware and other IT Equipments

Note:

1. To ensure a clear understanding, desktop computers and laptops are classified into three levels—Entry (SegmentI), Mid (Segment II), and High-End (Segment III)—based on work requirements, utilization, and mobility. The detailed specifications for each category are outlined below:

Sl. No.	Category / Level	Officials under Grade Pay as per CPC 7	Processor
1	Segment I / Entry	Pay Band Upto Level 7 (i.e 4600)	Intel Core i3 / AMD Ryzen 3
2	Segment II / Mid	Pay BandLevel 8 (i.e 4800)& above	Intel Core i5 / AMD Ryzen 5
3	Segment III / High-End	Professionals/ Developers	Intel Core i7 / AMD Ryzen 7

2.To ensure compliance with licensing regulations and strengthen cybersecurity, it is recommended that all desktop computers and laptops used in Government departments be pre-loaded or pre-installed with genuine, up-to-date licensed software, including Microsoft Office Professional and antivirus solutions, wherever required. This initiative aims to enforce the exclusive use of licensed software across all Government systems, ensuring legal adherence, data security, and operational reliability.

5.1. ENTRY LEVEL (Segment – I) - Desktop Computers

Sl. No	Parameters	Specifications
28.	Processor	Intel Core i3 **(or)** AMD Ryzen 3
29.	Processor Generation	12th Generation or latest
30.	Chip set	Intel H610 or B660 **(or)** AMD B520 or B550
31.	RAM	Size :16GB DDR4 or higher
32.	RAM Expandability	Upto 32GB
33.	Storage	512 GB M.2 NVMeSSDor Higher
34.	Graphic Card	Integrated
35.	Operating System	Windows 11 Professional /LINUX (Factory Pre-loaded)
36.	DIMM Slots	2 or higher
37.	Internal Bays	1 or higher
38.	External Bays	1 or higher
39.	Cabinet	SFF / Mini Tower / Mid Tower
40.	Network Connectivity	1 x Gigabit Ethernet
41.	Expansion Slots (PCIe x 1)	1 or higher nos.
42.	Expansion Slots (PCIe x 16)	1 or higher nos.
43.	USB Port 2.0	2 or higher nos.
44.	USB Port 3.0/3.1 Gen 1 ports or better	6 or higher nos.
45.	HDMI	1
46.	No. of Display port	1
47.	Display Type	LED
48.	Display Size	21” or higher
49.	Monitor Resolution	1920 x 1080 Pixels or better
50.	Monitor Certification	TCO 8.0 or higher

51.	No. of VGA/DP ports in Monitor	1
52.	No. of HDMI ports in Monitor	1
53.	Keyboard	Of same OEM Make with Minimum 104 keys
54.	Mouse	Of same OEM Make with Optical 2/3 Button
55.	In-built Speakers	Yes
56.	Wireless Network Adapter	Yes
57.	Audio Jacks	To connect headphones, external speakers, mic, etc.
58.	Optical Drive	Optional
59.	Camera (External)	Optional, 720p or Higher
60.	Bluetooth	Optional, If Yes, v 5.0 or higher
61.	Warranty	Onsite and Comprehensive warranty for minimum Five years from OEM/Vendor, the detailed Technical Specifications of the model with images should be available on OEM/Vendor website for verification. The part numbers/machine serial number with make and model of all items of the BOM of offered model should be available for cross verification and to be mentioned in invoice of the seller, after sales support shall be confirmed from the OEM/Vendor side.
62.	ROHS Compliance	Yes
63.	BEE / Energy star for the given Model	Yes
64.	Security Management	Trusted Platform Module TPM 2.0 Embedded chip

5.2. MID LEVEL - (Segment – II) - Desktop Computers

Sl. No	Parameters	Specifications
1.	Processor	Intel Core i5**(or)** AMD Ryzen5
2.	Processor Generation	12th Generation or latest
3.	Chip set	Intel B760 / H770 (or)AMD B550 Chipset
4.	RAM	Size :16GB DDR4 or higher
5.	RAM Expandability	Upto 32GB
6.	Storage	512 GB M.2 NVMeSSDor Higher (Expandable up to 1TB)
7.	Graphic Card	Integrated
8.	Operating System	Windows 11 Professional /LINUX (Factory Pre-loaded)
9.	DIMM Slots	2 or higher
10.	Internal Bays	1 or higher
11.	External Bays	1 or higher
12.	Cabinet	SFF / Mini Tower / Mid Tower
13.	Network Connectivity	1 x Gigabit Ethernet
14.	Expansion Slots (PCIe x 1)	1 or higher nos.
15.	Expansion Slots (PCIe x 16)	1 or higher nos.
16.	USB Port 2.0	2 or higher nos.
17.	USB Port 3.0/3.1 Gen 1 ports or better	6 or higher nos.
18.	HDMI	1
19.	No. of Display port	1
20.	Display Type	LED
21.	Display Size	21” or higher
22.	Monitor Resolution	1920 x 1080 Pixels or better
23.	Monitor Certification	TCO 8.0 or higher
24.	No. of VGA/DP ports in Monitor	1

25.	No. of HDMI ports in Monitor	1
26.	Keyboard	Of same OEM Make with Minimum 104 keys
27.	Mouse	Of same OEM Make with Optical 2/3 Button
28.	In-built Speakers	Yes
29.	Wireless Network Adapter	Yes
30.	Audio Jacks	To connect headphones, external speakers, mic, etc.
31.	Optical Drive	Optional
32.	Camera (External)	Optional, 720p or Higher
33.	Bluetooth	Optional, If Yes, v 5.0 or higher
34.	Warranty	Onsite and Comprehensive warranty for minimum Five years from OEM/Vendor, the detailed Technical Specifications of the model with images should be available on OEM/Vendor website for verification. The part numbers/machine serial number with make and model of all items of the BOM of offered model should be available for cross verification and to be mentioned in invoice of the seller, after sales support shall be confirmed from the OEM/Vendor side.
35.	ROHS Compliance	Yes
36.	BEE / Energy star for the given Model	Yes
37.	Security Management	Trusted Platform Module TPM 2.0 Embedded chip

5.3. MID LEVEL (Segment – II) Laptop

Sl. No	Parameters	Specifications
1.	Processor	Intel Core i5**(or)** AMD Ryzen5
2.	Processor Generation	12th Generation or latest
3.	Chip set	Intel 700 Series (or) AMD B50
4.	RAM	Size :16GB DDR4 or higher
5.	RAM Expandability	Upto 32GB
6.	Storage	512 GB M.2 NVMeSSDor Higher (Expandable up to 1TB)
7.	Graphic Card	Integrated
8.	Operating System	Windows 11 Professional /LINUX (Factory Pre-loaded)
9.	Ports	2x USB-C, 2x USB 3.2, HDMI, 3.5 mm Combo Audio Jack, RJ-45
10.	Display Type	LED, Non-Touch
11.	Display Size	14" or higher
12.	Display Resolution	1920 x 1080 Full HD or better
13.	Keyboard& Touchpad	Backlit keyboard with Touchpad and Numpad (Optional)
14.	In-built Speakers, Mic, Camera	Integrated Microphone 720p or 1080p HD Camera Stereo Speakers with Dolby Audio
15.	Connectivity	Wi-Fi 6E, Bluetooth 5.2, 1 x Gigabit Ethernet
16.	Battery Life	Integrated Battery with minimum 6-8 Hours or Higher
17.	Battery Warranty	3 Years
18.	Warranty	3-Years onsite comprehensive warranty
19.	ROHS Compliance	Yes
20.	BEE / Energy star for the given Model	Yes

21.	Security Management	Trusted Platform Module TPM 2.0 Embedded chip

5.4. HIGH-END LEVEL (Segment – III) Desktop Computers

Sl. No	Parameters	Specifications
1.	Processor	Intel Core i7**(or)** AMD Ryzen7
2.	Processor Generation	12th Generation or latest
3.	Chip set	Intel Z790 / B760 (or) AMD B650 / X670
4.	RAM	Size :16GB DDR5 or higher
5.	RAM Expandability	Upto64GB
6.	Storage	1TB M.2 NVMeSSDor Higher
7.	Graphic Card	Integrated / Dedicated
8.	Operating System	Windows 11 Professional /LINUX (Factory Pre-loaded)
9.	DIMM Slots	2 or higher
10.	Internal Bays	1 or higher
11.	External Bays	1 or higher
12.	Cabinet	SFF / Mini Tower / Mid Tower
13.	Network Connectivity	1 x 2.5G Ethernet Port
14.	Expansion Slots (PCIe x 1)	1 or higher nos.
15.	Expansion Slots (PCIe x 16)	1 or higher nos.
16.	USB Port 2.0	2 or higher nos.
17.	USB Port 3.0/3.1 Gen 1 ports or better	6 or higher nos.
18.	HDMI	1
19.	No. of Display port	1
20.	Display Type	LED
21.	Display Size	21” or higher
22.	Monitor Resolution	1920 x 1080 Pixels or better
23.	Monitor Certification	TCO 8.0 or higher
24.	No. of VGA/DP ports in Monitor	1
25.	No. of HDMI ports in Monitor	1
26.	Keyboard	Of same OEM Make with Minimum 104 keys
27.	Mouse	Of same OEM Make with Optical 2/3 Button
28.	In-built Speakers	Yes
29.	Wireless Network Adapter	Yes
30.	Audio Jacks	To connect headphones, external speakers, mic, etc.
31.	Optical Drive	Optional
32.	Camera & Microphone(External)	Optional, Camera1080p HD or better Microphone with AI Noise Cancellation
33.	Bluetooth	Optional, If Yes, v 5.0 or higher
34.	Warranty	Onsite and Comprehensive warranty for minimum Five years from OEM/Vendor, the detailed Technical Specifications of the model with images should be available on OEM/Vendor website for verification. The part numbers/machine serial number with make and model of all items of the BOM of offered model should be available for cross verification and to be mentioned in invoice of the seller, after sales support shall be confirmed from the OEM/Vendor side.
35.	ROHS Compliance	Yes
36.	BEE / Energy star for the given Model	Yes
37.	Security Management	Trusted Platform Module TPM 2.0 Embedded

		chip

5.5. HIGH END LEVEL (Segment – III) Laptop

Sl. No	Parameters	Specifications
1.	Processor	Intel Core i7**(or)** AMD Ryzen7
2.	Processor Generation	12th Generation or latest
3.	Chip set	Intel HM570 / Intel 500 Series(or) AMD Ryzen 7 7XXX Series with AMD 6000/7000
4.	RAM	Size :16GB DDR4 or higher
5.	RAM Expandability	Upto64GB
6.	Storage	1 TB M.2 NVMeSSDor Higher
7.	Graphic Card	Integrated
8.	Operating System	Windows 11 Professional /LINUX (Factory Pre-loaded)
9.	Ports	2x USB-C, 2x USB 3.2, HDMI, 3.5 mm Combo Audio Jack, RJ-45
10.	Display Type	LED, Non-Touch
11.	Display Size	14" or higher
12.	Display Resolution	1920 x 1080 Full HD or better
13.	Keyboard& Touchpad	Backlit keyboard with Touchpad and Numpad (Optional)
14.	In-built Speakers, Mic, Camera	Integrated Microphone 720p or 1080p HD Camera Stereo Speakers with Dolby Audio
15.	Connectivity	Wi-Fi 6E, Bluetooth 5.2, 1 x Gigabit Ethernet
16.	Battery Life	Integrated Battery with minimum 6-8 Hours or Higher
17.	Battery Warranty	3 Years
18.	Warranty	3-Years onsite comprehensive warranty
19.	ROHS Compliance	Yes
20.	BEE / Energy star for the given Model	Yes
21.	Security Management	Trusted Platform Module TPM 2.0 Embedded chip

5.6. – Printer

5.6.1. Printer

Sl. No	Parameters	Specifications
1.	Print Technology	Laser / Ink
2.	Type of Printing	Mono / Colour
3.	Paper Size	A4 / Legal
4.	Print Speed (Mono / Colour)	20 PPM or higher Colour: Minimum 15 ppm
5.	Duplex Feature	Optional
6.	Network Connectivity	Yes
7.	USB Port	Yes
8.	Duty Cycle	Minimum 5000 per month
9.	Warranty	Minimum 3 years Onsite warranty
10.	Wireless Connectivity	Optional

5.6.2. A4 – Ink Tank MF Printer with Network and Duplex

Sl. No	Parameters	Specifications
1.	Function	Print, Scan, Copy
2.	Paper Size	A4, A5, A6, B5, Legal, Letter, Custom Sizes
3.	Print Technology	Inkjet with Integrated Ink Tank System
4.	Print Speed	Monochrome (Black & White): Minimum 20 ppm
		Colour: Minimum 15 ppm
5.	First Page Out	Black: ≤10 seconds
		Colour: ≤20 seconds
6.	Print Resolution	Minimum 1200 x 1200 dpi
7.	Print Colour	Monochrome and Full Colour (CMYK)
8.	Print Languages	PCL 6, PCL 5c, HP GL/2, PostScript Level 3 emulation
9.	Duplex Printing	Automatic Duplex (Two-Sided Printing)
10.	Copy Speed	Monochrome: Up to 22 copies per minute (CPM)
		Colour: Up to 10 CPM
11.	Scan File Format	PDF, JPEG, PNG, TIFF, BMP
12.	Automatic Document Feeder (ADF) / RADF	Optional
13.	Connectivity	Wired: USB 2.0, Ethernet (10/100 Mbps)
		Wireless: Wi-Fi (802.11 b/g/n), Wi-Fi Direct
14.	Input Capacity	Paper Tray: Minimum 250 sheets
15.		ADF: Minimum 20 sheets
16.	Power Supply	Voltage: 100-240V AC, 50/60 Hz
		Consumption: Operational ≤20W, Standby ≤1W
17.	Wireless Printing	Apple Air Print, Google Cloud Print, Mopria Certification, Manufacturer-specific App Support
18.	Warranty	2-3 years onsite comprehensive warranty with extended options available
19.	Certificate	ENERGY STAR®, BIS (India), ISO 14001:2015 (Environmental Management), ISO 9001:2015 (Quality)

5.6.3. A4 Laser Jet Tank MF Printer with Network and Duplex

Sl. No	Parameter	Specifications	
1.	Function	Print, Copy, Scan	
2.	Paper Size	A4, A5, A6, B5, Letter, Legal, Executive, Envelope (C5, DL),	
3.	Print Technology	LaserJet tank technology	
4.	Print Speed	Black & white	Minimum 25 ppm
		Colour *(if applicable)*	Minimum 15 ppm
5.	First Page Out	Black & white	≤ 7 Seconds
		Colour *(if applicable)*	≤10 Seconds
6.	Print Resolution	Up to 1200 x 1200 dpi	
7.	Print Colour	Monochrome (Black & White) or Colour (Based on Model)	
8.	Print Languages	PCL 6, PCL 5, Postscript 3, PDF, XPS	
9.	Duplex Printing	Automatic Duplex Printing	
10.	Copy Speed	Black & white	Up to 25 CPM
		Colour *(if applicable)*	Up to 18 CPM
11.	Scan File Format	PDF, JPEG, PNG, BMP, TIFF	

12.	Automatic Document Feeder / RADF	Optional	
13.	Connectivity	USB 2.0, Ethernet (10/100 Mbps), Wi-Fi (802.11 b/g/n), Wi-Fi Direct	
14.	Input Capacity	Standard Tray	Minimum 250 sheets
15.		Manual Feed	1 sheet
		Output Tray	Minimum 100 sheets
16.	Power Supply	Voltage	220-240V AC, 50/60 Hz
		Power Consumption	Operating: ≤ 400W Standby: ≤ 1W Sleep Mode: ≤ 0.5 W
17.	Wireless Printing	Apple Air Print, Google Cloud Print, Mopria Certified, Dedicated App Support	
18.	Warranty	2-3 years onsite warranty with extended options available	
19.	Certificate	ENERGY STAR, Blue Angel Certified, RoHS Compliant	

5.6.4. A3 Mono Laser Multifunction Copier-cum-Printer with Network and Duplex

Sl. No	Parameters	Specifications
1.	Function	Print, Copy, Scan
2.	Paper Size	A3, A4, A5, A6, B4, B5; Legal, Letter, Executive, Folio; Custom: 98 mm x 148 mm to 297 mm x 431.8 mm
3.	Print Technology	Laser (Monochrome); High-speed single-pass engine
4.	Print Speed	• A3: Minimum 10 ppm • A4: Minimum 22 ppm
5.	First Page Out	Less than 6.5 seconds (from ready mode)
6.	Print Resolution	1200 x 1200 dpi
7.	RAM Memory	Minimum 512 MB
8.	Print Colour	Monochrome (Black & White)
9.	Print Languages	PCL 6, PCL 5, PostScript 3, PDF Direct Print
10.	Duplex Printing	Automatic (Standard)
11.	Copy Speed	• A3: Up to 10 CPM • A4: Up to 22 CPM;
12.	Scan File Format	PDF, JPEG, PNG, TIFF, XPS
13.	Automatic Document Feeder / RADF	Optional
14.	Connectivity	Gigabit Ethernet (10/100/1000 Mbps); USB 2.0/3.0, Host USB for direct printing
15.	Wireless Printing	Optional modules: Wi-Fi Direct, Apple Air Print, Google Cloud Print, Mopria Certified
16.	Input Capacity	Standard Tray: Minimum 200 sheets; Multipurpose Tray: 100 sheets; Expandable up to 2,000 sheets
17.	Power Supply	Voltage: AC 220–240V, 50/60 Hz; Power Consumption: ≤600 W (Operation), ≤1.5 W (Sleep Mode)
18.	Warranty	3 years onsite warranty with extended options available

19.	Certifications	Environmental: ENERGY STAR®, EPEAT®, RoHS compliant; Safety and Emissions: CE, FCC, UL certified
20.	Stand	Optional - For heavy load Printer

5.7. Scanner

5.7.1. Flat bed Scanner

Sl. No	Parameters	Specifications	
1.	Scan Technology	CCD (Change Coupled Devices) or CIS (Contact Image Sensor)	
2.	Scanning Resolution	Optical Resolution	2400 x 4800 dpi or higher
		Enhanced Resolution	Up to 9600 x 9600 dpi
		Hardware Resolution	1200 x 2400 dpi (min)
3.	Scan Speed	Colour	10-20 sec per page
		Monochrome	5-10 sec per page
		High Resolution	60-120 sec per page
4.	Scanning Area	A4 (210 mm x 297 mm)	
		A3 (297 mm x 420 mm)	
		Legal (216 mm x 356 mm)	
5.	Scan Depth	Colour Depth	48-bit internal, 24-bit external
		Grayscale Depth	16-bit internal, 8-bit external
6.	Scan File format	• JPEG, TIFF, PNG, PDF, BMP, GIF, PICT, JPG2000, etc. • OCR Support for text extraction (Optional)	
7.	Connectivity	• USB: USB 2.0 or USB 3.0 • Wi-Fi: Available in some models • Cloud: Google Drive, Dropbox, etc. • Software Integration: Adobe Acrobat, OCR tools	
8.	Display and Control panel	• Control Panel: Physical buttons or touchscreen • LCD Display: For settings and scan status	
9.	Operating System	• Windows 7, 8, 10, 11 (32/64-bit) • Linux	
10.	Colour Management	• Built-in calibration tools • ICC Profile Support for professional application • Colour correction & enhancement via software	
11.	Scan Feature	• Auto Document Feeder (Optional) • Automatic Image Correction • Instant preview scan	
12.	Power Supply	Voltage	AC 100-240V, 50/60 Hz
13.	Warranty	2-3 Year onsite comprehensive warranty with extended warranty options available	
14.	Use Case	• Scanning photographs, contracts, legal documents, artwork • Suitable for high-quality scans of various document types and sizes	

5.7.2. Sheet Fed Scanner:

Sl. No	Parameters	Specifications
1.	Scan Technology	Contact Image Sensor (CIS) or Charge Coupled Device (CCD)
		LED light source with minimal warm-up time
		Automatic duplex scanning
2.	Scanning Resolution	Optical: Minimum 600 x 600 dpi
		Enhanced: Up to 1200 dpi
3.	Scan Speed	Simplex: Minimum 25 pages per minute (ppm)
		Duplex: Minimum 10 images per minute (ipm)
		Auto Document Feeder (ADF): Minimum 50 sheets (Optional)
4.	Scanning Area	Maximum: A4 (8.5 x 11.7 inches)
		Minimum: Business card (2 x 3.5 inches)
5.	Scan Depth	Colour Depth: 24-bit
		Grayscale Depth: 8-bit
		Monochrome: 1-bit
6.	Scan File Format	PDF (searchable and non-searchable), JPEG, PNG, TIFF, BMP
7.	Connectivity	USB 3.0, Ethernet (optional), Wi-Fi (optional)
		Mobile connectivity via iOS/Android apps
8.	Display and Control Panel	Integrated LCD screen (minimum 2 inches)
		Scan-to-PC/USB/Cloud options
		Customizable scan profiles and multi-language support
9.	Operating System	Compatibility: Windows, macOS, Linux
		Driver Availability: TWAIN, WIA, and ISIS
10.	Colour Management	ICC Profile Support
		Automatic and manual colour calibration options
11.	Scan Features	Built-in OCR (Optical Character Recognition)
		Auto page size and alignment detection
		Image enhancement (skew correction, colour adjustment, de-speckling)
12.	Power Supply	Input Voltage: 100–240V AC, 50/60Hz
13.	Warranty	2-3 Year onsite comprehensive warranty with extended warranty options available
14.	Use Case	Office environments for document digitization
		Archival purposes for certificates and contracts
		Workflows require high-speed, reliable scanning
15.	Certifications	ENERGY STAR®, RoHS, FCC, CE

5.8. Uninterrupted Power Supply (UPS)

5.8.1. Model: 0.6 KVA Offline UPS

Sl. No	Parameters	Specifications
Electrical Parameters		
1.	Capacity	600 VA / 300 W
2.	Input Voltage	Nominal: 230V AC, Operating Range: 140V AC to 300V AC
3.	Input Frequency	45–55 Hz (Autosensing)
4.	Output Voltage	Nominal: 230V AC ± 10% (on battery)
5.	Output Frequency	50 Hz ± 1 Hz (on battery mode)
6.	Waveform Type	Simulated sine wave
7.	Automatic Voltage Regulation (AVR)	Boost and buck modes to handle low and high voltages
Backup and Battery		
8.	Backup Time	Minimum 10 minutes (at 50% load, ~150 W)
9.	Battery Type	Sealed lead-acid, maintenance-free
10.	Battery Capacity	12V, 7Ah or 12V, 9Ah (depending on model)
11.	Recharge Time	4–6 hours to 90% capacity
12.	Battery Replacement	User-replaceable, hot-swappable
Protection Features		
13.	Surge Protection	Built-in surge suppressor (up to 310 Joules)
14.	Overload Protection	Automatic shutdown during overload conditions
15.	Short Circuit Protection	Circuit breaker or internal fuse
16.	Low Battery Alarm	Audible alert for low battery and overload conditions
17.	Safety Standards	Complies with IEC/EN 62040-1
Environmental Parameters		
18.	Operating Temperature	0°C to 40°C
19.	Humidity	0–90% non-condensing
20.	Noise Level	≤ 40 dB at 1 meter
Design and Build		
21.	Indicator/Display	LED or LCD for power status, battery status, and fault conditions
22.	Outlets	2–3 battery-backed output sockets
Interface		
23.	Connectivity	USB or RS232 for monitoring and management (optional)
Efficiency		
24.	Normal Mode Efficiency	≥ 95%
25.	Battery Mode Efficiency	~80%
Warranty and Support		
26.	Warranty	2-3 years (UPS)
27.	Support	On-site service or carry-in to authorized service centers
28.	Certificate	ISO 9001, ISO 14001
29.	Battery Certificate	EMC, RoHS Compliance, BIS

5.8.2. Model: 1 KVA Online Double Conversion UPS

Sl. No	Parameters	Specifications
Backup time		**1KVA Online (30 min Backup) (or) 1KVA Online (1 Hr. Backup)**
Electrical Parameters		
1.	Capacity	1000 VA / 900 W
2.	Input Voltage	180-260 V(AC)
3.	Input Frequency	50 Hz ± 5%
4.	Output Voltage	220V ± 1%
5.	Output Frequency	50 Hz ± 0.1%
6.	Waveform Type	Pure sine Wave
7.	Automatic Voltage Regulation (AVR)	Yes, With buck and boost functionality
Backup and Battery		
8.	Battery Type	Sealed lead-acid or Lithium - Ion
9.	Battery Capacity	7 Ah -9Ah **(or)**9 Ah – 12 Ah
10.	Recharge Time	4-6 hours**(or)**6-8 hours
11.	Battery Replacement	User-replaceable, hot-swappable
Protection Features		
12.	Surge Protection	With high surge tolerance
13.	Overload Protection	Automatic shutdown during overload conditions
14.	Short Circuit Protection	Automatic Shutdown
15.	Low Battery Alarm	Audible alert for low battery
16.	Safety Standards	CE, UL, RoHS
Environmental Parameters		
17.	Operating Temperature	0°C to 40°C
18.	Humidity	0–90% non-condensing
19.	Noise Level	≤ 45 dB
Design and Build		
20.	Indicator/Display	LED or LCD for power status, battery status, and fault conditions
21.	Outlets	4–6 battery-backed, 1–2 surge-only outlets
Interface		
22.	Connectivity	USB, Serial Port, SNMP (optional)
Efficiency		
23.	Normal Mode Efficiency	>90%
24.	Battery Mode Efficiency	>85%
Warranty and Support		
25.	Warranty	2-3 years (UPS)
26.	Support	On-site service or carry-in to authorized service centers
27.	Certificate	CE, UL, RoHS
28.	Battery Certificate	EMC, RoHS Compliance, BIS

5.8.3. Model: 3 KVA Online UPS

Sl. No	Category	Specifications
Backup time		**3KVA Online (30 min Backup) (or)3KVA Online (1Hr. backup) (or)3KVA online (2 Hr. Backup)**
Electrical Parameters		
1.	Capacity	3000VA / 2700 W
2.	Input Voltage	180V to 270V
3.	Input Frequency	50 Hz 10%
4.	Output Voltage	220V 1%
5.	Output Frequency	50 Hz 0.1 %
6.	Waveform Type	Pure Sine Wave
7.	Automatic Voltage Regulation (AVR)	Yes
Backup and Battery		
8.	Battery Type	Sealed lead-acid or Lithium - Ion
9.	Battery Capacity	9 Ah -12Ah **(or)**12 Ah – 18 Ah**(or)**18 Ah – 24 Ah
10.	Recharge Time	4-6 hours**(or)**6-8 hours**(or)** 8-10 hours
11.	Battery Replacement	User-replaceable, hot-swappable
Protection Features		
12.	Surge Protection	With high surge tolerance
13.	Overload Protection	Automatic shutdown during overload conditions
14.	Short Circuit Protection	Automatic Shutdown
15.	Low Battery Alarm	Audible alert for low battery
16.	Safety Standards	IEC, CE, UL, ISO 9001
Environmental Parameters		
17.	Operating Temperature	0°C to 40°C
18.	Humidity	0–90% non-condensing
19.	Noise Level	≤ 45 dB
Design and Build		
20.	Indicator/Display	LED or LCD for power status, battery status, and fault conditions
21.	Outlets	4–6 battery-backed, 1–2 surge-only outlets
Interface		
22.	Connectivity	USB, RS232, Network Port
Efficiency		
23.	Normal Mode Efficiency	88% - 94%
24.	Battery Mode Efficiency	85% - 90%
Warranty and Support		
25.	Warranty	2-3 years (UPS)
26.	Support	On-site service or carry-in to authorized service centers
27.	Certificate	CE, UL, RoHS, ISO 9001
28.	Battery Certificate	ISO 9001, CE

5.8.4. Model: 5 KVA Online UPS

Sl. No	Parameters	Specifications		
Backup time		**5KVA Online (30 min Backup) (or)5KVA Online (1 Hr. Backup) (or)5KVA online (2Hr. Backup)**		
Electrical Parameters				
1.	Capacity	5000VA / 4000 W		
2.	Input Voltage	160V to 300V		
3.	Input Frequency	50 Hz 10%		
4.	Output Voltage	220V 1%		
5.	Output Frequency	50 Hz 0.1 %		
6.	Waveform Type	Pure Sine Wave		
7.	Automatic Voltage Regulation (AVR)	Yes		
Backup and Battery				
8.	Battery Type	Sealed lead-acid or Lithium - Ion		
9.	Battery Capacity	7 Ah -9Ah **(or)** 12 Ah – 14 Ah**(or)**24 Ah – 28 Ah		
10.	Recharge Time	4-6 hours**(or)** 6-8 hours**(or)**8-10 hours		
11.	Battery Replacement	User-replaceable, hot-swappable		
Protection Features				
12.	Surge Protection	With high surge tolerance		
13.	Overload Protection	Automatic shutdown during overload conditions		
14.	Short Circuit Protection	Automatic Shutdown		
15.	Low Battery Alarm	Audible alert for low battery		
16.	Safety Standards	IEC, CE, UL, ISO 9001		
Environmental Parameters				
17.	Operating Temperature	0°C to 40°C		
18.	Humidity	0–95% non-condensing		
19.	Noise Level	40 dB – 50 dB	45 dB – 55 dB	50 dB – 60 dB
Design and Build				
20.	Indicator/Display	LED or LCD		
21.	Outlets	6 - 8 battery-backed		
Interface				
22.	Connectivity	USB, RS232, SNMP		
Efficiency				
23.	Normal Mode Efficiency	92%- 95%		
24.	Battery Mode Efficiency	88%- 90%		
Warranty and Support				
25.	Warranty	2-3 years (UPS)		
26.	Support	On-site service or carry-in to authorized service centres		
27.	Certificate	CE, UL, RoHS, ISO 9001		
28.	Battery Certificate	ISO 9001, CE, RoHS		

5.8.5. Model: 6 KVA Online UPS

Sl. No	Parameters	Specifications
Backup time		**6KVA Online (30 min Backup) (or)6KVA Online (1Hr. Backup) (or) 6KVA online(2Hr. Backup)**
Electrical Parameters		
1.	Capacity	6000VA / 4000 W
2.	Input Voltage	160V to 280V AC
3.	Input Frequency	50 Hz ± 10%
4.	Output Voltage	220V ±1%
5.	Output Frequency	50 Hz / 60 Hz
6.	Waveform Type	Pure Sine Wave
7.	Automatic Voltage Regulation (AVR)	Yes
Backup and Battery		
8.	Battery Type	Sealed lead-acid or Lithium - Ion
9.	Battery Capacity	12 Ah -24Ah **(or)** 24 Ah – 36 Ah**(or)**36 Ah – 48 Ah
10.	Recharge Time	4-6 hours **(or)** 6-8 hours **(or)** 8-10 hours
11.	Battery Replacement	User-replaceable, hot-swappable
Protection Features		
12.	Surge Protection	With high surge tolerance
13.	Overload Protection	Automatic shutdown during overload conditions
14.	Short Circuit Protection	Automatic Shutdown
15.	Low Battery Alarm	Audible alert for low battery
16.	Safety Standards	IEC, CE, UL, ISO 9001
Environmental Parameters		
17.	Operating Temperature	0°C to 40°C
18.	Humidity	0–95% non-condensing
19.	Noise Level	40 dB – 60 dB
Design and Build		
20.	Indicator/Display	LED or LCD
21.	Outlets	6 - 10 battery-backed
Interface		
22.	Connectivity	USB, RS232, SNMP
Efficiency		
23.	Normal Mode Efficiency	92% - 94%
24.	Battery Mode Efficiency	85% - 88%
Warranty and Support		
25.	Warranty	2-3 years (UPS)
26.	Support	On-site service or carry-in to authorized service centres
27.	Certificate	CE, UL, RoHS, ISO 9001
28.	Battery Certificate	ISO 9001, CE, RoHS

5.8.6. Model: 10 KVA Online UPS

Sl. No	Parameters	Specifications
Backup Time		**10 KVA Online (60 min Backup) (or) 10 KVA Online (2 Hr. Backup) (or) 10 KVA online (4 Hr. Backup)**
Electrical Parameters		
1.	Capacity	10000VA
2.	Input Voltage	220V ± 20%
3.	Input Frequency	50 Hz ± 10%
4.	Output Voltage	220V ±1%
5.	Output Frequency	50 Hz ± 0.1%
6.	Waveform Type	Pure Sine Wave
7.	Automatic Voltage Regulation (AVR)	Yes
Backup and Battery		
8.	Battery Type	Sealed lead-acid or Lithium - Ion
9.	Battery Capacity	120 Ah x 2 (or)240 Ah x 2 (or) 480 Ah x 2
10.	Recharge Time	6-8 hours (or) 6-8 hours (or) 8-10 hours
11.	Battery Replacement	User-replaceable, hot-swappable
Protection Features		
12.	Surge Protection	1500 Joules
13.	Overload Protection	Automatic shutdown at 110%–150% of rated load
14.	Short Circuit Protection	Automatic Shutdown
15.	Low Battery Alarm	Audible alert for low battery
16.	Safety Standards	IEC, CE, UL, ISO 9001
Environmental Parameters		
17.	Operating Temperature	0°C to 40°C
18.	Humidity	0–95% non-condensing
19.	Noise Level	40 dB –60 dB
Design and Build		
20.	Indicator/Display	LED or LCD
21.	Outlets	6 - 10 battery-backed
Interface		
22.	Connectivity	USB, RS232, SNMP
Efficiency		
23.	Normal Mode Efficiency	>92
24.	Battery Mode Efficiency	>88%
Warranty and Support		
25.	Warranty	2-3 years (UPS)
26.	Support	On-site service or carry-in to authorized service centres
27.	Certificate	CE, UL, RoHS, ISO 9001
28.	Battery Certificate	IEC 60896, UL 1989

6. General IT Asset Management – Procurement / Procedures / Policies

6.1. Important factors to be considered during procurement

There are several important factors to be considered while buying a Desktop/Laptop, including:

- **Display -**The display is important for visual clarity and comfort. Look for a high-resolution display with good color accuracy and a size that suits the end-user/official's needs.
- **Battery life** - Battery life is important for portability. Look for a laptop with a battery life of at least 6 - 8 hours, especially if the end-user / official is plan to use it on the go / remote areas.
- **Build quality** - The build quality determines the durability and longevity of the laptop. Look for a laptop with a sturdy build, quality materials, and good ventilation.
- **Price** - Price is an important consideration for many buyers. Look for a desktop / laptop that offers good value for organization/ department budget / policies and meets the needs of official's / end-users objective.
- **Warranty**:The warranty includes technical hardware malfunctions and does not cover Customer induced damage. Generally, a minimum of 3 year's warranty must be looked for during procurement.
- **AMC**: A Computer AMC is a contract that ensures periodic upkeep and maintenance of the computer's hardware and software and fixing any related problems that may arise during the tenure of the contract. It is essential to follow AMC procedures for all the IT assets nearing the end of their warranty life cycle, and it is the responsibility of the procurement/asset management team to follow the guidelines as per ***Annexure I.***
- **Clause:** During the procurement of laptops or desktops, it is essential to ensure that all devices are equipped with a high-quality camera, microphone, and either built-in speakers or headphones to support uninterrupted video conferencing capabilities at any time. To ensure superior audio clarity and to minimize background noise or disruptions during virtual meetings, the use of headphones is highly recommended. This approach facilitates effective communication, promotes professionalism, and enhances the overall user experience during video conferencing sessions.
- **Licensed usage of software:**

  It is mandatory to utilize only licensed software, and such a license should be acquired for a minimum of threeyears, ensuring that the software remains valid and supported during this period. Once the license term expires, it is required to obtain a new license to continue using the software. The renewal of the license must be done in such a way that it incorporates the most current technological advancements and updates, ensuring the software remains up-to-date, secure, and compatible with evolving systems and standards.

  For Example,

  - **Microsoft Office:** In government entities, every employee must utilize the licensed version of Microsoft Office software to ensure full compliance with legal, regulatory, and organizational standards. The unauthorized downloading of Microsoft Office from

unverified online sources, without a valid license, is strictly prohibited, as it may expose the organization to significant legal risks and cybersecurity threats. During the procurement of laptops or desktops for official use, it is mandatory to include the corresponding Microsoft Office license as part of the purchase agreement. This guarantees that all systems are properly licensed and equipped with genuine software, thereby promoting a secure, legally compliant, and efficient work environmentwhile safeguarding the integrity of the organization's IT infrastructure.

- **Antivirus:** The procurement team must ensure, the existing or procuring new devices must be installed with reputed Antivirus/EDR software on all the systems with regular signature updates.

- **Recommendation of Headphones:** Headphones are preferred because they provide better sound quality and reduce disturbances.

- **Year of Manufacturing:** When procuring desktops/laptops, it is crucial to check the manufacturing year. Devices produced in the most recent year (2024) should be prioritized as they typically offer the most up-to-date technology and specifications, longer support for hardware and software compatibility, and better performance and energy efficiency.

6.2. Change of Asset

The department staff/official before upgrading or procuring a new device, the existing hardware, which has been previously used by them, needs to be submitted to the respective department admin by handling the inventory/asset management, and a token acknowledgment is to be issued mandatorily. A systematic approach has to be followed by making an entry in his/her tracking system; if not, an appropriate register has to be maintained and shall be made available at the time of auditing. Based on hardware submission, procurement of new Performa Invoice requests shall be raised, and the same can be approved.

6.3. Warranty

The existing IT asset (computers, printer/scanner, and UPS) with a **minimum of three (3) years on-site warranty (next business day) and an additional extended two (2) years warranty** has to be availed at the time of purchase/procurement with the vendor. Certain items, such as printers, scanners, and UPSs, may sometimes not have an extended warranty option. During this five (5) year period, any necessary repairs or replacements have to be immediately addressed by the vendor; if not, penalty terms shall be applicable as per the AMC contract given***section 9.1.*** After the completion of the warranty period, the maintenance and servicing of IT asset responsibilities are transferred to the annual maintenance contract (AMC) provider.

If a computer becomes non-functional or obsolete and is no longer viable for repair or use (refer to the decommission ***section 6***.4), it has to be decommissioned as per the policy. At this stage, the process of disposal must adhere strictly to the e-waste management guidelines prescribed by the relevant regulatory authorities to ensure environmental compliance.

Before any computer, printer/scanner, and UPS can be officially categorized as e-waste and disposed of, the department head must review its condition and provide formal approval for its classification and subsequent disposal. This approval process ensures accountability and proper documentation for the disposal of government or organizational assets.

I. If a device is identified as faulty within the warranty period, the device should be repaired rather than replaced with a new procurement. In case the device becomes non-functional or cannot be repaired within the warranty period, then the concerned department must obtain concurrence from the Directorate of Information Technology, Puducherry, stating the device condition, before proceeding with a new procurement.

II. If the device is beyond repair during the warranty period, the AMC vendor must provide a certificate stating that the device is non-functional, including a detailed description of the identified fault to the department concerned. This letter has to be submitted to the Directorate of Information Technology, Puducherry, while obtaining concurrence for new procurement.

III. In critical or emergency situations, where a resource's allocated device isfaulty, a temporary device may be assigned to the resource in order to perform his daily activity. However, the faulty device must be repaired (if the fault occurs in the RAM or hard disk or any other components that can be replaceable, then these components should be replaced under warranty).

    a. In case of a motherboard failure, a complete product replacement has to be provided by the OEM vendor during the warranty period.

IV. If the device has not yet completed its usual 7-year lifecycle, it is the responsibility of the respective department(IT Asset management team) must assess its condition and obtain a certificate immediately from the OEM vendor or AMC vendor.

V. In the above mentioned cases, where the OEM vendor offers a replacement, then the department (IT Asset management team) must proceed with replacing the faulty device, and this device has to be reallocated to the resource for whom a temporary device was allocated.

For example:A resource from the Tourism Department was allocated an HP desktop, which had gone faulty within 2-3 years, before its expected seven-year lifetime. In such cases, the tourism department (IT asset management team) must follow up with HP (OEM vendor) to get the faulty system repaired within the downtime penalty table matrix. If the device cannot be repaired, then the HP (OEM vendor) has to issue a certificate confirming that the device is faulty and cannot be repaired, along with a detailed description of the issue. With this certificate, the Tourism Department (IT Asset Management Team) should communicate with the Directorate of Information Technology, Puducherry, in order to approve new procurement. Upon receiving concurrence from the Directorate of Information Technology, Puducherry, the Tourism Department may initiate the new procurement for the faulty device.

Note:

- *For the next purchase cycle, the same brand should be restricted. It is not advisable to procure the same brand again for the same department.*
- *This restriction applies only to specific purchasers (departments). If the L1 supplier is an HP brand, a re-tender must be conducted.*

6.4. Decommissioning

The following section outlines various aspects related to the decommissioning and disposal of department-owned IT assets.

As stated above in the section titled "Change of Asset," all computers and equipment must be returned to the Department Admin/Asset Management team when no longer being used by their primary designee or when the system is at the end of its usable life. User Services defines the "end of usable life" as equipment that meets one or more of the following criteria:

- ✓ If the Hardware, unable to run a supported operating system,
- ✓ If the required operating system that is considered by the vendor as "end of life,"
- ✓ If the Hardware is greater than 7 years old or Warranty and Extended warranty period has completed,
- ✓ If the Hardware lacks necessary specifications (hard drive space, memory, etc.) to apply criticalsecurity patches or software updates.
- ✓ If the Hardware is damaged and is not fiscally prudent to repair.

When a IT Asset is at the end of the lifecycle,the department may choose to liquidate the hardware via one of thethree following methods:

- Resale for Revenue
- Hardware Recycling
- Hardware Donation – To Government schools for children educational purpose

6.5. Data Security on Decommissioned Computers

For security purposes, the hard drives of **ALL** decommissioned computers are backed up, if required, to cloud storage or other physical storage devices and wiped using Department of Defense-compliant erasure techniques with multiple zeroing passes to assure department data is destroyed before hardware leaves the department by following the e-waste management procedures link issued by Puducherry Pollution Control Committee are available at https://dste.py.gov.in/ppcc/waste%20management.html.

6.6. Quantity-based Procurement

Departments and organizations of the Government of India are encouraged to fully utilize the Average Cost Reduction (ACR) structure available for bulk procurement of laptops and desktops. These procurement policies are designed to offer cost benefits based on purchase volume, enabling government entities to realize significant savings. The evaluation process ensures transparency and accountability, confirming that vendors adhere to the agreed pricing for bulk orders. ACR percentages may vary according to vendors. By strategically leveraging these cost reductions, government organizations can optimize their budgets, allocate resources efficiently, and maintain cost-effective

procurement practices while meeting their technological needs.

Quantity Procured	Average Cost Reduction (%)
1–10	5%
11–20	10%
21–50	15%
51–100	20%
101+	25% or more

For Example:

Consider an organization with 40 employees. Among them, 20 are non-technical employees working in administrative, clerical, and data entry roles. These employees typically perform tasks like document handling, basic data management, and record maintenance, which do not require high computational power. As such, they are best suited for Segment - I desktops, which offer cost-efficient solutions for basic office tasks.

Five employees are in executive management, and their work primarily involves activities planning, execute and closure of the services, attending video conferences, reviewing documents and often requires travel between multiple locations / offices. In this, Segment II Laptops systems are sufficient for this group, as these configurations can comfortably handle such standard productivity tasks.

The remaining 15 employees, 10 of whom are in the technical category, are engaged in tasks like coordination and implementation of project across different departments, covering the planning to closure of the project, which fall on exceptional cases. These activities require moderate performance levels and multitasking capabilities. Hence, Segment II desktops are suitable for their needs, striking a balance between performance and cost.

The remaining 5 technical employees whose responsibilities include high-quality video playback, editing, and designing using advanced tools; handling multiple virtual machines; and handling heavy multitasking. These tasks demand robust performance, high processing power, and advanced graphical capabilities. Therefore, Segment-III desktops are preferred for this group to meet their performance requirements effectively.

Segment	System Type	Number of Devices	Estimated Unit Cost	Total Cost
Segment I	Desktop	20	□ 44,747	□ 8,94,940
Segment II	Laptop	5	□ 77,434	□ 3,87,170
Segment II	Desktop	10	□ 69,285	□ 6,92,850
Segment III	Desktop	5	□ 88,019	□ 4,40,095
TOTAL QUANTITY		40		
			TOTAL COST	□ 24,15,055
			ACR 15%	□ 3,62,258
			AVERAGE REDUCTION COST	□ 20,52,797

** To understand more about Segment I to Segment III category please refer section 3.3.1.*

7. Conclusion

The Chief Secretary, Government of Puducherry, directed the Puducherry e-Governance Society (PeGS) – Directorate of Information Technology (DIT), Puducherry, to prepare a detailed technical specifications guide for the procurement of desktop/laptop/printer/scanner/UPS accounting for multiple new-generation processors, types of printers, scanners, and various ranges of UPS and OEMs available in the market, along with price ranges for multiple OEMs.

To conclude, the procurement of desktop/laptop/printer/scanner/UPS systems is not a one-size-fits-all layer of department officials. It demands numerous factors to be considered before stepping into procurement. Apart from procurement, the most important factor in any government department is identifying the individual/department official'snature of work and the utilization of devices in achieving the allocated tasks. Based on the identification, categorize the individual/department officials as segment-wise.

This technical specifications guideline will help the competent authority of each department to categorize the individual/department officials, those who are lacking full knowledge with respect to specifications, price ranges of multiple brands/OEMs available in the market. To meet the industry standards with current availability and also to resolve the individual/department official slacking knowledge, this guideline will provide a detailed clarification to those department officials with the industry standards, technical specifications of multiple brands, processors, etc.

Also, they can understand the other factors that are required for procurement and a detailed method of categorizing department individuals into segment-wise. By analyzing all the factors mentioned in these guidelines and by applying the recommendation on the device specifications, it will not only ease the process of procurement for departments but also give knowledge in understanding the IT asset management and its policies.

Also, this technical specification guideline is prepared by Puducherry e-Governance Society (PeGS) – Directorate of Information Technology (DIT), Puducherry, as per the direction of The Chief Secretary, Government of Puducherry, addressing the State Government concern that many departments / Boards / Corporate / State Government organizations are facing issues while procuring Desktop / Laptop due to repeated launching / availability of new generations of Processors and other electronic systems in the market, by giving a reasonable solution approach in procurement of Desktop / Laptop for various Segment of staff / officials based on the Application / Software, CPU, Memory usage.

Certain exceptional cases have been taken into consideration, such as:

- if any department official moves from one Segment to another Segment either by promotion or executive management identifies, individual potential and allocate additional management tasks to perform as listed in the respective Segment -II.

The procurement of IT assets has to happen via the GEM portal with preference to "Make in India" products, and a detailed guideline of procurement via the GEM portal has been given in ***Annexure II*** for easy reference. In addition to that, a **"General IT Asset Policyand Procedures"** to be adopted has been given under ***section 6***, where the procurement team must follow certain mandatory conditions, like the reallocation of existing assets, warranty conditions, and decommissioning the existing outdated hardware asset by approaching **the Puducherry Pollution Control Committee** department.

A detailed model procurement exercise, considering the Directorate of Information and Technology, Puducherry, as an example, is given in the ***Annexure IV*** for understanding purposes to the concerned department procurement team. Taking this as guidance, procurement team can categorize the department staff/officials into various segments and procure new IT asset, based upon the request of device lifecycle.

A detailed list of FAQs has also been depicted for easy understanding, and addressing the clarifications in Questions and Answers (Q&A) format under ***section 8.***

This technical specifications guide also charted other IT assets, such as **printers, scanners, and UPS technical specifications,**as per the industry standards for procuring them via the GEM portal to ensure smooth operations in a precise manner.

By implementing the key performance metrics (KPI's) outlined in this technical specifications guide and coordinating with Puducherry e-Governance Society (PeGS)-Directorate of Information Technology (DIT) department, Puducherry, every department can utilize these guidelines to bring this technology roll-out on their premises successfully. This technical specifications guide is subject to revision on a yearly basis in order to keep updating with the latest industry standard products.

Further needed any support in these guidelines, Puducherry e-Governance Society (PeGS) – Directorate of Information Technology (DIT), Puducherry will be happy to assist in identifying the right choice of procurement for the department staff/official usage.

8. Frequently Asked Questions – FAQ's

1. What are some important factors to consider when choosing a Laptop/Desktop?

When procuring a laptop for a department, one should consider factors like processing power, memory, storage capacity, display size and quality, battery life, connectivity options, and the operating system that suits addressing the work requirements.

2. What processor should the department must look for in a Laptop/Desktop?

The department must look for a laptop with a modern and powerful processor, such as an Intel® Core i5™ or i7, or an Advanced Micro Devices (AMD) Ryzen 5 or 7. Also based on the CPU/memory utilization and the application/software usage of the respective individual official, one must check the segment in which he/she falls in. These processors offer excellent performance for multitasking and running demanding applications.

3. How much random-access memory (RAM) should I aim for in a desktop?

Aim for a desktop with a minimum of 8GB and a maximum of 16 GB of RAMfor smooth multitasking. However, if you frequently work with resource-intensive applications like video editing or virtual machines, consider opting for 32GB or more.

4. What storage capacity should I consider for a Desktop or Laptop?

It's best to choose a desktop or laptop with ample storage space to accommodate your work files and applications. For a laptop, a minimum of 256GB of solid-state drive (SSD) storage is recommended. However, if he/she deals with large files or requires more space (Segment II), consider 512GB or higher. For desktop, a minimum of 500 GB HDD storage is recommended, and for Segment-III, 1 TB of storage is recommended.

- 250GB: operating system, entertainment, and backups.
- 500GB: entertainment and business use.
- 1TB: business use, gaming, and photography.
- 2TB: professional gaming and image editing.

5. Is a dedicated graphics card necessary for Laptop?

Unless he/she works with graphic-intensive tasks (under Segment III), like video editing, 3D modeling, or gaming, a dedicated graphics card is not necessary. Most laptops with integrated graphics can handle everyday work tasks and even light photo editing.

6. Should I prioritize a larger display for Laptop?

While a larger display can provide a more comfortable working experience, it ultimately depends on personal preference and the nature of your work. Consider a laptop with a screen size between 13 to 15 inches, as this balance provides portability and sufficient workspace.

7. What resolution and display quality should I consider for work Laptop?

Aim for a laptop with a Full HD (1920x1080) or higher resolution display to ensure sharp and clear visuals. Additionally, look for laptops with in-plane switching (IPS) panels for better color accuracy and wider viewing angles.

8. **What is the recommended battery life for a work Laptop?**

   While procuring, one must ensure to choose a laptop with a battery that can last at least a full workday, around 6 to 8 hours. However, keep in mind that battery life can vary depending on usage and the laptop's power-hungry components.

9. **What connectivity options are important for a work Laptop or Desktop?**

   Essential connectivity options include WiFi (preferably WiFi 6 for faster speeds), Bluetooth® for wireless peripherals, universal service bus (USB) ports (preferably USB 3.0 or higher), a high-definition multimedia interface (HDMI) port for external display connections, and an Ethernet port for stable wired internet connections for both laptops and desktops.

10. **Which operating system is best for a work Laptop / Desktop?**

    The choice of operating system depends on individual work preferences and the compatibility requirements based upon the work nature. Windows and Linux® are popular options. Consider pre-loading the operating system from the OEM vendor's familiarity, software compatibility, and specific work needs when deciding on procurement.

11. **Can I use a Laptop / Desktop for video conferencing and online meetings?**

    Laptops are well-suited for video conferencing and online meetings. Look for laptops with built-in webcams, good microphone quality, and reliable internet connectivity to ensure smooth and hassle-free communication. For desktops, look for monitors with built-in webcams and external ports for connecting speakers/microphones additionally.

12. **Are there any specific software or tools I should install on my work Laptop?**

    Depending on the segment category (I / II / III) and job nature, one might need to install productivity tools like office suites, project management software, communication apps (e.g., Slack, Microsoft Teams), video conferencing software (e.g., Zoom, Google Meet), and any specialized software relevant to his/her field.

13. **How can I enhance the security of my Laptop / Desktop?**

    As part of cybersecurity policy, while procuring desktops/laptops, it is essential to ensure the respective individual desktop/laptop is secured by keeping its operating system and antivirus software up to date, using strong and unique passwords, enabling a firewall, being cautious of phishing attempts, regularly backing up your data, and avoiding suspicious websites or downloads.

14. **Can I connect additional monitors to my Laptop?**

    Yes, almost every Laptops offer connectivity options for external monitors. Check for high-definition multimedia interface (HDMI) or DisplayPort outputs, or consider using docking stations or universal service bus (USB) adapters to connect multiple monitors for increased productivity and workspace based on his/her work nature.

15. **What are the advantages of a portable laptop for working?**

Portable laptops/ notebooksallow department officials to work from different locations in office or even outside, providing flexibility and duty calls. They are also convenient if you occasionally need to work on the go or travel for work.

16. **Are there any specific Desktop features that can benefit programmers or developers?**

For programmers and developers, features like a comfortable keyboard, a responsive trackpad or mouse, ample random-access memory (RAM) for running virtual machines or resource-intensive development environments, and a powerful processor for compiling code quickly can be beneficial. Additionally, a desktop with a spacious display or the ability to connect multiple monitors would also be helpful.

17. **How can I optimize the performance of my Laptop / Desktop?**

To optimize performance, one can keep his/her laptop / desktop clean from unnecessary files, close unused applications, regularly update your operating system and software, use a solid-state drive (SSD) for faster storage access, and consider upgrading your RAM while facing performance bottlenecks.

18. **What should I do if my work Laptop starts to slow down over time?**

If a laptop becomes sluggish, an individual can try optimizing its performance by closing unnecessary background applications, running a malware scan, clearing temporary files, updating drivers, and performing regular maintenance tasks like disk clean up and defragmentation. If required, help support can be taken from the network administrator to perform the above-mentioned work.

19. **Can a work Desktop Laptop be used for gaming applications?**

Yes, depending on game specifications, a laptop / desktop can handle (Basic, Midlevel / Advanced) gaming applications. However, if individual work nature involves developing applications, consider procuring a dedicated laptop / desktop with a more powerful graphics card and optimized cooling system.

20. **Is this Technical Specifications guide applicable for Student Laptop / Desktop?**

No. This Technical Speciation's guide is only intended for Government organizations and not for students Laptop / Desktop or for any private academic institutions.

21. **Is this Technical Specifications guide applicable for Apple / MacBook Laptop / Desktop?**

No. This Technical Speciation's guide is only intended for Intel and AMD based Desktop and Laptop.

22. **Is this Technical Specifications guide applicable for Google Chromebook?**

Google Chromebook is a lightweight laptop designed primarily for web-based activities, running on Chrome OS, a streamlined operating system created by Google. Chromebooks are optimized for users who work mostly online and rely on cloud-based applications and storage. Because of this, Chromebooks may not be ideal for government organizations for day-to-day activities or other entities that require offline functionality and heightened data security, especially in regions with unreliable internet access.

9. **Annexures**

9.1. Annexure- I- Guidelines for Annual Maintenance Contract – AMC

1) The comprehensive AMC of IT equipment(s) shall be provisioned through the **Government e-Market Place** (**GeM)** with the date of commencement and the date of expiry of the AMC contract specifically mentioned in the contract.

2) The **on-site comprehensive AMC**, covering both preventive as well as corrective maintenance of IT infrastructure, shall be procured. The AMC may be entered with those vendors/service providers who have their service center within NCR or those vendors who commit to opening their office in NCR within one month of the issue of the work order.

3) **Preventive maintenance** activity shall include updating of service packs, drivers, and operating system patches; physical clearance and testing of equipment; carrying out system diagnostic tests and taking requisite remedial action; point-to-point connectivity tests, etc. At least one preventive maintenance activity should be scheduled every quarter during the maintenance period.

4) Under Corrective Maintenance, any defects in the IT equipment(s) shall be rectified, and all defective components of IT equipment necessary for normal operation, except consumables such as cartridges, drum kits, batteries, etc., shall be replaced. The AMC vendor shall replace the defective products/parts with similar or higher make/configurations of respective OEM products/parts at no additional cost beyond the cost stated upfront at the time of procurement of equipment.

5) The AMC vendor shall provide a **service escalation matrix** with contact details (escalation hierarchy along with timeline, contact persons, mobile number, address, and e-mail) through whom the departments/organization shall contact for AMC support.

6) The vendor shall have a **proper complaint call registration** procedure for logging complaints, follow-up, etc., and provide traceability of all complaints from registration to call clearance. The vendor shall issue a customer service slip after every service visit, clearly indicating the time of call by the user departments, time of attendance of the fault by the AMC vendor, nature of fault observed, and whether cleared or not. If further observation is needed, it would be given in writing whether the normal usage could be continued along with the details of subsequent visits for observation, closure of call, clearance of fault, and any other relevant information.

7) Downtime will be recorded for faults/complaints pending beyond the prescribed time as mentioned in the below table "Downtime Penalty" after the registration of complaints by the user department with the AMC vendor. The AMC holder shall give a unique complaints registration number and such relevant details as to the registrationprocess leading to timely clearance of faults within the prescribed time. For complaints pending more than the prescribed time, a downtime record will be created by the user department, and a pro-rata deduction of the penalty amount will be affected for payments due to the AMC vendor at the end of every quarter for the number of days the IT equipment(s) was not available for use from the call registration date.

Table: Downtime Penalty

Sl.No.	Type of Computer /Equipment	Downtime – Penalty
1.	If equivalent standby is given within 24 hours, DOWNTIME is NIL	"NIL" Penalty
2.	Laptop/ Desktop Computers	₹500 per day after 48 hours for every day/part thereof.
3.	Printers, Scanners, Multi-functional printers, Multimedia Projector, EPABX, Fax, Offline UPS, Digital Copier, etc.	₹250 per day after 48 hours for every day/part thereof.
4.	Servers	₹2000 per day after 48 hours for every day/part thereof.
5.	UPS Downtime	₹300 per day after 48 hours for every day/part thereof.
6.	For computer, printer, UPS systems at Bill Collection Centres, Hospital Registration Counters, DAT counters	₹500 per day after 24 hours for every day/ part thereof.

9.2. Annexure – II: Government e-Market place (GeM)

Introduction

General Financial Rules (GRF) 2017 issued by Ministry of Finance Department of Expenditure, Government of India.***(Reference: https://doe.gov.in/files/inline-documents/GFR2017.pdf)***

These rules are called General Financial Rules (GRF), 2017, and they shall come into force at once and shall be applicable to all Central Government Ministries/Departments and attached and subordinate bodies. The provisions contained in GFRs are deemed to be applicable to autonomous bodies except to the extent the bye-laws of an autonomous body provide for separate financial rules that havebeen approved by the government.

Rule 21: Standards of financial propriety

Every officer incurring or authorizing expenditure from public moneys should be guided by high standards of financial propriety. Everyofficer should also enforce financial order and strict economy and see that all relevant financial rules and regulations are observed, by his own office and by subordinate disbursing officers.Among the principles onwhich emphasis is generally laid are the following: -

i. Every officer is **expected to exercise the same vigilance in respect of expenditure incurred from public moneys** as a person of ordinary prudence would exercise in respect of expenditure of his own money.
ii. The expenditure should not be prima facie more than the occasion demands.
iii. No authority should exercise its powers of sanctioning expenditure to pass an order which will be directly or indirectly to its own advantage.
iv. Expenditure from public moneys should not be incurred for the benefit of a particular person or a section of the people, unless –
    a) a claim for the amount could be enforced in a Court of Law, or
    b) the expenditure is in pursuance of a recognized policy or custom.

Rule 147: Powers for procurement of goods

The Ministries or Departments have been delegated full powers to make their own arrangements for procurement of goods. In case, however, a Ministry or Department does not have the required expertise, it may project its indent to the Central Purchase Organization (e.g. DGS&D) with the approval of competent authority. The indent form to be utilized for this purpose will be as per the standard form evolved by the Central Purchase Organization.

Rule 149:Government e-Market place (GeM)

The Directorate General of Supplies and Disposals (DGS&D) or any other agency authorized by the government will host an online government e-marketplace (GeM) for common-use goods and services. DGS&D will ensure adequate publicity, including periodic advertisement of the items to be procured through GeM for the prospective suppliers. The procurement of goods and services by ministries or

departments will be mandatory for goods or services available on GeM. The credentials of suppliers on GeM shall be certified by DGS&D. The procuring authorities will certify the reasonableness of rates.

The GeM portal shall be utilized by the Government buyers for direct on-line purchases as under: -

(i) Up to Rs.50,000/- through any of the available suppliers on the GeM, meeting the requisite quality, specification and delivery period.

(ii) Above Rs.50,000/- and up to Rs.30,00,000/- through the GeM Seller having lowest price amongst the available sellers, of at least three different manufacturers, on GeM, meeting the requisite quality, specification and delivery period. The tools for online bidding and online reverse auction available **on GeM can be used by the Buyer if decided by the competent authority.**

(iii) Above Rs.30,00,000/- through the supplier having lowest price meeting the requisite quality, specification and delivery period after mandatorily obtaining bids, using online bidding or reverse auction tool provided on GeM.

(iv) The invitation for the online e-bidding/reverse auction will be available to all the existing Sellers or other Sellers registered on the portal and who have offered their goods/services under the particular product/service category, as per terms and conditions of GeM.

(v) The above mentioned monetary ceiling is applicable only for purchases made through GeM. For purchases, if any, outside GeM, relevant GFR Rules shall apply.

(vi) The Ministries/Departments shall work out their procurement requirements of Goods and Services on either "OPEX" model or "CAPEX" model as per their requirement/ suitability at the time of preparation of Budget Estimates (BE) and shall project their Annual Procurement Plan of goods and services on GeM portal within 30 days of Budget approval.

(vii) The Government Buyers may ascertain the reasonableness of prices before placement of order using the Business Analytics (BAA) tools available on GeM including the Last Purchase Price on GeM, Department's own Last Purchase Price etc.

(viii) A demand for goods shall not be divided into small quantities to make piecemeal purchases to avoid procurement through L-1 Buying / bidding / reverse auction on GeM or the necessity of obtaining the sanction of higher authorities required with reference to the estimated value of the total demand.

Rule 154: Purchase of goods without quotation

Purchase of goods up to the value of Rs. 25,000 (Rupees twenty-five thousand) only on each occasion may be made without inviting quotations or bids on the basis of a certificate to be recorded by the competent authority in the following format.

"I, am personally satisfied that these goods purchased are of the requisite quality and specification and have been purchased from a reliable supplier at a reasonable price."

Rule 155: Purchase of goods by Purchase Committee.

Purchase of goods costing above Rs. 25,000 (Rupees Twenty-Five Thousand only) and up to Rs. 2,50,000/- (Rupees Two Lakh and Fifty Thousand only) on each occasion may be made on the

recommendations of a duly constituted Local Purchase Committee consisting of three members of an appropriate level as decided by the Head of the Department. The committee will survey the market to ascertain the reasonableness of rate, quality, and specifications and identify the appropriate supplier. Before recommending placement of the purchase order, the members of the committee will jointly record a certificate as under. "Certified that we, members of the purchase committee, are jointly and individually satisfied that the goods recommended for purchase are of the requisite specification and quality, priced at the prevailing market rate, and the supplier recommended is reliable and competent to supply the goods in question, and it is not debarred by the Department of Commerce or the ministry/department concerned."

Rule 156 (1): Purchase of goods directly under Rate Contract

In case a Ministry or Department directly procures Central Purchase Organisation (e.g. DGS&D) rate contracted goods from suppliers, the prices to be paid for such goods shall not exceed those stipulated in the rate contract and the other salient terms and conditions of purchase should be in line with those specified in the Rate Contract. The Ministry or Department shall make its own arrangement for inspection and testing of such goods wherever required.

Rule 156 (2): The Central Purchase Organisation (e.g. DGS&D) should host the specifications, prices and other salient details of different rate contracted items, appropriately updated, on the web site for use by the procuring Ministry or Department.

Rule 157: A demand for goods should not be divided into small quantities to make piecemeal purchases to avoid the necessity of obtaining the sanction of higher authority required with reference to the estimated value of the total demand.

Rule 158: Purchase of goods by obtaining bids

Except in cases covered under Rule 154,155, and 156(1), Ministries or Departments shall procure goods under the powers referred to in Rule 147 above by following the standard method of obtaining bids in:

(i) Advertised Tender Enquiry
(ii) Limited Tender Enquiry
(iii) Two-Stage Bidding
(iv) Single Tender Enquiry
(v) Electronic Reverse Auctions.

Rule 166: Single Tender Enquiry. Procurement from a single source may be resorted to in the following circumstances:

(i) It is in the knowledge of the user department that only a particular firm is the manufacturer of the required goods

(ii) In a case of emergency, the required goods are necessarily to be purchased from a particular source and the reason for such decision is to be recorded and approval of competent authority obtained.

(iii) For standardization of machinery or spare parts to be compatible to the existing sets of equipment (on the advice of a competent technical expert and approved by the competent authority), the required item is to be purchased only from a selected firm

Note: Proprietary Article Certificate in the following form is to be provided by the Ministry/Department before procuring the goods from a single source under the provision of sub Rule 166 (i) and 166 (iii) as applicable.

(i) The intended goods are manufactured by M/s.....

(ii) No other make or model is acceptable for the following reasons: .....

(iii) Concurrence of finance wing to the proposal vide: ……..

(iv) Approval of the competent authority vide:

(Signature with date and designation of the indenting officer)

9.3. Annexure – III:Guidelines for condemnation & disposal of IT equipment(s)

The guidelines for condemnation & disposal of IT equipment's is issued by Government of National Capital Territory (NCT) of Delhi – Department of Information Technology dated ***25-11-2024.***

The IT equipment(s) will include the following items:

- Servers
- PCs
- Dumb Terminals
- Printers
- UPS
- Laptop/Notebook
- Package Software
- Technical books and manuals pertaining to hardware and software being condemned
- Data Communication Equipment(s)

1. **Applicable to:**
   - All Government Departments under Govt. of NCT of Delhi
   - All Autonomous Bodies/Local Bodies under Govt. of NCT of Delhi
   - All PSU's under Govt. of NCT of Delhi
2. **Grounds for condemnation:**

The IT equipment(s) can be condemned on the following grounds:

- **Technically obsolete:** Hardware/Data Communication Equipment/ Package Software which has been used for at least five years and they are not in working condition.
- **Beyond economical repair before 5 years**, when repair cost in considered too high after looking at the current value (taking depreciation into account), and the age of the equipment, after financial concurrence of competent authority. This could include IT equipment damaged due to fire or any other reason.

3. **Disposal:**

- Such equipment(s) shall be disposed of strictly following the procedure as laid down in Rules 217 to 223 of GFR 2017.
- Once the equipment has been condemned, it should be removed from office use and kept in the area allocated for scrapped equipment and auctioned therefrom within 60 days of being declared condemned.
- The department will also ensure the removal of service and inventory labels from such equipment(s). All data, including the operation system, must be removed after taking a proper backup.

4. **Responsibility of Department:**

- Each unit of the department will prepare an equipment condemnation note, which should be individually numbered with equipment descriptions, including the make, model, serial number, assets register number, purchase date, purchase price, reason for condemnation, and additional information, if any.
- The department will constitute a condemnation committee that will review the condemnation notes and decide about the condemnation of equipment as per guidelines given above. The committee should have at least one member with an IT background.
- All procedures and rules of the Government on maintenance of records for condemnation of non-consumable items will be adhered to in these cases.
- The condemnation will be done only after the report of the Condemnation Committee is obtained from the Administrative Secretary. To avoid a piecemeal approach, all cases of a department may be processed twice in a year during the months of May – June and Nov. – Dec.

9.4. Annexure – IV Model Procurement Exercise

The detailed procedure for procurement planner is given below for easy understanding.

Example:*Assuming a scenario, where Directorate of Information Technology, Puducherry, is planning for procuring new desktop/laptop, printer and scanner by replacing the existing devices due to considering the lifetime of the existing devices are crossed its lifetime of 7 years.*

Step1: Identifying

Identifying the total number of resources, utilizing the devices through the IT Asset management file and preparing the list of devices which are to be replaced. In case of any additional resources planned in the department, then include the resource count in the total number of resources planned and increase the required additional number of devices.

a. IT asset management file: (Existing Infrastructure)

Sl. No	Designation	No. of Desktops	No. of Laptops	No. of Printers	No. of Scanners
1.	Director	0	1	1	0
2.	Superintendent	1	0	1	0
3.	Senior Consultant SeMT	0	1	1	0

4.	Programmers	2	2	2	0
5.	Data Processing Assistant	1	0	1	0
6.	Data Entry Operators	6	0	3	0
7.	Personnel Assistant	1	0	1	0
8.	Personnel Secretary	1	0	1	0
9.	Accounts Assistant	2	0	2	0
10.	e- Office PMU	4	0	1	0
11.	Technical Specialist-PMU	0	1	0	0
12.	MyGov-PMU (Content writer & Researcher-Cum- Translator	0	0	0	0
13.	MyGov-PMU (Graphic Designer, Video editor)	0	0	0	0
13.	MyGov- PUM (Project Lead- cum- Relationship Manager)	0	0	0	0
14.	Common Printer-cum-scanner	-	-	1	-
	Total no. of devices	**18**	**5**	**15**	**0**

b. Total Number of Resources working in IT along with upcoming Project resources:

Sl. No	Resources grouped under Designation (IT department)	Upcoming Resources for PMU	Total counts
1	Director		1
2	Superintendent		1
3	Senior Consultant –SeMT		1
4	Programmers		2
5	Data Processing Assistant		1
6	Data Entry Operators		6
7	Personnel Assistant		1
8	Personnel Secretary		1
9	Accounts Assistant		2
10	e-Office PMU		4
11	Technical Specialist – PMU		2
12	MyGov – PMU (Graphic Designer, Video editor)	1	0
13	MyGov – PMU (Content writer & Researcher-cum-Translator)	1	0
14	MyGov – PMU (Project Lead-cum-Relationship Manager)	1	0
Total Number of resources available		**3**	**22**

Based on the above table,

- The total number of resources available in the Directorate of Information Technology is **22** and additional resource's planned to recruit is **3. Hence total number of Resources will be 25.**
- The total number of devices need to be "replaced" and "new allocation" need to be arrived through consolidated report generation.

Step 2: Categorizing the resources based on work and utilization

a. **Categorization:**After identifying the total number of resources in the department, the next step is to categorize them under the three segments based on Work & Utilization and devices need to be identified. (*Refer*: section 3.2.2).

Sl. No	Total Number of employees	Category	Based on Work & Utilization	Total No. of Count

1	25	Segment I	Superintendent, Programmers, Data Processing Assistant, Data Entry Operators, Personnel Assistant, Personal Secretary, Accounts Assistant	14
		Segment II	Director, Senior Consultant, e-Office PMU, Technical Specialist, MyGov-PMU (Content writer, Project Lead)	8
		Segment III	MyGov – PMU (Graphic Designer-cum-Video Editor)	3

Note: *In this scenario, under segment – III, only one device required for i7 criteria based on the work nature and utilization. All remaining Technical work covered in Segment-II.*

b. Exception List Preparation:

In this Directorate of Information Technology, it was identified, that one data entry operator was performing the technical work related to inter-department website development, monitoring, maintenance work, etc., other than the normal work of the respective designations. In such a situation, due to the additional task, they fall under the exceptional category, which belongs to Segment II., since the procurement of devices should be considered based on the nature of work and specific utilization requirements of the role.

Sl. No	Total Number of employees	Category	Based on Work & Utilization	No. of Count
1	25	Segment - I	Superintendent, Programmers, Data Processing Assistant, Data Entry Operators, Personnel Assistant, Personal Secretary, Accounts Assistant	13
		Segment - II	Director, Senior Consultant, e-Office PMU, Technical Specialist, MyGov-PMU (Content writer, Project Lead), **1-Data entry operator**	**9**
		Segment - III	MyGov- PMU (Graphic Designer-cum-Video Editor)	3

Step 3: Mapping Resources with Devices

Identifying the devices to be procured:

As per the Segment's identified against each Resources / employee, the total number of devices list need to be mapped. The required devices need to be categorized between Desktop Vs Laptops, identify the number of printers and scanners required for the resources.

Considering the Directorate of Information Technology department as example, the below table indicates the total number of desktop, laptop and printer used by the department resources.

Sl. No	Designation	No. of Desktops	No. of Laptops	No. of Printers
1.	Director	0	1	1
2.	Superintendent	1	0	1
3.	Senior Consultant SeMT	0	1	1
4.	Programmers	2	0	2
5.	Data Processing Assistant	1	0	1
6.	Data Entry Operators	6	0	0
7.	Personnel Assistant	1	0	1
8.	Personnel Secretary	1	0	1

9.	Accounts Assistant	2	0	2
10.	e- Office PMU	4	0	1
11.	Technical Specialist-PMU	1	1	0
12.	MyGov-PMU (Content writer & Researcher- Cum- Translator	0	1	0
13.	MyGov-PMU (Graphic Designer, Video editor)	0	1	0
13.	MyGov- PUM (Project Lead- cum-Relationship Manager)	0	1	1
14.	Common Printer cum scanner	-	-	1
	Total no. of devices	**19**	**6**	**13**

Based on the above identification, the total number of new devices to be procured can be arrived as shown in the below table.

Particulars	**Total Number**		
	Desktops	**Laptops**	**Printers**
Segment-I	**13**	**-**	**-**
Segment-II	**6**	**3**	**-**
Segment-III	**-**	**3**	**-**
Total no. of devices	**19**	**6**	**13**

Step 4: Preparing the Technical Specification for Procurement

Sl. No	**Device**	**No. for Quantity**	**Technical Specifications**
1	Desktop	13	Attach segment -I- Desktop Technical Specification
2	Desktop	6	Attach segment -II- Desktop Technical Specification
3	Laptop	3	Attach Segment -II Laptop Technical Specification
4	Laptop	3	Attach Segment –III Laptop Technical Specification
5	Printer	1	Attach A3 Mono Laser Multifunction Printer Technical Specification
6	Printer	12	Attach A4-Ink tank MF Printer Technical Specification

Step 5: Preparing the Bill of Material

After completing all the above process, the next step is to align/map the technical specifications according to the department requirements.

Example: Below listed bill of materials after categorizing the segments and the additional hardware required for each individual resources.

Sl. No	**Item Description**	**Technical Specification**	**Quantity**	**Unit price (INR)**	**Total Amount (INR)**
1.	Desktop	Minimum i3/AMD3 or Higher	13		
2.	Desktop	Minimum i5/AMD5 or Higher	6		
3	Laptop	Minimum i5/AMD 5 or Higher	3		
4.	Laptop	Segment III- Minimum i7/AMD 7 or maximum	3		
4.	Printer	A3 Mono Laser Multifunction Printer	1		

5.	Printer	A4 Ink Tank Multifunction Printer	12		
		Total	**38**		

**For all the above price calculation GST is excluded.*

Step 6: Conclusion

Based on the above "Procurement Exercise Procedure," the department can ease the procurement process by following step 1- Identifying till step 6 - Preparing the Procurement Process.The department must determine the cost in accordance with the established procedure. This involves outlining the calculation methodology, executing the necessary calculations, and deriving an approximate budget based on the average price range.

Sl. No	Category	Processor	Average Price	
			Desktop	Laptop
1.	Segment - I	Minimum i3/AMD3 or Higher	43,747	NA
2.	Segment - II	Minimum i5/AMD5 or Higher	69,285	77,434
3.	Segment - III	Minimum i7/AMD7 or Higher	NA	1,04,662

- So, based on the segment-wise average pricing, the proposed budget should be determined. It is important to note that the overall budgeted cost is expected to decrease proportionally as the quantity increases.
- During the procurement of 30-50 or more desktops/ laptops, it's to achieve approximately 20-25 percent of the budget has to be reduced to the competitive pole
- The budget estimation for these products will fall within this specific limit. If the amount exceeds the allocated budget, the bidding process should be revoked.
- If the average cost is successfully determined and aligns with the procurement criteria, the process may proceed. The vendor offering the lowest bid (L1) should be selected, and the final price should be confirmed in accordance with established procedures and guidelines.

The competent authority of The Directorate of Information Technology, Puducherry must ascertain the cost in alignment with the established procedures. This process includes defining the calculation methodology, performing the required computations, and formulating an estimated budget based on the average price range.