

# KENDRIYA VIDYALAYA SANGATHAN



## BENCHMARKING OF COMPUTER LABORATORY

"There are three kinds of death in this world.  
There's heart death, there's brain death, and there's being  
off the network."

-Guy Almes



## NEED FOR COMPUTER LABORATORIES IN KENDRIYA VIDYALAYAS

Computer teaching plays a key role in the modern systems of education. The ability to use the computer in today's world is very important. For this purpose Computer Labs should be well equipped in Schools. Use of Computer lab is not restricted only for computer teaching but other subject teacher can also use the technology for effective teaching learning in their subjects. Internet can play an important role in education. As it is an enormous information base, it can be harnessed for the retrieval of information on a wide variety of subjects. The Internet can be used to refer to information on various subjects to be taught to the students. Students find it easier to refer to the Internet than searching for information in fat reference books. The process of learning has gone beyond learning from prescribed textbooks.

## BENCH MARKING OF COMPUTER LABORATORIES

### (A) PHYSICAL FACILITIES

S.NO.	ITEM / FACILITY	SPECIFICATIONS
1.	Standard Room Size / dimensions with false ceiling for better airconditioning effect	<p>1. Lab size with capacity to accommodate 25 computers for students and one computer for instructor, an instructor's table with LCD projector.</p> <p><b>2. Lab Size:</b> 7.00 X 10.60 metres.</p> <p><b>3. Number of Labs per KV</b></p> <p>A-1 Type (Single Section) – 01 Lab</p> <p>A Type (Two Sections) – 02 Labs</p> <p>B Type (Three Sections) – 03 Labs</p> <p>Four / Five Sections – 04 Labs.</p> <p>Six Sections - 05 Labs subject to availability of infrastructure.</p>
2.	Electrical fittings	<p>* Sufficient points to house 25students +1 for Teacher computers, one LCD projector, a printer and a scanner in the lab.</p> <p>* Separate copper earthing of electrical points used for IT equipment.</p> <p>* Fixtures such as tube lights and fans should have a separate phase.</p>
3.	Fire Extinguisher	At least one meant for all types of fires in each lab.
4.	Air Conditioners	Air Conditioners as per heat load calculations depending upon size with separate wiring / phase other than that of electrical points for IT equipment.
5.	Exhaust fans & Ventilators	Exhaust fans - Minimum one which can be increased as per volume of the lab. Ventilators – for proper light.
6.	Flooring	Flooring with vitrified tiling.
7.	White Boards and Display Boards	*Magnetic White Board located at suitable height to be easily visible by the students.

		<p>* Display Boards for display of important circulars and other related data.</p> <p>* Interactive boards for smart classes.</p>
8.	Built in Almirah/Modular cabinets	Storage space in the form of sufficient number of built in almirahs/modular cabinets for storage documents / stock registers/CDs and computer accessories/software.
9.	Computer table or running shelves	Labs to have single/double shelf in center of lab with student sitting on either side.
10.	Chairs for students / teachers	Ergonomic design for back support to reduce long term stress.
11.	Mini subject library	Must be maintained so that students may refer to the books of their taste. Must include Reference books, generals, magazines on Computers, notices of various Olympiads
12.	Personal computers	*With latest configuration equipped with software for the syllabus as specified by CBSE for classes XI & XII.
13.	Peripherals	<p>*At least one heavy duty printer cum scanner cum photocopier preferably network printer in each lab.</p> <p>* Video projection system (VPU) in each lab.</p>
14.	LCD Projector	Preferably roof mounted
15.	UPS	<p>* Online UPS, if being used, should be placed in the adjacent room with provision of wiring from Labs to UPS through common wall.</p> <p>OR</p> <p>* Offline UPS of suitable specifications as per PCs</p>
16.	Internet connection	Broadband connectivity with minimum 2 MBPS or higher speed.
17.	Standby Power Supply	Silent DG Set of required capacity.

**(B) USABILITY / USAGE**

S.NO.	FACILITY	SPECIFICATIONS
1	As a learning centre	To teach courses to students and teachers, workshops and seminars. Priority to class use and homework
2	As a data centre	To assimilate and process school data related to academics, administration etc.
3	As internet access hub	Students and teachers can make use of internet facility for supplementing teaching learning activities.

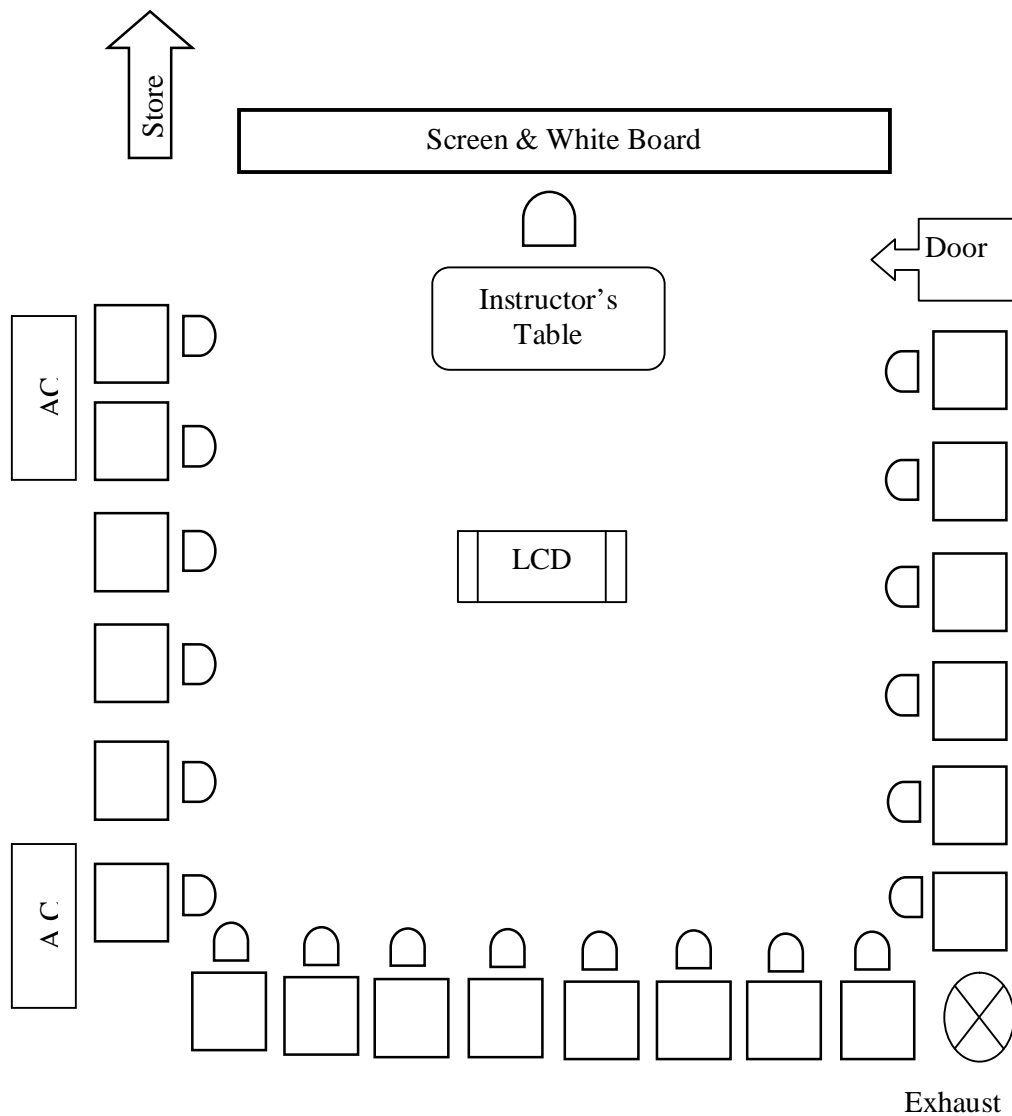
**(C) MAINTENANCE / CLEANLINESS**

- Wherever there are more than one computer labs in the vidyalaya, to ensure better management, security and monitoring, all the labs must be established same floor /block of the building.
- Duty / Responsibility of cleanliness of the labs and the equipment should be judiciously assigned to vidyalaya sub-staff and monitored.
- **AMC** – Annual Maintenance Contract must take into account regular visits by the hardware engineer, at least once in 15 days, for smooth functioning of computer hardware and software installed in the school.
- **Electrical Maintenance:** Use certified electrical fixtures. Power points should be checked for any naked wires, non functionality, switch failure etc. Check the tube lights and exhaust fans regularly.
- **Stock Verification:** Must be carried out thoroughly at the end of the financial year.
- **Condemnation:** The equipment that becomes non functional due to routine wear and tear or with time should be condemned as per proper guidelines and procedures.
- **Procurement:** The equipment (hardware and software) needed as per changes in syllabi or other departmental requirements must be procured immediately. Must acquire original software and certified / well reputed hardware.
- **Lab attendant:** At least one lab attendant must be present in the lab for taking care of the accessories in lab.

**(D) LAYOUT DESIGN OF COMPUTER LAB**

Inverted U-Shaped pattern is suggested. Inverted U-shape also offers engagement between instructors and students. In addition, the layout allows for the most convenient method of monitoring students. For individual learning, this layout minimizes the distance instructors must walk to move from workstation to workstation and student to student.

**INVERTED U-SHAPED COMPUTER LAB LAYOUT**



## **(E) COMPUTER LAB ETIQUETTE**

### **DOs**

- Be respectful, responsible & ready to learn when you are in the lab.
- Treat the computers with care.
- Press the keys of the keyboard gently.
- Log out & shut down the PC when class is over.
- Use only the computer you are assigned to.
- In case you want to use your CD or pendrive seek permission from your teacher.
- Remove your shoes outside lab in shoe rack.
- Come to lab in proper lines with your computer notebook.

### **DON'Ts**

- Don't change the background on the computers or download any files without permission.
- Don't play games or use disruptive Web sites.
- Don't download any files (or any other software) onto the computers.
- Don't disconnect the keyboard, mouse, monitor printer or any peripheral if the PC is powered on at the mains.
- Don't install any software without permission.
- Don't use personal media without permission.
- Don't use pen drive without Scanning on an anti-virus.

**LIST OF NON- CONSUMABLE ITEMS  
COMPUTER LABS**

<b>SL NO</b>	<b>NAME OF THE ARTICLE/ DEVICES</b>	<b>PROPOSED LIFE IN YEARS</b>
1	Server – 64 Bit	5
2	Server – 32 Bit	5
3	Computer CPU	5
4	Laptop	5
5	Notepads/ PDAs	5
6	Monitor (CRT)	5
7	Monitor (LCD)	5
8	Printer(Dot Matrix)	5
9	Printer (Ink Jet)	5
10	Printer (Laser)	5
11	Plotter	5
12	Scanner	5
13	Mike	5
14	Web Camera	5
15	Computer Cards	5
a.	Computer Memory Cards	
b.	Computer Sound Cards	
c.	Computer Cards, Television Tuner	
d.	Computer Cards Fire Wire	
e.	Computer Network Interface Card(NIC)/Network adapter card/ Wireless	
f.	Computer Card USB	
16	UPS (Multiuser)	5
17	UPS (Single User)	5
18	External Hard Disk Drive (USB)	5
19	External DVD Writer (USB)	5
20	Blue Ray Disc Reader/Writer	5
21	Duplicating Machines for CDs	5
22	Touch Screen Membrane	5
23	Touch Screen add-on-kits	5
24	Screens- anti-glare/ anti-radiation for Computer Monitors	5
25	Computer Stand with overhead Rack	5

Note:

- The upper Ceiling Amount in case of Computer Lab equipment for Principal should be increased to 5 lakh, keeping in view the expense of IT equipment.
- Life Span fixed by KVS if complete to be recommended for condemnation.



## LIST OF CONSUMABLE ITEMS

### COMPUTER LABS

<b>S. NO</b>	<b>NAME OF ARTICLE / APARATUS</b>
1	CDs (All Variant)
2	DVDs (All Variant)
3	Printer Toner
4	Cartridge
5	A4 – Paper
6	White Double Sized Sheets
7	Blue Ray Disc
8	Keyboard
9	Mouse
10	Network Equipments a. Modem (External) b. Computer Network Switches c. Network Repeaters d. Wireless Router e. Cables (Cat-5)/ Optical f. I/O Boxes g. Modem infrared (Wireless) h. Modem Radio Frequency for Wireless. i. USB Adapter for Wireless Router j. Data Switches Manual k. Data Switches Remote l. 10 Gigabit Internet Switches m. Firewall Internet n. Patch Panel o. Racks or Cabinets for Networking
11	Pen Drives
12	Speakers