



**STANDARD OPERATING PROCEDURE FOR REPAIR AND MAINTENANCE OF ELECTRONIC EQUIPMENT IN JAIN COLLEGE OF ENGINEERING**

**General**

1. The Jain College of Engineering runs graduate courses in five disciplines of Engineering as well as post graduate courses in Engineering, MBA and MCA under the Visvesvaraya Technological University. The classrooms and laboratories are equipped with various electronic equipment including computers, oscilloscopes, LCD projectors, UPSs, testing equipment etc.

**Aim**

2. To lay down procedures for maintenance and repair of electronic equipment in the College.

**Scope**

3. The scope of the SOP is to ensure early fault finding and repair of laboratory equipment to ensure smooth conduct of practical classes.

**Classification of Repairs**

4. All repairs will be classified under the following.

(a) **R1 Repairs**. These will be minor level repairs to hardware which can be carried out in situ by the instructors and faculty within the department.

(b) **R2 Repairs**. These are repairs which require an upgraded technical expertise wherein an authorised mechanic is called from outside the establishment for repairs. In the case of computer related hardware the same repairs requirement will be informed to Computer Science Department for repairs by the IT cell.

(c) **R3 Repairs**. These repairs require replacement of parts and need to be procured or major repairs are required to be carried out by an outside agency.

(d) **R4 Repairs**. In case of R4 the equipment is likely to be beyond economic repair however it would have parts which may be useful for other equipment. Hence at this repair stage cannibalisation is done to retrieve usable parts and the balance equipment which is beyond economical repair can be disposed as E scrap/waste to concerned vendors.

**Periodic Inspection of Equipment**

5. All HoDs will nominate a faculty member and instructor as In Charge and Second in Charge of particular Laboratories. Both persons preferably should not be on leave at the same time. The equipment in the Labs will be inspected daily by lab technicians for cleanliness, safety and function. Equipment will be inspected before the start of any classes for functional aspects. Once a week all equipment will be inspected in detail for wear and tear, safety as well as accuracy. A report of weekly checks will be maintained in a log book maintained in the department. A suggested sample of the log book is at Appx A. A monthly check of all equipment will be carried out by the HoD in addition to any surprise checks in the month. The record of



such checks will be maintained in the log book. The HoD will sign on the Inspection sheet to be pasted on the first page of the log book.

**Procedure of Repair and Records Maintained**

6. **Purchase committee**: All major departments will nominate a purchase committee for all kinds purchases related to equipment in their departments.

7. **Complaints Register**: A register for all complaints related to computers only will be maintained in the IT cell of the Computer Science Engineering department for complaints related to computers, computer peripherals and UPS equipment. Other equipment will be discussed separately in the SOP.

8. **Software Issues(Computers)**

- (a) Lab Technician / Lab In charge will try and resolve all the software (system and application) issues by him. Problems encountered will be noted in the log book.
- (b) In case the Lab Technician / Lab In charge is unaware of the procedure of installing the Operating System /Application Software, he shall be trained to install the same by the IT team upon receipt of a letter from the HoD. A demonstration will be provided by the IT team on one or two computers to the said Lab Technician / Lab In charge. After the demo the HoD and Lab Technician / Lab In charge needs to certify the completion of the training. An entry will be made in the department log book.

9. **Hardware Issues(Computers)**

- (a) Lab Technician / Lab In charge will be given the basic diagnostic training of the computers.
- (b) If the Lab Technician / Lab In charge fails to identify the fault. A ticket has to be raised by the HoD of the respective department to the HoD, CSE. A sample of the ticket is attached at the Appx B.
- (c) The HoD CSE shall forward the ticket to the Foreman CSE.
- (d) The Foreman CSE will depute the IT personnel for inspection of the faulty computer/s.
- (e) The IT personnel-upon the completion of the inspection shall update the ticket with the status of the faulty computer and the same should be attested by the HoD of the respective department.

(f) If the computer is diagnosed with faulty hardware. The same must be mentioned on the ticket and forwarded to the Principal by the respective Department HoD for the procurement of the spares.

10. **UPS**: All UPSs held along with batteries need to be under an Annual maintenance contract (AMC). A log book for the UPS will be maintained in the concerned department. A weekly check on the condition of the UPS and batteries as well as maintenance carried out will be noted in the log book. Essential DOs and DONTs are listed below:



(a) **Do's**

- (i) Ensure UPS is kept in 'ON' position 24x7 basis
- (ii) Ensure UPS batteries are charged by keeping UPS in 'ON' condition 24x7 basis
- (iii) Minimum charging time for UPS battery is 12 hrs
- (iv) Ensure adequate ventilation
- (v) In case of extreme temperatures put on the ceiling fans and table top fans so that the UPS receives optimal cooling

(b) **Don'ts**

- (i) Location of the UPS should NOT be changed as this would hamper the power cabling layout.
- (ii) UPS batteries should be kept in a dry and enclosed place in a rack and there should NOT be any water seepage near the batteries.
- (iii) Do not turn off the Inverter manually when operating in an On line mode.
- (iv) Do not press the fault reset button on the UPS when there is no power from mains supply (KEB)
- (v) Do not change the cabling on the Input / Output MCB's of the UPS until the UPS is totally turned off and the battery power is disconnected from the UPS.
- (vi) Do not cold start the UPS (EPO)
- (vii) Do not switch off the alarm sounds unless necessary.
- (viii) After a restart of the UPS do not turn on the inverter until the load is nil or zero. Start the load only after the UPS Inverter is turned on successfully.

11. In cases of faults or malfunctioning of UPSs the lab in charge of laboratories having UPSs will first contact EEE department for assistance to shut down the UPS. Thereafter the AMC service agency should be contacted for rectification of the fault. The IT cell will be informed through the HoD. In case the UPS needs to be dispatched to the AMC service centre the Administrator should be informed for processing the dispatch of the UPS. An estimation of the cost of repairs if any will be put up for approval of the Principal before dispatch of the UPS.

**Equipment Other Than Computers and UPS**

12. Special equipment as obtaining in ECE department such as CROs, Signal generators, LCR meters, Digital trainers and testers, various kits as well as other equipment is beyond the purview of repairs by the IT cell. The Lab in charges as nominated will carry out weekly inspection of all equipments as outlined in para 5 above and records will be maintained accordingly in the log books as specified. R1 level repairs if possible will be carried out in the lab and will be recorded in the log book.

13. In case of faults of a higher level are detected, the department purchase committee in consultation with HoD will contact the service provider for inspection of the equipment for likely repairs. Quotations for repair will be asked for and after due approval of the cost of repair by the Principal the equipment will be repaired.

**Procedure for Procurement of Spares and Major Repairs of Equipment**

14. All major departments will nominate a purchase team of consisting of faculty members and



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maintain a vendors list duly whetted for services and supply of equipment. Purchases upto Rs 1000 (one thousand only) per item need not be supported by quotations. Any purchase of value amount above Rs 1000 needs to be supported by at least two quotations especially in the case of replacement spare parts. New equipment purchase needs to be supported by three quotations.

15. If any electronic lab equipment has been assessed as requiring purchase of a spare part the purchase committee will negotiate with the vendor and procure quotations. The requisition for the item will be prepared and submitted to the Principal through the department HoD along with quotations and any service charges. (Refer para 13 above). The item will be repaired after the sanction of the cost of repair.

16. An entry will be made in the log book of the department mentioning the part replaced. The damaged item will be stocked as per instructions for E-Waste disposal instructions.

**Training Of Instructors on R1 Repairs**

17. All instructors of departments will undergo a day's training capsule of R1 repairs under the IT cell in the first week of their employment with the College. A similar cadre will be run by ECE and EEE departments for the instructors. A referresher cadre will be conducted periodically once in a semester preferably the beginning/ vacation period. One refreshers cadre will be planned specifically for the instructors / mechanics of the EEE, Civil and Mechanical dept. for R1 repairs to the UPS by calling a qualified technician from the service provider.

**Conclusion.**

18. There is a need to ensure efficient output from existing equipment and save on costs incurred due to mishandling of equipment and ignorance of essential repairs

Date: 02.01.2023

  
Dr J Shivakumar  
Principal and Director  
**Principal & Director**  
**Jain College of Engineering**  
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**Appx A:** Refers to para 5  
of SOP on repair and  
maintenance of Equipment.

**LABORATORY LOG BOOK FOR ELECTRONIC EQUIPMENT**  
**-----Lab**

Lab In Charge:

Lab Second In Charge:

Ser No	Date	Time	Nomenclature of Equipment	Fit/Unfit	Remarks	Signature



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**AppxB:** Refers to para9(b)  
of SOP on repair and  
maintenance of Equipment.

**TICKET FOR REPAIR AND MAINTENANCE OF COMPUTERS**

Date:

Department:

Lab:

Capacity:

Operational Computers

Lab In charge / Instructor:

Ser No	Particulars	Serial No	Issue	Remarks of IT Cell

Lab In Charge:

HoD

HoD CSE

IT Cell Staff

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Status of Repair: Repaired / Procurement of spares / Beyond economic repairs (tick one)

HoD

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**Recommendation for approval**

Purchase of spares as per quotation attached / Beyond economic repairs

Administrator:

Principal:

Group Head Office  
91/2, Dr. A N Krishna Rao Road  
V VPuram, Bengaluru – 560004  
P +918026615246

Campus  
599/2, TS Nagar, Hunchanhatti Cross  
Machhe, Belagavi – 590014  
P +918312411192



**AppxC:** Refers to para11  
of SOP on repair and  
maintenance of Equipment.

**TICKET FOR REPAIR AND MAINTENANCE OF UPS**

Date:

Department:

Lab:

Capacity:

No of Batteries and details:

Lab In charge / Instructor:

Particulars Of UPS	Remarks of IT Cell

Lab In Charge:

HoDIT Cell Staff

Status of Repair: Repaired / Procurement of Batteries/ Beyond economic repairs (tick one)

HoD

**Recommendation For Approval**

Repair of existing / Replacement with new and exchange of old UPS as per quotation attached

Administrator:

Principal: