



IT SUPPORT SERVICE LEVEL II

Learning Guide #37

Unit of Competence	:	Maintain Equipment and Consumables
Module Title	:	Maintaining Equipment and Consumables
LG Code	:	EIS ITS2 M10 1019 L02
TTLM Code	:	EIS ITS2 TTLM 1019v2

LO2: Replace and maintain consumables and supplies

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

1. Access stock from store and record information according to organizational procedures
2. Access relevant manual according to organizational guidelines and procedures.
3. Replace consumables promptly with minimum effect on other users
4. Test hardware to ensure it is in working order according to established procedures

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to:

- Accessing **consumables** from storage points and record usage information in line with organizational procedures
- Replacing consumables when needed and log the action undertaken
- Disposing of consumables following environmental guidelines
- Testing equipment to ensure it is in working order at set time periods and in line with organizational procedures

Learning Activities

1. Read the specific objectives of this Learning Guide.
 2. Read the information written in the “Information Sheets 1” in pages 3-4.
 3. Accomplish the “Self-check 1” in pages 5.
 4. Read the information written in the “Information Sheets 2” in pages 6-7.
 5. Accomplish the “Self-check 2” in pages 8.
 6. Read the information written in the “Information Sheets 3” in pages 9-11.
 7. Accomplish the “Self-check 2” in pages 12.
 8. Read the information written in the “Information Sheets 3” in page 13.
 9. Accomplish the “Self-check 2” in pages 14.
 10. If you earned a satisfactory evaluation proceed to “Lap Test”. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Operation Sheet.
 11. Do the “LAP test” on page 15 (if you are ready) and show your output to your teacher. Your teacher will evaluate your output either satisfactory or unsatisfactory. If unsatisfactory, your teacher shall advise you on additional work. But if satisfactory you can proceed to Learning Guide 38.
- Your teacher will evaluate your output either satisfactory or unsatisfactory. If unsatisfactory, your teacher shall advise you on additional work. But if satisfactory you can proceed to the next topic.

1.1. Overview

Consumables can be defined as any parts or supplies that need replacing periodically in order for the machine to perform all of its functions.

What are Information Technology (IT) Consumables?

IT consumables are items that you use relating to your computer set-up. Examples of IT consumables can include:

- Inkjet cartridges
- Laser printer toner cartridges
- Ribbon cartridges
- Tape cartridges
- Floppy disks
- ZIP disks
- CD ROMs blanks
- Tape, CD, floppy labels
- Cables, connectors, plugs
- Cleaning tools and materials
- Batteries
- Power boards, extension leads, spike protectors
- Fuses

1.2. Ordering Consumables

In a work place someone will have the responsibility for ordering consumable items. Each business or workplace will have their own procedures set in which employees need to familiarize themselves with. Many items can be ordered online while other companies may still require a paper order form. Most workplaces will expect the following to occur:

- A projected cost of consumables over a financial year is made
- When consumables are required a number of quotes will be expected. Normally at least 3 with the cheapest quote being used
- An order will be placed. The order may have to go through a separate section for approval. Once the order is approved then it will be entered online or faxed.

- Once the goods arrive they will be checked against the invoice to ensure all goods that the invoice lists are there. The invoice must then be checked against the actual order. If there is a discrepancy then the company needs to be contacted and a request is made for the remainder of the goods.
- A copy of the invoice will be stored for auditing purposes.

It is necessary to design a form that could be used to order consumables. It must use a company logo and be very professional in appearance.

Sample order form

Item No. (S.No)	Item Name	Model Number	Description	Manufacture date	Order Date	Ordering Body	Status
0001	Dell Laptop	01225WS4	1 tera, 6 Gb, Win10	2019	05/10/2019	ICT	Received
0002	Dell Laptop	01225WS5	1 tera, 6 Gb, Win10	2019	20/10/2019	ICT	Not received
0003	Dell Laptop	01225WS6	1 tera, 6 Gb, Win10	2019	20/10/2019	ICT	Not received

Self-Check 1**Written Test**

Name: _____

Date: _____

Instruction: Answer all the questions listed below, if you have some clarifications- feel free to ask your teacher.

Please ask your trainer for the questionnaire for this Self-Check.

Choice: Choose the correct answer

1. _____ can be defined as any parts or supplies that need replacing periodically in order for the machine to perform all of its functions.
A. Peripherals B. Consumables C. Input Devices D. Output Devices
2. IT consumables are items that you use relating to your computer set-up. Which one of the following cannot be categorized as IT Consumable?
A. Motherboard B. Printer Cartridge C. Batteries D. Cleaning tools and materials
3. All of the following are expectations in which workplaces expect to occur in consumables order except:
A. A projected cost of consumables over a financial year is made
B. When consumables are required a number of quotes will be expected.
C. A copy of the invoice will be stored for auditing purposes.
D. None

2.1. REPLACE CONSUMABLES

Consumables must be replaced promptly and with minimum effect on other users. For this to happen, adequate stocks must be in the stores and the user should be trained to replace them as required. Failure to replace consumables promptly can lead to loss of productivity and to frustration on the part of the user.

Consumables that require frequent replacement

The following table lists consumables and equipments that are most frequently replaced in various situations. Note that, the equipments and consumables are not limited to the listed items in the table.

Consumable	Frequency	Remark
Printer Cartridges	Most frequently	<ul style="list-style-type: none"> Whenever the ink becomes empty from the cartridge. You should use a cartridge which for specifically for the specific printer.
Copy Machines Cartridges	Most frequently	<ul style="list-style-type: none"> Whenever the ink becomes empty from the cartridge. You should use a cartridge which for specifically for the specific printer.
Fax Machine Cartridges	Most frequently	<ul style="list-style-type: none"> Whenever the ink becomes empty from the cartridge. You should use a cartridge which for specifically for the specific printer.
RAM	Less Frequently	<ul style="list-style-type: none"> Whenever it is failed and is impossible to repair it.
Hard Disk	Less Frequently	<ul style="list-style-type: none"> Whenever it is failed and is impossible to repair it.
Power Supplies	Less Frequently	<ul style="list-style-type: none"> Whenever it is failed and is impossible to repair it.
Key Board	Less Frequently	<ul style="list-style-type: none"> Whenever it is failed and is impossible to repair it.
Mouse	Less Frequently	<ul style="list-style-type: none"> Whenever it is failed and is impossible to repair it.

2.2. Recording or Logging actions under taken

It is very important to log/record replacement activities whenever it takes place. For this to happen the technician should prepare a form which helps to keep records about the replacement activities which will be helpful for future.

Sample Form

Date	Item	Component Replaced	Reason	Replaced by
13-08-2019	HP Laser Jet 2035	Cartridge	No ink	Ayele
22-08-2019	Dell Vostro 2015 Desktop PC	Mouse	Broken	Sisay
19-09-2019	Dell Vostro 2015 Desktop PC	RAM	Pins Damaged, and Failed to operate	Sisay
27-09-2019	Dell Vostro 2015 Desktop PC	Power Supply	Burnt due to high electric voltage	Ayele

Self-Check 2**Written Test**

Name: _____

Date: _____

Instruction: Answer all the questions listed below, if you have some clarifications- feel free to ask your teacher.

Please ask your trainer for the questionnaire for this Self-Check.

Matching: Identify the following consumables replacement frequency.

A

1. Printer Cartridges: _____
2. Copy Machines Cartridges: _____
3. Fax Machine Cartridges: _____
4. RAM: _____
5. Hard Disk: _____
6. Power Supplies: _____
7. Key Board: _____
8. Mouse: _____

B

- A. Most frequently
- B. Less Frequently

2.1. Disposing consumable equipment

Disposal of Computer Waste

“Disposal” refers to the reselling, reassignment, recycling, donating, or throwing out of IT equipment through responsible, ethical, and environmentally sound means. It is illegal in several states to simply throw computer parts, or old computers, in the trash.

The average color CRT monitor has about 4 pounds of lead in it. The rest of the computer is a buffet of heavy metals that can cause liver damage, kidney failure, cancer, and a host of different diseases that affect not only human beings but wildlife as well.

It is the duty of us technicians responsible to properly recycle or dispose of our old computer parts.

How do you dispose of used printer consumables?

- Dispose used consumables with recycling centers or the take back programs of printer manufacturers.
- Don't dispose them, manufacture/reuse empty cartridges, drums and other consumables.
- Refill toner cartridges for a number of print cycles and/or recycle OPC drums. I only get rid of these once these have worn out.
- Used consumables often end up with neighborhood trash bins.

Disposal Procedures and Environmental Guidelines

Many computer components, such as batteries, CRTs, chemical solvents, and toner kits (for printers), contain harmful ingredients. Don't throw these items in the garbage! Many of these items can be recycled, and a hazardous waste program can remove most.

Make sure you know the proper disposal procedures for each of the following items.

Batteries

Batteries for the computer often contain lithium, mercury, or nickel-cadmium, which means that if they were to be thrown in the garbage and carried off to a landfill site, they could contaminate the water and soil. You can take batteries to a recycling depot or, in some cases, send them back to the manufacturer.

CRTs

Many CRTs contain lead. If you dump them in the trash (and ultimately in a landfill), you may contaminate the soil and water in your area and poison people. Don't do it! For this reason, CRTs must be recycled or turned over to a hazardous waste program.

Toner Kits and Cartridges

The main concern about the disposal of toner kits and cartridges is that there are too many of them. Most people go through several a year, and if they were all thrown in the garbage, they would fill a landfill site. There are many ways of dealing with toner kits and cartridges.

You can now refill these cartridges, which saves on environmental wear but wreaks havoc on your printer. The printing quality from refilled cartridges is often less than that of new cartridges and the refilled ink can cause the bubble jets on ink-jet printers to clog.

Many manufacturers of these cartridges will buy back the used cartridges, refill them, and then resell them, which is probably the best solution.

Chemical Solvents and Cans

Chemical solvents or cans for PC use (or for any other use, for that matter) contain many harmful chemicals that should not be placed in the ground. For this reason, you simply cannot throw these in the garbage or they may damage the soil and water supply. Instead, chemical solvents and cans must be picked up through a hazardous waste program.

Material Safety Data Sheet

Most compounds, chemicals, and components come with a Material Safety Data Sheet (MSDS) that contains information about the product as well as any warnings, safe disposal requirements, and safe methods of transportation. If an item comes without an MSDS, you can obtain one from the manufacturer or locate one on the Internet.

2.2. System Maintenance

- System maintenance is required to ensure the reliable operation of any mechanical system in a workplace.
- If a computer system is not maintained properly it is more likely to fail.
- System failures prevent workplaces from operating and cost money.

- An adequate system maintenance schedule will help to prevent many of the problems from occurring.
- Routine maintenance is preventative and designed to avoid unnecessary problems.
- Remedial, non-routine, maintenance will try to fix things that are already broken.

2.3. Maintenance Schedules (Logs)

- A maintenance log is used to document components which need maintenance, frequency, times, methods etc...
- A schedule plans for when the maintenance will take place where a log will describes what has been done.
- On the schedule there should be allowance to note when the last maintenance was carried out.

Sample Maintenance Schedule (Log)

Component	Installation Date	Method	Duration	Frequency	Last Maintained	Due Next	Maintained by
Monitor	Oct - 05	Cleaning Cloth and Glass Cleaner	5 min	Weekly	Aug – 06	Aug – 13	Ayele
Keyboard	Oct – 05						
Mouse	Oct – 05						
Printer	Oct – 05						
System Unit	Oct – 05						
Disk Drive	May – 02						
CD-Drive	Jun - 07						

- A maintenance schedule/log is a table which can be manual, Word, Excel.
- The advantage of electronic format is that it is easily updateable and clients can also look to see when the next maintenance is due.

Self-Check 3**Written Test**

Name: _____

Date: _____

Instruction: Answer all the questions listed below, if you have some clarifications- feel free to ask your teacher.

Please ask your trainer for the questionnaire for this Self-Check.

1. _____ refers to the reselling, reassignment, recycling, donating, or throwing out of IT equipment through responsible, ethical, and environmentally sound means.
A. Disposal B. Maintenance C. Troubleshooting D. Both B and C
2. Which of the following is NOT correct about disposing used printer consumables?
A. Dispose used consumables with recycling centers or the take back programs of printer manufacturers.
B. Don't dispose them, manufacture/reuse empty cartridges, drums and other consumables.
C. Refill toner cartridges for a number of print cycles and/or recycle OPC drums. I only get rid of these once these have worn out.
D. None
3. Which consumable can be reused by refilling, which saves on environmental wear but wreaks havoc on your printer?
A. CRT B. Battery C. Cartridge D. Chemical Solvents and Cans
4. _____ is used to document components which need maintenance, frequency, times, methods etc.
A. Maintenance Schedule B. System Maintenance C. Inventory D. All
5. A consumable which contains lead in which if you dump them in the trash, you may contaminate the soil and water in your area and poison people:
A. Battery B. CRT C. Cartridge D. CD/DVD

4.1. Test hardware to ensure it is in working order according to established procedures

When replacing hardware, test it to verify it is working properly and then apply further tests periodically to ensure continued effective functioning.

You should be mindful of the following:

- Where new equipment is not tested for critical functions before being used, it can lead to failure and hence damage to both data and other linked systems. Therefore, you must ensure that all new installations are thoroughly tested after initial set up and prior to live use. All such tests should be in accordance with a documented test plan.

NOTE: Inadequate testing can threaten the integrity and availability of your data.

- Check the test outputs to confirm the results. Ensure that all key components, e.g. hard disk subsystems are included in the tests.
- Devices that are known to degrade with time, e.g. printers, should be tested periodically.
- When testing, ensure that the test plan simulates realistic work patterns. When testing is not done in a manner that does not simulate live conditions, the results of such tests cannot be relied on.
- Poor security procedures during equipment testing can compromise the confidentiality of your data. Therefore, Non Disclosure Agreements should be obtained from all third party staff involved in testing the equipment.
- Verify that the required security configuration and safeguards have been implemented for the new hardware.

If live data is used in the testing process for the new hardware, ensure that it is closely controlled.

CAUTION: Damage to equipment must be reported as soon as it is discovered. Repair any damaged equipment that affects your Information Security without delay as you could possibly lose valuable items and information through any weak links.

Self-Check 4**Written Test**

Name: _____

Date: _____

Instruction: Answer all the questions listed below, if you have some clarifications- feel free to ask your teacher.

Please ask your trainer for the questionnaire for this Self-Check.

True/False: Write true or false.

- _____ 1. When replacing hardware, it is necessary to test it to verify it is working properly and then apply further tests periodically to ensure continued effective functioning.
- _____ 2. Inadequate testing can threaten the integrity and availability of users' data.
- _____ 3. Devices that are known to degrade with time, e.g. printers, should NOT be tested periodically.
- _____ 4. Poor security procedures during equipment testing can compromise the confidentiality of your data.
- _____ 5. When testing is not done in a manner that does not simulate live conditions, the results of such tests cannot be relied on.

1.1. Replacing a Power Supply

Power supply is one of the toughest components to replace simply because of the large number of connections. The PC power supply or PSU you are going to replace will take about 15 minutes, including taking all of the pictures.

➔ The first step to replacing a power supply or any other component in a PC is to unplug the power cable from the back of the power supply.

✓ The socket for the power cord is above the screwdriver in the picture.

➔ The next step is to remove the cover from the case, which varies like crazy from brand to brand.

- On a standard mid-tower case like this one, you only need to remove a side cover, the one on the opposite side of the power supply fan grille than the cord socket and switch.

- The cover is already removed in this pictures (two screws and it slides right out).

- Finally, we get to remove the screws that hold the ATX power supply in place.

➔ After removing the four mounting screws from the old PC power supply, remove it out of the way on top of the drive cage.

- By leaving the old power supply connected, installing the new power supply, and then replacing the leads one at a time, it's nearly impossible to mess up.

- The only thing you have to watch out for is that the old power supply doesn't fall into the case while you're working and damage the motherboard or CPU.

- Note that this Antec replacement power supply has an intake fan on the bottom, which puts it right next to the CPU heat sink in the standard ATX design.



➔ As soon as the Antec power supply is in place, install the four screws to secure it.

➔ Then you'll stand up the case and the power supply will drop out of place and bash the fan on the heat-sink, or worse.

- ➔ In any case the four screws securing the PC power supply are just to the outside of the cut-out in the back of the case that the fan, switch and power cord socket protrude through.
- ➔ Screws that are further out in the painted areas are case screws.
- ➔ Now we can begin actually replacing the old power supply connectors with connectors from the new power supply.
 - The most important power connection(s) in any PC are the motherboard connections.
 - The simplest version, as with this Athlon 1000 system, is the standard ATX connector, a single 20 pin (10x2) connector.
- ➔ To remove it, push in at the top of the latch with your thumb and pull upwards on the connector, shouldn't take any real force.
- ➔ Then Connect all the connectors on their exact position.



Lap Test

Practical Demonstration

Name: _____

Date: _____

Time started: _____

Time finished: _____

Instructions: You are required to perform the following individually with the presence of your teacher.

Please ask your trainer for the instructions for this lap test.

Activity 1: Maintenance Scheduling and Maintenance Logs

1. Use *Microsoft Word* to create the table that appears on page 11
2. Save the document as *Maintenance Schedule Template*
3. Print the document (a blank table)
4. This document will be used to keep a record of each task you complete in the remaining activities. Complete the table by hand as you complete each task.
5. Once the table is full, type your hand written information into the document
6. Print the completed document and save as *Maintenance Schedule for Your Name*

Activity 2: Clean your Computer

1. Complete *Activity in the operation Sheet 1.1* step by step to replace a power supply.
2. Update your personal *Maintenance Schedule* as you go (see Activity 1 above).
3. Get your work marked (ask for the teacher) immediately after you have finished to demonstrate your competence in this task

➤ *Your teacher will evaluate your output either satisfactory or unsatisfactory. If unsatisfactory, your trainer shall advice you on additional work. But if satisfactory, you can proceed to the next topic.*

Self Check Answer Sheet

Self-Check 1

1. B
2. A
3. D

Self-Check 2

1. A
2. A
3. A
4. B
5. B
6. B
7. B
8. B
9. B
10. B

Self-Check 3

1. A
2. D
3. C
4. A
5. B

Self-Check 4

1. True
2. True
3. False
4. True
5. True