**Task1:**

**Chosen Type:** Preventive Maintenance

**How It’s Applied**: Robot Arm 1400 Example

# Maintenance Schedule

|  |  |
| --- | --- |
| **Frequency** | **Tasks** |
| Daily | Visual check, clean arm, check cables. |
| Weekly | test sensors. |
| Monthly | software updates. |
| Quarterly | Deep cleaning |
| Annually | replace damage components. |

1. **Techniques Used**
   * Visual inspection
   * Lubrication
   * Calibration tools
   * Vibration analysis
   * Thermal imaging
   * Maintenance records

# Time

From daily to yearly based on usage.

# Tools Needed

* + Cleaning tools
  + Screwdrivers
  + Calibration
  + Lubricants
  + Vibration and thermal sensors
  + Maintenance log system

**TASK 1: Corrective Maintenance**

**HOW IT’S APPLIED: Robot Arm 1400 Example**

**1. MAINTENANCE SCHEDULE**

| **FREQUENCY** | **TASKS** |
| --- | --- |
| As needed | Identify and diagnose faults. |
| After failure | Replace or repair faulty components. |
| Post-repair | Test arm functionality and calibrate. |

**2. TECHNIQUES USED**

* Diagnostic testing
* Component replacement
* Calibration tools
* Functional testing
* Maintenance records

**3. TIME**

Repairs scheduled immediately after failure detection, duration varies based on fault severity.

**4. TOOLS NEEDED**

* Diagnostic software
* Screwdrivers
* Replacement parts
* Calibration tools
* Maintenance log system

**TASK 2: Predictive Maintenance**

**HOW IT’S APPLIED: Robot Arm 1400 Example**

**1. MAINTENANCE SCHEDULE**

| **FREQUENCY** | **TASKS** |
| --- | --- |
| Continuous | Monitor sensors for performance data. |
| Weekly | Analyze data trends for potential issues. |
| Monthly | Adjust components based on predictive alerts. |
| As predicted | Replace parts before failure. |

**2. TECHNIQUES USED**

* Sensor monitoring
* Data analytics
* Vibration analysis
* Thermal imaging
* Predictive algorithms
* Maintenance records

**3. TIME**

Ongoing monitoring with interventions scheduled based on predictive data analysis.

**4. TOOLS NEEDED**

* Vibration and thermal sensors
* Data analytics software
* Screwdrivers
* Replacement parts
* Maintenance log system

**TASK 3: Breakdown Maintenance**

**HOW IT’S APPLIED: Robot Arm 1400 Example**

**1. MAINTENANCE SCHEDULE**

| **FREQUENCY** | **TASKS** |
| --- | --- |
| At failure | Stop operation and assess breakdown. |
| Post-failure | Repair or replace broken components. |
| After repair | Test arm and resume operation. |

**2. TECHNIQUES USED**

* Fault diagnosis
* Component repair/replacement
* Functional testing
* Maintenance records

**3. TIME**

Unplanned, initiated immediately after breakdown, duration depends on damage extent.

**4. TOOLS NEEDED**

* Diagnostic tools
* Screwdrivers
* Replacement parts
* Testing equipment
* Maintenance log system

**Task2:**

# Q1: Safety & health instructions?

* If you found the water in the area or workspace don’t touch the robot and be far.
* Only operate by professional trainers.
* Ensure nobody in the danger area or workspace.
* Don’t use inappropriate materials.
* Read and follow all the instructions.
* Remove the obstacles from work area.

# Q2: Steps ( Power Supply)

* Disconnect the power supply from control cabinet.
* Remove power supply and disconnect wires.
* Use a screwdriver to remove four M3 screws.
* Remove the old power supply.
* Install the new power supply, reconnect cables, and turn power on.

# Q3: Tools & Devices

* Screwdriver
* Multimeter
* Oscilloscope

**Task3:**

)هناخد سكرينات للجزء ده في الاسيسمنتBackup( Windows

<https://youtu.be/kEPw2XV7fuo?si=D96t-vbI2P9TfnrS>

**Task4:**

# Type of maintenance?

Preventive maintenance**:** it has a schedule and occurs before an issue happens.

# Date of Maintenance?

April 27, 2025

# Type of device?

Robot Arm 1400

# Tools used?

Screwdrivers, multimeter, lubricants.

# Problems and faults before maintenance?

**Unstable Movement:** The arm doesn’t move smoothly.

**Overheating:** The machine heat up quickly.

**Slow Response:** The arm is slow to respond.

# Problems and faults after maintenance?

There is no problem. The system is work correctly after resolving all issues.

# Maintenance duration?

Estimated take 5 hours.

# Next maintenance schedule?

October 27, 2025 or based on performance.

# Challenges during maintenance?

* + Component Damage Risk
  + Unexpected Issues
  + Tools Availability

# System status?

The system is repaired.

# Repairing suggestions?

* + Perform regular testing
  + Upgrade parts
  + Improve cooling
  + Lubricate regularly
  + Remove old parts and replace it