©2025 TVET CDACC

021306T4IOR

INDUSTRIAL AUTOMATION AND ROBOTICS LEVEL 6

ENG/OS/IA/CR/03/6

Develop and Maintain Data Communications Systems

July/August 2025

TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION COUNCIL (TVET CDACC)

easyexpert.com

PRACTICAL ASSESSMENT

Time: 3 HOURS

INSTRUCTIONS TO CANDIDATE:

1. You are required to develop a system that accomplishes the algorithm outlined below:
    a. Start push button starts the system
    b. When the inductive sensor at the start of the conveyor detects an object, the conveyor begins to move
    c. When the collection bin at the end of the conveyor accumulates 5 objects, the conveyor stops for 1 minute to allow the bin to be emptied.
    d. After 1 minute, the conveyor resumes operation
    e. The process repeats until the stop push button is pressed
    f. The system sends status data to the PC every 5 seconds

    System status contents:

    - Motor status; speed and torque
    - Object count

Tasks:

i. **Task 1: Install the System**
   - Install conveyor system
   - Install control system

ii. **Task 2: Develop the PLC Program**
   - Develop a PLC program that executes the sequence of events described in the algorithm above
   - Simulate and debug the program to ensure correct functionality

iii. **Task 3: Test, Maintain and Commission the System**
   - Power on the system as per the Standard Operating Procedures (SOPs)
   - Download the developed program to the PLC module
   - Run the system and observe its operational results

iv. **Task 4: Send System Status to PC**
   - Configure OPC server to send and store data from the PLC
   - Configure permissions and security for the system
   - Retrieve the stored data and format it into an excel file
   - Save the excel file with your credentials

edactivet.org

2. You have been provided with the following resources for the practical tasks:
    - Computer installed with relevant software(s)
    - PLC
    - Programming cable
    - MCB
    - Power supply
    - Terminal blocks
    - DIN rail
    - Conveyor belt
    - Motor
    - Relay
    - Inductive sensor
    - Start pushbutton
    - Stop pushbutton
    - Collection bin
    - Multimeter
    - Connecting cables
    - Electronics toolkit
    - Side cutter
    - Zip ties

easytvet.com