

B.E. DEGREE EXAMINATIONS: MAY/JUNE 2013

Sixth Semester

MECHATRONICS ENGINEERING

MCT115: Programmable Logic Controller

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

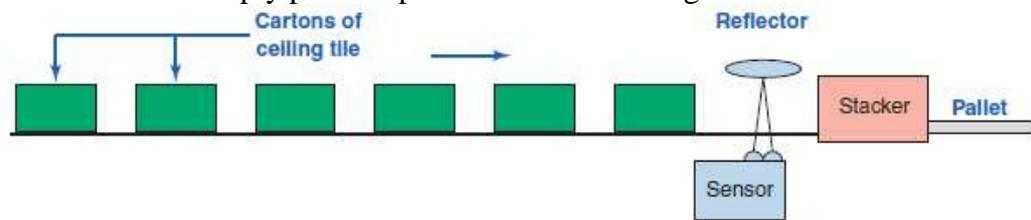
PART A (10 x 1 = 10 Marks)

1. An example for Boolean operators is ____
 - a) AND
 - b) DO & IF
 - c) WHILE
 - d) FOR
2. Software and interface cards added to PC to do the work of PLC is called ____
 - a) Hard soft controller
 - b) Fast hard controller
 - c) Soft logic controller
 - d) Hard logic controller
3. ____ PLC application involves one PLC controlling several others.
 - a) Multitask
 - b) Control management
 - c) Single ended
 - d) One way control
4. ____ is popular because it has a very low current drain (15micro Amps) when not accessed and the information stored in its memory can be retained by as little as 2V DC.
 - a) EEPROM
 - b) CMOS-RAM
 - c) UVPROM
 - d) ROM
5. __ programming language in PLC uses high level syntax with if & then statements.
 - a) Instruction list
 - a) Structured text
 - c) Sequential functional chart
 - c) Functional block diagram
6. __ bit will be used only in conjunction with an external high speed counter
 - a) Overflow
 - a) Underflow
 - c) Update accumulator
 - c) Update done
7. ____ is graphical display hardware in which machine status, alarms, messages, diagnostics, and data entry are available to the operator in graphical display format.
 - a) HMI
 - b) MIH
 - c) MSB
 - d) MAP

23. a) Two part conveyor lines, A and B, feed a main conveyor line M. A third conveyor line, R, Removes rejected parts a short distance away from the main conveyor. Conveyors A, B, and R have parts counters connected to them. Construct a PLC program to obtain the total parts output of main conveyor M and explain the program in few points.

(OR)

- b) Write a program to implement the box-stacking process .This application requires the control of a conveyor belt that feeds a mechanical stacker. The stacker can stack various numbers of cartons of ceiling tile onto each pallet (depending on the pallet size and the preset value of the counter). When the required number of cartons has been stacked, the conveyor is stopped until the loaded pallet is removed and an empty pallet is placed onto the loading area. A photoelectric sensor will be used to provide count pulses to the counter after each carton passes by. In addition to a conveyor motor start/stop station, a remote reset button is provided to allow the operator to reset the system from the forklift after an empty pallet is placed onto the loading area.



24. a) (i) Explain about the Distributed Control System in detail? (7)
(ii) Explain the redundancy concept in detail? (7)

(OR)

- b) (i) Explain any two industrial communication technologies that play a critical role in today's control systems? (7)
(ii) Explain MAP & TOP with a neat block diagram? (7)

25. a) (i) Explain the function of PLC in Factory automation in detail? (7)
(ii) Explain the working of PLC as robot controller in detail? (7)

(OR)

- b) What is the function of a Watch Dog in PLC systems? Explain about the PLC maintenance procedure in detail?
