

COURSE CODE (CREDITS): 25B1WEC831(2)

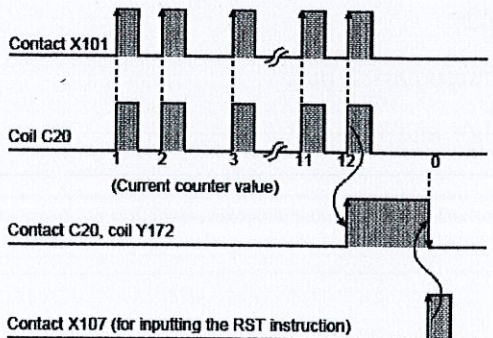
MAX. MARKS: 35

COURSE NAME: Industrial Automation

COURSE INSTRUCTOR: Salman Raju Talluri

MAX. TIME: 2 Hours

Note: (a) All questions are compulsory. (b) The candidate is allowed to make suitable numeric assumptions wherever required for solving problems. (c) Use of calculator is allowed.

Q.No	Question	CO	Marks
Q.1	What are the different types of devices that are used in designing a PLC automated system? List different types of components in the order of input devices, output devices and intermediate devices.	CO-1	5
Q.2	Draw the ladder diagram to generate the following timing diagram. Before that, closely observe the timing diagram and list all the devices needed and instructions to be used to generate the required timing diagram. 	CO-2	5
Q.3	What do you mean by a closed loop control system? Draw the block diagram indicating each block very clearly. Define the necessity of each block and/or its functionality.	CO-2	5

Q.No	Question	CO	Marks
Q.4	Develop a ladder diagram to switch on an output device Y_0 if the current value in the timer is less than 200. Turn off Y_0 and turn on another output device Y_1 immediately if the current value in the counter is more than 200 and less than 500. After the value reaches to 500 in the timer, both output devices must be on. Use an emergency switch to stop all processes in an emergency event.	CO-3	5
Q.5	Clearly explain with neat diagrams the necessity and execution flow of sequence control instructions, JUMP, CALL, MCR and MC. Draw simple ladder diagrams to indicate these instructions' functionalities.	CO-3	5
Q.6	Draw a neat diagram to indicate the differences between Roll, Yaw and Pitch. What are the boundaries/limits for each? How do these parameters effect the movement of a robotic arm? How can you link these with revolute joints?	CO-4	5
Q.7	Write very precisely about the following. a. Inline transfer machine and Rotary transfer machine b. Accuracy and repeatability c. Straight line path and Interpolation path d. Cartesian coordinate robot and Polar coordinate robot e. FEND and SRET	CO-4	5