UTHM
Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER I
SESSION 2014/2015

COURSE NAME	:	PLC PROGRAMMING AND APPLICATION LABORATORY
COURSE CODE	:	BND 30703
PROGRAMME	:	BND
EXAMINATION DATE	:	DECEMBER 2014 / JANUARY 2015
DURATION	:	3 HOURS
INSTRUCTION	:	ANSWER **ALL** QUESTIONS

THIS QUESTION PAPER CONSISTS OF **SIX (6)** PAGES

Q1   (a)   Identify the name of programming language of PLC widely used in industry.

(1 marks)

(b)   Differentiate the Mnemonic language and Ladder Diagram using suitable representations.

(12 marks)

(c)   Define the analogue and digital signals and list **TWO (2)** devices which produce analogue signal.

(12 marks)

Q2   (a)   Explain the following terms below:
- (i)   Execution Condition
- (ii)   Logical Block.
- (iii)   Normally Open (NO)
- (iv)   Normally Close (NC).

(8 marks)

(b)   Explain the step to write the program for OR LD and AND LD according to the ladder diagram in Figure **Q2** (b).

(7 marks)

(c)   Develop a mnemonic programs for ladder diagram in Figure **Q2** (c).

(10 marks)

Q3   (a)   List **FIVE (5)** example of input devices and output devices.

(5 marks)

(b) Develop a mnemonic code for ladder diagram shown in Figure **Q3** (b) and explain the operation of ladder diagram.

(7 marks)

(c) Draw a ladder diagram according to mnemonic code in Table **Q3** (c).

(13 marks)

Q4 (a) Draw a ladder diagram to control two unit of lamps L1 and L2. L1 and L2 will ON if one or both switch S4 and S5 is turn ON. Lamp L2 will OFF if the reset switch is turn ON. Develop a mnemonic code to control lamp.

(5 marks)

(b) Draw a ladder diagram and develop a program to control the system according to the system below.

(10 marks)

> Conveyer will operate when the switch is turn ON. Conveyor will carry a pack of goods to keep in particular box. A sensor is use to detect the movement of 50 packs of goods flow through conveyor into particular box. When the sensor counts 50 times, conveyor belt will stop for a moment.

(c) Figure **Q4** (c) shows the timing diagram for Traffic Light system. Design a ladder diagram for the system. R1- Red 1, Y1-Yellow 1, G1-Green 1, R2-Red 2, Y2-Yellow 2, G2-Green 2.

(10 marks)

- END OF QUESTION –

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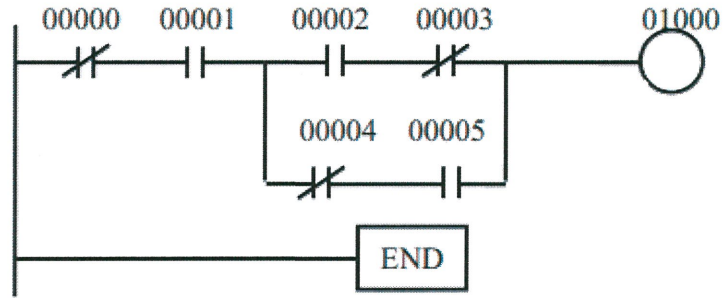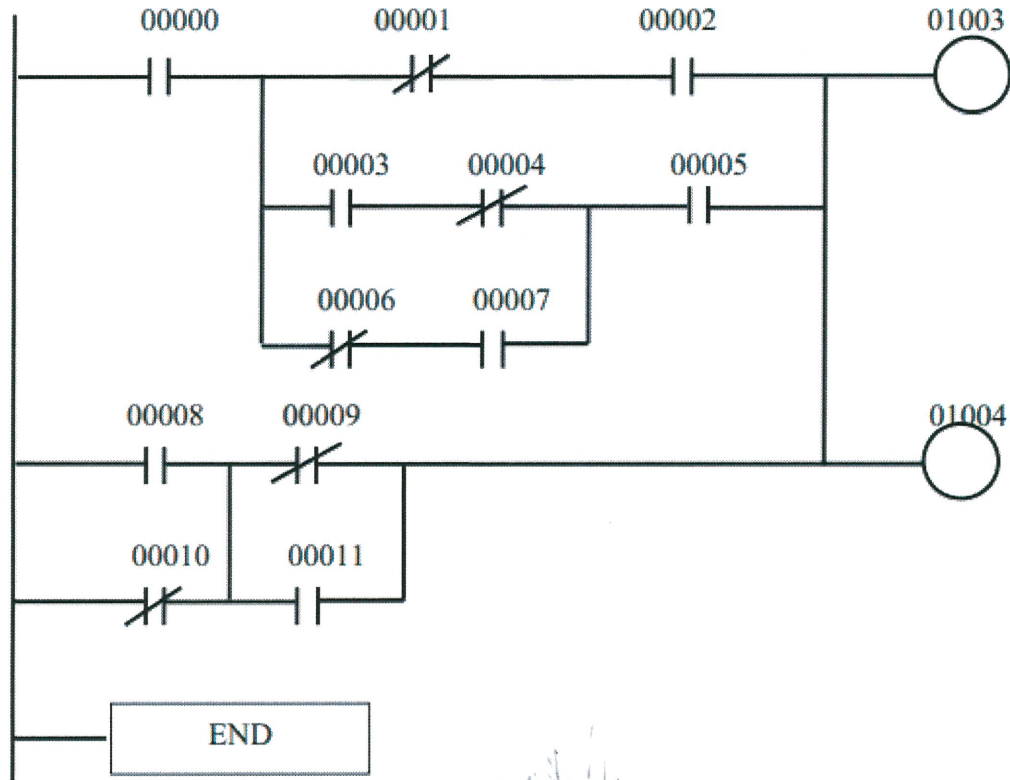

Figure Q3 (b)

Figure Q2 (c)

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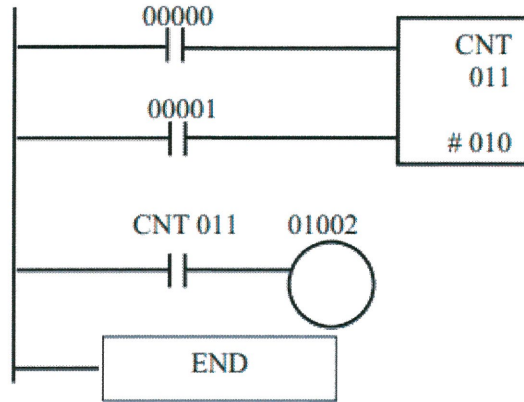COURSE NAME: PLC PROGRAMMING & APPLICATION LAB. COURSE CODE: BND30703
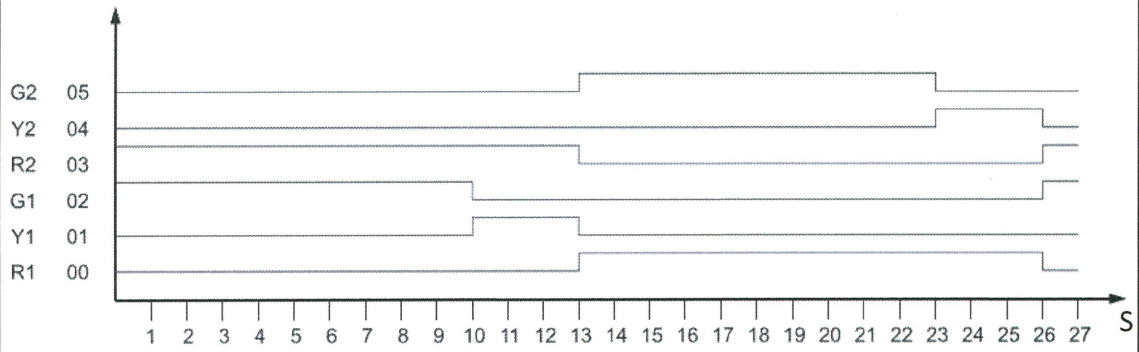

Figure Q3 (b)

Address	Instruction	Data
0000	LD	00000
0001	OR	01000
0002	AND NOT	00001
0003	OUT	01000
0004	LD	00003
0005	AND NOT	00004
0006	OUT	01001
0007	LD	00005
0008	LD NOT	00006
0009	CNT	011
		#010
0010	LD CNT	011
0011	OR NOT	00002
0012	AND	00009
0013	OUT	01003
0014	END	

Table Q3 (c)

Figure Q4 (c)