

**Indian Maritime University**  
(A Central University, Government of India)  
**June/July 2019 End Semester Examinations**  
**B.Tech. (Marine Engineering)**  
**Semester- IV**  
**Digital Electronics & PLC (UG11T3402)**

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Date:26.06.2019

Maximum marks: 100

Time: 3 Hrs

Pass Marks: 50

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**Part A (Compulsory)**

(MARKS=3\*10=30)

Q1)

a) With the help of universal gate (NAND gate) DRAW

1)AND gate

b) What are the various input and output devices attached to the PLC ?

c) List different language in PLC Programming ?

d) What is value of analog signal(current) which is used in marine ?

e) What is Application of A/D & D/A Converter in PLC ?

f) List example of analog and digital signal in PLC ?

g) Write full form of SCADA /DCS/RTU ?

h) What is difference between RAM and ROM ?

i) Write difference between transmitters and switch in sensor ?

j) What is HMI?

**Part B**

(5\*7=14)

Answer any FIVE Question from Part B

2)a) Explain PLC Block Diagram & Advantage

(2\*7=14)

b) Explain Any Two Application & Types of PLC.

(2\*7=14)

3)a) Draw the Ladder-Logic for the following Digital Logic Gate

- 1) AND
- 2) OR.
- 3) NOT.
- 4) NOR.
- 5) NAND

b) What is Sink type and source type (I/p & o/p)

(2\*7=14)

4)a) DRAW ARCHITECTURE of SCADA System and Explain RTU

b) Application of following

- 1) PLC
- 2) SCADA
- 3) Microprocessor
- 4) Digital Multi-Meter (DMM)

(2\*7=14)

5)a) Write a short note on classification of memory ? Difference between SRAM and DRAM

b) Draw a neat labeled functional block diagram of 8085 microprocessor and explain the flags of the flag register

(2\*7=14)

6)a) Write a Short Note on CRO (OSCILLOSCOPE)

b) Draw and explain the following

- 1) Counter
- 2) Register
- 3) Multiplexer

7)a) Explain the following in Brief with Neat Sketch

(2\*7=14)

- 1) Signal Generator

## 2) Transducer

b) Write a Short Notes On Analog to Digital Converter (ADC)

8 a) Write a PLC program using ladder diagram to start a motor –  
When motor was started RED light will on and GREEN light will  
be off , when the motor was stoped GREEN light will be on and  
RED light will be off

b) State few advantage of PLC over microprocessor.