

NETTUR TECHNICAL TRAINING FOUNDATION
DIPLOMA IN MECHATRONICS ENGINEERING & SMART FACTORY-CP15
V SEMESTER REGULAR & SUPPLEMENTARY EXAMINATION-JAN 2023

Subject: Embedded System & IoT
Subject Code: CP15501T

Total Time: 2 Hr.
Total Marks: 50 Marks

PART B

1.0 ANSWER ANY EIGHT OF THE FOLLOWING **2*8=16**

- 1.1 What is kernel? What are the functions of kernel?
- 1.2 What is Node MCU?
- 1.3 What is GPIO?
- 1.4 List out the features of IoT.
- 1.5 What is PUB/SUB approach?
- 1.6 What is IoT Framework?
- 1.7 What is meant by variable in programming? Give the syntax of for variable in python
- 1.8 What is smart factory?
- 1.9 Write the difference between Analog pin and PWM pin in Arduino?
- 1.10 What are the 7 layers of IoT architecture?

2.0 ANSWER ANY SIX OF THE FOLLOWING **3*6=18**

- 2.1 Draw the Hardware architecture of embedded system
- 2.2 List out the features of Node MCU ESP8266?
- 2.3 Why Arduino become so popular in embedded field compare to other controllers?
- 2.4 Write the benefits of IoT
- 2.5 Why predictive analysis become important requirement of IoT reference architecture?
- 2.6 What are three things included in message packets of MQTT?
- 2.7 List the features of Raspberry Pi 3B / B+
- 2.8 List the different data types available in python.

3.0 ANSWER ANY FOUR OF THE FOLLOWING **4*4=16**

- 3.1 Explain in details of four stages of IoT Architecture.
- 3.2 What are the key features of Arduino Uno?
- 3.3 Explain the different arithmetic operators used in python program
- 3.4 Write the comparison between CoAP vs MQTT protocols.
- 3.5 Explain the GET & POST methods in Http.
- 3.6 What is the difference between IoT and IIoT?

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PART B

1.0 ANSWER ANY EIGHT OF THE FOLLOWING **2*8=16**

- 1.1 What is Interrupt response time?
- 1.2 What is VHDL?
- 1.3 What you mean by kernel?
- 1.4 Mention how many bit channel ADC PIC 16F877A has.
- 1.5 Abbreviate 1. POR 2. BOR
- 1.6 Write short notes on RISC Processor.
- 1.7 How will you differentiate embedded system from other system?
- 1.8 List out the Timers in PIC16F877A and their size.
- 1.9 List any five Features of PIC 16F877A
- 1.10 Write short note about Shortest Job First Algorithm.

2.0 ANSWER ANY SIX OF THE FOLLOWING **3*6=18**

- 2.1 Write a short note on message queue and mailbox.
- 2.2 Draw and explain each bit of STATUS Register.
- 2.3 Explain shortly on real time operating system with examples
- 2.4 Write a program in PIC to add two 16 bit number without carry
- 2.5 Explain Round robin and pre-emptive algorithms.
- 2.6 Differentiate Harvard and Von Neumann Architecture.
- 2.7 Explain Watch Dog Timer. How it differs from other timer?
- 2.8 Which are the registers used for timers in PIC microcontroller

3.0 ANSWER ANY FOUR OF THE FOLLOWING **4*4=16**

- 3.1 Explain the data transfer instruction in PIC Microcontroller.
- 3.2 Explain SLEEP mode in PIC16F877A briefly.
- 3.3 Explain the different categories of embedded system.
- 3.4 Draw and explain DC motor control using PIC16F877A.
- 3.5 Explain about the program memory organization of PIC 16F877a
- 3.6 Write short notes on a) Segmentation b) paging c) Fragmentation

