POKHARA UNIVERSITY

Level: Bachelor | Semester: Fall | Year : 2019
Programme: BE | Full Marks: 100
Course: Embedded System | Pass Marks: 45
Time : 3hrs.

Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.
Attempt all the questions.

1. a) Define Embedded System. Explain essential components of Embedded System? 7
   b) Design an overlapping sequence detector for the sequence 1010 8
2. a) Design a sequential circuit to implement 2-bit counter with an input that controls up (increase value) or down (decrease value) count. 8
   b) Explain the firmware development process with necessary block diagram? 7
3. a) Explain different types of RAM with RAM variation. 8
   b) What are methods that can be employed to find the address of interrupt service routine? Discuss a generalized DMA process. 7
4. a) Explain Daisy-chain arbitration in detail. What is the significant of Multilevel bus architecture 8
   b) Define Real time operating System? Explain Round Robin and Pre-emptive Scheduling Policies. 7
5. a) Explain, with necessary diagrams and equations, how a MOSFET can be used as a switch. 8

   OR

   What are cross compilers and assemblers? Why do we require such type of compilers and assemblers while designing embedded system?
   b) Write an assembly language program based on 8051 to send data "Hello" through UART (with baud rate of 9600, 8 bit data, no parity, 1 stop bit and no handshake) in every 500 ms using internal timer of the microcontroller. Show the necessary calculation and connection diagram. 7
6. a) Write a VHDL program for which output will be 1 when the sequence 7

1011 is detected considering overlapping condition.

b) Write down the VHDL code for an adder that takes in two 4-bit number and gives their sum as output. 8

7. Write short notes on: **(Any two)** 2×5

a) Fan out

b) Memory Management

c) Multi-level bus architecture