POKHARA UNIVERSITY

Level: Bachelor | Semester: Fall | Year : 2021
Programme: BE | Full Marks: 100
Course: Embedded Systems | 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) State Moore's Law. Explain different characteristics that differentiate embedded system from other computing. 7
   b) Design a 3-bit gray code counter using JK flip – flop. 8
2. a) Define target and development processor. Explain any three ways of testing the program intended for embedded system. 7
   b) Explain the optimization of single purpose processor in detail. 8
3. a) Combine 2kx4 ROM to get 6kx8 ROM 7
   b) Differentiate interrupt driven I/O using fixed and vectored interrupt. 8
4. a) What are the advantages of interrupt over DMA? Explain the operation of peripheral to memory transfer with DMA 8
   b) What is binary semaphore? Explain the usage of semaphore and mutex with proper example. 7
5. a) Why RTOS are preferred in embedded system? Differentiate between clocking communication and task synchronization. 7
   b) Write an assembly language program for 8051 microcontroller to blink LED 3 times if user sends character 'a' through UART, and blink LED 5 times if user sends 'b' through UART. Show necessary calculation and connection diagram. 8
6. a) Write a program in VHDL implement 4:1 multiplexer. 7
   b) What are the advantages of using VHDL instead of any other HDL? Explain different modelling styles in VHDL with illustration. 8
7. Write short notes on: (**Any two**) 2×5
   a) Cross Assemblers
   b) Set associative Cache mapping
   c) Arbitration