

POKHARA UNIVERSITY

Level: Bachelor
Programme: BE
Course: Embedded Systems

Semester: Fall

Year : 2018
Full Marks: 100
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) What is an Embedded system? Justify, how automatic fuel machine is a good example of embedded system? 7
- ✓ b) Design a circuit to implement 2-bit gray counter. 8
2. a) Suppose, you are appointed as an officer in a criminal investigation department, are provided a lot of phone record for analysis. How you will solve this problem & which processor is suitable for this analysis purpose? 7
- ✓ b) Explain the programmer view in the embedded system. 8
3. a) Describe a way to fulfill a requirement of 18 memory locations each 8 bit wide using 16X4 memory chips. 7
- ✓ b) Why we need DMA? Explain the working principle of DMA. 8
4. a) Compare and contrast bus-based I/O and port-based I/O. 7
- ✓ b) In an RTOS environment different tasks may share same variables and functions. Explain the problems faced due to this type of sharing and also suggest the solutions. 8
5. a) Explain memory fragmentation? How problem related to memory fragmentation can be solved in embedded systems? 8
- ✓ b) Explain, with necessary diagrams and equations, how a MOSFET can be used as a switch. 7
6. a) Write an ALP in 8051 to implement seven segment and implement counter that counts two digit hexadecimal number. 7
- ✓ b) Write a VHDL program for a 4-bit full adder. 7
7. Write short notes on: (**Any two**) 2×5
 - a) Associative cache mapping
 - b) Control Blocks
 - c) Structural and Behavioural Model