

POKHARA UNIVERSITY

Level: Bachelor

Semester: Fall

Year : 2020

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) What is an embedded system? What are the main constraints that we should know to develop a firmware in embedded system? 7
b) Define Combinational and Sequential Circuit. Design a NOR gate using CMOS transistor. 8
2. a) Define Optimization. Explain the different optimization opportunities. 8
b) What are the key factors a programmer needs to consider when choosing a general-purpose controller? 7
3. a) What do you understand by cache memory? Discuss about cache-replacement policy and cache write techniques. 8
b) Compose 2Kx16 ROM using 1Kx8 ROM. 7
4. a) Define Arbitration. Explain daisy chain arbitration with necessary diagram. 8
b) List out the differences between Process and Thread. 7
5. a) What do you understand by TCB in RTOS? What are the information contents of TCB? 8
b) Write an assembly language program for 8051 microcontroller to blink a LED in every one second. Use internal timer interrupt to generate the required delay. Show necessary connection diagram and calculation. 7
6. a) Explain different Modeling Styles with an example in VHDL. 9
b) Write a VHDL code for 4:1 MUX using structural Modeling style. 6

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

2×5

- a) Multilevel Bus Architecture
- b) Task and its states
- c) Debugger, Emulator and Profiler