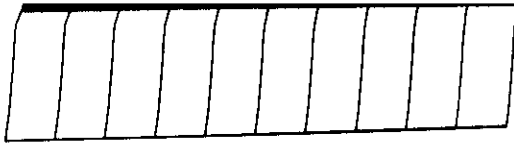


USN



**First Semester M.Tech. Degree Examination, Dec.2014/Jan.2015**  
**Advanced Embedded System**

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions.**

1.
  - a. Differentiate between : i) RISC and CISC architectures ii) SRAM and DRAM. (08 Marks)
  - b. What are the features and uses of :  
i) EEPROM ii) I2C BUS iii) IrDA iv) optocoupler. (08 Marks)
  - c. Explain the function of a WDT. Determine the resolution and total delay that can be provided with a 16 bit timer at 40 MHz. (04 Marks)
2.
  - a. Explain the operational and nonoperational quality attributes of an embedded system. (08 Marks)
  - b. Describe CDFG and FSM, with a block schematic and an example for each. (08 Marks)
  - c. Write a sequential program model for a seat belt warning system. (04 Marks)
3.
  - a. Describe the various things in UML model. (08 Marks)
  - b. Explain : i) Gerber file creation and DRC and ii) Different types of PCB fabrication methods. (08 Marks)
  - c. List the guidelines for PCB layout. (04 Marks)
4.
  - a. With a block schematic, explain the features of ARM cortex M3. (08 Marks)
  - b. Explain the functions of GPRS and special registers in ARM cortex M3. (08 Marks)
  - c. Explain the application of ARM cortex M3 processor. (04 Marks)
5.
  - a. What are the various exceptions and exception vectors and reset sequence operations in ARM cortex M3. (08 Marks)
  - b. Write the memory map and explain memory access attributes in cortex – M3 and default memory access. (08 Marks)
  - c. Explain SYSTICK TIMER integrated with NVIC in cortex – M3. (04 Marks)
6.
  - a. Describe the assembly to machine language creation with a block diagram. What are its advantages? (08 Marks)
  - b. Explain the two approaches for embedded firmware design approaches. (08 Marks)
  - c. Write the OS architecture showing the functions of kernel. How a RTOS is different from GPOS. (04 Marks)
7.
  - a. With a state transition diagram and PCB or TCB, explain the functions of various states and scheduler/ dispatches. (08 Marks)
  - b. Determine average waiting time, average turnaround time and average execution time for three process IDS P<sub>1</sub>, P<sub>2</sub> and P<sub>3</sub> with 10, 5 and 7 seconds as completion/execution times when the scheduler was FCFS and priority based scheduling. P<sub>1</sub> has highest and P<sub>2</sub> has least priorities. (08 Marks)
  - c. Compare : i) threads and processes and ii) mailbox and pipe for IPC. (04 Marks)
8.
  - a. Write a block schematic of IDE environment for embedded system design and explain their functions in brief. (08 Marks)
  - b. Describe the files generated on cross compilation, in brief. (08 Marks)
  - c. Define decompiler, emulator, logic analyzer and JTAG. (04 Marks)