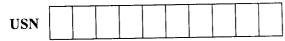
(04 Marks)

7



## Seventh Semester B.E. Degree Examination, Dec.2016/Jan.2017 **Embedded Computing System**

Max. Marks: 100 Time: 3 hrs.

Note: Answer FIVE full questions, selecting at least TWO questions from each part.

## PART - A

- What is an embedded system? Differentiate between a general purpose computer and an 1 (04 Marks) embedded system. Explain the design of a requirement form for the beginning of project. (08 Marks) b.
  - Discuss various challenges in embedded computing system design. (08 Marks)
- Differentiate between: 2
  - Cache hit and cache miss with a neat diagram. i)
  - (04 Marks) LDRH and LDRB of ARM instructions.
  - b. What is an interrupt? Explain the mechanism of interrupt vectors with a neat diagram. (08 Marks)

  - c. Write ARM assembly code to implement the following C statement: Z = (a << 2) | (b & 15).
  - (04 Marks) d. What is pipeline? Explain the stages in an ARM pipeline.
- ii) Four-cycle handshake protocol; Explain the following terms: i) Bus master; 3 (12 Marks) iii) Components/signals on a bus; iv) DMA.
  - Explain, how bridge can be used to connect different speeds systems. (08 Marks) b.
- (10 Marks) Explain three techniques used in loop optimization.
  - Explain the role of assembles and links in the compilation process with a neat diagram. b. (07 Marks)
  - (03 Marks) What is dead code elimination? Explain.

## PART - B

- What is a process? What is Kernel? Explain any three services of the Kernel in an operating 5 (08 Marks) system.
  - (07 Marks) Compare thread v/s process.
  - Define the following terms: i) CPU utilization; ii) Throughput; iii) Turnaround time; (05 Marks) iv) Waiting time; v) Response time.
- Explain the working of a shared memory communication system with a neat diagram. 6

(08 Marks) List various assumptions done during the evaluation of operating system performance.

- (04 Marks) Explain the following with respect to IPC: i) signals; ii) mail-boxes. (08 Marks)
- (10 Marks)
  - With a neat diagram, explain CAN data frame format. a. (10 Marks) Explain the basic format of an IP packet.
- Explain the following file types generated during cross-compiling/assembling: 8
  - . obJ File
  - . Map File ii)
  - . Hex File (iii
  - (20 Marks) . lst File. iv)

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