

QP Code : 15997

(3 Hours)

[Total Marks : 100

- N.B. (1) Question No. 1 is compulsory.
(2) Answer any **four** questions out of remaining **six** questions.
(3) Assume suitable **data** wherever **required**.

1. (a) Explain SPI protocol for serial communication. 5
(b) Explain Task and Task States. 5
(c) Draw and explain data frame format for CAN bus. 5
(d) Differentiate between RS 232 and RS 485. 5
2. (a) Suggest various techniques used for interprocess communication in an Embedded system. 10
(b) What is shared data problem ? Explain different types of semaphores. 10
3. (a) Compare schedulers used in hard real time system. 10
(b) Explain why ARM processor is one of the most commonly used 32 bit embedded processor. Draw architecture of ARM7 TDMI processor. 10
4. (a) Explain address space (Memory Map) of MSP 430. 10
(b) Explain in detail Link List, Pipes, Queue and Mailboxes. 10
5. (a) What is bounded and unbounded priority inversion problem ? Suggest solution used for same. Explain with suitable example. 10
(b) Describe embedded programming tools like compiler, cross compiler, integrated development environment, debugging tools, in circuit emulator. 10
6. (a) What is the role of processor reset and system reset explain the need of watchdog timer and reset after the watched time. 10
(b) Design an embeded system to control room temperature and humidity :— 10
 - (i) Draw FSM/Petrinet
 - (ii) Draw block diagram
 - (iii) Suggest hardware specification (viz. controller, memory, peripherals)
 - (iv) Give list of tasks and device drivers.
7. (a) Black Box Testing 20
(b) Digital Signal Controller
(c) Explain System on Chip (SOC).