

Roll no:.....
Name:

DEPARTMENT OF ELECTRONICS & COMMUNICATION
II SEMESTER M.TECH EMBEDDED SYSTEMS
MODEL EXAMINATION
TES 2004 EMBEDDED NETWORKING

Time: 3 hrs

Max Marks: 60

(Answer any *two* questions from each module. Each question carries 10 marks)

MODULE I

1. Write notes on

a) PCI parallel protocol.

b) RS232 serial communication protocol. (10)

2. a. Describe the working of Serial peripheral interface. What are the advantages of SPI protocol? (5)

b. Write a C Program to find the base address of the parallel adapter. (5)

3. a. Write a program to explain the working of I2C communication protocol. With neat timing diagram, explain how multiple bytes of data is received through I2C bus. (7)

b. Explain about different software registers associated with parallel ports. How to access these registers? (3)

MODULE II

4. a. How speed is identified on USB bus? What is the significance of SIE in USB bus? (5)

b. Compare UDP and TCP header and give examples for each protocol. (5)

5. a. Explain about the different data formats of CAN bus. (4)

b. USB descriptors and enumeration process. (6)

6. Consider a subnet with prefix 101.101.101.64/26. Give one example of one IP address that can be assigned to this network. Suppose an ISP owns the block of addresses of the form 101.101.127/19. Suppose it wants to create four subnets from this block, with each block having the same number of IP addresses. What are the prefixes for the four subnets? (10)

MODULE III

7. a. Explain data centric routing in wireless sensor networks. (5)
- b. Write short notes on Sensor MAC (S-MAC) (5)
8. With the help of a program explain, How a UDP datagram is sent and received using Rabbit-Core embedded system? (10)
9. How HTML protocol used for serving web pages? Write an HTML code for a webpage that displays a table. (10)

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MODEL EXAMINATION- AUGUST 2014

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MODULE I

1. Write notes on

a) PCI parallel protocol. (5)

b) RS485 serial communication protocol. (5)

2. a. Describe the working of Serial peripheral interface and discuss configurations of SPI. (5)

b. Write C PROGRAM to transfer a data to an external device through the parallel port. (5)

3. a. Which serial synchronous protocol is used for communicating with slow on board peripheral devices that are accessed intermittently? Consider three on-board devices memory, pressure sensor and one display unit. The pressure sensor frequently reads the pressure of a unit and sent signals to a controller and controller simultaneously writes data to memory and displayed in display unit. The data read and write by the controller is 11110000 10101010. Give necessary timing diagrams. (7)

b. Explain about different parallel port types. (3)

MODULE II

4. a. What are different methods for assigning IP address to a host? (6)

b. Compare UDP and TCP protocols and give examples for each. (4)

5. a. Describe the collision avoidance mechanism used in CAN bus.

b. USB descriptors and enumeration process (10)

6. Consider a router that interconnects three subnets: subnet 1, subnet 2 and subnet 3. Suppose all of the interfaces in each of these three subnets are required to have the prefix 223.1.17/24. Also suppose that subnet 1 required to support 120 interfaces and subnets 2 and 3 each required to support up to 60 interfaces. Provide three network addresses that satisfy these conditions. (10)

MODULE III

7. a. Explain different network Topologies used in wireless sensor networks. (5)
- b. Write short notes on Sensor MAC (S-MAC) (5)
8. With the help of a program explain, How a UDP datagram is sent and received using Rabbit-Core embedded system? (10)
9. Consider a node with unknown coordinates located in a square region of side d , with four reference nodes on the corners of the square. Consider two cases, when the reference beacons can be received within circles of radius: (a) $R = \sqrt{d}/2$, (b) $R = d$, identify the node location using centroid method. (10)

I²C provides good support for communication with various slow, on-board peripheral devices that are accessed intermit.tently, while being extremely modest in its hardware resource needs.

Which serial synchronous protocol is used for communicating with slow on board peripheral devices that are accessed intermittently? Consider three on-board devices memory, pressure sensor and one display unit. The pressure sensor frequently reads the pressure of a unit and sent signals to a controller and controller simultaneously writes data to memory and displayed in display unit.

The data read and write by the controller is shown in table. Give necessary timing diagrams .

	Data	
	11001100	
	01001001	

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discuss configurations of SPI.

An LED is controlled by a switch and are connected to the PC through a parallel port. Write a driver program (assembly language) for the same.

