CS/ECE/EEE/INSTR F241 – MICROPROCESSOR
PROGRAMMING & INTERFACING

MODULE 9: BUSES
QUESTIONS

ANUPAMA KR

BITS, PILANI – KK BIRLA GOA CAMPUS

Q1. What is the significance of the AEN signal available on the 8-bit ISA bus?

Q2. If you found an interface board lying on the bench, what is the one way you can tell whether it came from an 8-bit or from 16-bit ISA bus?

Q3. How does a PCI bus distinguish between a Memory Read or Memory Write operation?

Q4. The data 0011 1101 has to be transmitted via USB bus. Draw the NRZI encoded data pattern for the data .Assume that initially data is at high state.

Q5 Distinguish between Hot swapping and Hot plugging?

Q6. How does a USB hub distinguish between a Full speed and High speed device during device recognition?

Q7. The system to be designed is a general purpose computing system (GPCS) – with an add-on board that is used for industrial control (ICB). System is built around the 80286 processor.

It has 1 MB of memory – of which 128K is ROM and the rest is RAM – Half of the ROM is mapped to address space starting at 00 00 00$_H$ and half it to address space starting from 0F 00 00$_H$ The RAM is mapped continuously from address 01 00 00$_H$.

Memory Chips available are RAM -61256, ROM - 27256 .

In addition the GPCS has 1 8259, 1 8254 and 1 8237. The 8254 is used to raise an interrupt every 100ms which is used for task-switching. The 8254 output is mapped to IR0 of 8259. (Starting Address: 8254 -00$_H$, 8259- 08$_H$, 8237- 10$_H$)

The system is used for controlling a set of 12 relays. The control can be from as set of 12 local switches available on the ICB. If a switch is turned on the corresponding relay is turned else the relay is turned off. The switches give a low output when closed (turned on). A logic high activates the relay. Or the system can be controlled remotely by a data sent via an asynchronous serial communication bus at a maximum rate of 9600 baud. To switch between local and remote control – there is switch available-if output of switch is at logic 0 – remote mode else local mode.

There are 12 LEDs available that reflect the condition of the relays. After 4 bytes of data are received via the serial interface IR3 is raised to GPCS. The ICB has a 16550 in null modem and 2 8255's available on the board. The board is connected to the 8-bit connector of the 16-bit ISA bus of the GPCS. The address available for use onboard are (0100$_H$ – 011F$_H$). An 18.432 MHz crystal is available on ICB for 16550