TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2080 Baishakh

Exam.	Back		
Level	BE	Full Marks	80
Programme	BEL, BEX, BCT	Pass Marks	32
Year / Part	III / I	Time	3 hrs.

Subject: - Instrumentation II *(EX 602)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. a) Describe the various PC interfacing techniques while interfacing an I/O devices. [3]
   b) Draw circuit diagram of an interfacing circuit controlling one 4KB RAM and one 4KB ROM assuming base address 4000H. [5]
2. A microprocessor kit has an onboard 8255. Interface to the 8255 eight single-pole-double-throw (SPDT) switches numbered S_0 to S_7 and a seven segment common anode LED display. Draw the complete circuit setup. Define clearly the functions of all ports. Write a program to initialize 8255. Detect a switch closure and display the value of the switch number on the LED display. [9]
3. a) Illustrate digital data transmission using modem and standard phone lines. [5]
   b) Explain Check Sum error detection technique with suitable example. [4]
4. Why do we need digital to analog conversion? Design an interfacing circuit diagram for an 8 bit ADC using status check. Explain it with the suitable flowchart and program. [2+6]
5. a) What are the components used in Data Acquisition system? Explain with necessary block diagram. [4]
   b) Explain Bluetooth protocol architecture with suitable block diagram. [4]
6. a) Talk about inductive coupling in short. [2]
   b) Explain Ground Loop mechanism and also discuss the elimination of the ground loop issues with suitable diagram. [4]
7. Any circuit design must be capable to provide the high speed and low power performance. Discuss various terminologies in detail to achieve the above witnesses in fair design. [6]
8. What are the general rules for placement of components in a circuit? Describe grounding in terms of circuit layout. [4+2]
9. What do you mean by software reliability? Explain prototyping model for software development. [2+6]
10. What have you learned from case study? Draw the complete block diagram of the industrial process control involved in your case study. What are the critical factors effecting the production you have noticed in the visited industry and what measure you can suggest for the same? What problems you might face after implementing your suggested process control system? [12]

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