TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2078 Bhadra

Exam.	Regular		
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. Define instrumentation system. Compare status check I/O, Interrupt driven I/O and DMA. [2+6]
2. Design an interfacing circuit to set up bidirectional data communication in the master-slave format between two 8085A microcomputers. Use the 8255A as the interfacing between the master and the slave microcomputers. What will be the port addresses and control word. Write necessary program to transfer a block of data from the master to the slave along with its flowchart diagram. [9]
3. a) Explain simplex, half duplex and full duplex operation of RS-232 serial standard. [4]
   b) Describe different types of USB protocols along with the common USB packet fields. [6]
4. Explain the principle involved while interfacing an 8-bit ADC using interrupt; including suitable block diagram, process flow diagram and necessary ALP subroutine. [8]
5. List the major characteristics of Bluetooth. Draw the block diagram of data acquisition system and explain each block. [3+5]
6. Explain the principle of energy coupling. Describe about capacitive coupling with remedies. [6]
7. Discuss and differentiate between different types of fault tolerance schemes used in the purpose of circuit design. [6]
8. Explain ground, returns and shields in the context of circuit layout. [6]
9. a) Draw the complete block diagram for prototype model in software development process and explain its component in brief. [4]
   b) Write about White box testing and Black box testing. [3]
10. Draw the complete block diagram of industrial process control system involved in your case study. Explain why you want to implement this control system over existing one in terms of cost, manpower and plant automation. What problems you might face after implementing this control system. [12]

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