TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2078 Kartik

Exam.	Back		
Level	BE	Full Marks	80
Programme	BEI	Pass Marks	32
Year / Part	I / I	Time	3 hrs.

Subject: - Digital Logic *(EX 401)*

- ✓ 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. List out the advantages of digital signal over the analog signal. [3]
2. Explain ASCII and EBCDIC codes with example. [1.5+1.5]
3. Convert the following number system. [2×2]
   a) $(5A.B)_{16}=(?)_{Excess-3}$
   b) $(1011011)_2=(?)_{BCD}$
4. Define universal gates with example. Explain positive and negative logic. [2+2]
5. Design three input exclusive NOR gate using NOR gates only. [3]
6. Given function F=A(B'+C)+BD, change into its canonical form. Define max term and min term. [3+2]
7. Simplify the given function using K-map $F=\Pi(0,1,4,7,8,10,11,12)$ and $D=(2,3,6,9,15)$ and implement the final expression using NAND gate only. [4+2]
8. Define and design 2-bit binary fast adder. Draw the circuit diagram of full substractor using half substractor. [5+2]
9. Implement the given function $F=\Sigma(0,1,3,6,10,12,14)$ using 8×1 MUX only. [4]
10. Define race around condition. What are the limitation of SR flip flop? Convert JK flip flop to SR flip flop. [2+2+4]
11. Mention the application of shift Register. Explain the circuit diagram of 3-bit switched tail ring counter. [2+4]
12. Design the synchronous MOD-6 counter using –ve edge triggered JK flip flop. [6]
13. Design a sequential machine that detects three consecutive zeros from an input data stream x by making output y=1. (Use SR flip flop in your design) [10]
14. Differentiate between PROM and PLA. Implement the following boolean functions using PAL. [2+2×2]
    a) $A(x,y,z) = \Sigma(2, 4, 5, 7)$
    b) $B(x,y,z) = \Sigma(0, 2, 6)$
15. Explain the operation of digital clock with neat and clean diagram. [5]

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