Tribhuvan University

Faculty of Humanities & Social Sciences

OFFICE OF THE DEAN 2018

Bachelor in Computer Applications **Full Marks: 60**
Course Title: Digital Logic **Pass Marks: 24**
Code No: CACS 105 **Time: 3 hours**
Semester: Ist

Candidates are required to answer the questions in their own words as far as possible.

Group B

Attempt any SIX questions. **[6×5 = 30]**

11. Subtract: 675.6 – 456.4 using both 10's and 9's complement. [5]
12. What is university logic gate? Realize NAND and NOR as an universal logic gates. [1+2+2]
13. Simplify (using K- map) the given Boolean function F in both SOP and POS using don't care conditions D: $B'CD' + A'BC'D$

    $F = B'C'D' + BCD' + ABCD'$ [2+3]
14. Define encoder: Draw logic diagram and truth table of octal - to - binary encoder. [1 + 4]
15. What is D flip-flop? Explain clocked RS flip-flop with its logic diagram and truth table. [1+4]
16. Design MOD - 5 counter with state and timing diagram. [2+1+2]
17. Design a 4 - bit serial into parallel- out shift register with timing diagram. [3+2]

Group C

Attempt any TWO questions. **[2×10 = 20]**

18. Write difference between PLA and PAL. Design a PLA circuit with given functions.

    F1 (A, B, C) = $\boxtimes$ (2, 3, 5)

    F2 (A, B, C) = $\boxtimes$ (0, 4, 5, 7). Design PLA program table also. [3+7]
19. Define D flip-flop. Design a Master-slave flip-flop by using JK flip-flop along with its circuit diagram and truth table. [2+8]
20. Write down the difference between asynchronous and synchronous counter. Design a 4-bit binary ripple counter along with its circuit, state and timing diagram. [3+7]