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END TERM EXAMINATION

SECOND SEMESTER [BCA] MAY-JUNE 2009 Subject: Digital Electronics Paper Code: BCA-106

(Batch: 2005-2008) Paper Id: 20106

(b) Describe and compare Register, Main Memory and Secondary Memory. (c) What are the drawbacks of S-R Flip-flop? How are they removed in J-K flip-flop? (d) Perform the following conversions: (i) (AB.08) ₁₆ = () 10 (ii) (670.04) ₈ = () 16 (e) Design full-subtractor using NAND Gate only. PART-A (22. (a) Realize (i) Y = A+BC D using NOR Gates only. (ii) Y = (A+C) (A+D) (A+B+C) using NAND Gates only. (b) Express the function Y = A+B C+BD in (i) Canonical SOP form (ii) Canonical POS form (iii) Canonical POS form (iv) Canonical POS form (ii) Canonical POS form (iii) Canonical POS form (i		-	20106(Batch: 2005-2008)
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(i) Canonical SOP form (ii) Canonical POS form (ii) Canonical POS form Q3. (a) Using the K-Map method, simplify the following Boolean function F=∑m (0,2,3,6,7) + ∑d (8, 10, 11, 15) And obtain (i) minimal SOP and (ii) minimal POS expressions (b) If AB+CD=0, then by using Boolean algebra's laws and properties prove that: AB+C(A+D)=AB+BD+BD+ACD PART-B Q4. (a) Explain Binary Multiplier. (b) Show how a full-adder can be converted to a full-subtractor with the addition of an inverter circuit. Q5. (a) What are MUX & DEMÛX? Implement the following function using Multiplexer: F=∑m(0,1,3,4,8,9,13,15) (b) Design a code converter to convert Grey code into Binary code. PART-C Q6. (a) Define flip flop. Realize JK flip-flop using D-flip-flop. (b) Differentiate between combinational and sequential circuits. Explain the Race-Around condition and how can it be eliminated in Master-Slave JK-Flip Flop? Q7. (a) What are shift Registers? How are they different from Data Registers? The content of a 4-bit shift register is initially 1101. The register is shifted 6 times to the right with the serial input being 101101. What will be the final content of the register after all the 6 shifts are over? (b) Explain in detail the construction and working of Universal/Bidirectional shift register. PART-D	Q2.	(a)	
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Q8. (a) Design a mod-10 counter to count in Grey code using D-flip flop.	O8.	(a)	Design a mod-10 counter to count in Grey code using D-flip flop.

- (b) What is a Ripple Counter? Draw the wave forms to explain how this circuit can (6.5)be used as a "Frequency Divider".
- (a) What is a RAM? State the differences between Static RAM and Dynamic RAM. Q9. (b) What is a ROM? State the differences among ROM, PROM, EPROM and (6.5)