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Question Paper Code : 40991

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018

Third Semester

**Electrical and Electronics Engineering
EE 6301 – DIGITAL LOGIC CIRCUITS**

**(Common to Electronics and Instrumentation Engineering/Instrumentation and Control Engineering)
(Regulations 2013)**

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. State the associative property of Boolean algebra.
2. Reduce $A(A + B)$.
3. Define duality property.
4. What is a karnaugh map ?
5. What is a master-slave flip-flop ?
6. Give the comparison between synchronous and asynchronous counters.
7. Define address and word.
8. Why was PAL developed ?
9. Define Cache memory.
10. Infer the concept of switch-level modeling.

PART – B

(5×13=65 Marks)

11. a) i) Prove that $ABC + ABC' + AB'C + A'BC = AB + AC + BC$. (8)
ii) Convert the given expression in canonical SOP form $Y = AC + AB + BC$. (5)
(OR)
b) Designing a 4-bit Adder-Subtractor circuit. (13)



12. a) Write down the steps in implementing a Boolean function with levels of AND gates. (13)
- (OR)
- b) Give the general procedure for converting a Boolean expression in to multilevel N.AND diagram. (13)
13. a) Explain the operation of SR flip-flop, T flip-flop and JK flip-flop. (13)
- (OR)
- b) Explain the flip-flop excitation tables for JK flip-flop and RS flip-flop. (13)
14. a) Elaborate the concept of PROM, EPROM, EEPROM in detail. (13)
- (OR)
- b) Explain the operation of bipolar RAM cell with suitable diagram. (13)
15. a) Give the different arithmetic operators and bitwise operators. (13)
- (OR)
- b) Explain in detail about the principal of operation of RTL design. (13)

PART – C

(1×15=15 Marks)

16. a) Draw the circuit of CMOS AND gate and explain its operation. Also implement using PHDL. (15)
- (OR)
- b) Design and explain and bit shift register. Also give its truth table with its input and output waveform. (15)