Total No. of Questions : 8]

SEAT No. :

P4141

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[5255] - 639

M.E. (E & TC) (VLSI & Embedded Systems)

FAULT TOLERANT SYSTEMS

(Semester - III) (2013 Pattern) (604201) (Credit System)

Time : 3 Hours] *[Max. Marks :50*

Instructions to the candidates:

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***Assume suitable data, if necessary.***
3) ***Solve any five questions.***

Q1) a) Define unknown logic value. Construct the truth table for 2 input NAND gate. Prove that there is a loss of information associated with the use of 3-valued logic. **[5]**

b) Explain main flow of Event driven simulation. **[5]**

Q2) a) Explain following delay models for 2 input AND gate with timing diagrams,

i) Rise and Fall delay

ii) Transport delay

iii) Inertial delay **[5]**

b) Explain 8 valued logic for static and dynamic hazard analysis. Calculate AND (R, 1*). **[5]**

Q3) a) Calculate equivalent collapse ratio and dominance collapse ratio for the circuit shown in Fig. 1. **[5]**

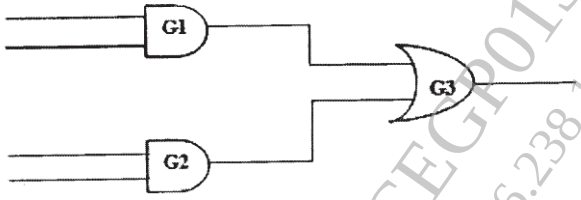


Fig.1

b) Construct the truth table of an XOR function of two inputs using five composite logic values. **[5]**

P.T.O.

Q4) a) Find fault list at J by considering faults B/1, F/0, J/0 for inputs shown in Fig.2 using deductive fault simulation. **[5]**

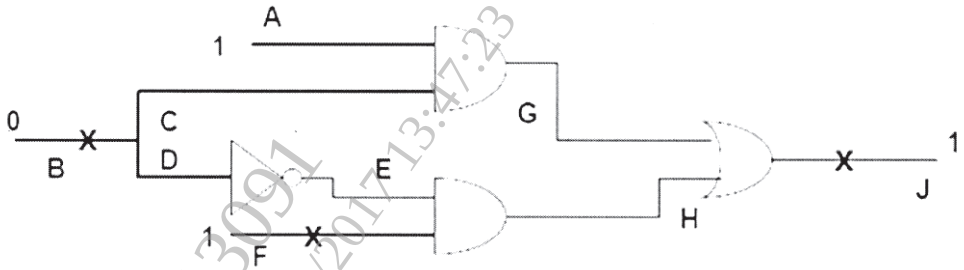


Fig.2

b) For the circuit shown in Fig. 3, **[5]**

- find the set of all tests that detect the fault c s-a-1
- find the set of all tests that detect the fault {c s – a – 1, a s – a –1}

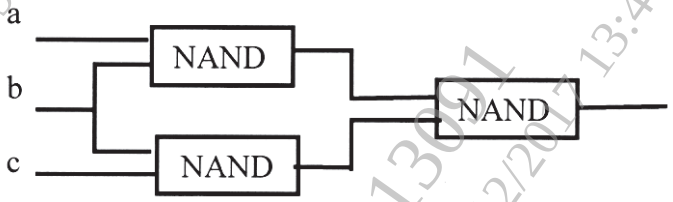
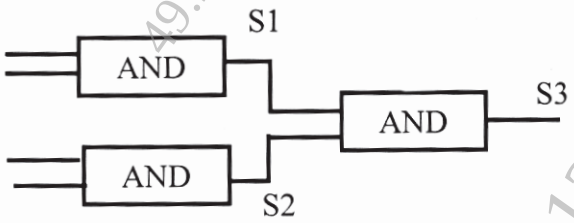


Fig.3

Q5) a) Obtain the Berger code for three information bits (I). **[5]**

b) Prove that for the following circuit, Syndrome S3 = S1*S2. **[5]**



Q6) a) Prove that residue m must be odd for the Residue coed to detect single bit error. **[5]**

b) What are the properties of LFSRs that make them suitable for generation of pseudorandom code in signature analysis. **[5]**

Q7) a) Explain different test pattern generation methods for BIST. **[5]**

b) Explain following Ad Hoc design for testability techniques. **[5]**

- Initialization.

- Monostable Multivibrators.

Q8) a) Give classification of BIST techniques. **[5]**

b) What is crosspoint fault? Explain different types of crosspoint faults occurred in PLA. **[5]**