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**B.Tech. (EE) 4th Semester F-Scheme  
Examination, May-2019  
DIGITAL ELECTRONICS  
Paper-EE-204-F**

*Time allowed : 3 hours*

*[Maximum marks : 100*

*Note : Attempt five questions in total. All question carry equal marks. Question No. 1 is compulsory. Attempt one question from each unit.*

1. (a) Convert :
  - (i) Decimal 45.75 into binary
  - (ii) hexa 4AB4 into octal
- (b) Discuss combinational circuits.
- (c) Difference between latch and flip flop.
- (d) What do you understand by race around condition?
- (e) Define hazards and its effects. 5×4=20

**Unit-I**

2. (a) At the receiver the Hamming code data received is 1011001. Find out the error and also give the correct code. The even parity has been used at transmitter. 10

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- (b) Solve the followings : 2×5=10
  - (i)  $\bar{A} + BC + CA - \bar{A}\bar{B}(A - B - C)$
  - (ii)  $(A + C + B) + (\bar{B} + C + 1)$
3. (a) Simplify the function using Quine-Mc Clusky method : 15  
 $X(A, B, C, D) = m \sum (1, 2, 5, 7, 8, 12, 13)$
- (b) Enumerate Advantages of K Map method. Also give out sequence of actions. 5

**Unit-II**

4. (a) Explain working of Binary full adder. Also draw the Truth Table. 10
- (b) Discuss working of Comparator with the help of diagram and TT. 10
5. (a) Design 16:1 multiplexer using 4:1 multiplexer. 10
- (b) Design Decimal to Gray encoder. Also give out TT. 10

**Unit-III**

6. Write short notes on the following : 2×10=20
  - (a) Design of JK Flip flop using SR flip flop
  - (b) Steps involved in state reduction

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7. (a) Design module 10 ring counter. Also give out its working and TT. 10
- (b) Enumerate similarities and difference between synchronous and ripple counters. 10

**Unit-IV**

8. (a) Design PLA using Multiplexer. 10
- (b) Discuss in detail the race free state assignment. 10
9. Write briefly about the following : 7,7,6
- (a) ROM
- (b) ASM design
- (c) PAL