Subject Code: 40104 / Digital Electronics

SE / Biomed / Sem IV / Choice Based.

(3 Hours)

Q. P. Code : 21324

17

(Total Marks: 80)

Please check whether you have the right question paper.

N.B.:
1) Question number 1 is compulsory arc compulsory.
2) Attempt any three questions from the remaining five questions.
3) Figures to the right indicate full marks.

Q.1 Solve any five questions out of six questions.

(a) Excess-3 code is called a self-completing code, Justify. [4]

(b) State and prove De-Morgan's thermos. [4]

(c) Simplify $y = \pi M (1,3,5)$ [4]

(d) Explain hazards in combinational circuits. [4]

(e) Explain race around condition? [4]

(f) Perform following operations using two's complement method: [4]
i) $(42)_{10}-(18)_{10}$ ii) $(18)_{10}-(42)_{10}$

Q.2 (a) Implement a full adder using 74138, 3:8 decoder . [10]

(b) Explain the operation of J-K Flip Flop using NAND gates. [10]

Q.3 (a) Reduce using Quine McClusky's method: [10]

(b) Design a 4 bit binary code to gray code converter. [10]

Q.4 (a) Obtain a 1:32 demultiplexer using four 1:8 demultiplexers and one 1:4 demultiplexer together. [10]

(b) Design a MOD 5 asynchronous UP counter using flip-flops. [10]

Q.5 (a) Design a 2 bit magnitude comparator. [10]

(b) Design a BCD to seven segment converter with common cathode. [10]

Q.6 Write short notes on any four of the following: [20]

(a) Shaft Position Encoding

(b) Describe both of the following:
i) Standard and Non –Standard SOP form ii) Standard and Non- Standard POS form

(c) Bidirectional shift register

(d) RTL and DTL Logic families

(e) Master-Slave Flip-Flop
