

[Total No. of Questions - 9] [Total No. of Printed Pages - 3]
(2064)

14692

B. Tech 4th Semester Examination

Digital Electronics and Microprocessor Architecture (O.S.)

EC-4041

Time : 3 Hours

Max. Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : (i) Attempt only five question selecting one question from each section A, B, C and D.

(ii) Section E is compulsory.

(iii) Use of non-programmable calculator is allowed.

SECTION - A

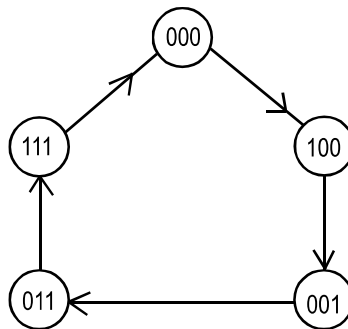
1. (a) Perform the following conversion.
 - (i) $(213.33)_{10}$ into octal, hexadecimal & binary number
 - (ii) $(7730.01)_8$ into hexadecimal and binary number. (10)
- (b) Give advantage & disadvantage of binary code over gray code. Also give application of excess-3 code. (10)
2. (a) Perform the following operation using $(r-1)$'s compliment.
 - (i) $(23)_8 - (33)_8$ (ii) $(10011)_2 - (11011)_2$ (10)
- (b) What are error detecting codes? Explain with example how they work. (10)

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SECTION - B

3. (a) Minimize the following function using k-map method and express the result in POS form
 $f(a, b, c, d) = \Sigma M(2, 3, 4, 7, 9, 10, 13, 15)$ (10)
- (b) Explain the construction and operation of 64×16 ROM (10)
4. (a) Design a 3-bit counter with the sequence mentioned in Fig. 1. (10)

**Fig. 1**

- (b) Write short note on different types of analog to digital converters. (10)

SECTION - C

5. (a) Write a program to find a fractional of a number in assembly language. (10)
- (b) Discuss evolution of microprocessor. (10)
6. (a) What are the future trends in microprocessor architecture? (10)
- (b) Write an assembly language program to check whether the number is prime or not. (10)

SECTION - D

7. (a) Explain the operation and architecture of any 8-bit microprocessor. (10)
- (b) Explain different types of instruction format supported by 8085. (10)
8. (a) Compare 8080 & 8085 microprocessor. Also give their block diagram. (10)
- (b) What are different methods of debugging in 8080? Explain dynamic debugging. (10)

SECTION - E

9. (i) Realize full-adder using NAND gate.
- (ii) Why we need inter facing?
- (iii) Differentiate between microprocessor and microcontroller.
- (iv) Give example of 8-bit, 16-bit & 32-bit microprocessor.
- (v) Write BCD code for $(8)_{10}$ & $(10)_{10}$.
- (vi) Briefly explain serial I/O techniques.
- (vii) Compare memory mapped and I/O mapped techniques.
- (viii) Obtain 8×1 mux using $2:1$ max.
- (ix) Realize NOT gate using X-OR gate.
- (x) Realize AND gate using only NOR gate. (2×10=20)