

B. N. BANDODKAR COLLEGE OF SCIENCE, THANE
 F.Y.B.Sc. (INFORMATION TECHNOLOGY) SEMESTER – I EXAMINATION; OCTOBER
 2014
 COURSE CODE– USIT103

Duration: 2½ Hrs
Marks: 75

Total

N.B. 1. All questions are compulsory.

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| Q. 1 | <p>Answer any two out of following</p> <p>a Differentiate Natural BCD and Gray Code.</p> <p>b What is Excess-3Code? Explain the Procedure for Converting Excess-3 Code.</p> <p>c Perform the following Arithmetic Operations:
 (a) $(10111)_2 + (11111)_2$ (b) $(11111)_2 - (10111)_2$
 (c) $(111)_2 \times (11)_2$ (d) $(1110111)_2 \div (11)_2$ (e) $(1101)_2 \times (110)_2$</p> <p>d Do The Following Conversions
 (a) $(F3)_{16} = (?)_{10}$ (b) $(45)_8 = (?)_{10}$ (c) $(111.11)_2 = (?)_{10}$
 (d) $(75)_{10} = (?)_2$ (e) $(53)_8 = (?)_{10}$</p> | 10 |
| Q. 2 | <p>Answer any two out of following</p> <p>a State and Explain De Morgan’s Theorems?</p> <p>b Explain NAND gates and NOR gates in detail?</p> <p>c Minimize the four-variable logic function for POS using K-Map
 $F(A,B,C,D) = (0,1,2,3,5,7,8,9,11,15)$</p> <p>d Simplify the Boolean function $Y = \sum M(1, 3, 5, 7, 8, 9, 13, 15)$ using K-Map.</p> | 10 |
| Q. 3 | <p>Answer any two out of following</p> <p>a Differentiate Between Multiplexer and Demultiplexer.</p> <p>b Draw the symbol, circuit and truth table of Half Adder And Full Adder?</p> <p>c Draw 8:1 Multiplexer using Truth Table and Logic Gates?</p> <p>d Write Short note on Combinational Circuit?</p> | 10 |
| Q. 4 | <p>Answer any two out of following</p> <p>a Differentiate between Combinational Logic Circuit and Sequential Logic Circuit?</p> <p>b Draw circuit for R-S Flip-flop using NAND gate. Explain its working.</p> <p>c Explain Shift Registers in Sequential Circuit in detail?</p> <p>d Draw a Neat labeled diagram of Master Slave JK Flip-flop?</p> | 10 |
| Q. 5 | <p>Answer any two out of following</p> <p>a Explain the components of computer organizations?</p> <p>b Explain in brief about output devices of computers?</p> <p>c Draw the block diagram of computer System (CPU) and Explain each of its Blocks?</p> <p>d Explain the Generation of Computer System?</p> | 10 |
| Q. 6 | <p>Answer any two out of following</p> <p>a Write Short Note on Linux O.S?</p> <p>b What is Operating System (O.S.)? State & Explain types of O.S.</p> <p>c State the advantages of Linux Operating System?</p> <p>d Discuss Linux Operating System?</p> | 10 |

Q. 7 **Answer any three out of following**

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a Perform the following by Two's Complement method use 8-bit representation.
 $(40)_{16} - (64)_{16}$.

b Prove using truth table:

(i) $A.(B+C)=(AB+AC)$

(ii) $AB+\bar{A}C=(A+C)(\bar{A}+B)$

c What is Multiplexer? Explain in details?

d Explain the working of JK Flip-flop?

e Explain Different types of ROM?

f Explain use of following Linux Commands:

Mkdir ,cd ,mv ,pwd and sleep.

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