University Roll No._____

YMCA UNIVERSITY OF SCIENCE & TECHNOLOGY, FARIDABAD

B.TECH EXAMINATION (under CBS)

DIGITAL ELECTRONICS & COMPUTER ORGANIZATION (CE207C)

Time: 3hrs **M.Marks: 75**

NOTE: Attempt any five questions, Q1 is compulsory.

Q1.(a)	Express the following numbers in decimal: (i) $(26.24)_8$ (ii) $(DADA.B)_{16}$ (iii) $(10110.1101)_2$	1.5
(b)	Represent the given number $(6248)_{10}$ in (i) BCD code (ii) Excess-3 code (iii) Gray code	1.5
(c)	Given two eight-bit strings A=10110001 and B=10101100, evaluate the eight-bit result after the following logical operations: (i) AND (ii) XOR (iii) NOT A	1.5
(d)	Find the minterms of the Boolean expression: F=C'D+ABC'+ABD'+A'B'D	1.5
(e)	How many address and data lines are there in a 4096 X 8 EPROM chip?	1.5
(f)	Construct a 16X1 multiplexer with two 8X1 and one 2X1 multiplexers. Write truth-table for the same.	1.5
(g)	What is the difference between serial and parallel transfer? How to convert serial data to parallel data?	1.5
(h)	Differentiate between hardwired and micro programmed control unit.	1.5
(i)	Explain with simple expression: Depth of modulation in AM.	1.5
(j)	State Nyquist theorem and Shanon limit with respect to data rate in Communication channels.	1.5
Q2.(a)	Discuss the need for modulation in communication system. Explain the given terms for FM: (i) Frequency Deviation (ii) Bandwidth.	5
Q2.(b)	What is meant by error detection and correction codes? Obtain Hamming code for the message 1101, to be transmitted using odd parity system. During transmission of this code, if error occurs in MSB, how it is detected. Give step by step detection and correction of error.	10
Q3.(a)	Discuss different types of transmission media with respective pros and cons.	5
Q3.(b)	Simplify the given Boolean function using Boolean Algebra, K-map and Quine-McCluskey method; Then compare the results: $Y=\sum m(2,4,10,12,14)+\sum d(0,1,5,8)$	10
Q4.(a)	What is race –around condition in J-K flip-flop? Construct a J-K flip-flop using D flip-flop.	5
Q4.(b)	What is instruction cycle? Draw and discuss flowchart for (fetch-decode-execute) instruction cycle? Give classification of instructions (with suitable examples) on the basis of operation performed by them.	10
Q5.(a)	What is addressing mode? List and explain all possible modes with suitable examples.	5
Q5.(b)	Design the circuit of BCD subtractor and explain its operation with suitable examples.	5
Q5.(c)	On what parameters the quality of transmission depends in case of guided transmission media? What is crosstalk? How is it minimized in case of twisted-pair of wire?	5
Q6.(a)	What is meant by memory organization and memory hierarchy? Discuss different types of memories used in a computer system.	5
Q6.(b)	Design a combinational circuit (majority function) with four inputs w, x, y and z, and four outputs A, B, C and D. When the binary inputs have equal or more 1's than 0's, the binary output is one greater than the input otherwise binary output is two less than the input. Implement the circuit using both universal gates.	10