MCS-404/DCA-104
Digital Electronics
P.G.Diploma in Computer Application (PGDCA-20/DCA)

1ST Semester, Examination June 2022

Time : 2 Hours   **Max. Marks:80**

Note : This paper is of eighty (80) marks divided into two (02) Sections A and B. Attempt the questions contained in these sections according to the detailed instructions given therein.

Section-A

(Long Answer-type questions)

Note: Section 'A' contains Five (05) long-answer-type questions of Twenty (20) marks each. Learners are required to answer any two (02) questions only.

(2 x 20=40)

Q.1.   What is the difference between Half Adder and Full Adder? Explain Half Adder and Full Adder with suitable circuit diagram and Truth table.

P.T.O.

Q.2 What is the difference between minterm and maxterm? How will you Minimize the following four variable logic function:

f(A,B,C,D)=(A+B+C'+D').(A'+C+D').(A'+B+C'+D').(B'+C)(B'+C').(A+B').(B'+D')

Q.3 What is the difference Multiplexer and Demultiplexer? Design a 1:4 Demultiplexer using BCD to Decimal decoders.

Q.4 What do you understand by K-Map? Minimize the following expression with the help of K-Map :

X=AB'C + A'BC + A'B'C + A'B'C' + AB'C'

Q.5 What is Flip Flop? Convert an S-R Flip Flop to J-K Flip Flop.

Section-B

(Short Answer-type questions)

Note: Section 'B' contains Eight (08) short-answer-type questions of Ten (10) marks each. Learners are required to answer any four (04) questions only.

(4 x 10=40)

Q.1 What is binary number system? Express the following decimal numbers in the binary form:

1) 15.5   2) 10.625   3) 0.1275

P.T.O.

C-1020   2

Q.2   What are the different Logic gates? Draw their graphic symbol and Algebraic function.

Q.3   What is Semiconductor memory? Also explain Read Only Memory.

Q.4   Construct a 4-to-16 line decoder with five 2-to-4 line decoders with enable.

Q.5   Explain the working of a three-stage synchronous counter with suitable example.

Q.6   What is the difference between Binary Coded Decimal Codes and Unit Distance Codes? Explain.

Q.7   What are Serial Input Serial Output Shift Register and Serial Input Parallel Output Shift Register?

Q.8   What do you understand by the principle of Quine-McClusky Method? Explain.

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