

Total No. of Pages : 04

Roll No.

**MCA-02/PGDCA-02/
M. Sc. (IT)-02/MIT(CS)-302
Digital Logic/Introduction Digital
Systems**

Master/P.G Diploma in
Computer Application/
Master of Science in Information Technol-
ogy/ Master of Science(Cyber Security)
1st/3rd Semester, Examination-2019

Time : 3 Hours

[Maximum 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 Types Questions

Note : Section ‘A’ contains Five (05) long-answer-type questions of Fifteen (15) marks each.

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P.T.O.

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Learners are required to answer any three (03) questions only. **(3×15=45)**

1. What is register ? Explain the working and significance of register in basic computer system.
2. What are the universal gates? Draw all fundamental gates using the universal gates.
3. What do you understand by JK-flip flop and D flip flop? Explain the difference between JK-flip flop and D flip flop with their characteristic table.
4. Draw 4×1 multiplexer and 1×4 Demultiplexer using gates and explain its operation.
5. Explain the following keywords :
(a) RAM (b) ROM (c) Full-subtractor

Section–B

Short Answer Types Questions

Note : Section ‘B’ contains Eight (08) short-answer-type questions of Seven (07) marks each. Learners are required to answer any Five (05) questions only. **(5×7=35)**

1. Explain the Half Subtractor and its circuit diagram.

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(3)

2. Simplify $F(A, B, C, D) = \Sigma m(1, 3, 5, 7, 9, 11, 13, 15)$ using K-Map.
3. Find the 2's Complement for the given binary number : 111001
4. Convert the following numbers from the given base to the base indicated :
 - (a) $(129)_{10} = (?)_{16}$
 - (b) $(456)_8 = (?)_2$
5. Write the difference between Synchronous and Asynchronous Counter.
6. Explain the advantages of Flip-Flop on computer system.
7. Find the simplified SOP (Sum of Product) form of the Boolean expression $(P + Q' + R')$. $(P + Q' + R)$. $(P + Q + R')$.
8. What do you understand by Comparator? Explain its advantage.