Printed pages: 01 **Sub Code: RCAA01**

Paper Id: | 1 | 4 | 0 | 3 | **Roll No:** | | | | | | | | | | |

MCA

(SEM I) THEORY EXAMINATION 2017-18

INTRODUCTION TO PROGRAMMING AND COMPUTER ORGANIZATION

Time: 3 Hours ***Total Marks: 100***

Notes: *Attempt all Sections. Assume any missing data.*

SECTION A

1. Attempt *all* questions in brief. 2 x 7 = 14

a. Discuss in brief various properties of equivalence relations.
b. What do you mean by composition of function? Give proper example.
c. What is system bus? Explain Different types of bus.
d. Differentiate between algorithm and program.
e. What is micro instruction?
f. Name various argument passing methods.
g. What is the scope of a global variable?

SECTION B

2. Attempt any *three* of the following: 7 x 3 = 21

a. Discuss various operators along with their precedence and associativity.
b. Draw the block diagram of digital computer and explain in detail.
c. Minimize following Boolean function using tabular method:
$F(A,B,C,D) = \sum m(4,5,6,8,9,10,13) + \sum d(2,7,15)$
d. Explain CISC and RISC architecture of microprocessor.
e.

SECTION C

3. Attempt any *one* part of the following: 7 x 1 = 7

(a) Show that for any two sets, A and B:
$A - (A \cap B) = A - B$.
Also draw Venn diagrams for both.
(b) What do you mean by inverse function? Find the inverse function of $f(x) = x^3 + 1$. Also prove that composition of two invertible function is also an invertible function.

4. Attempt any *one* part of the following: 7 x 1 = 7

(a) Draw various topologies and explain each in detail.
(b) Attempt the followings
i) What do you mean by signed magnitude representation?
ii) Minimize thr following logic function using k-map
$Y(A,B,C,D)= \sum m(0,1,2,3,4,7,8,9,10,11,12,14)$

5. Attempt any *one* part of the following: 7 x 1 = 7

(a) Explain the term Instruction and arithmetic pipelining. Enumerate the sa
(b) Discuss hazards and hazard detentions in the memory system used in pipeline with example.

6. Attempt any *one* part of the following: 7 x 1 = 7

(a) Write a program using recursion to print the Fibonacci seriesup to given number of steps.

(b) What is conditional operator? How many operands are required to use conditional operator? Write a program to check the given year is leap year or not using conditional operator.

7. Attempt any *one* part of the following: 7 x 1 = 7

(a) What are the characteristics of a good instruction format? Explain the types of instruction format.

(b) Write short note on followings:

i) Computer memory hierarchy

ii) Parallel processing Vs Pipelining.