Printed pages: 02 **Sub Code:RCAA01**

Paper Id: 214306 **Roll No:** | | | | | | | | | | |

MCA
(SEM-III) THEORY EXAMINATION 2018-19
INTRODUCTION TO PROGRAMMING & COMPUTER ORGANISATION

Time: 3 Hours ***Total Marks: 70***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.
2. Any special paper specific instruction.

SECTION A

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

a. What is polling?
b. Explain different types of bus.
c. Add the following signed integers-93 and 44.
d. Differentiate between Algorithm and flow chart.
e. What is a floating point overflow error?
f. What is pipeline speedup?
g. Explain about Duality Principle.

SECTION B

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

a. Show that the relation R in the set A of all the books in a library of a college, given by R={(x,y): x and y have same number of pages} is an equivalence relation.
b. Draw the functional block diagram of a Digital Computer and discuss its components in brief.
c. Explain CISC and RISC architecture of microprocessor.
d. What are the different data types of conditionals and branching, looping statements? Discuss.
e. What is the function? Explain the various categories of function.

SECTION C

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

(a) Prove the following by using the principle of mathematical induction for all n € N:
$1^3 + 2^3 + 3^3 +$ ---------- $+ n^3 = (n(n+1)/2)^2$
(b) Discuss the following:
(i) Ordered sets with example
(ii) Types of relation with examples.

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

(a) Differentiate synchronous and asynchronous sequential circuits. Explain the problem in asynchronous circuits.
(b) Minimize the following standard POS expression using K-map.
$Y = \prod M (0, 2, 3, 5, 7)$

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

(a) Explain the Fixed Point and Floating Point Number Representations with examples.

(b) Explain micro programmed CPU organization with the help of a diagram.

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

(a) What do you mean by flow chart? Draw flow chart to calculate factorial of given number N.

(b) What do you understand by the primitive data types? Discus with suitable examples.

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

(a) What is algorithm? Write an algorithm to multiply two matrixes A (3,3) and B (3,3) of integers and store the results in matrix C.

(b) Write a note on the storage classes-scope and life time in detail with example.