

Roll No. :

Total No. of Questions : 9] [Total No. of Pages : 3

67064-N

M.C.A. 2nd Semester (2 Year Course)

Examination, July-2021

(w.e.f. 2020-21)

**ADVANCE COMPUTER ARCHITECTURE AND
QUANTUM COMPUTING**

Paper-20MCA22DB3

Time : Three Hours]

[Maximum Marks : 80

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note :- Attempt five questions in all, selecting one question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

1. (a) What is Switch module ?
- (b) What is Torus ?
- (c) What is Barrel Shifter ?
- (d) What is TLB ?

- (e) What is Interleaved memory ?
- (f) What is Virtual Channel ?
- (g) What is Universal Gate ?
- (h) What is Order Finding ? 2×8=16

Unit-I

- 2. What is Computer Architecture ? What are the elements of modern computer ? Explain the evolution of Computer Architectures. 16
- 3. Explain the following with examples :
 - (i) System attributes to performance
 - (ii) Conditions of Parallelism
 - (iii) Demand driven mechanism 5+5+6=16

Unit-II

16 each

- 4. What do you mean by static connection ? How network properties and routing works ? Explain Barrel shifter, Chordal ring and Hypercube.
- 5. What is Dynamic connection network ? How Crossbar network design ? Explain Omega and Baseline with example.

Unit-III

6. Explain the following with example :
- (a) Hierarchical bus system
 - (b) Crossbar switch
 - (c) Multiport memory
 - (d) Multistage network 4×4=16
7. How Systematic shared memory architecture works ? What are differences between Systematic and Distributed shared memory architecture ? Explain with example. 16

Unit-IV

8. How do you mean by Quantum Computing ? Explain Quantum Gates, Quantum Superposition, and Entanglement with example. 16
9. Explain the following with example :
- (a) Quantum Fourier Transform
 - (b) Grover's Quantum search algorithm
 - (c) Quantum Cryptography
 - (d) Shor's Factoring algorithm 4×4=16