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 Iinterleaved 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