

LIB
16/12/15 AN

Reg. No. :

| | | | | | | | | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|

Question Paper Code : 95295

5 Year M.Sc. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2015.

Second Semester

Software Engineering

ESE 022 — COMPUTER ARCHITECTURE

(Common to 5 Year M.Sc. Software Systems)

(Regulations 2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is a computer? List its types.
2. Give the register transfer instruction for the following assembly language code:
MOV LOC
ADD R1, R2, R3
3. List the basic instruction types.
4. Draw the circuit diagram of a half adder and write the truth table.
5. What is n-bit triple carry adder?
6. What is multi-phase clocking?
7. What are flash cards and flash drives?
8. Write the functionalities of a CMOS cell.
9. What is an exception?
10. Define: Bus Arbitration.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Draw the basic functional unit of a computer and explain all the components in it. (12)
(ii) What is big-endian and little-endian assignment? (4)

Or

- (b) (i) Consider the task $C = A + B$. Explain instruction execution and straight line sequencing of it. (4)
(ii) Categorize the different addressing modes and give examples for each of them. (12)
12. (a) (i) What is carry look-ahead addition? Draw 4-bit carry look-ahead adder and explain its working. (12)
(ii) Write the working of non-restoring-division for the following division operation: 1000/11. (4)

Or

- (b) (i) Appraise the use of Booth algorithm in number multiplication with an example. (10)
(ii) List the rules for addition and subtraction. (6)
13. (a) (i) Describe the execution of a complete instruction with control sequences. (10)
(ii) Explain the hardwired control with a neat diagram. (6)

Or

- (b) (i) Discuss microprogrammed control with an example. (10)
(ii) Characterize the working of operational forwarding in a pipelined processor with a neat diagram. (6)
14. (a) (i) What is memory mapping? Explain its types in detail. (10)
(ii) Write a note on Pentium III cache with its diagram. (6)

Or

- (b) (i) Draw the virtual memory organization. Describe the address translation technique to translate virtual address into physical address. (10)
(ii) Write a note on RAID disk arrays. (6)

15. (a) (i) How an I/O interface for input device is used to connect a computer to use a single bus structure. (8)
- (ii) What is interrupt nesting? Explain it in detail. (8)

Or

- (b) (i) Demonstrate the use of Direct Memory Access (DMA) in handling interrupts. (10)
- (ii) Draw the diagram of a serial interface with its working. (6)
-