

SRK/KW/14-7019

Fourth Semester B. E. (Information
Technology and Computer Engg.)
Examination

COMPUTER ARCHITECTURE AND
ORGANIZATION

Time : Three Hours]

[Max. Marks : 80

- N. B : (1) All questions carry marks as indicated
(2) Assume suitable data wherever necessary
(3) Illustrate your answers wherever necessary with
the help of neat sketches

1. (a) What is straight line sequencing ? Explain. 4
- (b) Explain in brief the functional units of computer system. 4
- (c) Explain single bus structure. How is synchronization achieved between processor and slow input and output devices. 5

OR

2. (a) Explain with one address, two address, and three address instruction, the following expression.
$$Z = (A + B - C) * (C - D + E) / (A * B - C)$$
 5
 - (b) Explain different addressing mode with an example. 8
3. (a) What are the limitations of short word length machine? 4
 - (b) Explain condition code flag of 68000 PC. 4

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- (c) Give the control sequence for execution of the instruction ADD (R_3), R_1 5

OR

4. (a) Explain different instruction set available in computer systems with suitable example. 5

(b) Write in short about :—

(i) Subroutine linkages

(ii) Three bus architecture. 8

5. (a) Explain microprogram control unit for microinstruction with diagram. 7

(b) Write microprogram for instructions ADD (R_4), R_5 using single bus organization. 3

(c) What is Bit slicing ? Explain in brief. 4

OR

6. (a) Compare microprogram control unit with Hardwired control unit. 5

(b) What are various microinstruction format supported by microprogrammed control unit ? 5

(c) Explain how emulation facilitates transmission into new system with a minimum of disruption. 4

7. (a) Explain the design of fast adder. 7

(b) Give the IEEE 754 floating point format for single and double precision for the following

(i) -1.5 (ii) -5 7

OR

8. (a) Perform the following multiplication using Booth's algorithm for signed operand multiplication 11×-6 . 6
- (b) Discuss arithmetic and branching conditions of number representation. 4
- (c) What are guard bits? Also explain rounding off technique and mention four policies of it. 4
9. (a) Explain in detail about various mapping techniques used in cache memory. 9
- (b) Explain in brief about utility of memory interleaving and multimodeling. 4

OR

10. (a) Explain how address translation is done in virtual memory. 5
- (b) Write difference between static and dynamic RAM. 4
- (c) Design and draw $128 \text{ m} \times 8$ memory using $2 \text{ m} \times 4$ memory chip. 4
11. (a) How data transfer takes place using DMA technique. 6
- (b) Explain various interrupt handling technique. 7

OR

12. (a) List all the characteristic feature of RISC and CISC processor. 4
- (b) Write a short note on (any three) :—
- (i) Pipelining.
 - (ii) Online storages.
 - (iii) Array processor.
 - (iv) File services.
 - (v) DATA Dependency. 9