NTK/KW/15/7324

Faculty of Engineering and Technology

Third Semester B.E. (Computer Technology)
(C.B.S.) Examination

COMPUTER ARCHITECTURE AND ORGANIZATION

Time : Three Hours] [Maximum Marks : 80

INSTRUCTIONS TO CANDIDATES

(1) All questions carry marks as indicated.

(2) Solve **SIX** questions as follows :

Que. No. **1** **OR** Que. No. **2**

Que. No. **3** **OR** Que. No. **4**

Que. No. **5** **OR** Que. No. **6**

Que. No. **7** **OR** Que. No. **8**

Que. No. **9** **OR** Que. No. **10**

Que. No. **11** **OR** Que. No. **12**

(3) Due credit will be given to neatness and adequate dimensions.

(4) Illustrate the answers with necessary figures/drawings wherever necessary.

1. (a) Illustrate following addressing modes in detail with suitable examples :

(i) Register Addressing Mode

(ii) Indirect Addressing Mode

(iii) Autoincrement and Autodecrement Addressing Mode

(iv) Relative Addressing Mode. 8

(b) What is assembler directive ? Explain the significance of assembler directive with an example of assembly language program. 6

OR

2. (a) Explain straight line sequencing in detail. 6

(b) Differentiate big endien and little endien allignment by giving example. 3

(c) Illustrate single bus structure with neat sketch. 5

3. (a) Write control sequence for execution of ADD (R1), R2. 7

(b) Highlight limitations of short word length machine. 6

OR

4. (a) List and explain instruction formats used in IBM 370. 7

(b) Explain in detail with an example of an instruction execution generating sequence of control signals. 6

5. (a) Explain microinstruction with next address field. 7

(b) Explain organization of hardwired control unit with neat diagram. 6

OR

6. (a) What is Emulation ? 3

(b) Write short note on prefetching of Microinstruction. 4

(c) Point out differences between hardwired control and microprogrammed control. 6

7. (a) Multiply 47 × –3 using Booth's multiplication. 6

(b) Using Restoring division method, solve following : 11011 DIV 00111. 7

OR

8. (a) Represent 1365.125 in IEEE single and double precision format. 7

(b) Divide 15 by 4 using non restoring division. 6

9. (a) Give the differences between static and dynamic memory with neat sketch. 6

(b) Explain different mapping techniques used for cache memory. 7

OR

10. (a) Write short note on memory interleaving. 6

(b) What is virtual memory ? Describe address translation scheme in virtual memory. 7

11. Write short notes on :

(i) Array processor 5

(ii) Pipelining 5

(iii) Vector processing. 4

OR

12. (a) State the difference between RISC and CISC processor. 7

(b) Explain loosely coupled and tightly coupled systems. 7