B.E.(Computer Engineering) Semester Fifth (C.B.S.)

Computer Architecture & Organization

P. Pages : 2 **KNT/KW/16/7361**

Time : Three Hours * 0 6 6 * Max. Marks : 80

Notes :
1. All questions carry marks as indicated.
2. Solve Question 1 OR Questions No. 2.
3. Solve Question 3 OR Questions No. 4.
4. Solve Question 5 OR Questions No. 6.
5. Solve Question 7 OR Questions No. 8.
6. Solve Question 9 OR Questions No. 10.
7. Solve Question 11 OR Questions No. 12.
8. Assume suitable data whenever necessary.
9. Illustrate your answers whenever necessary with the help of neat sketches.
10. Use of non programmable calculator is permitted.

1. a) Explain Von-Neuman architecture in detail. **6**

b) Perform a division $96 \div 06$ using non-restoring method. Explain what would be the additional computational overheads if the same division is performed using restoring method. **8**

OR

2. a) Explain basic principle of Booth's algorithm and perform the following. multiplication using Booth's multiplication. **6**
A=010111, B = 110110
Where A is multiplicand and B is the multiplier.

b) Explain lEEE floating point standard. **4**

c) Represent following number's in 1's complement, 2's complement & sign & magnitude representation. **4**
i) 1 ii) 7
iii) -16

3. a) Explain various processor level design components in detail. **7**

b) Draw and explain RISC architecture in detail. **6**

OR

4. a) Write short notes on. **4**
i) Instruction cycles. ii) Instruction pipeling.

b) Explain combinational ALUs and sequential ALUs . **6**

c) Write one address instruction two address instruction format for the following operation. **3**
$Z = (A + B)/(C - D) * (E + F)$.

5. a) Explain the need of working bus. **4**

b) Write a short note on Hardwired control. **6**

c) What are the advantages & disadvantages of Hardwired control. **3**

OR

6. a) Define. **9**
- i) Microprogram
- ii) Microinstruction
- iii) Micro routine
- iv) Control word
- v) Control store

b) Compare & contrast hardwired & microprogrammed control units. **4**

7. a) Explain static RAM and Dynamic RAM in detail. **6**

b) Explain how address translation is done in virtual memory. **7**

OR

8. a) For a cache memory organization where main memory is 64 k and cache 4k. Give details of. **9**
- i) Direct mapping.
- ii) Associative mapping.
- iii) Block set Associative mapping.

Assume that there are 64 bytes/block and 4 blocks/set wherever relevant.

b) Write short note on optical memory. **4**

9. a) What is DMA? What is the process of DMA transfer. **6**

b) Write short notes on **7**
- i) Programmed I/o
- ii) Interrupt Driven I/o and
- iii) I/o Channels.

OR

10. a) Write a short note on working mechanism of touch screen panel. **4**

b) Difference between Desk - jet printers & caser printers. **4**

c) What is RISC? List the various characteristics of RISC processor. **5**

11. a) What are interrupts? What are the sequences of steps followed by the CPU when an interrupt occurs? **8**

b) Explain super scalar processor in detail. **6**

OR

12. a) Write short notes on. **8**
- i) Symmetric multiprocessors.
- ii) Vector competitions.

b) Explain Non-Uniform memory Access. **6**

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