

B.E.(with Credits)-Regular-Semester 2012-Information Technology Sem III
IT 305 - Computer Architecture and Organization

P. Pages : 2

Time : Three Hours



GUG/S/18/3772

Max. Marks : 80

- Notes :
1. Same Answer book must be used for all question.
 2. All questions carry marks as indicated.
 3. Due credit will be given to neatness and adequate dimensions.
 4. Assume suitable data wherever necessary.

1. a) Draw block diagram of connections between processor and memory. Also explain in brief. **8**
b) Write in detail different addressing modes. **8**

OR

2. a) Draw block diagram and explain in detail how data transfer takes place between two registers. **8**
b) Explain in brief basic functional units of a computer. **8**
3. a) Write steps for execution of complete instructions. Explain with add instruction. **8**
b) How hardwired control signal is generated? Explain with the help of detailed block diagram. **8**

OR

4. a) What is the control sequence for execution of the instruction?
Add R₁, R₂ including the instruction fetch phase. **8**
b) What is 3 bus organization of CPU. Give details with example. **8**
5. a) Show how the multiplication and division operation of A * B & A / B would be performed by the hardware of sequential circuit binary multiplier by constructing charts similar to multiplier & Non-restoring division algorithm. **10**
b) Using manual method, perform the operation A * B & A / B on the 5-bit unsigned numbers A = 10101 & B = 00101. **6**

OR

6. Explain in brief Booth algorithm and multiply each of the following pairs of consigned 2's complement no using the Booth algorithm in each case assume that A is multiplicand and B is multiplier. **16**
- | | |
|---------------|------------|
| a) A = 010111 | B = 110110 |
| b) A = 110011 | B = 101100 |
| c) A = 110101 | B = 011011 |
| d) A = 1111 | B = 1111 |

7. a) Give block diagram & explain in detail the organization of a 64k * 8 memory module using 16*1 static memory. **8**
- b) Give details of memory hierarchy with block diagram. **8**

OR

8. a) What are different mapping functions give detail of direct mapping technique. **8**
- b) What is cache memories Also explain different property of locality of reference and cache operation. **8**
9. a) What are different I/O devices? Explain with example. **8**
- b) Explain how interrupt service routine will helpful to control a program execution. **8**

OR

- 10 a) Explain two channel DMA controller. **8**
- b) What is instruction pipelining? Explain with block diagram of 4-Stage pipeline. **8**
