

B.E. / B.Tech. Computer Science & Engineering (Model Curriculum) Semester-III
SE103CS - Computer Organization & Architecture

P. Pages : 2

Time : Three Hours



GUG/W/24/13803

Max. Marks : 80

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- Notes :
1. All questions carry equal marks.
 2. Due credit will be given to neatness and adequate dimensions.
 3. Assume suitable data wherever necessary.
 4. Diagrams and Chemical equation should be given wherever necessary.
 5. All questions are compulsory.

1. a) An instruction is started at location 600 with its address field at location 601. The address field has the value 800. A processor register R1 contains the number 200. Evaluate the effective address if the addressing mode of instruction is, **10**
- i) Direct
 - ii) Immediate
 - iii) Relative
 - iv) Register Indirect
 - v) Index with R1 as index register.
- b) Write short notes on: **6**
- i) Software
 - ii) Distributed computing

OR

2. a) What is subroutine? Explain the role of stack in subroutine call with example. **8**
- b) Define computer architecture and organization. Explain functional units of basic computer system? **8**
3. a) Write steps for execution of instruction SUB (R2), R1. **8**
- b) Write short note on: **8**
- i) Array processor.
 - ii) RISC processor

OR

4. a) Explain multiple Bus Organization of CPU. **8**
- b) Explain in brief Hardwired control unit organization. **8**
5. a) What is micro instruction? Why grouping of control signals is important? **8**
- b) Write short note on microprocessor sequencing. **8**

OR

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| 6. | a) Draw flowchart of a microprogram Add Src, Rdst instruction. | 8 |
| | b) Write short note on microinstruction with next address field. | 8 |
| 7. | a) Perform multiplication using Booth's algorithm. | 10 |
| | i) $(-23) * 12$ | |
| | ii) $(-16) * (-24)$ | |
| | b) Write short note on addition and subtraction logic unit. | 6 |

OR

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| 8. | a) Write short note on carry save Addition of summands method for multiplication of two numbers. | 8 |
| | b) Explain in detail Bit pair recoding method. | 8 |
| | Multiply $\Rightarrow 36 \times (-8)$ using bit pair recoding method. | |
| 9. | a) What is cache memory? Explain different page replacement algorithm by considering suitable example. | 10 |
| | b) Write short note on semiconductor RAM memory. | 6 |

OR

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| 10. | a) Write short note on ROM memory. | 8 |
| | b) Explain with neat diagram set associative mapping function of cache memory. | 8 |
