BT-4/M-20   **34121**

COMPUTER ORGANIZATION AND ARCHITECTURE
IT-202N

Time : Three Hours]   [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least one question from each Unit.

Unit I

1. (a) What is Computer Architecture ? Discuss multilevel viewpoint of a computer.   **8**

(b) Explain different types of memory used in a computer system.   **7**

2. (a) What is RISC architecture ? Explain main characteristics of this architecture.   **7**

(b) Explain immediate, indirect and indexed addressing modes along with their applications.   **8**

Unit II

3. (a) Draw the block diagram of a GPRs based CPU. Explain the function of each component in the diagram. **8**

    (b) What is Pipeline processing ? Calculate the speedup factor of a pipeline with k stages. **7**

4. (a) What is instruction cycle ? Explain 5-stage instruction cycle with suitable examples. **7**

    (b) What is microprogrammed control unit ? Explain its working with suitable diagram. **8**

Unit III

5. (a) What is Memory Hierarchy ? Explain its working principle. **7**

    (b) What are static and dynamic RAM ? Explain their relative pros and cons. **8**

6. (a) Explain working of direct-mapped cache. **5**

    (b) What is virtual memory ? Explain paging scheme of virtual memory. **5**

    (c) What are LRU and LFU page replacement policies ? Explain with examples. **5**

Unit IV

7. (a) What is throughput? How can you enhance throughput of a system ? Explain. **5**

(b) Explain the internal structure of DMA. **5**

(c) What is Superscalar Pipeline ? Explain its working with suitable diagram. **5**

8. (a) What is Multiprocessor ? Explain the architecture of non-uniform memory access model. **8**

(b) What is Interrupt? Explain priority interrupt structure. **7**