UNIT-3

> **Control Unit:** Instruction types, formats, instruction cycles and sub cycles (fetch and execute etc), micro operations, execution of a complete instruction. Program Control, Reduced Instruction Set Computer, Pipelining. Hardwire and micro programmed control: micro-program sequencing, concept of horizontal and vertical microprogramming.

Q1. What is Instruction Format ? Explain different type of instruction format use by computer?

Q2. Explain the following
   I) RISC   II. CISC

Q3. Explain Program control Instruction ?

Q4. What are the characteristics of RISC and CISC processor.

Q5. What is the basic differences between a branch instruction, a call Subroutine instruction, and Program interrupt?

Q6. What is the difference between a microprocessor and a microprogram? Is it possible to design a microprocessor without a microprogram? Are all microprogrammed computers also microprocessors?

Q7. Explain the difference between hardwired control and microprogrammed control. Is it possible to have a hardwired control associated with a control memory? What are their advantages and disadvantages?

Q8. Define the following: (a) microoperation (b) microinstruction (c) microprogram (d) microcode

Q9. Discuss how address sequencing is carried out in microprogrammed control organization.

Q10. Explain microinstruction format. Describe Horizontal and vertical micro-instructions.

Q11. Explain wide branch addressing.

Q12. Describe the execution of complete instruction with the help of fetch and Execute phase.

Q13. Explain the Block diagram of hardwired control unit with its advantages and disadvantages?

Q14. Draw and explain the block diagram of microprogram sequencer?

Q15. What is instruction cycle? Explain

Q16. Give step by step process how a complete instruction is executed.

Q17.What are characteristics of virtual micro instructions?

Q18. "Hardwired control unit is faster than micro programmed control unit." Justify this statement.

Q19. Write short note on
   a. Vertical and horizontal microprogram
   b. RISC and CISC
   c. Pipeline

Q20. What is multiprogramming and Pipelining?
Q21. Explain wide-branch addressing and micro-program sequencing.
Q22. Discuss instruction with next-address field with neat diagram.
Q23. Write the function of Registers: i. PC ii. IR iii. MAR iv. MDR
Q24. Explain the organization of four stage pipeline.