Note:(1) All questions are compulsory.

(2) Figures to the right indicate marks.

Q. 1   Attempt All Questions.   (15 Marks)

(a) Select correct answer from the following:

i)   One Byte is equivalent to _____.bits.

(a) 2   (b) 6   (c) 16   (d) 8

ii) The decoded instruction is stored in _____.

(a) IR   (b) PC   (c) Registers   (d) MDR

iii) If both the input to an EX-OR gate is high its output will be _____.

(a) Medium   (b) High   (c) Low   (d) no output

iv) The instruction, Add # 33, R3 does ___.

(a) Adds the value of 33 to the address of R3 and stores 33 in that address.

(b) Adds 33 to the value of R3 and stores it in R3.

(c) Finds the memory location 33 and adds that content that of R3.

(d) None of these.

v)   ANSI stands for _____.

(a) American National Standards Institute

(b) American National Standard Interface

(c) American Network Standard Interfacing

(d) Amercian Network Security Interrupt

b)   Fill in the blanks.

[JK flip flop, Reduced instruction set computer, 16, fan out, 8,Reduced instruction set command, Fan in, 4, Single Bus structure, D flip flop]

i)   Race condition may exist in _____ sequential circuits.

ii) In Hexa decimal number system base is _____.

iii) The number of inputs to a logic gate is called its _____.

iv) The Minimum number of selection inputs requred for selecting on out of 32 input are ___.

v)   The usual BUS structure used to connect the I/o devices is ___.

c)   Short answers.

(i) Define fan-out.

  ii) What is the binary equvalent of Hexa decimal 25 ?

  iii) State the role of ALU.

  iv) Define sequential circuit.

  v) Define SOP and POS terms.

Q. 2 Attempt the following (Any Three) : (15 Marks)

 (a) List and explain the types of computers.

 (b) Explain the Universal logic gates.

 (c) Draw and explain full adder circuit.

 (d) What is ripple counter? Explain with example.

 (e) Explain the concept of floating point numbers and character representation.

 (f) Write a short note on Decoders.

Q. 3 Attempt the following (Any Three) : (15 Marks)

 (a) List and explain any four different types of operand addressing modes.

 (b) Explain the concept of RISC and CISC Instruction sets

 (c) Write a short note on Assembly Directives.

 (d) Explain Big-Endian and Little-Endian Assignments.

 (e) Explain the concept of Stack and stack frame.

 (f) What is pointer ? Explain its use in indirection operation.

Q. 4 Attempt the following (Any Three) : (15 Marks)

 (a) List and explain with neat diagram main hardware components of processor.

 (b) Explain with example sequence of actions needed to fetch and execute an unconditional branch instruction.

 (c) Consider the RISC Style Load instruct in

   Load RS, x(R5)

  Examine the actions involved in fetching and executing the above instruction.

 (d) Explain the concept exception.

 (e) How arithmetic and logic instructions differ from load ? Explain with example.

 (f) Discuss process control registers.

Q. 5 Attempt the following (Any Three) : (15 Marks)

 (a) Minimize the four variable logic function using K-map

   $F(A,B,C,D)=\pounds m(0,1,2,3,5,7,8,9,11,14)$

 (b) Write a RISC style program for computing the dot product of two vectors..

 (c) Explain implementation of AND, OR, NOT GATES using NAND.

 (d) Draw and explain Micro Programmed control for RISC and CISC.

 (e) Design half adder circuit.