Subject Code: MC912

MCA I Semester [R09] Regular Examinations, January 2010

C PROGRAMMING AND DATA STRUCTURES

Time: 3 Hours **Max Marks: 60**

Answer any FIVE questions All questions carry EQUAL marks

1.a)Write the various steps involved in executing a C program and illustrate it with a help of flowchart.

b)Explain various data types defined in C

2 a) Describe various loops defined in C

b) How are initial values written in a one-dimensional array definition? Must the entire array be initialized? What value is automatically assigned to those array elements not explicitly initialized?

3 a) Describe different types of user defined functions

b)Write a function which takes a square matrix and then returns 1 if it is a "symmetric matrix". Otherwise returns zero. Also, write main program to check the function

4. a)What is a pointer? How do use pointer variable in expression? Explain through examples

b) Describe dynamic memory management functions

5. a)Describe structures types defined in C? How a structure is different from a Union

b) Define a structure type struct ABS, that contains name, age, designation, and salary. Using this structure, write a C program to read this information for one person from the keyboard and print the same on the screen.

6. a) What is a searching? Write a C program to Binary Search method

b) Explain Quick sort method with suitable example

7.Write an algorithm to insert an element in the linked list at the following positions:

(a) in the beginning of a list

(b) after a specified element

(c) before a specified element

(d) at the end of a list

8. Write in detail about the following

(a) Depth first search of a graph

(b) Minimum spanning tree

Subject Code: MC116

MCA I Semester [R06] Supplementary Examinations, January 2010

COMPUTER ORGANIZATION

Time: 3 Hours **Max Marks: 60**

Answer any FIVE questions All questions carry EQUAL marks

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1. a) Represent the number (+ 46.5) as a floating point binary number with 24 bits. The normalized fraction mantissa has 16 bits and exponent has 8 bits.
   b) Simplify the Boolean function F together with the don't care condition d in product of sums form
   $F(w,x,y,z) = \Sigma(0,1,2,3,7,8,10)$
   $d(w,x,y,z) = \Sigma(5,6,11,15)$

2. a) What is full adder ? Design a full adder circuit by constructing truth table.
   b) What is excitation table .Explain about JK flip flop with its excitation table.

3. a) With a block diagram of associative memory explain in detail about hardware organization.
   b) Explain briefly about memory hierarchy.

4. a) Explain different instruction formats in detail.
   b) Explain in detail about the generation of physical address.

5. a) Explain about data manipulation instructions with examples.
   b) Explain about shift instructions in detail.

6. a) List and explain different conditional branch instructions.
   b) Write any two examples for external interrupts and internal interrupts

7. a) What is control memory. Explain micro programmed control organization.
   b) Explain difference between hard wired control and micro programmed control. Is it possible to have a hardwired control associated with a control unit?

8. a) Discuss asynchronous data transfer in detail.
   b) Explain DMA transfer in a computer system.

Subject Code: MC109

MCA I Semester [NR] Supplementary Examinations, January 2010

COMPUTER ORGANIZATION

Time: 3 Hours **Max Marks: 60**

Answer any FIVE questions All questions carry EQUAL marks

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1. a) Discuss with truth tables about all logic gates with their graphical symbols.
   b) Explain the design procedure for binary counter.

2. a) Design 3-to-8 decoder circuit and also construct its truth table.
   b) Discuss bidirectional shift register with parallel load.

3. a) What is the significance of using complement. Explain in detail (r-1)'s complement and r's complement with an example.
   b) Derive the circuits for 3-bit parity generator and 4-bit parity checker using an odd parity.

4. a) Discuss in detail about arithmetic micro operations in detail.
   b) Explain about arithmetic logic shift unit.

5. a) Explain flowchart for the hardware algorithm for add and subtract operations.
   b) Explain multiplication of floating point numbers.

6. a) Explain different addressing modes.
   b) Differentiate Micro programmed control Vs Hardwired control

7. a) How memory is connected to CPU .Explain.
   b) What is virtual memory? Give relation between address and memory space in Virtual memory system.

8. a) Explain communication with I/O versus memory bus.
   b) Explain asynchronous data transfer.