B.Sc. IT (Part I) Examination, 2014

COMPUTER LOGICS & REASONING

Part A (Marks: 10)

1. Define principle of duality in Set theory.

2. Define equivalance classes with examples.

3. Define tautology, contradiction and contingency.

4. Define cartesian product of A = {a, b, c, d}, B = {1, 2, 3}.

5. Define binary relation.

6. Define partial order relation with example.

7. Quantify the statement "Every student in this class has studied calculas".

8. Multiply 5543E12 and 4111E-15.

9. $(11)_{10}$ x $(13)_{10}$ by converting into binary.

10. Define bounded lattice.

Part B (Marks: 10)

1. Show that the statement (p $\rightarrow$ q)(~q $\leftrightarrow$ ~p) is a tautology.

2. Let x = {2, 3, 6, 12, 24, 36} and the relation ≤ be such that x ≤ y if x divided y. Draw the Hasse diagram of (x, ≤).

3. Determine the validity of the argument

   'It is snowing today'.

   'It is snows today, then we will go skiing'.

   'Hence, we will go skiing'.

4. Prove (A' $\cup$ B) = A' $\cap$ B'

5. Find the domain & range of y = $\sqrt{9 - x^2}$

Part C (Marks: 30)

1. Define the following:

   (i)   Radix r representation of integers

   (ii)   Coding System

   (iii)   Compatible Universe

   (iv)   Complement and property of compliment

   (v)   Graphical representation of binary relation.

OR

Let 100 of the 120 students of mathematics at a college take at least one of the languages Hindi, English and German. Also, let 65 study Hindi, 45 study English and 42 German. If 20 study Hindi and English, 25 study English and German 15 study Hindi and German. Find the number of students who study all three languages.

2. Obtain conjuctive normal form (CNF) of

   (i) $p \wedge (p \to q)$

   (ii) $\sim(p \vee q) \leftrightarrow (p \wedge q)$

OR

Prove that if R is equivalence relation then R^{-1} is also equivalence relation.

3. Let a, b, c be any elements in a Boolean algebra. Prove:

   (a) Idempotent laws:

      (i)   a + a = a

      (ii)   a * a = a

   (b) Boundedness laws:

      (i)   a + 1 = a

      (ii)   a * 0 = 0

   (c) Absorption laws:

      (i)   a + (a * b) = a

(ii)   a * (a + b) = a

(d) Associative laws:

    (i)   (a + b) + c = a + (b + c)

    (ii)   (a * b) * c = a * (b * c)

OR

If the normalization on floating point is carried out at each stage, prove the following:

(a) $a(b - c) \neq ab - ac$

    where a = .5555E1, b = .4545E1, c = .4535E1

(b) $(a + b) - c \neq (a - c) + b$

    where a = .5665E1, b= .5555E-1, c = .5644E1

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FOUNDATION COURSE IN I.T.

Part A (Marks: 10)

1. What is BCD?

2. What do you mean by vaccum tube?

3. Write 'De Morgan's Law'.

4. What is UDP?

5. Write Gray Code for $(4)_{10}$.

6. Give an example of serial access memory.

7. What is difference between ROM and RAM?

8. Subtract $(1111)_2$ from $(100100)_2$.

9. Define computer virus.

10. Define data warehouse.

Part B (Marks: 10)

1. Classify the computer based on size.

2. Write short notes on following:

    (a) HGA

    (b) CGA

    (c) EGA

    (d) VGA

3. Describe symptoms of computer virus infection.

4. Explain various computer codes.

5. Describe features of third generation's computers.

Part C (Marks: 30)

1. (a) Differentiate optical disk and magnetic disk with example.

   (b) Describe hand held scanner.

OR

   (a) Differentiate impact and non-impact printers with examples.

   (b) Describe hybrid computers.

2. (a) Explain various types of monitors in detail.

   (b) Prove following theorem by truth table:

   $$x . (x' + y) = x . y$$

OR

   (a) Explain various components of a data warehouse.

   (b) Prove following theorem by truth table:

   $$x + x' . y = x + y$$

3. What do you mean by logic gates? Explain various logic gates with block diagrams and truth tables.

OR

   Write short note on:

   (a) www

   (b) Internet

   (c) Flash Memory

   (d) MICR

   (e) Digitizer

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OFFICE AUTOMATION PC SOFTWARE

Part A (Marks: 10)

1. Write use of auto correct.

2. What is advantage of GUI?

3. What is left indent?

4. What is use of sound clip in MS-Power Point?

5. What do you mean by word wrap?

6. How can you set Recycle bin?

7. Write the use of ruler line in MS Word.

8. What is auto fill in MS-Excel?

9. What do you mean by paste special?

10. What is the advantage of screen saver?

Part B (Marks: 10)

1. Write short note on referential integrity in MS-Access?

2. Write down the steps to install new printer.

3. Differentiate between importing and exporting data.

4. What do you mean by paragraph formatting?

5. What do you mean by formula? What is the use of formula?

Part C (Marks: 30)

1. What do you mean by database? Explain the following in reference to MS-Access:

   (a) Tables

   (b) Reports

(c) Queries

(d) Forms

(e) Macros

OR

What do you mean by charts? Explain different types of charts available in MS-Excel. Also write the steps for charts.

2. Explain different types of relationships supported by MS Access. Use proper examples for you support.

OR

How many views are available in MS Word? Explain each of them.

3. What is cell referencing? Describe its various types.

OR

What are the differences and similarities between slide transition and custom animation? Explain an example.

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C PROGRAMMING & DATA STRUCTURE

Part A (Marks: 10)

1. Define travelling salesman problem.

2. Explain typedef.

3. What are different types of data structures?

4. Give the preorder sequence for following tree:
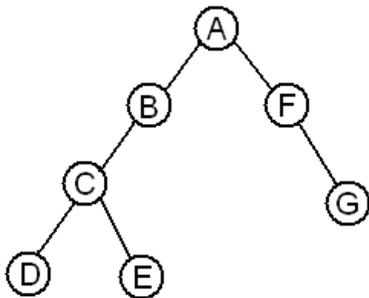
5. Write the output of following:

   main()

   char name[20];

   int n;

   printf("Enter name is: \n");

   name[20]="Information";

   n=strlen(name);

   printf("%d", n);

6. What is the advantage of union over structure?

7. What is the use of pointer in array?

8. Write the size of double data type in C.

9. Define algorithm.

10. What is binary search tree?

Part B (Marks: 10)

1. Write a program in C language to display the table of a given integer.

2. Explain the various data types used in C.

3. Describe the hashing mechanism.

4. What is the difference between Stack and Queue?

5. Explain the double link list.

Part C (Marks: 30)

1. Explain and compare the different traversal technique used in graph.

OR

Explain the various sorting techniques and write the complexity foe all.

2. Write the C programs for the linear and binary search.

OR

Write a C program to implement the nerge sort technique.

3. Write a C program to add two matrix (2D array)

OR

Write the syntax for different loop control structures and write a program to print the sum of digits of a given number.

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CIRCUIT ANALYSIS & ELECTRONICS DEVICES

Part A (Marks: 10)

1. Convert the following binary number into its octal equivalent:

   $(1001011.10101)_2 = (?)_8$

2. Add 1011 and 110.

3. Divide the binary no. 1110101 by 1001.

4. Write the truth table of EX-OR gate.

5. Perform the following conversion and find X

   $(4057.06)_8 = (X)_{10}$.

6. What is sequential circuit?

7. What is SOP form?

8. Convert $(564)_{10}$ into its hexadecimal equivalent.

9. Convert $(DBCA)_{16}$ into its decimal equivalent.

10. Simplify y = AB + AB'.

Part B (Marks: 10)

1. What do you mean by Universal Gate?

2. Minimize the following Boolean expression using k-map.

   $f(A,B,C,D) = \sum(0, 4, 6, 7, 8, 9, 10, 13)$

3. Define multiplexer.

4. Explain T flip flop with truth table.

5. What is race around condition?

Part C (Marks: 30)

1. Write short note on the following:

   (a) RTL

   (b) TTL

                              OR

   Explain master slave J-K flip flop with circuit diagram in detail.

2. Explain full adder with its truth table also design a half adder using NAND gate only.

                              OR

   Explain Quine-mc' Cluskey method.

3. What is boolean algebra and explain its all laws and solve the problem:

   A[B + C'(AB + AC')']

                              OR

   Explain synchronous and asynchronous counters with circuit diagrams.

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DATABASE MANAGEMENT SYSTEMS

Part A (Marks: 10)

1. What is DBMS?

2. What is a primary key?

3. Differentiate between generalization and aggregation.

4. Define index sequential file organization.

5. What is a data dictionary?

6. What is referential integrity?

7. What are the methods for concurrency control?

8. What is the use of SEEK command in FoxPro?

9. How do we create user defined functions in FoxPro?

10. What is the use of compound index files?

Part B (Marks: 10)

1. List the advantages of DBMS approach compared to file system.

2. How is database designed in ER modelling?

3. What are the advantages of relational approach?

4. Discuss the usage of locks in DBMS.

5. How do we set relations in FoxPro?

Part C (Marks: 10)

1. Define data abstraction. How does the architechture of a DBMS helps in achieving logical and physical data independance?

OR

How is the database manager different from database administrator? Discuss their roles and responsibilities.

2. What do you understand by data integrity? illustrate using an example the concept of domain integrity and referential integrity.

OR

Write a detailed note on need and importance of data normalization and dependencies. Discuss the successive stages of normalization.

3. Define and distinguish between DDL and DML. Briefly describe the creation and deletion of database in FoxPro.

OR

Discuss the process of creating and printing formatted reports in FoxPro. How can we utilize multiple tables for generating reports.