Babasaheb Bhimrao Ambedkar Bihar University, Muzaffarpur
Directorate of Distance Education
Professional / Technical 1st Semester (Session 2015-18)
Subject:- B.Sc.IT
Paper – I
Model Paper (Full Marks – 70)
Fundamental of I.T

1. What is an output device? Discuss the type of output device used in computer.
2. What is Secondary memory? Discuss the type of secondary memory used in computer.
3. Explain the structure of computer.
4. Define and distinguish between
   (a) Application software and system software
   (b) Compiler and Interpreter
5. What is an operating system? Discuss the types of operating system.
6. What is Ms-word? Write down the feature and application of Ms-word in Windows-XP.
7. Explain the types of computer programming language. Also explain the advantage of each programming language.
8. What is Mail Merge? Write down the steps to perform Mail Merge.
9. What is function in Ms-Excel? Write down the syntax and purpose of any five functions used in Ms-Excel.
10. What is Macro? Write down the steps to perform Macro.
11 What is Power point? Write down the feature and application of Power point.
12 What is Multimedia? Discuss the application of Multimedia.
13 Explain the classification of computer according to size and function.
14 Convert the following.
   a) $(1111)_2 = (\ )_{10}$
   b) 11011+11110
   c) 101010-10010
   d) 111*101
   e) $(125.75)_{10} = (\ )_2$
   f) 1111/101
15. Write short notes on any two of the following
   (a) History of computer
   (b) Windows-XP
   (c) Application of computer

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Paper – II
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Mathematics of I.T.

1. Define Universal set. Also explain union and intersection of sets with example.
2. If X and Y are two sets such that $n(x \cup y) = 50$, $n(x) = 28$ and $n(y) = 32$, also find $n(x \cap y)$.
3. Define statement. Also construct the truth table of the following (a) ~ [p ^ (~ q)]
   (b) (p ^ q) ^ (~ p).
4. Write and explain properties of Group.
5. Show that CosecA – CotA= $\sqrt{((1- \cos A)/ (1+\cos A))}$
6. If $\cos\emptyset = 4/5$ and $0 < \emptyset < 90^0$ find the value of $(3\cos\emptyset + 2\cos\emptyset)/ (4\sin\emptyset - 2\cot\emptyset)$
7. Evaluate the following limits (a) $\lim_{n\to\infty} \frac{2n+1}{2n}$
   (b) $\lim_{n\to\infty} \frac{2+3n+9n^2}{n^2}$
8. Find $\frac{dy}{dx}$ when $y = \tan^{-1}((\sqrt{1 + x^2})-x)$
9. Find $\frac{dy}{dx}$ when $x=a\cos^3 t$, $y= a\sin^3 t$.
10. Integrate the following with respect to x. (a) $\sin^3 x$ (b) $\frac{\log x}{X}$
11. Write and explain Bernoulli's equation for differential equation.
12. Evaluate $\Delta = \begin{vmatrix} 4 & 1 & 10 \\ 2 & 4 & 6 \\ 1 & 2 & 5 \end{vmatrix}$
13. Find the inverse of $A = \begin{pmatrix} 1 & 1 & 1 \\ 1 & -1 & 1 \\ 2 & 1 & -1 \end{pmatrix}$
14. Solve $1 + \frac{x}{3} + \frac{x^2}{5} + \frac{x^3}{7} + \cdots \infty$
15. Write short note on any two of the following
    (a) Venn Diagram
    (b) Bay's theorem
    (c) Mean
    (d) Standard Deviation

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Paper – III
Model Paper (Full Marks – 70)
Logic Design

1. (a) Convert the following binary number to base10.
   i. 10101101
   ii. 110110.1
   iii. 1111111
   (b) Convert the following decimal into base16.
   i. 235
   ii. 6928
   iii. 10053
2. Define and explain one number system to other number system.
3. Write and explain Universal gates (NAND & NOR)?
4. What is logic gate? Draw a logic circuit for (A+B) C.
5. Write and explain Karnaugh Map with example.
6. Expand the following boolean function into their canonical form
   (a) $F_1(A,B,C)=\overline{A}B+C$
   (b) $F_2(A,B,C) = AB+\overline{A}C+A\overline{B}C$
7. Define sequential circuits. Also explain J.K. Flip Flop.
8. Draw and explain S-R and D Flip-Flop.
9. What is shift registers? How many type of shift register? Explain.
10. Explain the working of 4 bit Johnson counters with the help of net diagram.
11. Describe various types of electrical switches.
12. Explain the working of MODEM.
13. Explain the functioning of Digital Multimeter.
14. Explain practical concepts and application of DAC (Digital to Analog converter).
15. Write short note on any two of the following
   (a) BCG code
   (b) Multiplexers.
   (c) ADC (Analog to Digital converter).

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Subject:- B.Sc.IT
Paper – IV
Model Paper (Full Marks – 70)
Data Structure Using C

1. What is Looping Control structure? Discuss the types of Looping control structure.
2. Write a c program to print all prime number from 1 to n number.
3. What is data structure? Discuss the type of Data Structure used in "C".
4. What is double dimensional Array? Write a C program to enter max number in an array. Print sum of the diagonals of max Matrix.
5. What is Pointer? Write a program in C using pointer to print sum of N natural number.
6. What is Linked List? Describe the types of linked list used in "C".
7. Write a program to demonstrate the operation in a singly linked list using pointer.
8. What is stack? Write a program to implements stack operation like PUSH and POP using Array.
9. What is sorting? Write a program to sort N number using selection sorting.
10. What is Queue? Explain the type of Queue. Write a C program to implement the concept of Queue operation.
11. Write noted on circular linked list with neat diagram.
12. What is BST. Write an algorithm for common operation performed on binary search tree.
13. What is tree traversal? Explain the algorithm for different types of tree traversal.
14. What is searching? Write a program to search a number using liner search.
15. Write short note on any two of the following
    (a) Pointer
    (b) Application of C
    (c) Dynamic Memory Allocation
    (d) Function Prototype

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Subject:- B.Sc.IT
Paper – V
Model Paper (Full Marks – 70)
DBMS

1. Defined and explain DBMS.
2. What are entities, attributes and relationship?
3. What are the applications of SQL server2000 architecture?
4. Describe the features of distributed processing
5. Write and explain the term primary key, candidate key and super key.
6. What is the goal of query optimization? Why is it important?
7. What do you meant by DDL, DML, and DCL command of SQL?
8. Explain the statement that relational algebra operation can be composed. Why is the ability to compare operators important?
9. How do you differentiate a relational algebra and relational calculus?
10. What are the basic purposes of 4NF?
11. Write and explain BCNF.
12. Discuss the relation advantages of centralized and distributed database.
13. What is the meaning of multimedia data? List a few requirements for multimedia data management.
14. Discuss and compare RDBMS with ORDBMS.
15. Write short note on any two of the following
    (a) Functional Dependency
    (b) 2NF
    (c) Select statement
    (d) Relational Model

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