6. What is sorting? Discuss the type of sorting. Write down the Algorithm and program of selection sort.

7. What is string? Write a "C" programme to enter a string. Print how many words are present in the given string.

8. Distinguish between single linked list and doubly linked list with neat Diagram.

9. Write a "C" Programme to multiply two MXN matrices.

10. Write short notes an any two of the following:

(a) Tree

(b) Binary Search

(c) Jump Statements in "C"

(d) Parameter Passing Techniques

BCA 2nd Sem.(2017-20)

Time : 3 Hrs *Full Marks : 80*

Candidates are required to give their answers in their own words as far as practicable.

The questions are of equal value.

Answer any five questions

1. What is C language? Explain its features and application.
2. (a) What is function? Describe the normal function and recursive function with example.
   (b) What is Actual and Formal parameter?
3. What is "for" loop? Write a C programme to print all prime numbers from 2 to n given numbers.
4. What is structure? Write a C programme to show the concept of structure.
5. Write a C programme to enter N Number and print the number in Sorted Order using printer.
6. What is Queues? Describe the types of Queues with example.
7. (a) Define Binary Tree. Discuss different properties of Binary Tree.

P.T.O.

(b) What is Recursion? Explain with example.

8. What is Double Dimensional Array? Write a "C" programme to enter mxn no in matrix format and also print the sum of Diagonals.
9. Write a "C" programme to print factorial values of a given integer using function.
10. Write short notes on any two of the following :
    (a) Sequential search
    (b) Control structure in "C"
    (c) Array
    (d) Sorting

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Disc. Maths

BCA 2nd Sem. (Session-2018-21)

Time : 3 Hrs. *Full Marks : 80*

Candidates are required to give their answers in their own words as far as practicable

The questions are of equal value.

Answer any five questions.

1. Define the following terms:
   (i) Inclusion & Exclusion of Set
   (ii) Venn Diagram
   (iii) Equality of Sets
   (iv) Rings
2. If $A=\{1,2,3\}$ $B=\{2,4,5\}$ & $\Omega=\{x : x \text{ is a digit}\}$
   (a) $(A \cap B)$
   (b) $A' - B'$
   (c) $(A-B)$
   (d) $(A \cup B) \cap (B-A)$
3. If A=[1 2 3 4 5] let R={(1,1) (1,2) (2,3) (2,4) (3,4) (3,5) (4,5) (5,5) } be a relation on set A. Then find
   (a) Matrix Representation of R
   (b) Graphical Representation of R

P.T.O.

(c) Domain & Range of R
(d) Inverse Relation of R
4. List all partition of sets
   (a) A = {a, b, c}
   (b) A = {1, 2, 3, 4}
5. Find fog and gof where $f(x)=x^2+x-1$, $g(x)=x-2$ are the function from R to R.
6. Define function and types of function.
7. Show that set of all divisions of 70 form Lattice.
8. Use Karnaugh map to simplify the following expression.
   $x = A'BC'D' + ABC'D' + A'BCD' + ABCD'$
9. Minimize the Boolean expression by the function:
   (a) $f(p, q, r, s) = \Sigma(5, 8, 9, 10, 11, 12, 13, 14, 15)$
   (b) $f(p, q, r, s) = \Sigma(1, 2, 3, 6, 8, 9, 10, 12, 13, 14)$
10. Write short notes on any two of the following:
    (a) Equivalence Relation
    (b) Monoacid
    (c) Semi-group
    (d) Partitions of Set

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2017

Time : 3 hours *Full Marks : 80*

Candidates are required to give their answer in their own words as far as practicable.

The questions are of equal value.

Answer any five questions.

1. Define the term:
   (a) Overllaping Set
   (b) Vector spaces
   (c) Universal Sets
   (d) Groups
2. If $A=\{1,2,3,4,5\}$ $B=\{3,4,5,6,7\}$ $U=\{1,2,3,4,5,6,7,8,9\}$ then find:
   (a) $(A-B)\cup(B-A)$
   (b) $A-B'$
   (c) $A'-B'$
   (d) $(A\cup B)-(A\cap B)$
3. (a) Define Boolean Algebra.

(b) Find the complement of the following Boolean expression,
   (i) $xy'+x'z$
   (ii) $xy'(y+y'z)+x'z$
4. If $x=\{2,3,6,12,24,36\}$ R on $x=\{(x,y)\in R, x \text{ divides } y\}$
   (a) Construct Hasse diagram
   (b) Maximal and Minimal elements
   (c) IS POSET a lattice?
5. If $f(x)=ax^2+bx+2$ $f(1)=3$ and $f(4)=42$ then find the value of b.
6. List all the partitions of sets:
   (a) $A=\{1,2,3\}$
   (b) $A=\{a,b,c,d\}$
7. Minimize the Boolean expression given by the function:
   (a) $f(p,a,r,s)=\sum(1,2,3,6,8,9,10,12,13,14)$
   (b) $f(p,q,r,s)=\sum(5,11,13,15)$
8. Draw a Karnaugh Map 4-variables.
9. (a) Final fog and gof where $f(x)=x^2+1$ $g(x)=x+2$ are the functions from R to R.
   (b) Find $f(4)$, if $f(x)=x^4-3x^3+6x^2-10x+16$

R

and SoR via a diagram

$z) = 2^{z-2}$ then find the value of $f(-1.5)$.

If $f(x) = ax^2 + bx + c$. $f(1) = 3$ and $f(4) = 32$ then find the value of b.

3. Find the power set of the following sets :

(a) { 0, 1 }

(b) { 2, 1, 7 }

(c) { 1, { 2, 3} }

(d) { a, b, c, d }

4. (a) Show that set of all divisors of 70 from a lattice.

(b) If S = { 2, 3, 5, 9, 12, 15, 18 } then find the relation R on S where S = { (x, y) ∈ R, x divides y }.

(i) Construct Hasse diagram.

(ii) Maximal and Minimal Element.

(iii) Is Poset a Lattice ?

8. (a) Minimize the Boolean expression given by the function.

f(P, Q, R, S) = { (0, 3, 4, 5, 7) }

d(P, Q, R, S) = { (8, 9, 10, 11, 12, 13, 14, 15) }

(b) Minimize the Boolean function of the given expression :

$F = x^1yz + x^1yz^1 + xy^1z^1 + xy^1z$

9. Draw a Karnaugh map 3-variable.

10. Write short notes on any **two** of the following :

(a) Vector space

(b) Relation

(c) Composition of function

(d) Lattice

BC-202

Computer Architecture

BCA 2nd Sem. Exam.-2019

Time : 3 Hrs. *Full Marks : 80*

Candidates are required to give their answers in their own words as far as practicable.

The questions are of equal value.

Answer any five questions.

1. What do you mean by addressing modes? Discuss any four addressing modes.
2. Explain K-Map with example.
3. What is Hierarchical Memory Organization? Draw memory organization hierarchy map for access time and cost.
4. What is the difference between RAM and ROM.
5. What is the need of memory hierarchy. Explain their interaction in details with diagram.
6. What is the Direct and Indirect address construction.
7. What is instruction set? Critically examine different addressing models.
8. Draw the internal structure of CPU with control signal.
9. What is floating point Representation ? Explain it with example and its advantage over fixed point representation.

P.T.O.

10. Write short notes on any two of the following:
    (a) Boolean Algebra
    (b) Register
    (c) Memory Hierarchy
    (d) Logic Gates

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BCA 2nd Sem.(2017-20)

Time : 3 Hrs *Full Marks : 80*

Candidates are required to give their answers in their own words as far as practicable.

The questions are of equal value.

Answer any five questions.

1. Explain the construction with the logic diagram of a 4 to 1 line multiplexer.
2. Construct a 5 to 32 line decoder with four 8 to 8 line decoders with enable and one 2 to 4 line decoder.
3. What is the difference between zero-address, one-address and two-address construction.
4. Explain the structure and functioning of arithmetic logic unit (ALU).
5. Explain division algorithm with the help of example.
6. Explain the virtual memory concept of memory management.
7. What are the different types of basic logic gates? Explain with the help of truth table.

P.T.O.

8. What is the error detection code? Explain any two method used for error detection.
9. What is the shift register? Explain the shift micro-operation.
10. Write short notes on any two of the following :
    (a) K-map
    (b) Flip-flop
    (c) DRAM
    (d) Sequential circuit

***

9. What is searching and sorting ? Write down the algorithm and program of bubble sort.

What is Binary Tree ? Discuss binary tree traversal and also write down the algorithm of different types of binary tree traversal.

10. Write short notes on any **three** of the following :

(a) Tree Traversals

(b) Binary Tree

(c) Queues in "C"

(d) Call by Value and Reference

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BC-202

Comp. Arch.

2017

Time : 3 hours

Full Marks : 80

Candidates are required to give their answer in their own words as far as practicable.

The questions are of equal value.

Answer any five questions.

1. What is Half Subtractor ? Explain a Half Subtractor with the help of truth table and logic diagram.
2. Explain Error Detection Codes with the help of example.
3. Define floating point representation with suitable example with advantages over fixed point representation.
4. Design 4 bits Synchronous binary counter.
5. What is the difference between a direct and an indirect address construction.
6. Define Decimal Arithmetic Unit and its function.
7. i. Explain the Serial In Serial Out (SISO) shift register.
   ii. Explain the functioning of D Flip-flop with the help of diagram and characteristics table.
8. Explain K-map with example.
9. Write short notes on any two of the following :
   a. Boolean Algebra
   b. Error Detection Codes.
   c. Memory Hierarchy
   d. Flip-Flop.
10. Differentiate between :
    a. Computer Architecture and Computer Organization.
    b. DRAM and SRAM
    c. Sequential circuit and Combinational circuit.

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 BCA(II)—Dis. Math
(BC – 201)

2016

Time : 3 hours

Full Marks : 80

Candidates are required to give their answers in their own words as far as practicable.

The questions are of equal value.

Answer any five questions.

1. Define the following terms :
   (a) Operation on sets
   (b) Power sets
   (c) Groups
   (d) Partions of a set

2. (a) Let A = { 1, 2, 3, 4, 5 }, B = { 1, 2, 3, 4 } and S = { 1, 2, 3, 4, 5, 6, 7, 8, 9 } then find the following :
   (i) $A \cup B$

   (ii) $A \cap B$
   (iii) $(A \cup B) \cap S$
   (iv) $(A \cap B) \cup S$

   (b) In a university 60% of the tea… tennis, 50% of them play football, … cricket and 20% play tennis and foot… 30% play tennis and cricket and 40% play football and cricket. What is the percentage of teachers who play tennis, play football and play cricket ?

3. Let A = { 1, 2, 3, 4 }. Define the following relation R on A, if a R b and a < b then find the following :
   (a) Graphical Representation of the relation
   (b) Matrix representation of the relation.
   (c) Find the Domain and Range of the relation.

4. If A = { 1, 3, 5 }. Let R be a Relation, such that x Ry : if y = x + 2 and s be the relation, such that x Ry : if x < y then find the following :
   (a) Find RoS

10. Write short notes on any two of the following:

(a) Relation Matrix

(b) Hasse Diagrams

(c) Uniqueness of finite Boolean

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2017

Time : 3 hours *Full Marks : 80*

Candidates are required to give their answer in their own words as far as practicable.

The questions are of equal value.

Answer any five questions.

1. What is operator in "C". Discuss the types of operator used on "C" language with example.
2. Distinguish between while loop and do-while loop with example.
3. What is data structure? Discuss the different types of Data structure. Also explain the application of data structure.
4. Write a C programme to print the following series function (0,1,1,2,3,5,8,13,21,.....N).
5. What is stack? Write a "C" programme to implement the Push and POP operation of stack using Array implementation.

P.T.O.