Subject :RDBMS

Course: polytechnic (CSE)

Full Marks : 70

Time : 3 Hours

Pass Marks: 28

- Candidates are required to give their answers in their own words as far as practicable.
- Question Paper is divided into **Three Parts –A,B& C**
- **Part-A** is compulsory.
- **Part- B** contains **SIX** questions out of which **FOUR** questions are to be answered.
- **Part- C** contains **SIX** questions out of which **THREE** questions are to be answered.

PART A

Q.1) **All questions are compulsory**

A] **Multiple Choice Questions :(10x1=10)**

a) The data model which is use to describe how data is stored
   i) Internal model/view
   ii) External model/view
   iii) Logical model/view
   iv) None of these

b) Data about data is called
   i) directory
   ii) data bank
   iii) meta data
   iv) none of the above

c) The structure in which hierarchical database is organized
   i) tree
   ii) graph
   iii) file
   iv) none of the above

d) overall structure of a database is called
   i) meta data
   ii) tree
   iii) schema
   iv) none of the above

e) Relational calculas is
   i) Procedural language
   ii) Non-procedural language
   iii) Data definition language
   iv) High-level language

f) Architecture of database can be viewed as
   i) Two level
   ii) Four level
   iii) Three level
   iv) One level

g) In a relational model, relation are termed as
   v) tuples
   vi) Attributes
   vii) tables
   viii) rows

h) An entity set that does not have sufficient attributes to form primary key
   i) Strong entuty key
   ii) Weak entity key
   iii) Simple entity key
   iv) None of the above

i) In E-R model attributes are represented by
   i) rectangle
   ii) square
   iii) ellipse
   iv) triangle

j) a logical schems
   i) is the entire database
   ii) way of organizing data
   iii) describe how data is stored in database
   iv) none of the above

B] Very Short question(5x2=10)
   a) what is database management system?
   b) what is attribute?
   c) What is a tuple?
   d) What is primary key?
   e) Write syntax of create and insert in SQL?

PART B

Q2. Answer any four: (4x5=20)

   i) Explain each database languages? what is E-R model?
   ii) Explain Relational algebra?
   iii) Explain Normalization and its type?
   iv) What is Functional dependency? Explain in detail
   v) Explain database administrator?
   vi) Define a scheme? Draw a schema for university management system?

PART C

Answer any three: (3x10=30)
Q.3)Explain what is specialization and generalization in detail?
Q.4)Explain query processor and storage manager
Q.5)write syntax for following sql queries: i) set operator ii) logical operator (and, or & not)
iii)aggregate function iv)rename v)where clause
Q.6)Explain and draw the PL/SQL block structure?
Q.7)Explain file management system? State the advantage and disadvantages of database management system?
Q.8)Explain in detail different data model?

ARKA JAIN University, Jharkhand

3rd Semester Final Examination – 2018-19

Subject : Switching Circuit and logic Design
Course: Polytechnic (CSE)
Full Marks : 70

Time : 3 Hours
Pass Marks: 08

- Candidates are required to give their answers in their own words as far as practicable.
- Question Paper is divided into **Three Parts –A, B ,C& D**
- **Part-A & D** are compulsory.
- **Part- B** contains **FOUR** questions out of which **TWO** questions are to be answered.

PART A

Q.1)   Multiple Choice Questions   **(5x1=5)**

i) NOT of AND gate is called

a) NAND gate   b) NOR gate

c) NXOR gate   d) XOR gate

ii) Convert in to decimal: $(214)_8$ = ?

a) $(140)_{10}$ b) $(141)_{10}$
c) $(142)_{10}$ d) $(130)_{10}$

iii) If the decimal number is a fraction then its binary equivalent is obtained by _____ the number continuously by 2.

a) Dividing   b) Multiplying
c) Adding   d) Subtracting

iv) How is a J-K flip-flop made to toggle?

a) J=O.K=O   b) J = 1.K = O

c) J = 0, K = 1   d) J = 1, K = 1

v) The output of a logic gate is I when all its inputs are at logic 0, the gate is either

a) a NA N D or an EX-OR   b) an OR or an EX-NOR

c) an AND or an EX-OR   d) a NOR or an EX-NOR

B] Very short answer type question (5x2=10)

i) Find 1's complement of 0111.
ii) Draw symbol and construct the truth table for AND gate
iii) What is Maxterms?
iv) Draw symbol and construct the truth table for Ex-OR gate
v) What is Minterms?

PART B

(5x4= 20)

Q2. Answer any four:

i) What are the basic laws of Boolean Algebra?
ii) What are different triggering methods?
iii) What is 1's complement ? Find 1's complement of 1101.
iv) What is JK flip flop. Construct the diagram and write the excitation table.
v) Implement basic logic gates using UNIVERSAL gates.
vi) Explain SOP and POS expression using suitable examples.

PART C

(10x3=30)

Q.3) Define Full Adder. Design it by using universal gate.

Q.4) Prove the following expression
a) A + A B' + A B' C' + A B' C + C'B ·A = A
b) [1 + L M + L M' + L'M] [(L + M') · (L' M) + L' M' (L + M)] = 0

Q.5) What do you mean by combinational circuits? List out any two combinational circuits.

Q.6) Explain steps for solving 3 & 4 variable Karnaugh map using example.

Q.7) Define SOP and POS term then convert the Boolean expression
AB'C +B'CD+AC'D to SOP form

Q.8) Convert Hexadecimal to Decimal
a)EEE   b)ACE
c) ECE   d)AAA
d)DAD

Part D

(5x1=5)

Q.9) Find the 2's complement of following.
i)1011   b)1101

Subject : Data Structure

Time : 3 Hours

Course: Poly(CSE)
Full Marks : 70
Pass Marks: 28

- Candidates are required to give their answers in their own words as far as practicable.
- Question Paper is divided into **Three Parts –A, B & C**
- **Part-A** is compulsory.
- **Part- B** contains **SIX** questions out of which **FOUR** questions are to be answered.
- **Part- C** contains **SIX** questions out of which **THREE** questions are to be answered.

PART A

Q.1)   **All questions are compulsory**

A] Multiple Choice Questions :   (10x1=10)

a) Stack is use for
   i)   CPU resource allocation
   ii)   breadth first search traversal
   iii)   recursion
   iv)   none of the above

b) The following can have maximum of two node

   i)   Binary tree
   ii)   stack
   iii)   link list
   iv)   binary search tree

c) .... is very useful in situation when data have to stored and then retrieved in reverse order.
   i)   Stack
   ii)   Queue
   iii)   List
   iv)   Link list

d) Which of the following data structure is non linear type?
   i)   Strings
   ii)   Lists
   iii)   Stacks
   iv)   Graph

e) Match the following.

   a) Completeness   i) How long does it take to find a solution
   b) Time Complexity   ii) How much memory need to perform the search.
   c) Space Complexity   iii) Is the strategy guaranteed to find the solution when there in one.

   i)   a-iii, b-ii, c-i
   ii)   a-i, b-ii, c-iii
   iii)   a-iii, b-i, c-ii
   iv)   a-i, b-iii, c-ii

f) State True or False.

a) Binary search is used for searching in a sorted array.

b) The time complexity of binary search is O (logn).

    i)   True, False
    ii)   False, True
    iii)   False, False
    iv)   True, True

g) Which of the following data structure store the homogeneous data elements?
    v)   Arrays
    vi)   Records
    vii)   Pointers
    viii)   Lists

h) A data structure where elements can be added or removed at either end but not in the middle is called ...
    i)   linked lists
    ii)   stacks
    iii)   queues
    iv)   dequeue

i) binary tree with all the leaf node at the same level
    i)   strictly binary tree
    ii)   complete binary tree
    iii)   binary search tree
    iv)   none of the above

j) a node with both left and right child address as NULL
    i)   parent node
    ii)   child node
    iii)   root node
    iv)   siblings

B] Very Short question   (5x2=10)
    a) what is linear search and binary search method?
    b) what is dynamic memory allocation?
    c) what is complete binary tree?
    d) what is circular link list?
    e) what is the difference between stack and queue?

PART B

Q2.   **Answer any four:**   (4x5=20)

    i)   what is queue? mention it underflow and overflow condition with example?
    ii)   define binary search tree give an example?
    iii)   what are non-premitive data type explain in detail?
    iv)   state and explain insertion sort with an example?
    v)   what is a doubly link list? explain in detail?
    vi)   write a program in C for deletion of an element in a 1-D array?

PART C

Q.3) a)write an algorithm for deletion in a doubly link list.
b)write an algorithm for creation of a single link list.

Q.4) write a program in C for insertion(push) and deletion(pop) in a stack?

Q.5) what is a linear and non-linear data structure? state the difference between linear and non-linear data structure?

Q.6) convert the following expression into postfix
a*b-c/d+(e^g+h-i)^j/k^f-(v+s)*q

Q.7) sort the given array using bubble sort technique:-

82	62	93	54	85	47	52	53	13	80

Q.8) what is tree data structure? state what is child node, leaf node and height of a binary tree? What is graph?