CNS INSEM IMPORTANT

a) Draw Manchester and differential Manchester code for the bit sequence: (3)

- 0100110
- 01001011

b) Give brief about design issues in DLL (3)

c) What are design issues of layers? Explain it.

d) Explain LAN, MAN, WAN

e) Explain i) Router ii) Switch

f) Explain TCP/IP Model.

g) Explain PPP.

h) Explain IEEE 802.3 frame format.

i) Explain Stop and Wait Protocol.

j) Explain Ring and Mesh topologies

k) Justify answer using CRC for divisor: 1101 dividend: 100100

l) Explain CSMA in detail.

m) Explain Client Server and Peer to Peer Network

DBMS INSEM IMPORTANT

a) Draw architecture of DBMS system and explain function of following components:

i) Storage manager ii) Query Processor

b) Construct an ER Diagram for

i) Banking System ii) Company iii) Student system

c) What is view and how to create it? Can you update view? If yes, how? If not, why not?

d) Defined stored procedure. Explain the creating and calling stored procedure with example.

e) Consider following schema.

i) Student_fee_details (rollno, name, fee_deposited, date)

Write a trigger to preserve old values of student fee details before updating in the table

ii) Hotels(hotel_no,hotel_name.city) Rooms(Room_no,hotel_no,price,type)

Write a PL/SQL procedure to list the price & type of all rooms at the hotel 'TAJ

iii) Emp(Emp_no, Emp_name, Dept_no) Dept(Dept_no, Dept_name) Address(Dept_name, Dept_location)

Write SQL queries for the following

i) Display the location of department where employee 'Ram' is working.

ii) Create a view to store total no of employees working in each department in ascending order.

iii) Find the name of the department in which no employee is working

f) What is a trigger? How to create it? Discuss various types of triggers

g) What is the importance of creating constraints on the table? Explain with example any 4 constraints that can be specified when a database table is created

h) What is synonym? How to create and use synonym in SQL

IOT INSEM IMPORTANT

a) What is an embedded system? What are the characteristics of an embedded system

b) Introduce any embedded processor in brief. Explain its architecture.

c) Differentiate between General Computer and embedded devices.

d) Draw and elaborate the general model of an embedded system, what are the different applications of an embedded system

e) Define SOC. Illustrate SOC types and its examples

f) Illustrate the different components of Microcontroller.

g) Explain the concept of 'Things' in IoT with suitable examples

h) What are the challenges in implementing IoT Applications?

i) Enlist IoT deployment levels and explain IoT level 2 , 3 & 4 with suitable application.

j) Illustrate the physical & Logical design of IoT with suitable example.

k) Explain soft and hard real - time tasks with suitable examples

SPOS INSEM IMPORTANT

a) Draw and explain flowchart of Pass-I of two pass assembler with suitable example.

b) Differentiate between literal and immediate operand.

c) Explain algorithm of pass 1 of two pass assembler.

d) Define macro. What are the advantages of macro facility? How they are different from function.

e) Write Short note on i) Compiler ii) Interpreter iii) Assembler

f) Explain the output of pass-I of two pass Assembler with respect to the given program:

I) START 600

READ A

READ B

LOOP MOVER AREG, A

MOVER CREG, B

SUB AREG,='1'

BC GT,LOOP

STOP

A DS 1

B DS 2

END

ii) PROG START 50

USING PROG+2, 15

```
L1, FIVE
Al, = F '2'
 LTORG
 ST 1, RES
FIVE DC F '4'
RES DS F '4'
RES DS IF
END
```

g) What is Macro? Explain Macro definition, Macro Call and Macro Expansion with an example and Advantage macro facility

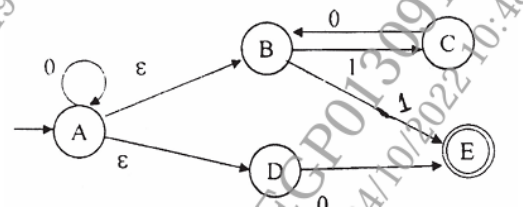
h) What are different data structures required for Two Pass Macro Processor? Justify which data structures are implemented at that time of processing Macro definition, Macro call and Macro Expansion

i) Explain the Phases of Compiler and their output with an example.

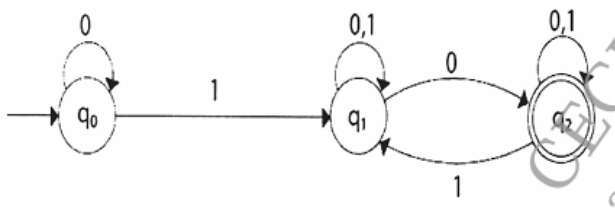
j) Explain the concept of single pass Macro processor with example. Give example for macro calls within the macro

TOC INSEM IMPORTANT

a) Convert the given NFA–ε to an NFA to DFA



b) Convert following NFA to DFA



c) Design a Mealy machine that accepts strings ending in '00' or '11'. Convert the Mealy machine to the equivalent Moore machine

d) • The set of strings over {0,1} that have at least one 1.
   • The set of strings over {0,1} that have at most one 1.
   • The set of all strings over {0,1} ending with 00 and beginning with 1.

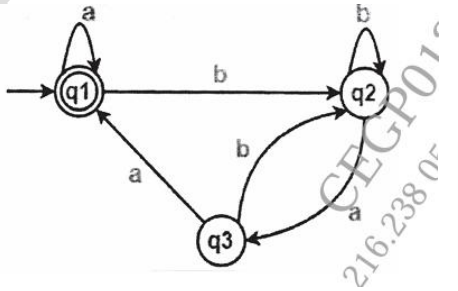
e) Covert following NFA into equivalent DFA and perform DFA minimization

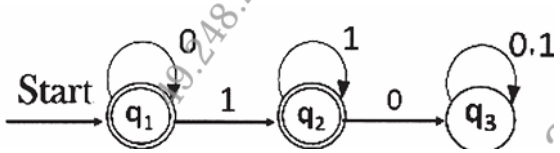
Q/Σ	0	1
→ P	{P, Q}	{P}
Q	{R}	{R}
R	{S}	--
S*	{S}	{S}

f) Differentiate between Moore machine and Mealy machine

g) Write regular expressions for the following languages over the alphabet ∑={a,b} & ∑ = {0,1}

h) Construct Regular expression for following DFA using Ardens theorem.





i) Write regular expression for a set of strings of 0s and 1s with even & Odd number of 0s

j) Design a moore machine for the 1's complement of binary number