

**BHARTI VIDYAPEETH'S COLLEGE OF ENGINEERING FOR WOMEN**  
**DHANKAWADI,PUNE-43**

**Dept:- Computer Engg.**  
**Subject:- DBMS.**

**Class:-TE (V)**  
**Marks-50**

**Q1. Do the following?**

**(20)**

Create a table STATION to store information about weather observation stations:  
-- No duplicate ID fields allowed

STATION (ID, CITY, STATE, LAT\_N , LONG\_W )

Where LAT\_N(Northern latitude) and LONG\_W(Western Longitude)

1.query to select Northern stations (Northern latitude > 39.7):

2.create another table STATS to store normalized temperature and precipitation data:  
-- ID field must match some STATION table ID  
(so name and location will be known).  
-- allowable ranges will be enforced for other values.  
-- no duplicate ID and MONTH combinations.  
-- temperature is in degrees Fahrenheit.  
-- rainfall is in inches.

3.populate the table STATS with some statistics for January and July:

4.query to look at table STATS, picking up location information by joining with table STATION on the ID column:

5.query to look at the table STATS, ordered by month and greatest rainfall, with columns rearranged:

6.query to look at temperatures for July from table STATS, lowest temperatures first, picking up city name and latitude by joining with table STATION on the ID column:

7.query to show MAX and MIN temperatures as well as average rainfall for each station:

8.query (with subquery) to show stations with year-round average temperature above 50 degrees:  
9.create a view METRIC\_STATS (derived table or persistent query) to convert Fahrenheit to Celsius and inches to centimeters:

## Unit Test II

Class: T.E (Computer)      Sub: Data Communication

Marks: 50

Date/Time: -

Instructions: 1) Figures to the right indicate full marks

2) Q.1 compulsory & Attempt any two questions from Q.2, 3, 4.

Q.1

(a) What is N/w topology? Explain in detail classification of N/w topology with suitable diagrams.

Also state Advantages & Disadvantages of each topology.

(12)

(b) Compare LAN and WAN.

(6)

Q.2

(a) Write the function of modem in transmitting & receiving mode

(8)

(b) Compare frequency modulation & amplitude modulation techniques in communication systems. Describe one method of generating FM.

(8)

Q.3

(a) Enumerate seven layers of ISO-OSI reference model for an architecture of computer N/w. Explain significance of each layer in detail

(10)

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Computer engineering department  
Unit Test-II

Class :- TE Computer  
Subject :- Digital signal processing.

Date :- 26-09-11

Time :- 12.00 to 1.30

Q. 1. is Compulsary -

Solve any five from Q. (2) to Q. (8)

ALL THE BEST

Q (1) Obtain a signal flow graph for 8-point DFT using DIF (Decimation in frequency) & DIT (Decimation in Time) algorithm. [10 marks]

Q (2) Obtain a DTFT of a signal  $x(n) = (a)^{-n} u(-n-1)$ . Find out magnitude & phase [8 marks]

Q (3) Obtain inverse Z-Transform using Residue method.  
 $X(z) = \frac{z^2}{(z-a)^2}$  ROC  $|z| > |a|$  [8 marks]

Q (4) Draw a pole-zero plot for a system having  $y(n) = 0.2 y(n-1) + 0.15 y(n-2) + x(n) - x(n-1)$ . What do you mean by multiple order poles/zeros. [8 marks]

Q.2 a) Let  $L = \{0^n \mid n \text{ is prime}\}$  Show that  $L$  is not regular.  
(use Pumping lemma).

- 6 Marks

b) Prove or disprove the following for  
Regular Expression  $\alpha, \beta, \gamma$  &  $\epsilon$

a)  $(\alpha\beta + \gamma)^* \alpha = \alpha(\beta\gamma + \alpha)^*$

b)  $\beta(\alpha\beta + \beta)^* \alpha = \alpha\alpha^* \beta(\alpha\alpha^* \beta)^*$

c)  $(\alpha + \beta)^* = \alpha^* + \beta^*$

- 10 Marks

OR

Q.3. a) Using Pumping lemma for regular sets  
Prove that the language

$$L = \{a^m b^n \mid m > n \text{ is not regular}\}$$

- 6 Marks

b) Find Regular Expression corresponding  
to each of the following subsets of  $\{0,1\}^*$

1) The language of all strings containing  
exactly two 0's.

2) The Language of all strings containing  
at least two 0's

3) The expression of all strings that do not  
end with 01.

6 Marks

c) If  $S = \{aa, b\}$  write all strings in  $S^*$   
which are having length 4 or less, also  
say the following is True or False.

i)  $(S^+)^* = (S^*)^*$

ii)  $(S^+)^+ = S^+$

iii)  $(S^*)^+ = (S^+)^*$

- 4 Marks

10.query to look at table STATS in a metric light (through the new view):

11. metric query restricted to January below-freezing (0 Celsius) data, sorted on rainfall:

12. update all rows of table STATS to compensate for faulty rain gauges known to read 0.01 inches low

13. update one row, XYZ's July temperature reading, to correct a data entry error:

14. make the above changes permanent:

15. update two rows, XYZ's rainfall readings:

16. Oops! We meant to update just the July reading! Undo that update:

17. delete July data and East Coast data from both tables:

**Q2. Explain Stored Procedure ,triggers and Cursor with example? (10)**

**Q3.Explain Normalization with Example? (10)**

**Q4.Short note on B+ tree and B- tree? (10)**

(b) write a note on TCP/IP model

(6)

Q 4

(a) List the important features of ATM.  
Also Explain the ATM reference model.

(8)

(b) what is frame relay? differentiate frame relay with ATM.

(8)

Best Of Luck

Q. (5) How to compute N-point circular convolution using DFT & IDFT?

Compute 4-point circular convolution for

$$x_1(n) = \{1, 2, 3, 4\}$$

$$x_2(n) = \{2, 1, 2, 1\}$$

[ 8 marks ]

Q. (6) Compute the response of the system

$$y(n] = 0.7 y(n-1) - 0.12 y(n-2) + x(n-1) + x(n-2)$$

input  $x(n] = n u(n)$ .

Is the system is stable? [ 8 marks ]

Q. (7) What is ROC? state its properties. What is the possible ROC of any infinite duration sequence. [ 8 marks ]

Q. (8) Calculate linear convolution using overlap-add & overlap-save method of following long duration sequence

$$x(n] = \{1, 1, 2, -1, 3, 0, 4, -2, 3, 4, 2, 5\}$$

$$h(n] = \{1, 2, 1\}$$

[ 8 marks ]

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UNIT TEST-II

Subject - TOC

Date -  
Time

Marks-50

Q.1) construct DFA for given NFA

	0	1
$\rightarrow p$	p, q	p
q	r	r
r	s	-
*s	s	s

10 Marks

b) Write Difference between Moore & Mealy machine & consider the Moore machine described by the transition table given below. Construct corresponding Mealy machine

- 6 Marks

Present state	Next state		Output
	a=0	a=1	
$\rightarrow q_1$	$q_1$	$q_2$	0
$q_2$	$q_1$	$q_3$	0
$q_3$	$q_1$	$q_3$	1

P.T.O.



Q. 4a) Describe the language generated by each of these grammars & justify your answer with the example string derive from the grammar of the productions give below

12 Marks

b) Convert the following to Greibach Normal form.

$$S \rightarrow ABA \mid AB \mid BA \mid AA \mid A \mid B$$

$$A \rightarrow aA \mid a$$

$$B \rightarrow bB \mid b$$

6 Marks

OR

Q. 5 a) consider the grammar

$$G = (V = \{E, F\}, T = \{a, b, -\}, E, P)$$

where P consist of rules :

$$E \rightarrow F - E$$

$$F \rightarrow a$$

$$E \rightarrow E - F$$

$$F \rightarrow b$$

$$E \rightarrow F$$

1) Show that G is ambiguous.

2) Remove the ambiguity, if possible of G.

6 Marks

b) Convert the following grammar to Greibach normal form

$G = (\{A_1, A_2, A_3\}, \{a, b\}, P, A_1)$  where P consist of following Rules.

$$A_1 \rightarrow A_2 A_3$$

$$A_2 \rightarrow A_3 A_1 \mid b$$

$$A_3 \rightarrow A_1 \mid a$$

c) Justify whether following grammar are  
in CNF or not

1)  $S \rightarrow AS|a$   
 $A \rightarrow SA|b$

2)  $S \rightarrow AS|AAS$   
 $A \rightarrow SA|aa$

6 Marks

~~XOX~~

~~XOX~~