

(3 Hours)

[Total Marks : 100

- N.B. :** (1) Question No. 1 is compulsory.
(2) Attempt any **four** questions out of the remaining **six** questions.

1. Consider a university database that keeps track of student and their majors, transcripts and registration and the university courses. Several sections of each course are offered and each section is related to the instructor who is teaching. It also keeps track of the sponsored research project of faculty and graduate students of the academic departments of the particular college. The database also keeps track of research grants and contracts awarded to the university. A grant is related to one principle investigator and to all researchers it supports.
 - (a) Draw an extended ER diagram for the above system. 7
 - (b) Show mapping of EER diagram into relational schema. 7
 - (c) Take two typical queries and write them in SQL. 6

2. (a) Explain different architecture for parallel database. 10
 (b) Explain different joins such as EQUIJOIN, NATURAL JOIN, LEFT AND RIGHT OUTER JOIN with suitable example. 10

3. (a) Explain query processing in distributed database. 10
 (b) Explain with example nested relation in ORDBMS. 10

4. (a) Explain heuristic query optimization with given example :- 10
 Select e-lname
 from Employee e, Works-on w, Project p
 where P.pname = 'Database' And
 p.pnumber = w.pno And
 e.essn = w.ssn And
 e.bdate > '1977 - 12 - 31'
 (b) In SQL 3 how type inheritance and table inheritance is implemented ? Explain with suitable example. 10

5. (a) What is Data transparency ? Explain the type of transparencies distributed database should achieve. 10
 (b) What is well formed and valid XML document ? With example explain what is XML Schema file. 10

6. (a) Explain Nested-loop join and Block Nested-loop join algorithm. 10
 (b) Explain database design and implementation process. 10

7. Write short notes on (any four) :- 20
 - (a) Replication in distributed DBMs
 - (b) Aggregate functions in SQL
 - (c) XML Schema elements
 - (d) EXIST and NOT EXIST clause in SQL
 - (e) Query processing in typical DBMs system.

TE/CMPN - V (REV)
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Shilpa -(b) 34
Con.7602-12.

KR- 5093

(3 Hours)

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- N.B. :** (1) Question No. 1 is **compulsory**.
(2) Attempt any **four** questions out of remaining **six** questions.

1. (a) Explain the following Intel 8086 assembly language instructions giving example :- 10
(a) TEST
(b) DAA
(c) STOS
(d) SAR
(e) JC.
(b) Explain the interrupt structure of the 8085 microprocessor with a neat diagram. 10
2. (a) Explain addressing modes of 8085 microprocessor with example. 10
(b) Explain assembler directives of 8086. 10
3. (a) Explain the different bus arbitration techniques with their advantages and disadvantages. 10
(b) Write an assembly language program for 8086 to transfer the block of 1 KB located at 0100 H to 02 00H using string instructions. 10
4. (a) Explain the necessity of a bus controller in 8086 maximum mode operation. Also explain the 8288 bus controller in detail. 10
(b) What is segmented memory ? State the advantages of segmented memory with reference to the 8086 microprocessor. 10
5. (a) Explain the concept of DMA. Show and explain an interfacing diagram of the 8086 with the 8237 DMA controller. 10
(b) Explain the operating modes of 8255 PPI. Also, explain the handshaking operation for input and output in mode 1. 10
6. (a) Design an 8086 based system with the following specifications. 10
(i) 8086 is in minimum mode
(ii) 64 kbyte EPROM using 52 KB devices
(iii) 64 kbyte RAM using 32 KB devices.
Draw the complete schematic of the design indicating address map.
(b) Explain the operation of IC 8259 with block diagram. 10
7. Write short notes on any **four** of the following :- 20
(a) RS 232 serial interface standard
(b) Difference between memory mapped I/O and I/O mapped I/O
(c) IEEE 488 GPIB
(d) 8284 clock generator
(e) String instructions in 8086
(f) Addressing modes of 8086.

03/12/12

TRE. Comp Sem V MID. 2012

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Con. 9854-12.

KR-5231

(3 Hours)

[Total Marks : 100

- N.B. :** (1) Question No. 1 is **compulsory**.
(2) Attempt any **four** questions out of remaining **six** questions.
(3) Assume **suitable** data wherever required.

1. (a) Explain the following with example :- 10
 - (i) Repeater
 - (ii) Hubs
 - (iii) Bridges
 - (iv) Switches
 - (v) Router.
- (b) Explain the layers details of OSI and TCP/IP Models. 10
2. (a) Explain the major componets of telephone networks. 10
(b) Explain the error detection and error correction algorithms. 10
3. (a) What is CRC ? Write the algorithm for computing checksum and explain with suitable example. 10
(b) Explain the following with examples :- 10
MAC address, IP address, Socket, Baud rate, Latency.
4. (a) Differentiate between the following :- 10
 - (i) Protocol and Interface
 - (ii) Connectionless and connection oriented service.
- (b) Explain and compare the following :- 10
Ethernet, Token Bus and Token Ring.
5. (a) Explain CSMA/CD. 10
(b) List the features of bluetooth and explain the network formation process. 10
6. (a) Explain : FDMA, TDMA and CDMA. 10
(b) What are different types of routing ? Explain Distance vector routing. 10
7. (a) What are the congestion prevention policies ? Explain the congestion control in virtual circuit and datagram subnets. 10
(b) Write note on : SONET. 10

Con. 7632-12.

(3 Hours)

KR-5348

[Total Marks : 100

N.B. : (1) Question No. 1 is **compulsory**.

(2) Attempt any **four** questions from remaining **six** questions.

(3) Draw **suitable** diagrams wherever **necessary**.

(4) Assume **suitable** data, if **necessary**.

1. (a) What is finite automation ? Give the finite automation M accepting $(a,b)^*(baaa)$. 5
 (b) Explain Chomsky Hierarchy with languages used, forms of productions in grammars and accepting device. 5
 (c) Differentiate Moore and Mealy machine. 5
 (d) Give and explain ambiguous context free language. 5

2. (a) Design finite state machine to add 2 binary numbers of equal length. 10
 (b) Give the rules for defining languages associated with any regular expression : 10
 Let $L_1 =$ all words beginning with a
 $L_2 =$ all words ending with a
 what is L_1 intersection L_2 ?

3. (a) Give the statement for pumping Lemma for regular languages. 2
 (b) Construct an NFA- \wedge for - 8
 (i) $(00 + 1)^* (10)^*$
 (ii) $((0 + 1)^* 10 + (00)^* (11)^*)^*$
 (c) Let G be the grammar 10
 $S \rightarrow aB \mid bA$
 $A \rightarrow a \mid a\bar{S} \mid bAA$
 $B \rightarrow b \mid bS \mid aBB$
 Find the leftmost derivation, right most derivation and parse tree for the string "bbaaabbaba".

4. (a) What is TM ? Give the power of TM over FSM. Explain undecidability and incompleteness in Turing machine. 10
 (b) Explain PDA and power of PDM. Also design the NPDA for the given - 10
 CFG
 $S \rightarrow aAA$
 $A \rightarrow bS$
 $A \rightarrow aS$
 $S \rightarrow a$

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Con. 7632-KR-5348-12.

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5. (a) Explain basic Complexity classes. 6
(b) Define NP-hard and NP-complete languages. 4
(c) Using pumping lemma, check whether $a^n b^n$ is regular or not. 10
6. (a) How regular expression is converted to DFA ? Explain all rules with example. 10
(b) Construct a PDA accepting the language of Palindromes. 10
7. Write short notes on (any four) :- 20
(a) Myhill Nerode Theorem
(b) Universal TM
(c) Rice Theorem
(d) Closure property and decision algorithm for CFL
(e) Application areas of RE, FA, PDA, CFG, TM.
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Comp Sem ~~V~~ 13 Dec '12
Web Engineering

VT-S.H.Exam. Oct.-12- 121

Con. 7566-12.

KR-5489

(3 Hours)

[Total Marks : 100

- N.B. :** (1) Question No. 1 is **compulsory**.
(2) Attempt any **four** questions from remaining questions from Q. Nos. 2 to 7.
(3) **Specify** your answers with examples and diagrams wherever **necessary**.

1. Attempt the following questions :- 20
 - (a) List various client side and server side Technologies.
 - (b) What do you mean by web browser, what facilities it provides to the user ?
 - (c) List various tags in HTML with simple example for a web page.
 - (d) What do you mean by internal and external style sheet ?

2. (a) What do you mean by components of generic web application architecture ? 10
Explain in detail.
(b) Explain 2 Tier and 3 Tier Architecture for web application. 10

3. (a) Write short note on (i) content modelling (ii) access modeling. 10
(b) Write a code in any web development tool to represent ordered and unordered list, form, tables and images for a web page. 10

4. (a) You are appointed as Team Leader for a web based application for *online admission process* of first year Engineering, find all the stake holder for this and give a simple format of application form that will be displayed on screen (do not write any code). 15
(b) Explain all attributes for Tables in HTML. 5

5. (a) What is XML, XSL, DTD ? Explain with simple example. 10
(b) Explain in detail characteristics of web applications. 10

6. (a) Differentiate between Get and Post method for a web based application, write a simple code to explain the same. 10
(b) Explain in brief Requirement Engineering activities. 10

7. (a) Explain role of tester in testing web application. 10
(b) What do you mean by content management system. 10