

QP Code : MV-18404

(3 Hours)

[Total Marks : 100

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

1. Design college library database system. Students are registered to library to borrow the various titles like Books, Journals and Magazines. All transactions like issue and return are stored. Students can issue maximum 3 titles. All titles in library are supplied by different suppliers.
 - (a) construct EER diagram for the system. 6
 - (b) Map the EER to relational schema. 8
 - (c) Write 3 typical queries in SQL. 6
2. (a) Explain left, right, outer, inner and equijoin with examples. 10
 - (b) Describe object relational features of SQL3. 10
3. (a) Explain macro life cycle in database design methodology. 10
 - (b) Explain various parallel database architectures. 10
4. (a) Explain merge join and hash join algorithms. 10
 - (b) What is heuristic rules in query optimization? Explain transformation rules. 10
5. (a) What is DTD? Write DTD for an XML schema of following relational schema 10

Library (code, name, bookset set of (books));
 Books (Acc - no, title, author, pub-detailset set of (pub-details))
 pub-details (ISBN no, add, year)
 Students (id, name, branch)
 borrowed-by (Acc - no, id, date)

 - (b) What is XML application? Explain querying and transformation of XML data. 10

Con. 10403-14.



TURN OVER

6. (a) Consider following schema : 10
Dept (Dno, Dname, location, staff)
Emp (Eno, Ename, salary, Dno)
Works (Eno, Pno, Role)
Proj (Pno, Pname, Ptype, Pbudget)
- (i) Give two examples of horizontal and vertical fragmentation each.
(ii) Give derived horizontal fragmentation on Emp and Dept relation.
Write the resultant fragmentation.
- (b) How concurrency control and recovery done in distributed databases. 10
7. Write short note on any four :- 20
- (1) Client server architecture
 - (2) Database storage and access methods.
 - (3) Exist and Not Exist clauses in SQL.
 - (4) Measures of query cost.
 - (5) Aggregate functions in SQL.
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TE (Computer) sem-V

Microprocessor

21.05.14

(12)



QP Code : **MV-18443**

(2 Hours)

[Total Marks : 60

- N.B. : (1) Q. 1 is compulsory.
(2) Answer any four questions from remaining questions.
(3) Assume suitable data if necessary.
(4) Figures to the right indicate full marks.

1. (a) Explain 8085 programmer's model. 5
(b) What is segmentation? What are the advantages of segmentation? 5
(c) Draw and explain the 4x4 keyboard interface using 8255. 5
(d) Explain the role of bus arbiter in loosely coupled systems. 5
2. (a) Explain architecture of 8086. 10
(b) Write an assembly language program to find whether given word is palindrome or not. 10
3. (a) Describe interrupt structure of 8086? 10
(b) Explain the hardware required to generate clock and reset signals. 10
4. (a) Design 8086 based system in minimum mode system for following requirements: 10
(i) 128 KB ROM using 32KB x 8 memory device
(ii) 512 KB ROM using 64KB x 8 memory device
(b) Interface following I/O devices to system designed in (a) 10
(i) Three 16-bit ports using 8255
(ii) 15 interrupt support using 8259
5. (a) Draw and explain block diagram of PIT 8253. 10
(b) Explain ICWs of interrupt controller 8259. 10
6. (a) Explain, in brief, closely coupled systems. Also, explain coprocessor interfacing with 8086. 10
(b) Discuss various bus arbitration schemes used in loosely coupled systems. 10
7. Write short note on :-
(a) IEEE 488 5
(b) DRAM controller 5
(a) Mixed mode programming 5
(c) Basic functions of microprocessor 5

Con. 11244-14.

Sem V Comp / IT (OTR)
(CRA)

27/05/14

CN.

(3 Hours)

QP Code : MV-18488
[Total Marks : 100]

1. Question No 1 is compulsory.
2. Attempt any four out of the remaining six questions.

- Q1. (a) What is the difference between a protocol, a service and an interface? 05
(b) List the advantages of fiber optics as a communication medium. 05
(c) Discuss the merits of the OSI reference model. 05
(d) Define the following with examples:- 05
MAC address, IP address, Baud rate, Latency.
- Q2. (a) Explain sliding window protocol using Go Back-n Techniques. 10
(b) i) State and explain the duties of the Data Link Layer. 07
ii) Assume that Character Stuffing method of framing is being used with each data frame preceded by the character sequence DLE STX and ending with DLE ETX. If the data to be transmitted is A DLE B DLE ETX, show what is the actual transmitted frame. DLE stands for the Data Link Escape character. 03
- Q3 (a) How are collisions handled by a 1-persistent CSMA protocol? Give an example of a collision free multiple access protocol and explain in detail. 10
Q3(b) What are the different types of routing protocols? Explain Distance vector routing. 10
- Q4. (a) What are the congestion prevention policies? Explain congestion control in virtual circuit and datagram subnets. 10
(b) What is traffic shaping? Explain Leaky bucket algorithm. 10
- Q5 (a) Explain the different classes of IP addresses. Identify the class of the following IP addresses and give their default subnet masks. i) 227.56.83.0 10
ii) 114. 22.43.21 iii) 129.14.12.21
- Q5 (b) Differentiate between 10
i) OSPF and BGP
ii) TCP and UDP
- Q6 (a) Explain the functions of the different internetworking components and state the layer in which they work. 10
Q6 (b) Explain in details the fields of the IPV4 header with a neat diagram. 10
- Q7. Short notes on: (any two) 20
i) TCP connection establishment and release
ii) Transport service primitives
iii) Berkely sockets
iii) Satellite communiation.

Con. 11732-14.



- Note: i. Q. No. 1 is compulsory
 ii. Attempt any four questions out of the remaining six questions.
 iii. Figures to the right indicate full marks
 iv. Make suitable assumptions wherever necessary with proper justification

- Q. 1 a) Distinguish between DFA and NFA. (05)
 b) Give applications of regular expressions. (05)
 c) Explain the Myhill Nerode Theorem. (05)
 d) Give the closure properties of CFLs. (05)
- Q. 2 a) Design a DFA to check whether a given number is divisible by 4. (08)
 b) Define a NFA with an example. (02)
 c) Explain Intractable problems and their classification in detail. (10)
- Q. 3 a) Draw NFA for the given regular expression and convert it into its equivalent DFA. (11 + 01)* (10)
 b) For the string "aabbabba" find the following: (10)
 (i) Leftmost Derivation
 (ii) Rightmost Derivation
 (iii) Parse Tree
 Given the following grammar:
 $S \rightarrow aB | bA$
 $S \rightarrow a | aS | bAA$
 $S \rightarrow b | bS | aBB$
- Q. 4 a) Design a Moore Machine for $(0 + 1)^*(00 + 11)$ and convert it to equivalent Mealy Machine. (10)
 b) Convert the following grammar to GNF. (10)
 $S \rightarrow ABA | AB | BB | AA | A | B$
 $A \rightarrow aA | a$
 $B \rightarrow bB | b$
- Q. 5 a) Show that the following languages are not context free. (10)
 (i) $L = \{SS^T / S \in (a,b)^*\}$
 (ii) $L = \{0^i 1^j 3^k / i \geq 0 \text{ and } j \geq 1\}$
 b) Construct a PDA accepting the following language: (10)
 $L = \{a^n b^m a^n / m, n \geq 1\}$
- Q. 6. a) Design a Turing Machine which accepts all strings of the form $a^n b^n, n \geq 1$. (10)
 b) Explain Closure Properties of Regular Language (10)
- Q. 7. Write Short Notes on (any four): (20)
 (a) Halting Problem
 (b) Chomsky Hierarchy
 (c) Rice's Theorem
 (d) Arden's Theorem
 (e) Post Correspondence Problem





T. E. (COMP), Sem. Vth

06/06/2014

W.E.

QP Code : MV-18569

(3 Hours)

[Total Marks : 100

- N.B. :** (1) Question No. 1 is **compulsory**.
(2) Solve any **four** from remaining questions.

1. (a) Explain test approaches in detail. 10
(b) Explain following terms :- 10
(i) Web Engineering
(ii) Link Testing
(iii) Helpers and plug-ins
(iv) Web Application
(v) Document object in Java Script
2. (a) Explain development related characteristics of web application. 10
(b) What is Requirement Engineering? Explain in detail Requirement Engineering Activities. 10
3. (a) Explain in detail modeling specific in web engineering. 10
(b) Explain components of Generic Web Application architecture. 10
4. (a) What is streaming ? Explain architecture for multimedia data. 10
(b) Explain customization modeling. Also explain its relation to content, hypertext and presentation modeling. 10
5. (a) Explain in detail Test Automation. 10
(b) Explain categories of Web Application. 10
6. (a) Explain presentation design by considering different aspects of web application. 10
(b) Write a short on - 10
(i) Project Tracking
(ii) Role of a Tester.
7. Write a short note on :- 20
(1) SMIL
(2) Extensible stylesheet language
(3) Navigation design
(4) 3-Tier architecture.

Con. 13262-14.