

(3 Hours)

[Total Marks : 80

**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) What is the need for layering ? Discuss the design issues for layers. 10  
(b) Explain the ALOHA protocol. Compare the performance of Pure Aloha v/s Slotted Aloha at low load and high load. 10
  2. (a) Explain different framing methods. What are the advantages at variable length frames over fixed length frames ? 10  
(b) Explain : FDMA, TDMA and CDMA. 10
  3. (a) Explain sliding windows protocol with selective repeat. 10  
(b) Explain with the suitable example CRC algorithm for computing checksum. 10
  4. (a) What are transport service primitive ? 10  
(b) How TCP controls the congestion, explain in detail. 10
  5. (a) Differentiate between the following :- 10  
(i) Protocol and Interface  
(ii) Connectionless and connection oriented service.  
(b) What are different types of routing ? Explain any one in detail. 10
  6. (a) Explain the different factors associated with quality of service in inter network. 10  
(b) Describe the IPV4 header format in detail. 10
  7. Write short notes on (any four) :- 20  
(a) SONET  
(b) Layer 2 v/s Layer 3 switching  
(c) Bluetooth  
(d) CIDR  
(e) Berkeley Socket.
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17/5/13.

T.E (Comp) V Microprocessor

P3-upq-Feb.-13KL-107 A4 E

Con. 6953-13.

GS-8871

(3 Hours)

[Total Marks : 100

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

(2) Solve any **four** questions out of the remaining **six** questions.

1. (a) Explain the memory segmentation in Intel 8086 processor with its advantages and disadvantages. **10**
- (b) Explain interrupts of Intel 8086 microprocessor. **10**
2. (a) Design an 8086 based system with following specification :— **10**
  - (i) 8086 working at 8MHz
  - (ii) 32 kbytes EPROM using 16kB devices
  - (iii) 64 kbytes RAM using 32kB devicesDraw the complete schematic of the design indicating address map.
- (b) Explain the following Intel 8086 assembly language instructions giving example. **10**
  - (1) TEST
  - (2) NOP
  - (3) STOS
  - (4) DAA
  - (5) SAR.
3. (a) Explain the operating modes of 8255 PPI including the handshaking operation. **10**
- (b) Explain the operating modes of 8254 PIT. **10**
4. (a) Explain the modes of operation of DMA controller. **10**
- (b) What do you understand by bus arbitration ? Explain the different bus arbitration techniques with diagram. **10**
5. (a) Explain the 8288 bus controller block diagram. Explain its use. **10**
- (b) Explain the operation of three 8259 PIC in cascaded mode. **10**
6. (a) Explain with neat diagram memory read and write machine cycle in maximum mode. **10**
- (b) Explain addressing modes of 8085 microprocessor with example. **10**
7. Write a short notes on (any **four**) :— **20**
  - (a) RS-232 Serial Interface Standard
  - (b) 8284 clock generator
  - (c) Fixed port and Variable port addressing
  - (d) Generation of Reset Signal in 8086 based system
  - (e) String Instructions.

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10/5/13

Comp. Sem V Rev

73 : 1st half.13-shilpa(h)

Con. 7037-13.

ADBMJ

GS-8748

(3 Hours)

[Total Marks : 100

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

(2) Solve any **four** out of **remaining** questions.

(3) **Suitable** assumptions can be made if **required**.

1. (a) Construct an EER diagram for an airline database. The database contains information about passengers, flights, departure, employees of the airline and aircrafts. For passengers name, address, phone no. and related information is to be stored. For employees, the company want to record the name, address, salary, identification no. and flight information. Not all employees can fly aircraft—but just the Pilots. For all these employees, it is required to record the qualification i.e. what kind of plane they can fly. For planes it is required to record the model and manufactures of the plane. The airline has many aircrafts of a certain type. For flights the airline needs to keep the information like ; flight no., origin, destination, departure time and arrival time. Note that for the same source–destination, there can be many flights per week. Relevent assumptions, if required can be made. 8
- (b) Convert the above EER diagram into Relational schema. 6
- (c) Write three typical queries in SQL3. 6
2. (a) State the purpose of two phase commit protocol. Explain two phases in detail. 10
- (b) Explain the need of Replication. How Quries are processed in Replicated Distrubuted databases ? 10
3. (a) Explain Hash join algorithm. 10
- (b) What are the main architectures used for building parallel databases ? Give advantages and disadvantages of each. 10
4. (a) What is data transperency ? Explain the types transperencies distributed database should achieve. 10
- (b) How concurrency control is achieved in distributed database systems ? 10
5. (a) What is heuristic rule in query optimization ? Explain transformation rules. 10
- (b) Explain nested loop join and block nested loop join algorithm in query processing. 10
6. (a) Explain merge sorting in query processing. 10
- (b) Explain macro life cycle in database design methodology. 10
7. Write notes on (any **two**) :- 20
  - (a) Object relational features in SQL3
  - (b) Measures of query cost
  - (c) XML Schema elements.

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42: 1ST HALF-13 (S)-JP

Con. 6972-13.

GS-9099

(3 Hours)

[ 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**.  
(5) **Maximum** weightage is given to technical **notations**.

1. (a) Define the following terms :— 5  
(i) Undecidability  
(ii) Unrestricted grammar  
(iii) Pumping lemma.  
(b) Define TM and give its variants. 5  
(c) Explain Chomsky hierarchy for formal languages. 5  
(d) Give the closure properties of regular languages. 5
2. (a) (i) What is ambiguous CFG ? Give one example of ambiguous CFG. 5  
(ii) What is Myhill-Nerode theorem ? Explain necessity of it. 5  
(b) Let G be the grammar, find the leftmost derivation, right most derivation and parse tree for the string 00110101 10  
$$S \longrightarrow OB / 1A$$
$$A \longrightarrow O/OS/1AA$$
$$B \longrightarrow 1/1S/OBB$$
3. (a) Explain CNF and GNF with example. 10  
(b) Give the formal definition of RE and design a DFA corresponding to the regular expression 5  
 $(a+b)^* aba (a+b)^*$   
(c) Using pumping lemma prove that the following language is regular or not 5  
 $L = \{a^n b^n \mid n \geq 1\}$

[ TURN OVER

**Con. 6972-GS-9099-13.****2**

4. (a) Write NFA for accepting the following RE 10  
 $(a+bb)^* (ba^* + \epsilon)$
- (b) Explain DPDA and NPDA with languages of them. 10
5. (a) Find the languages defined by the following grammer : 10
- (i)  $S \longrightarrow OA / IC$   
 $A \longrightarrow OS / IB / \epsilon$   
 $B \longrightarrow 1A / OC$   
 $C \longrightarrow OB / 1S$
- (ii)  $S \longrightarrow OA / IC$   
 $A \longrightarrow OS / IB$   
 $B \longrightarrow OC / IA / \epsilon$   
 $C \longrightarrow OB / IS$
- (b) Construct the PDA accepting following language 10  
 $L = \{a^n b^m a^n \mid m, n \geq 1\}$
6. (a) Differentiate between Moore and Mealy machine with proper example and usage 10  
 Carry out conversion of Moore MIC to Mealy MIC.
- (b) Design a Turing machine to accept the language  $L = \{a^n b^n \mid n \geq 1\}$  10
7. Write short notes on any four :— 20
- (a) Recursive and recursively enumerable languages  
 (b) Intractable problems  
 (c) Simplification of CFGs  
 (d) Decision properties of regular languages  
 (e) Rice's theorem.
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TE/ ~~ETP~~ CMPN/ V (R.)

1/6/13

WE

AGJ 1st half (g+) 13

Con. 7296-13.

GS-9237

(3 Hours)

[ Total Marks : 100

**N.B. :** (1) Question No. 1 is **compulsory**. Attempt any **four** questions from **remaining** questions.  
(2) Specify your answers with neat sketches and examples wherever **necessary**.

1. (a) Differentiate following :- 10
    - (i) Conventional Test Approach vs Agile Test Approach
    - (ii) HTML vs XML.
  - (b) Enlist project risk in web project according to J.Nielsen. 5
  - (c) Write a short note on Middleware Technologies. 5
  
  2. (a) Define web application. Explain categories of web applications. 10
  - (b) Discuss in detail Requirement Engineering Specifics in Web Engineering. 10
  
  3. (a) Discuss in detail Interaction Design. 10
  - (b) Explain in detail typical methods and techniques for web application testing. 10
  
  4. (a) Discuss in detail modelling specifics in Web Engineering. 10
  - (b) Explain product related characteristics of typical web application. 10
  
  5. (a) Explain in detail requirement types with respect to requirement engineering. 10
  - (b) Discuss in detail specifics of web application architecture. 10
  
  6. (a) Explain in detail customization modeling and its relation to content, Hypertexts, and presentation modelling. 10
  - (b) Explain in detail presentation design. 10
  
  7. Write a short notes on :- 20
    - (a) Simple object access protocol
    - (b) Project tracking.
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