

T.E. Sem. VI (COBOS) Comp. Engg.
Software Engg.

DT: 26/11/15

QP Code : 6308

Time: 3 Hrs

Max Marks: 80

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

(2) Attempt any three questions out of remaining five.

1. A distance learning institute decides to use e-learning software to ease its regular functioning of the program. Through this e-learning tool students can register to various courses, appear for online exams, download study material, upload assignments online, view lecture videos etc. The faculty can upload study materials, conduct exams, teach one or many courses. The institute can check student and faculty information, collect fees, pay salary, display results and so on. Create an SRS for the institute that includes the following 20
 1. Product perspective
 2. Scope and objective
 3. Functional requirements (atleast 3)
 4. Non-functional requirements

2. Attempt any four (04).
 - (a) Define Software Engineering. Explain in brief the software process framework. 5
 - (b) Discuss on Modularity and Functional Independence fundamentals of design concepts. 5
 - (c) Explain cyclomatic complexity. How is it computed? 5
 - (d) Discuss the different categories of risk that help to define impact values in a risk table. 5
 - (e) Briefly explain Unit and Integration Testing in the OO Context. 5

3.
 - (a) Explain in brief the different types of coupling and cohesion. Give one practical example of high cohesion and low coupling 10
 - (b) What is FTR in SQA? What are its objectives? Explain the steps in FTR. 10

4.
 - (a) What is Agility in context of software engineering? Explain Extreme Programming (XP) with suitable diagram. 10
 - (b) Explain different techniques in White Box Testing. 10

5.
 - (a) Explain the various steps in Risk Management with suitable diagram. Identify the risks associated with delayed projects. 10
 - (b) Explain different architectural styles with suitable brief example for each.

6.
 - (a) Explain the change control and version control activities in SCM. 10
 - (b) Explain TDD with its advantages. 10

(3 Hours)

[Max Marks 80

N.B.

- (1) Question no. 1 is compulsory.
- (2) Attempt any 3 from the remaining questions.
- (3) Assume suitable data if necessary.
- (4) Figures to right indicate full marks.

- Q1(a) Differentiate between Application program and system program. Indicate the order in which following system programs are used, from developing program upto its execution. 5
Assemblers , Loaders , Linker , Macro processor , compiler , Editor
- Q1(b) Eliminate Left recursion in the following grammar (Remove Direct and Indirect recursion) 5
 $S \rightarrow Aa | b$ $A \rightarrow Ac | Sd | \epsilon$
- Q1(c) What is an activation record? Draw diagram of General Activation record and explain the purpose of different fields of an activation record 5
- Q1(d) What are the different functions of loader. 5
- Q2(a) For a given grammar below , construct an operator precedence relation matrix , assuming * , + are binary operators and *id* as terminal Symbol and E as non-terminal. 10
 $E \rightarrow E + E$ $E \rightarrow E * E$ $E \rightarrow id$
Apply operator precedence parsing algorithm for the statement $id + id * id$
- Q2(b) Explain the role of code optimization in compiler designing ? Explain Peephole optimization along with an example. 10
- Q3(a) Write a note on JAVA compiler environment. 5
- Q3(b) Write a brief note on Design of an Editor. 5
- Q3(c) Explain synthesized and Inherited attributes used in Syntax Directed Definition. 5
- Q3(d) Find FIRST and FOLLOW Set for given grammar below 5
 $E \rightarrow TE'$ $E' \rightarrow +TE' | \epsilon$
 $T \rightarrow FT'$ $T' \rightarrow *FT' | \epsilon$
 $F \rightarrow (E)$ $F \rightarrow id$
- Q4(a) Explain Design of Dynamic Linking Loader along with example 10
- Q4(b) For the following grammar construct LL(1) parser table 10
 $S \rightarrow F$ $S \rightarrow (S - F)$ $F \rightarrow a$
And Parse the string (a - a) . Show contents of stack and i/p buffer and action taken after each step.
- Q5(a) Explain different pseudo-ops used for conditional macro expansion along with an example 10
- Q5(b) What are the different phases of Compiler ? Illustrate compilers internal representation of source program for following statement after each phase 10
Position := initial + rate * 60
- Q6(a) With reference to Assembler explain following tables with suitable example . (i) POT , (ii) MOT (iii) ST (iv) LT 10
- Q6(b) Explain Backpatching with an example. 10

T.E Sem VI (C.B.G.S) Comp. Engg.
Mobile Comm. & Computing

Q.P. Code : 6393

Dt: 8/12/15

(3 Hours)

[Total Marks : 80

NB :

1. Q1 is compulsory.
2. Attempt any 3 questions out of the rest.

Q1)

- a) Draw and Explain Electromagnetic Spectrum for communication. (5)
- b) Explain agent Advertisement in Mobile IP (5)
- c) Explain the difference between Adhoc Network and infrastructure based wireless networks (5)
- d) Explain the U_m interface of GSM (5)

Q 2)

- a) Explain how a Bluetooth network is established using baseband state transitions. (10)
- b). Explain Mobile Call termination in GSM, detailing the need and the use of MSRN , IMSI, TMSI no.s (10)

Q 3)

- a) Compare various IEEE 802.11x standards. (a/b/g/i/n etc) (10)
- b) Explain the functioning of Mobile -TCP (10)

Q 4)

- a) Why does the Mobile IP packet required to be forwarded through a tunnel. Explain Generic techniques of encapsulation of Mobile IP packet (10)
- b) Explain differences in GSM, GPRS and UMTS. (10)

Q 5)

- a) Explain UMTS architecture. Explain UTRA -FDD and TDD modes (10)
- b) Explain Security issues in wireless communication, typically for cellular networks (10)

Q 6) Short Notes on any 4

(20)

- a) Satellite Communication
- b) Android framework
- c) HIPERLAN 1 Vs HIPERLAN2
- d) PSTN
- e) Cellular IP

Note the following instructions.

1. Question no.1 is compulsory.
2. Solve any three questions out of remaining five questions.
3. Assume suitable data if necessary.

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1. (a) Write short note on 8288 Bus Controller. (5)
(b) Explain the following instructions in 8086 : LAHF and STOSB (5)
(c) Design interfacing of 8282 latches to 8086 system. (5)
(d) Explain in brief Protection Mechanism in 80386DX Processor. (5)
 2. (a) Explain Memory Management in details in 80386DX processor (10)
(b) Design 8086 based system with following specifications (10)
(i) 8086 in minimum mode working at 8MHz
(ii) 32KB EPROM using 16KB devices.
(iii) 64KB SRAM using 32KB devices.
 3. (a) Explain with block diagram working of 8255 PPI. (10)
(b) What is segmentation? What are the advantages of segmentation? (5)
(c) Differentiate between minimum mode and maximum mode in 8086. (5)
 4. (a) Explain branch prediction logic used in Pentium. (10)
(b) Compare Pentium 2, Pentium 3 and Pentium 4 processors. (10)
 5. (a) Explain different data transfer modes of 8237 DMA controller. (10)
(b) Explain the architecture of Super SPARC processor with a neat diagram. (10)
 6. Write short note on
(a) 8087 Math Coprocessor. (5)
(b) Generation of Reset signals in 8086 based system. (5)
(c) Comparative Study of multicore i3, i5 and i7 processors. (5)
(d) Mixed Language Programming. (5)
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(3 Hours)

[Total Marks: 80]

DT: 2/12/15

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

(2) Answer any three out of the remaining questions.

Q 1.

- a) Define Client Server and Peer to Peer distributed system architecture. [05]
- b) Give two applications of XML. [05]
- c) What do you mean by serializability in a distributed database? [05]
- d) Explain the concept of a "semi-join" using an example. [05]

Q 2. Using a snapshot of the following centralized schema of a database:

- Departments(*DN, DName, Budget, Location*)
- Employees(*EN, EName, Title, DNo*)
- Salary(*Title, Salary*)

- a) Show 2 examples of horizontal fragmentation with fragmentation rules [05]
- b) Show 2 examples of vertical fragmentation with fragmentation rules [05]
- c) Show 2 examples of derived fragmentation with fragmentation rules [05]
- d) Demonstrate the correctness of your fragmentation rules. [05]

Q 3.

(a) Consider a employee management database which maintains entries for employees in a company. Employees may be programmers, managers, designers and testers. Appropriate information is to be maintained for each employee along with their address, salary, etc. (You can make any other reasonable assumptions)

- I. Give the DTD for the XML schema for the described system. [05]
- II. Write the following query in XQuery [05]
"Find programmers who have worked in projects coding at least two different languages in one year."

(b) Describe query processing in a distributed database. [10]

Q 4.

- (a) Explain the different types of transparencies in a Distributed Database System [10]
- (b) Describe clearly the Three Phase Commit (3PC) algorithm? [10]

Q 5.

- a) Explain two concurrency control algorithms for a distributed database system [10]
- b) What are the issues for query processing in a heterogeneous database? [10]

Q 6. Write Short notes on:

- a) Heterogeneous Database Architecture. [10]
- b) Distributed Deadlock Management. [10]

