Mha I -10 100

TE/Comp / Sem VI / Rev
Sub:- OOSE

Con. 5547-10. (REVISED COURSE) GT-7560

30-11-10

Object oriented Software Engineering

(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. A leading TRAVEL AGENCY has decided to develop application package to help its customer in planning tours. The agency provides services like tour, air, railway, luxury coach, hotel booking etc. Many a times customers do not have idea of availability of transport services to a particular destination. The agency also gives advice regarding economical planning of vacation/tour. Given the tour constraints like number of days, affordable cost and places to visit the software should present alternative tour plans. Alternatively the software may be just used for querying to know availability of transport services, hotels etc. Besides this main objective of this software should also have facilities for billing and accounting for the agency. You are appointed as a consultant to develop implementation strategy for Automated Tourist System. Draw use case and class diagram. **20**

2. (a) Explain how project scheduling and tracking is done for a software development project. **10**
   (b) Explain objectives for testing. Also explain the following terms :— **10**
   (i) System testing
   (ii) Scalability
   (iii) Regression
   (iv) Black box testing.

3. (a) What is deployment diagram ? Explain the elements of deployment diagram. Give the use of diagram in detail. **10**
   (b) Differentiate between Static modeling and Dynamic modeling in detail. **10**

4. (a) Construct the state diagram and interaction diagram for the online Railway Reservation System. **10**
   (b) State different types of Coupling and Cohesion. Explain any four techniques of coupling and cohesion. **10**

5. (a) Explain Software Configuration Management and Change Control Management in detail. **10**
   (b) What are different types of maintenance and also explain the different steps involved in creating a maintenance log ? **10**

6. (a) Explain how to map different types of association to the database. Also explain how to map generalization to database. **10**
   (b) What is an Agile Process ? Explain any one Agile Process model with its advantages and disadvantages. **10**

7. Write short notes on (any **two**) :— **20**
   (a) Reverse and Re-engineering.
   (b) Software Architecture Styles.
   (c) SQA.
   (d) Software Testing Strategies.

TE/Com/SemVI/Rev AMP

137 : 2ndhf10Bmk

Con. 5550-10.

(REVISED COURSE)

6-12-1

GT-7554

(3 Hours) [Total Marks : 100

N.B. (1) Question No. **1** is **compulsory**.
(2) Attempt any **four** questions out of remaining **six** question.
(3) **Each** question having **20 marks**.

1. (a) Explain Intel's Net Burst Micro-architechture with neat schematic. **10**
   (b) Explain the protection mechanism of X86 intel family microprocessor. **10**
   (c) Explain how the Linear Pipelining Working. **10**

2. (a) Differentiate between real mode and protected mode of X86 family. **10**
   (b) State and explain operating modes of X86 family of processor. Show the mode transition diagram highlighting important features. **10**
   (c) Explain segment translation mechanism of X86 processor with flow chart. Also explain segment descriptor field. **10**

3. (a) Explain different stages of integer pipeline and floating point pipeline of Pentium Processor. **10**
   (b) Explain Cache organisation of Pentium. **10**
   (c) Explain with block diagram how superscalar operation is carried out in pentium processor. **10**

4. (a) Write the features of Pentium IV processor. **10**
   (b) Explain Itanium processor with respect to instruction format, core pipeline stages and the functionality. **10**
   (c) Explain the architecture of Super SPARC microprocessor with the help of neat diagram. **10**

5. (a) Data type supported by SPARC. **5**
   (b) Register file of SPARC architecture. **5**
   (c) Write short note on Ultra SPARC Processor. **5**
   (d) Branch Prediction Logic. **5**

6. (a) Explain EFAG bits of pentium. **10**
   (b) Explain the state transition diagram for pentium processor bus cycle. **10**
   (c) Differentiated RISC and CISC. **10**

7. Write short notes on following :—
   (a) IDE **5**
   (b) VESA **5**
   (c) EISA **5**
   (d) USB. **5**

TE/COM / Sem VI / Old
AD

P4–Con No–47

Con. 5794–10.

(OLD COURSE)

(3 Hours)

4-12-10

GT–7287

[Total Marks : 100

N.B. : (1) Question No. **1** is **compulsory**.
(2) Answer any **four** out of remaining **six** questions.
(3) Answers to **sub** questions must be written **together**.

1. You have to design and implement a database that manages information about publishers, authors, and books. Some information includes :
• A publisher has a name and an address for the headquarters. Each publisher also has a set of branches, each branch having an address and two phone numbers.
• An author has a name and an address.
• A book is published by a publisher and has a list of authors associated with it. An author can publish several books and a book can be published by at most one publisher.

a) Draw an Extended Entity-Relationship diagram (5)
b) Specify an object-relational database schema that suitably represents the above properties. Use object-relational features (user-defined data types, object tables, references, nested tables, . . .) whenever suitable. Use SQL 3 (10)
c) Write a SQL 3 query for the following query :
List the name of the author who has published the most books with publisher "McGraw Hill" (5)

2.(a) Compare and contrast Parallel and distributed databases. (10)
(b) Consider an airline database that keeps track of passenger reservations on different flights. Design Object Oriented Schema for the system (10)

3.The city central library wants to put up its list of books on the web, so that members can order books online.
(a) Discuss the design such a web database. (10)
(b) Describe XML schemas for the database (10)

4.(a) Consider the global schema:
PATIENT (Number, Name, SSN, Amount_Due, Dept, Doctor, Med_treatment)
DEPARTMENT (Dept, Location, Director)
STAFF (Staffnum, Director, Task)
1) Show 2 examples of horizontal fragmentation
2) Show 2 examples of vertical fragmentation
3) Show 2 examples of derived fragmentation (5 * 3 =15)

(b) Describe in brief the design and implementation issues for temporal databases (5)

5. (a) Describe with example the need for data warehousing. (10)
(b) Define Data Mining. Describe any two data mining algorithms. (10)

6. Explain the following concepts with examples:
(a) Object Identity (OID)
(b) Type constructor
(c) Persistent data types
(d) Accessor functions (GET and SET) (5 * 4 = 20)

7. Write detailed notes on :
a) Spatial Databases
b) Mobile Databases. (10 * 2 = 20)

T.E./Com/ Sem VI/old
Operating system with Unix

ws Oct- 10 Scan 14

Con. 6046–10. **(OLD COURSE)** **GT–7290**

(3 Hours) **[Total Marks : 100**

N.B. : 1) Q.1 is compulsory.
2) Solve any 4 questions from the remaining questions.
3) Assume suitable data wherever necessary.

Q.1 a) What are the various functions of Operating System? Explain the following operating systems in detail- 10
a) multiprogramming O.S
b) Real time O.S.
c) Distributed O.S.

b) Consider the following snapshot of the O.S. for Banker's algorithm- 10

	Allocation				Max				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P0	0	0	1	2	0	0	1	2	1	5	2	0
P1	1	0	0	0	1	7	5	0				
P2	1	3	5	4	2	3	5	6				
P3	0	6	3	2	0	6	5	2				
P4	0	0	1	4	0	6	5	6				

1) Calculate the need matrix.
2) Is the system in a safe state? Justify your answer.
3) If the request from process p1 arrive for (0,4,2,0), can a request be granted immediately?

Q.2 a) Explain in detail the reasons for process creation & process termination. 10

b) What are the scheduling & performance criteria? Explain the Round robin scheduling algorithm with the suitable example. 10

Q.3 a) Consider a reference string 7,6,2,0,2,6,0,1,7,5,1,5,2,3,6,3,4,2,0,4,6 & a page of 100 bytes. Assume that a set of 3 frames is available for allocation. How the page replacement will be done in case of following algorithms- 10
1. FIFO 2. LRU 3. OPTIMAL
Calculate the page faults in each case.

b) What is the use of virtual memory in memory management system? Explain the Inverted page table with suitable example. 10

Q.4 a) Explain various file allocation methods. 10

b) Explain various disk scheduling algorithms. Consider a process requesting to read from the following tracks- 98, 183, 37,171, 74,14,153,36,70,105. Assume the disk has maximum 200 cylinders & the disk arm is currently at cylinder no. 75. 10

i) Draw a track charts for SSTF, SCAN, LOOK & C-LOOK algo. of disk scheduling.
ii) Determine total no. of head movements in tracks in each case.
iii) Which is the best algo? Justify your answer.

Q.5a) Explain critical section problem & its different solutions. 10

b) Explain memory management in Linux. 10

Q.6 a) What criteria are important in choosing a file organization? List & briefly describe the 5 basic file organizations.

b) Explain Unix concurrency control method. 10

Q.7 Write short notes on- 20

i) Remote procedure call
ii) Monitors
iii)Different ways of I/O buffering.
iv) Architecture of Windows OS.

TE/COM/Sem VII/Rev

ws Oct- 10 Scan 39

Con. 6271–10. Advance Com - Network GT–7557

16/12/10

(3 Hours) [Total Marks : 100

N.B. a) Questions No. 1 is compulsory

b) Attempt any four questions out of remaining six questions

1. a) Describe how is the TCP/IP protocol stack organized compared to the ISI/OSI protocol stack [5]

   b) Differentiate between Bridge, Router and Gateway [5]

   c) What is difference between data plane and control plane in ATM [5]

   d) Discuss the functions of SONET layers [5]

2. a) Describe the Routing Information Protocol in detail with its message header And types. [10]

   b) Write code for connection oriented client server program using c++/Java Assume suitable libraries. Use socket programming for establishing connection [10]

3. a) Using block diagram describe a typical unidirectional dense wavelength division Multiplexing (DWDM) transmission system? What are advantages and disadvantages Of DWDM? [10]

   b) Explain functions of ATM adaptation layers. Explain in detail the AAL1 and AAL2 layers [10]

4. a) Explain the Autonomous systems concept and explain EGP in detail [10]

   b) Explain different traffic descriptors used in ATM [5]

   c) Explain the naming scheme used in SNMP [5]

5. a) What is the main function of DVMRP? How does it differ from RIP and OSPF? [10]

   b) List different queuing models .Explain one in detail. [10]

6. a) What is RSVP? What are features of RSVP? How RSVP work? Give its frame format. [10]

   b) Explain TCP segment with header format. [10]

7. Write short note on any two of following [20]

   a) MIB b) Queue Management Algorithms

   c) IP Multicasting d) X.25

TE/Com/IT/Sem VII/Old
sub:- OOA&D

VT-Oct-10-6

30-11-10

Con. 5546–10. **(OLD COURSE)** **GT–7302**

(3 Hours) **[Total Marks : 100**

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

1. (a) What is coupling and cohesion ? Explain the following types of coupling among objects : content coupling, common coupling, control coupling, stamp coupling and data coupling. **10**
   (b) State UML dynamic diagrams. Explain any one in detail. **10**

2. (a) What is a model ? What are different types of modeling ? Briefly describe each. **10**
   (b) What are the guidelines for developing effective documentation. **10**

3. (a) Draw a sequence diagram for ATM Banking systems for Invalid pin used case. **10**
   (b) Explain deployment diagram and its use with example. **10**

4. (a) How can you identify association, generalization and aggregation relationship ? Illustrate. **10**
   (b) How is design different from analysis ? Explain in detail logical and physical design. **10**

5. (a) Construct an activity diagram for processing mortgage requests. Use synchronization bars and guard conditions wherever necessary. How is it related to state chart diagram ? **10**
   (b) Explain the Rambaugh object modeling technique and the Booch Methodology. How do they differ ? **10**

6. (a) What is the purpose of producing use cases ? Describe in your own words the difference between the <<extend>> and <<include>> relationship in the use case diagram with example. **10**
   (b) What is a test plan ? What are the steps involved in developing a test plan ? **10**

7. (a) A simple digital watch has a display and two buttons to set it, the **A** button and the **B** button. The watch has two modes of operation, display time and set time. In the display time mode, hours and minutes are displayed seperated by a flashing colon. The set time mode has two submodes, set hours and set minutes. The **A** button is used to select modes. Each time it is pressed, the mode advances in the sequence : display, set hours, set minutes, display etc. Within the submodes, the **B** button is used to advance the hours or minutes once each time it is pressed. Buttons must be released before they can generate another event. Prepare a state diagram of watch. **12**
   (b) How is software verification different from validation ? Explain with example. **8**

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TE / Com / Sem VI / old
System Programming.

VT-Oct-10-10

Con. 5561–10. (OLD COURSE) GT–7296

(3 Hours) [Total Marks : 100

N.B. : (1) Question **No. 1** is **compulsory**.
(2) Attempt any **four** questions out of the remaining **six** questions.
(3) **Figures** to the **right** indicate **full** marks.

1. (a) Explain the design of Direct Linking Loader. 10
   (b) What are the features provided by macro ? Explain with example. 10

2. (a) Explain various phases of compiler with suitable example. 10
   (b) Explain Design of Absolute Loader. 10

3. (a) Explain Run time storage organization in detail. 10
   (b) Distinguish between top down and bottom up parsing. 10

4. (a) Explain with the help of memory data formats, registers, instruction format, addressing modes of traditional CISC Machines. 10
   (b) Explain the two pass macro processor with neat flowcharts and databases. 10

5. (a) Explain the design of Two Pass Assembler with databases used. 10
   (b) Explain different types of Text Editors. 10

6. (a) Construct LALR parsing table for following Grammer :– 10

   $S \rightarrow S$

   $S \rightarrow Cc$

   $C \rightarrow cC/d$

   (b) Explain Operator Precedence Parser with suitable example. 10

7. Write detailed notes on any **two** :– 20
   (a) LEX and YACC
   (b) Dynamic Loading and Dynamic Linking
   (c) Debug Monitors.

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TE / Com / Sem VI / Rev
System program & complier constr

P4–Exam.–Oct.–10–64

Con. 5559–10. **(REVISED COURSE)** **GT–7563**

(3 Hours) **[Total Marks : 100**

N.B. : (1) Question No. **1** is **compulsory**.
(2) Solve any **four** questionsout of remaining.
(3) Assume **suitable** data if **necessary**.

1. (a) What is function of interpreter ? **5**
   (b) Explain operator precedence parsing. **5**
   (c) Explain run time storage allocation strategies. **5**
   (d) Explain the role of finite regular state automata in compiler design. **5**

2. (a) Explain the design of direct linking loader in detail. **10**
   (b) Explain with suitable flow chart working of single pass assembler. **10**

3. (a) Explain design of one pass macro-processor to handle nested macro calls. **10**
   (b) Explain difference between :– **10**
      (i) Procedure calls and macro calls
      (ii) Linker and Loaders.

4. (a) Explain difference between JAVA compiler and YACC compiler. **10**
   (b) Explain difference between linkage editor and linkage loader. **10**

5. (a) Explain various form of the intermediate code used by compiler. **10**
   (b) What is source of optimization ? **5**
   (c) Explain role of lexical analyzer. **5**

6. (a) Explain different phases of compiler in details. **10**
   (b) Explain management of variable length block and storage allocation strategies. **10**

7. Short notes on :– **20**
   (a) Implementation of three address statement
   (b) Storage allocation strategies
   (c) YACC
   (d) SPARC assembler.

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Computer Graphics

VT-Oct-10-73

Con. 6081–10. **(OLD COURSE)** **GT–7293**

(3 Hours) **[Total Marks : 100**

N.B. : (1) Question **No. 1** is **compulsory**.
(2) Attempt any **four** questions from Q. Nos. **2** to **7**.
(3) Assume **suitable** data if **required**.

1. (a) What is Halftoning ? **5**
   (b) Write algorithm for DDA. **5**
   (c) Briefly explain Depth Cueing. **5**
   (d) Explain Color CRT monitor in short. **5**

2. (a) Write the procedures for Boundary fill and flood file algorithm. **10**
   (b) Explain Midpoint subdivision algorithm. **10**

3. (a) Explain the 4 cases of Area Subdivision Method. **10**
   (b) What is the meaning of the following 3D Display methods :– **10**
      (i) Parallel Projection and
      (ii) Perspective Projection.

4. (a) Derive Midpoint Circle Algorithm. **10**
   (b) Explain and derive window to viewport relationship. **10**

5. (a) List the steps for Gouraud Shading and explain why it is better than Phong Shading. **10**
   (b) Explain with equations the concept of Bezier Curves. **10**

6. (a) What is Alising and Anti-alising. **10**
   (b) Explain Inside-Outside tests. **10**

7. Write short notes on :– **20**
   (a) Reflection and Shear Matrices
   (b) Raster Scan Display
   (c) 3D-Transformations
   (d) Sutherland Hodgman Polygon Clipping.