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10CS71

Seventh Semester B.E. Degree Examination, June/July 2015
Object Oriented Modeling and Design

Time: 3 hrs.

Max. Marks:100

Note: *Answer any FIVE full questions, selecting atleast TWO questions from each part.*

PART – A

1 a. What is OO development? Explain OO methodology. What are OO themes? **(10 Marks)**
   b. With help of a UML, explain the following:
      i)   Qualified association
      ii) Aggregation
      iii) Association class
      iv) Derived attribute
      v)   Ordering. **(05 Marks)**
   c. Prepare a class diagram for group of classes. Add atleast three relationships (associations, generalization). Use association names where needed and show multiplicity.
      School, playground, principal, book, student, teacher, cafeteria, class room, rest room, computer. **(05 Marks)**

2 a. What is an event? Explain different types of events with an example. **(10 Marks)**
   b. Explain state diagram and write state model for a telephone line with activities. **(10 Marks)**

3 a. What are use case models? Give the guidelines for constructing a use case model. **(05 Marks)**
   b. Prepare a use case diagram for an online airline reservation system. **(05 Marks)**
   c. What is an activity diagram? Explain the special constructs for activity models. **(10 Marks)**

4 a. What is software development process? Explain the stages of software development. **(08 Marks)**
   b. Explain the criteria to select a right attributes with help of an ATM system. **(12 Marks)**

PART – B

5 a. What is system design? Explain the reuse concept of system design. **(08 Marks)**
   b. Write a normal scenario for ATM process transaction use case. **(02 Marks)**
   c. List out the various common architectural styles. Explain any two of them. **(10 Marks)**

6 a. Distinguish between forward engineering and reverse engineering. **(06 Marks)**
   b. Write short notes on: i) Association travel   ii) Design optimization. **(10 Marks)**
   c. Write briefly on wrapping. **(04 Marks)**

7 a. What is pattern? How is it categorized? **(05 Marks)**
   b. Explain Forwarder-Receiver design pattern with help of OMT (Object Modeling Technique) diagram. **(05 Marks)**
   c. Explain the dynamics of client-dispatcher-server design pattern. **(10 Marks)**

8 a. Describe the structure solution of command processor design pattern. **(10 Marks)**
   b. Define publish-subscriber design pattern. **(02 Marks)**
   c. Write down the steps to implement the counted pointer idiom. **(08 Marks)**

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Seventh Semester B.E. Degree Examination, June/July 2015
Embedded Computing Systems

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting atleast TWO questions from each part.*

PART – A

1   a.   Define an embedded system. Explain the embedded system design process.   **(12 Marks)**
    b.   Define digital command control (DCC). Explain the conceptual specification of a model train controller system.   **(08 Marks)**

2   a.   Explain the various data operations in ARM.   **(08 Marks)**
    b.   Explain in detail the programming of I/O devices.   **(12 Marks)**

3   a.   Discuss memory interfacing and I/O interfacing in brief.   **(08 Marks)**
    b.   What is DMA? Explain with a neat diagram.   **(06 Marks)**
    c.   Explain briefly the development and debugging of an Alarm clock.   **(06 Marks)**

4   a.   Explain data flow and control/data flow graphs for programming models.   **(08 Marks)**
    b.   List and explain different program optimization techniques.   **(12 Marks)**

PART – B

5   a.   Explain how threads and processes are used in RTOS.   **(10 Marks)**
    b.   With a neat diagram, explain RTOS architecture.   **(05 Marks)**
    c.   Define the following:
       i) Task   ii) Deadlock   iii) Semaphore   iv) Schedular   v) Remote procedure call (RPC).   **(05 Marks)**

6   a.   Explain Inter-process communication and synchronization with signals.   **(10 Marks)**
    b.   List the different functional and non-functional requirements while choosing an RTOS.   **(10 Marks)**

7   a.   Define a distributed embedded system. Explain.   **(06 Marks)**
    b.   Compare I^2C bus and CAN bus over their use in embedded system.   **(10 Marks)**
    c.   Describe the requirements for Elevator controller in brief.   **(04 Marks)**

8   Write short notes on the following (5 marks each):
    a.   IDE
    b.   Pre-emptive scheduler
    c.   Simulator and emulator
    d.   Target system.   **(20 Marks)**

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10CS73

Seventh Semester B.E. Degree Examination, June/July 2015
Programming The Web

Time: 3 hrs.

Max. Marks:100

Note: *Answer FIVE full questions, selecting*
at least TWO questions from each part.

PART – A

1 a. Explain the task of the DNS name server. **(05 Marks)**
   b. Explain the request phase of the hypertext transfer protocol (HTTP). **(06 Marks)**
   c. How lists are handled in XHTML? Design an XHTML code for illustrating nested list.
   (09 Marks)

2 a. Design an XHTML code for the following shown in Fig. Q2 (a). **(08 Marks)**

		Fruit Juice		
		Apple	Grape	Orange
Diet	Breakfast	00	00	01
	Lunch	01	00	00
	Dinner	00	01	00

Fig. Q2 (a)

   b. Explain the different selector forms provided in CSS. Illustrate the use of each with suitable example. **(12 Marks)**

3 a. Describe briefly the 3 major uses of Javascript on the client side. **(06 Marks)**
   b. Write a regular expression to validate the email of the following type abc@yahoo.co.in in a javascript function. **(06 Marks)**
   c. Write a XHTML and javascript to return the leftmost vowel of the string. **(08 Marks)**

4 a. Write a XHTML document to display the content "WEB PROGRAMMING" which continuously moves back and forth across the top of the display. **(10 Marks)**
   b. Write a java script to compare two passwords. **(04 Marks)**
   c. Explain the 3 phases of event processing in the DOM 2 event model. **(06 Marks)**

PART – B

5 a. What are the disadvantages of DTD? What is XML schema? Explain defining a schema with example. **(10 Marks)**
   b. What are the four possible parts of an attribute declaration in a DTD (Document Type Definitions). **(04 Marks)**
   c. Briefly explain the purposes of XML processors. **(06 Marks)**

6 a. Explain the string functions in perl with example. **(06 Marks)**
   b. Explain the query string format. **(06 Marks)**
   c. Explain the CGI.pm module. **(08 Marks)**

7 a. Explain the overview of PHP. **(04 Marks)**
   b. Explain the sort, assort and ksort array functions in PHP with examples. **(08 Marks)**
   c. Explain the form handling in PHP for login form to check it for successful login or not.
   (08 Marks)

8 a. Define class. Write ruby class to implement a stack-like structure in an array. **(05 Marks)**
   b. Explain the overview of rails. **(05 Marks)**
   c. Explain how to create a hello world example. **(10 Marks)**

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10CS74

Seventh Semester B.E. Degree Examination, June/July 2015
Advanced Computer Architectures

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting*
atleast TWO questions from each part.

PART – A

1   a. Define instruction set architecture (ISA). Explain seven dimensions of an ISA.   **(08 Marks)**
    b. Briefly explain the Amdahl's law.   **(06 Marks)**
    c. Suppose that we want to enhance the processor used for web serving. The new processor is 10 times faster on computation in the web serving application than the original processor. Assuming that the original processor is busy with computation 40% of the time and is waiting for I/O 60% of the time, what is the overall speedup gained by incorporating the enhancement.   **(06 Marks)**

2   a. With a neat diagram, explain the classic five stage pipeline for a RISC processor.   **(10 Marks)**
    b. Explain different techniques in reducing pipeline branch penalties.   **(10 Marks)**

3   a. Define instruction level parallelism. Explain data dependencies and different types of data hazards with examples.   **(08 Marks)**
    b. What is correlating predictors? Explain with example.   **(04 Marks)**
    c. Explain Tomasulo's algorithm, sketching the basic structure of a MIPS floating point unit.   **(08 Marks)**

4   a. Explain the basic VLIW approach for exploiting ILP, using multiple issues.   **(08 Marks)**
    b. Explain branch target buffer with neat diagram.   **(06 Marks)**
    c. What are the issues involved in implementation of speculation? Explain register renaming approach.   **(06 Marks)**

PART – B

5   a. Explain the different taxonomy of parallel architecture.   **(06 Marks)**
    b. To achieve a speedup of 80 with 100 processors what fraction of original computation can be sequential?   **(06 Marks)**
    c. Explain the snooping, with respect to cache – coherence protocol.   **(08 Marks)**

6   a. Briefly explain six basic cache optimization methods.   **(12 Marks)**
    b. With a neat diagram, explain the translation buffer of fast address translation.   **(08 Marks)**

7   a. Which are the major categories of advanced optimizations of cache performance? Explain any one in detail.   **(12 Marks)**
    b. Explain DRAM memory technology with its basic organization.   **(08 Marks)**

8   a. Explain in detail, the hardware support for preserving exception behaviour during speculation.   **(10 Marks)**
    b. Explain the architecture of IA64 intel processor and also prediction and speculation support provided.   **(10 Marks)**

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Seventh Semester B.E. Degree Examination, June/July 2015
Information Systems

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting atleast TWO questions from each part.*

PART – A

1   a. What are the fundamental roles of information system in business? Explain briefly.
                                                                                (10 Marks)
    b. Explain the different modules in a systematic development process for developing information system solutions.   **(10 Marks)**

2   a. Explain with a neat figure, the business competitive strategies and competitive forces that appear in the market place.   **(10 Marks)**
    b. How do build knowledge creating company using IMT?   **(10 Marks)**

3   a. Explain the transaction process system, with an example.   **(10 Marks)**
    b. How human resource is support the strategic, tactical and operational use of human resources?   **(10 Marks)**

4   a. Define CRM. Explain the phases of CRM and support between business and its customers.
                                                                                (10 Marks)
    b. Explain the benefits and challenges of ERP.   **(05 Marks)**
    c. List and explain the SCM functions, in detail.   **(05 Marks)**

PART – B

5   a. What is E – commerce? Explain the scope and the categories of E–commerce.   **(10 Marks)**
    b. Explain the B2C5 and B2B e–commence.   **(10 Marks)**

6   a. Explain briefly the major business application areas of AI.   **(10 Marks)**
    b. What is expert system? What are the components of expert system? Explain briefly.
                                                                                (10 Marks)

7   a. Briefly explain the most important technology ethics, software piracy and issues.   **(10 Marks)**
    b. Explain the important security measures adopted in several companies in today's networked business enterprises.   **(10 Marks)**

8   a. With a neat block diagram, explain the three major components of information technology management.   **(10 Marks)**
    b. What are the challenges faced by business while managing global information technology?
                                                                                (10 Marks)

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Seventh Semester B.E. Degree Examination, June/July 2015
Data Ware Housing and Data Mining

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting*
atleast TWO questions from each part.

PART – A

1 a. Explain the characteristics of ODS. **(06 Marks)**
   b. List the major steps involved in the ETL process. **(06 Marks)**
   c. Based on oracle, what are difference between OLTP and data warehouse systems. **(08 Marks)**

2 a. Discuss the FASMI characteristics of OLAP. **(05 Marks)**
   b. Explain Codd's OLAP rules. **(10 Marks)**
   c. Describe the difference between ROLAP and MOLAP. **(05 Marks)**

3 a. What is data preprocessing? Explain various data preprocessing tasks. **(14 Marks)**
   b. Explain the following :
      i) Euclidean distance
      ii) Simple matching coefficient
      iii) Jaccard coefficient. **(06 Marks)**

4 a. Explain frequent itemset generation in the apriori algorithm. **(10 Marks)**
   b. What is FP – Growth algorithm? In what way it is used to find frequency itemsets? **(03 Marks)**
   c. Construct the FP tree for following data set. Show the trees separately after reading each transaction.

Tid	1	2	3	4	5
Items	{a, b}	{b, c, d}	{a, c, d, e}	{a, d, e}	{a, b, c}
Tid	6	7	8	9	10
Items	{a, b, c, d}	{a}	{a, b, c}	{a, b, d}	{b, c, e}

(07 Marks)

PART – B

5 a. What is classification? Explain the two classification models with example. **(06 Marks)**
   b. Discuss the characteristics of decision tree induction algorithms. **(10 Marks)**
   c. Explain sequential covering algorithm in rule –based classifier. **(04 Marks)**

6 a. List five criteria for evaluating classification methods. Discuss them briefly. **(05 Marks)**

b. What is predictive accuracy of classification methods? Explain different types of estimating the accuracy of a method. **(07 Marks)**

c. Consider the following training set for predicting the loan default problem :

Tid	Home owner	Marital status	Defaulted borrower	Annual income
1	Yes	Single	No	125 k
2	No	Married	No	100 k
3	No	Single	No	70 K
4	Yes	Married	No	120 k
5	No	Divorced	Yes	95 k
6	No	Married	No	60 k
7	Yes	Divorced	No	220 k
8	No	Single	Yes	85 k
9	No	Married	No	75 k
10	No	Single	Yes	90 k

Find the conditional independence for given training set using Bayes theorem for classification. **(08 Marks)**

7 a. List and explain the desired features of cluster analysis. **(08 Marks)**

b. Explain the K – means clustering algorithm with suitable examples. **(12 Marks)**

8 Write short notes on :

a. Web content mining

b. Unstructed text

c. Text clustering

d. Temporal data mining tasks. **(20 Marks)**

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Seventh Semester B.E. Degree Examination, June/July 2015
JAVA and J2EE

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting*
atleast TWO questions from each part.

PART – A

1 a. Why is java considered to be a robust programming language?   **(05 Marks)**
   b. Define byte code. How does it help java program (s) achieve portability.   **(05 Marks)**
   c. Why are java applets considered to be harmless?   **(05 Marks)**
   d. Write a java program to sum only the first five elements of the array
       {1, 2, 3, 4, 5, 6, 7, 8, 9, 10}, using "for-each" version of the for loop. **(05 Marks)**

2 a. What is an applet? With a skeletal code explain the methods that constitute the lifecycle of
       an applet.   **(07 Marks)**
   b. Consider the following code:

```
class nested-try
{ public static void main (string args[ ])
  {
    try
  {int a = Integer.parse Int (args [0]);
   int b = Integer.parse Int (args [1]);
   int quot = 0;
   try
  {quot = a/b;
   system.out.println (quot);
   try
  {system.out.println {"a * b = " + (a * b));
   if (a * b < 0)
     throw new array index out of bounds exception( )
  }
   finally
     {system.out.println ("in finally block");}
  }
   catch (Arithmetic Exception e)
     {system.out.println ("Divide by zero");}
  }
   catch (Number Format Exception e)
     {system.out.println ("Incorrect argument type");}
  }
}
```

Indicate the output of the above code for the following runs:
   i)   Java Nested-Try 24 6
   ii)   Java Nested-Try 24 aa
   iii) Java Nested-Try 24 0
   iv)   Java Nested-Try -1 5.   **(08 Marks)**
   c. Explain, with an example each, the effect of the keyword "final" with   i) a class and
       ii) methods (s) of a class.   **(05 Marks)**

3 a. Why is the "main" thread important? Write a Java program that creates multiple child threads and also ensures that the main thread is the last to stop. **(10 Marks)**
   b. What is the need for synchronization? How can synchronization be achieved in Java? **(05 Marks)**
   c. Explain the delegation event model used to handle events in Java. What are events, event listerners and event sources? **(05 Marks)**

4 a. What are the deficiencies of AWT that are overcome by swings? Explain the two key features of swings. **(08 Marks)**
   b. Explain with syntax the following:
      i) JLabel   ii) JText Field   iii) JButton   iv) JChehBox. **(12 Marks)**

PART – B

5 a. Explain the various steps in the JDBC process, use code snippets. **(10 Marks)**
   b. What are transactions? Write a Java program to demonstrate how to process a database transaction. **(10 Marks)**

6 a. How are servlets different from applets? Explain the benefits and the life cycle of a java servlet. **(10 Marks)**
   b. What is a cookie? List and explain the various cookie attributes. **(05 Marks)**
   c. Write a short note on session tracking. **(05 Marks)**

7 a. What is JSP? Explain the different types of tags that can be used in a JSP program. **(05 Marks)**
   b. List and explain the three methods that are automatically called when a JSP is requested and terminated normally. **(05 Marks)**
   c. What is RMI used for? Explain the code snippet to implement the remote interface at the server side. **(10 Marks)**

8 Write short notes on:
   a. Stateless v/s stateful session beam.
   b. JAR file
   c. EJB transaction attributes
   d. Deployment descriptors. **(20 Marks)**

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Seventh Semester B.E. Degree Examination, June/July 2015

C# Programming and .NET

Time: 3 hrs.   Max. Marks:100

Note: *Answer FIVE full questions, selecting*
at least TWO questions from each part.

PART – A

1   a.   Discuss the issues that lead to the genesis of .NET platform. With an example of trivial calculator, explain the role of common Intermediate language. **(10 Marks)**

    b.   List and explain intrinsic CTS data types and .NET namespaces in C#. **(10 Marks)**

2   a.   What is the rule of response files in C# program development using command line compiler (CSC.exe) **(05 Marks)**

    b.   Give the output centric options of C# complier. **(05 Marks)**

    c.   Explain the role of the following directives in C# with examples.
i) #region and #endregion   ii) # if and #endif   iii) #line **(10 Marks)**

3   a.   Explain C# member variable Initialization syntax. **(04 Marks)**

    b.   Write a program to illustrate the difference between value types and value types and reference types. **(06 Marks)**

    c.   Give the method parameter modifier and explain each with an example. **(10 Marks)**

4   a.   What are the three pillars of object oriented programming in C#? Differentiate between "is – a and "has – a" relationships. **(10 Marks)**

    b.   Illustrate with an example, polymorphic support in C#. **(10 Marks)**

PART – B

5   a.   List and explain with code, the core members of system. Exception type. **(10 Marks)**

    b.   Describe the role of .Net garbage collection, finalization process and AdHoc destonction method. **(10 Marks)**

6   a.   What is an interface? Explain three methods of obtaining interface references with examples. **(10 Marks)**

    b.   With an example, Explain any four interfaces of system. Collections. **(10 Marks)**

7   a.   What asynchronous delegates. Write the source code in C# to illustrate it. **(10 Marks)**

    b.   Discuss the following advanced keywords in C#.
i) Checked   ii) Unchecked   iii) Stackalloc   iv) Fixed **(10 Marks)**

8   a.   Differentiate between,
i) Single file and Multifile Assemblies   ii) Physical and Logical view of an Assembly.
(10 Marks)

    b.   Write short notes on :
i) Cross language inheritance.   ii) Shared Assemblies. **(10 Marks)**

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Seventh Semester B.E. Degree Examination, June/July 2015

Storage Area Networks

Time: 3 hrs.

Max. Marks:100

**Note: *Answer FIVE full questions, selecting
at least TWO questions from each part.***

PART – A

1 a. Explain the evolution of storage technology from non intelligent internal storage ot intelligent network storage. **(10 Marks)**
   b. What are the key requirements for data center elements? **(05 Marks)**
   c. Consider a disk I/O system in which an I/O request arrives at the rae of 80IOPS. The disk service time is 6ms. Compute i) Utilization of I/0 controller ii) Total response time iii) Average queue size iv) Total time spent by a request in a queue. If the controller power is doubled or service time is halved, what is the utilization? **(05 Marks)**

2 a. Compare RAID 5 and RAID 6. **(05 Marks)**
   b. With neat diagrams, explain the structure, read and write operations in cache. **(10 Marks)**
   c. An application has 1000 heavy users at a peak of 2IOPS each and 2000 typical users at a peak of 1 IOPs each. With a read/write ratio of 2:1. It is estimated that the application also experiences an overhead of 10 percent for other workloads. Calculate IOPS requirement for RAID 1, RAID 3, RAID 5 and RAID 6. **(05 Marks)**

3 a. Write about SCSI 3 architecture with a neat diagram. **(05 Marks)**
   b. What is the significance of the various layers of SCSI communication model. **(05 Marks)**
   c. Explain the three basic connectivity options in FC Architecture. **(10 Marks)**

4 a. What is NAS? What are its benefits? **(10 Marks)**
   b. Write a note on iSCSI. **(10 Marks)**

PART – B

5 a. Explain the features and benefits of CAS. **(10 Marks)**
   b. What is virtualization? Elaborate on the types of storage virtualization. **(10 Marks)**

6 a. Define the following terms:
      i) Disaster Recovery   ii) Disaster Restart
      iii) Recovery point objective   iv) Recovery time objective. **(10 Marks)**
   b. Explain the three basic topologies used in backup environment. **(10 Marks)**

7 a. Differentiate between full volume mirroring and pointer based full volume replication. **(10 Marks)**
   b. What are the basic approaches to host based remote replication. **(10 Marks)**

8 a. What are the primary security attributes? **(05 Marks)**
   b. Explain the various management tasks in which a storage infrastructure can be classified. **(10 Marks)**
   c. Write a note on threats. **(05 Marks)**

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