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**Seventh Semester B.E. Degree Examination, Dec.2014/Jan.2015**  
**Object Oriented Modeling & Design**

Time: 3 hrs.

Max. Marks:100

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

**PART – A**

- 1 a. Describe the important characteristics of object orientation. (08 Marks)  
b. Write short notes on : i) Association classes ii) Generalization iii) Qualified association. (12 Marks)
- 2 a. With suitable UML diagram explain aggregation and composition. (08 Marks)  
b. Draw class diagram for the following:  
i) Programmer uses computer language on projects.  
ii) Worker is a butcher or baker or candlestick maker. (04 Marks)  
c. Draw and explain the general UML syntax for state diagram. (08 Marks)
- 3 a. What is submachine? Explain with the state diagram of a vending machine. (08 Marks)  
b. Draw a sequence diagram for a stock purchase using an online stock broker system. (04 Marks)  
c. With suitable examples, explain different use case relationships. (08 Marks)
- 4 a. Explain the following software development life-cycle models:  
i) Water fall development  
ii) Iterative development. (07 Marks)  
b. List and explain any four criteria to be considered in keeping the right classes. (08 Marks)  
c. Draw domain state model for account with respect to ATM example. (05 Marks)

**PART – B**

- 5 a. Draw the use-case diagram for ATM and explain each use-case. (06 Marks)  
b. Bring out initial and final event for each use-case in ATM example. (04 Marks)  
c. Explain the various software control strategies that can be applied in the system design. (10 Marks)
- 6 a. List and explain the steps involved in the design of algorithms. (12 Marks)  
b. Compare forward engineering and reverse engineering. (08 Marks)
- 7 a. What is a pattern? Explain with model-view-controller example. (08 Marks)  
b. Explain the structure and dynamics of forwarder-receiver pattern. (12 Marks)
- 8 a. Explain the behaviour of the view handler for the scenario “view creation”. (08 Marks)  
b. Explain the structure of the command processor pattern. (08 Marks)  
c. Briefly explain the counted pointer problem. (04 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

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**Seventh Semester B.E. Degree Examination, Dec.2014/Jan.2015**  
**Information Systems**

Time: 3 hrs.

Max. Marks:100

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

**PART – A**

- 1 a. What is an information system? Explain briefly fundamental roles of IS in business. Give example for each role. (10 Marks)
- b. With a neat diagram, explain information system resources. (10 Marks)
- 2 a. Explain the business competitive forces and competitive strategies that appear in the market place. (10 Marks)
- b. With neat figures, explain how a customer focused business builds customer value and loyalty using internet. (05 Marks)
- c. Explain the concept of building a knowledge creating company and KMS. (05 Marks)
- 3 a. What are transaction processing systems and explain transaction processing cycle. (08 Marks)
- b. Explain enterprise collaboration system and the tools associated with it. (06 Marks)
- c. What are human resource information system and explain how they support strategic, tactical, operational use of human resources of an organization. (06 Marks)
- 4 a. With a figure, explain how CRM supports 3 phases of the relationship between a business and its customers. (06 Marks)
- b. What is ERP? Explain benefits and challenges of ERP. (08 Marks)
- c. Explain benefits and challenges of SCM. (06 Marks)

**PART – B**

- 5 a. Explain essential e- commerce processes. (10 Marks)
- b. Explain e – commerce success factors. (10 Marks)
- 6 a. Explain four basic analytical modeling activities involved in DSS. (08 Marks)
- b. Discuss about management reporting alternatives. (06 Marks)
- c. Explain major application areas of AI. (06 Marks)
- 7 a. Discuss about business ethics and technology ethics. (10 Marks)
- b. Explain about tools of security management of IT. (10 Marks)
- 8 a. Explain business/IT planning process and also a IT architecture that is created by strategic business/IT planning process. (10 Marks)
- b. Explain political, geo-economic, cultural challenges in global IT management and also explain global business /IT strategies. (10 Marks)

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**Seventh Semester B.E. Degree Examination, Dec.2014/Jan.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. What is web browser and web server? Explain how communication takes place in between web browser and web server. (07 Marks)
- b. What is the purpose of a MIME type specification in a request / response transaction between a browser and a server? (05 Marks)
- c. Explain how the text content of an XHTML document can be formatted with XHTML tags with suitable examples. (08 Marks)
- 2 a. Which widgets are created with the <input> tag? Explain with examples. (08 Marks)
- b. Briefly explain the different selector forms of the CSS. Illustrate the use of each with suitable example. (12 Marks)
- 3 a. Describe briefly the major differences between Java and JavaScript. (04 Marks)
- b. Describe the two ways an Array object can be created. Explain the Array methods with suitable example for each. (12 Marks)
- c. Write a Javascript to generate first 4 Fibonacci numbers. (04 Marks)
- 4 a. Explain the basic concepts of event handling. List the events and their tag attribute. (12 Marks)
- b. What is a dynamic XHTML document? How positioning and moving of elements are done in dynamic XHTML? (08 Marks)

**PART – B**

- 5 a. Explain the four possible keywords used in a DTD declaration. (10 Marks)
- b. Create a DTD for a catalog of cars, where each car has the child elements make, model, year, color, engine, number-of-doors, transmission type, and accessories. The engine element has the child elements number of cylinders and fuel system. The accessories element has the attributes radio, air-conditioning, power-windows and power-brakes, each of which is required and has the possible values yes and no. Entities must be declared for the names of popular car makes. (10 Marks)
- 6 a. Briefly describe string functions of perl with suitable example. (05 Marks)
- b. Write a perl program to read three numbers a, b and c, each on its own line, from the keyboard. And return the value of the expression  $\text{load} - \lfloor \lfloor c-1 \rfloor / 17.44 \rfloor$  (06 Marks)
- c. What is a query string? What is the format of a query string that has multiple widget data values? How is a query string transmitted to the server with get method? (09 Marks)
- 7 a. Explain the actions of the implode and explode functions. (03 Marks)
- b. Describe how files are created, read and write on the server system using PHP. (12 Marks)
- c. What is cookie? How it can be created in a PHP script? (05 Marks)
- 8 Write a short notes on:
  - a. Ruby. (05 Marks)
  - b. Rails. (05 Marks)
  - c. Data access with perl and MYSQL. (05 Marks)
  - d. Document object model. (05 Marks)

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**Seventh Semester B.E. Degree Examination, Dec.2014/Jan.2015**  
**Advanced Computer Architecture**

Time: 3 hrs.

Max. Marks:100

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

**PART – A**

1.
  - a. Define Computer Architecture. Illustrate the seven dimensions of an ISA. (08 Marks)
  - b. Find the die yield for dies that are 1.5 cm on a side and 1.0 cm on a side assuming a defect density of 0.4 per cm<sup>2</sup> and  $\alpha$  is 4. (04 Marks)
  - c. Define Amdahl's law. Derive an expression for cpu clock as a function of instruction count. Clocks per instruction and clock cycle time. (08 Marks)
2.
  - a. What is pipelining? With neat diagram, explain the classic five stage pipeline for RISC processor. (08 Marks)
  - b. Consider unpipelined processor. Assume that it has a 1 ns clock cycle and that it uses 4 cycles for ALU operations and branches and 5 cycles for memory operations. Assume that the relative frequencies of these operations 40%, 20% and 40% respectively. Suppose that due to clock skew and setup, pipelining the processor adds 0.2 ns of overhead to the clock. Ignoring any latency impact, how much speedup in the instruction execution rate will we gain from pipeline? (06 Marks)
  - c. Explain different techniques in reducing pipeline branch penalties. (06 Marks)
3.
  - a. Explain true data dependence, name dependence and control dependence, with an example. (05 Marks)
  - b. What is Correlating Predictors? Explain with example. (05 Marks)
  - c. With a neat diagram give the basic structure of Tomasulo based MIPS FP unit and explain various fields of reservation station. (10 Marks)
4.
  - a. Explain exploiting ILP using dynamic scheduling multiple issue and speculation. (08 Marks)
  - b. Explain Pentium 4 pipeline supporting multiple issue with speculation. (08 Marks)
  - c. Explain in detail, Branch-Target buffers. (04 Marks)

**PART – B**

5.
  - a. Explain the basic schemes for enforcing coherence in a sheared memory multiprocessor system. (10 Marks)
  - b. Explain the Taxonomy of parallel architecture. (05 Marks)
  - c. Suppose you want to achieve a speedup of 80 with 100 processors. What fraction of the original computation can be sequential? (05 Marks)
6.
  - a. Explain four memory hierarchy questions, in detail. (08 Marks)
  - b. Explain in brief, the types of basic cache optimization. (10 Marks)
  - c. Define Virtual Memory and describe its features. (02 Marks)
7.
  - a. Which are the major categories of advanced optimizations of cache performance? Explain any one in detail. (10 Marks)
  - b. Describe the technique to improve memory performance inside DRAM chip. (05 Marks)
  - c. Explain the process of protecting via virtual machines. (05 Marks)
8.
  - a. Explain detecting and enhancing loop level parallelism for VLIW. (08 Marks)
  - b. Explain Intel – IA 64 architecture, with a neat diagram. (08 Marks)
  - c. Write a brief note on predicated instructions. (04 Marks)

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**Seventh Semester B.E. Degree Examination, Dec.2014/Jan.2015**

**JAVA and J2EE**

Time: 3 hrs.

Max. Marks:100

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

**PART – A**

- 1 a. How the arrays are defined in java? Explain with an example. (05 Marks)
- b. Differentiate the usage of access specifiers in java and their scope. (05 Marks)
- c. Write and demonstrate a Java program to initialize and display different types of integers and floating point variables. (05 Marks)
- d. Define type casting. Explain with an example. (05 Marks)
- 2 a. Define an applet. Explain the skeleton of an applet. (08 Marks)
- b. Write a Java program to perform the addition of two complex numbers by using the method add( ) by passing object as a parameter and display result using method display( ). Initialize the real and imaginary values of the complex number using parameter constructor. (08 Marks)
- c. Write the syntax of try and catch block to handle multiple exceptions, explain. (04 Marks)
- 3 a. What is synchronization? Explain the role of synchronization with producer and consumer problem. (10 Marks)
- b. Describe the thread priority. How to assign and get the thread priority? (05 Marks)
- c. Explain any two event listener interfaces with its function or methods. (05 Marks)
- 4 a. Write a swing applet program to demonstrate with two Jbuttons named India and Srilanka. When either of buttons pressed, it should display respective label with its icon. Refer the image icons "India.gif" and "Srilanka.gif". Set the initial label is "press the button". (10 Marks)
- b. Explain the JScrollPane with an example. (05 Marks)
- c. Explain the JComboBox with an example. (05 Marks)

**PART – B**

- 5 a. Describe the steps of JDBC process with suitable exception handling blocks. (10 Marks)
- b. What is ResultSet? How to set scroll options to ResultSet? Explain. (05 Marks)
- c. Write a note on Database metadata object methods and ResultSet metadata object methods. (05 Marks)
- 6 a. Describe the simple html file to pass the parameter to servlet and display the parameter values accepted by servlet. (08 Marks)
- b. Explain the servlet life cycle with example. (06 Marks)
- c. Define a cookie. Explain how the cookies are created using Java servlet. (06 Marks)
- 7 a. List and describe the different types of JSP tags. (06 Marks)
- b. What is session? Explain how to create session using JSP. (06 Marks)
- c. Briefly explain how remote method invocation works in Java. (08 Marks)
- 8 Write short notes on :
  - a. Deployment descriptors
  - b. JAR file
  - c. Message driven bean
  - d. Entity Java bean. (20 Marks)

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**Seventh Semester B.E. Degree Examination, Dec.2014/Jan.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. Explain the role of common intermediate language with an example and write the benefits. (07 Marks)
- b. Explain the role and responsibilities of common language runtime, with a diagram describing the modules of common language runtime. (08 Marks)
- c. Differentiate between single-file and multi-file assembly. (05 Marks)
- 2 a. Explain the C# preprocessor directives with examples. (09 Marks)
- b. Write a C# program to display the following information using system.Environment class:
  - i) Fully qualified path to the system special folder.
  - ii) Names of the logical drives.
  - iii) Amount of physical memory used by the process.
  - iv) Operating system version.
  - v) Fully qualified path where operating system is installed.
  - vi) NETBIOS name of the computer. (06 Marks)
- c. Write a C# program to accept an integer as a command-line parameter from the user and check whether it is prime or not. (05 Marks)
- 3 a. List the functions associated with system.Object class and override any 2 methods. (10 Marks)
- b. Write a C# program in which a method accepts two arguments as parameters from the user and returns four output values as add, sub, mul and division operations on arguments. (10 Marks)
- 4 a. Write a short note on enumeration and explain their usage with example. (06 Marks)
- b. How would you enforce encapsulation using traditional accessor and mutator methods? Explain class properties with examples. (10 Marks)
- c. What is boxing and unboxing? Explain with examples. (04 Marks)

**PART – B**

- 5 a. Explain in detail the finalization process. (04 Marks)
- b. Explain how to build finalizable and disposable objects with examples. (05 Marks)
- c. What is Structured Exception Handling (SEH)? List advantages of SEH, atoms in SHE. Differentiate between application exception and system exception. Create a user-defined exception to handle division by zero exception. (11 Marks)
- 6 a. List the class types of system.collection namespace and list the associated built-in functions for 2 class types of system.collection. (08 Marks)
- b. How to build clonable, comparable objects. Explain with examples. (12 Marks)

- 7 a. With an example, discuss keywords of C#:  
i) Checked  
ii) Unchecked  
iii) Sealed  
iv) Stackalloc  
v) abstract  
vi) volatile (12 Marks)
- b. Explain overloading operators in C# with an example to overload a binary operator '+' to add two instance variables of a class. (08 Marks)
- 8 a. Write the steps involved in building multifile assembly. (05 Marks)
- b. Write the structure of .NET assembly. (04 Marks)
- c. Explain the two views of an assembly. (04 Marks)
- d. List the key elements and core CIL tokens of the assembly manifest. (07 Marks)

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**Seventh Semester B.E. Degree Examination, Dec.2014/Jan.2015**  
**Storage Area Networks**

Time: 3 hrs.

Max. Marks:100

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

**PART – A**

- 1 a. Explain the key characteristics of a data center with a neat diagram. (07 Marks)
- b. Discuss the functions of a logical volume manager, with a neat diagram. (06 Marks)
- c. Explain the concept of compute virtualization along with its advantages with a neat diagram. (07 Marks)
- 2 a. With a neat diagram, explain the components of an intelligent storage system. (07 Marks)
- b. Explain the features of RAID – 6 with a diagram. (06 Marks)
- c. Discuss the features of high end storage systems, with a neat diagram. (07 Marks)
- 3 a. Explain the connectivity options of FC [Fiber channel] architecture with relevant diagrams. (10 Marks)
- b. Discuss the different layers of fiber channel protocol stack, with a neat diagram. (04 Marks)
- c. Explain the different types of FC – ports, with a neat diagram. (06 Marks)
- 4 a. Explain the components of NAS with a neat diagram. What are the benefits of NAS? (08 Marks)
- b. Describe the NAS gateway connectivity, with a neat diagram. (08 Marks)
- c. Write a short note on CIFS. (04 Marks)

**PART – B**

- 5 a. Explain the architecture of CAS with a neat diagram. List out the features of CAS. (10 Marks)
- b. Define storage virtualization. What are the forms of storage virtualization? (04 Marks)
- c. Explain block level storage virtualization, with a neat diagram. (06 Marks)
- 6 a. Define the following terminologies :  
i) MTBF ii) RPO iii) MTTR iv) RTO v) Disaster Recovery. (10 Marks)
- b. Explain the backup operation, with a neat diagram. (10 Marks)
- 7 a. Explain LVM based local replication, with a neat diagram. Discuss the advantages and disadvantages. (10 Marks)
- b. Explain synchronous and asynchronous modes of remote replication with a neat diagram. (10 Marks)
- 8 a. Write a note on risk triad. (10 Marks)
- b. Explain the concept of kerberos, with a neat diagram. (10 Marks)

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