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10CS71

Seventh Semester B.E. Degree Examination, Dec.2018/Jan.2019
Object Oriented Modeling and Design

Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1 a. Explain object oriented development, object oriented methodology and object oriented themes. (10 Marks)
- b. Explain modeling concept. Write the class model of a windowing system. (10 Marks)
- 2 a. Explain association and aggregation with examples. (10 Marks)
- b. What is an event? Explain the different types of events with examples. (10 Marks)
- 3 a. What is concurrency? Explain aggregation concurrency. Draw relevant figure. (10 Marks)
- b. Explain use case and sequence model with examples. (10 Marks)
- 4 a. Explain software development stages in detail. (10 Marks)
- b. Describe the stages in constructing a domain state model. (10 Marks)

PART – B

- 5 a. With a neat block diagram, explain the steps followed in constructing application class model. (10 Marks)
- b. Explain the steps involved in system design. (10 Marks)
- 6 a. Explain with an example, the class design what are the steps involved in designing. (10 Marks)
- b. Explain : (10 Marks)
 - i) Forward engineering
 - ii) Reverse engineering
 - iii) Wrapping.
- 7 a. What is a pattern? Explain the model view controller design for software architecture with OMI diagram. (10 Marks)
- b. Explain three categories of patterns. (10 Marks)
- 8 Write short notes on : (20 Marks)
 - a. UML
 - b. State model
 - c. Association ends
 - d. Packages.

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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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10CS72

Seventh Semester B.E. Degree Examination, Dec.2018/Jan.2019
Embedded Computing Systems

Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1 a. Define embedded system. Explain the embedded system design process. (06 Marks)
b. Explain the hardware and software architecture for the moving map display. (06 Marks)
c. Write the sequence diagram for transmitting a control input in model train controller. (08 Marks)
- 2 a. What is the difference between the Harvard and von Neumann architectures? (06 Marks)
b. Explain the basic ARM programming model. (06 Marks)
c. Write the UML collaboration diagram for the data compressor. Explain Huffman coding for text compression. (08 Marks)
- 3 a. Define a bus. Explain with a neat diagram bus with a DMA controller. (06 Marks)
b. With a neat sketch explain the internal organization of a memory device. (06 Marks)
c. Explain : i) Timers and controller ii) A/D and D/A converter
iii) Key board iv) Display. (08 Marks)
- 4 a. Discuss models of program in design and analysis. (06 Marks)
b. Explain program optimization techniques. (08 Marks)
c. Explain program level performance analysis. (06 Marks)

PART – B

- 5 a. Explain the architecture of RTOS with suitable example. (08 Marks)
b. Discuss process, threads and CPU metrics. (06 Marks)
c. Briefly explain rate monotonic scheduling and earliest – Deadline first scheduling. (06 Marks)
- 6 a. Explain interprocess communication mechanisms. (10 Marks)
b. Discuss the theory of operation and requirements in telephone answering machine. (10 Marks)
- 7 a. With a neat sketch, explain OSI model for network. (08 Marks)
b. Explain distributed embedded architecture with a neat diagram. (06 Marks)
c. Explain :
i) Internet applications
ii) Internet security
iii) Sensor networks. (06 Marks)
- 8 Write short notes on the following :
a. IDE
b. Simulator and debugger
c. BMW 850i brake and stability control
d. Cache memory. (20 Marks)

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10CS73

Seventh Semester B.E. Degree Examination, Dec.2018/Jan.2019
Programming the Web

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 terms :
i) Internet ii) Web iii) Web Browser iv) Web server v) MIME. (10 Marks)
- b. Give syntax and an example to each of the following tags :
i) <pre> ii) <a> iii) iv) <sub> v) <p>. (10 Marks)
- 2 a. What are the different levels of CSS style sheets? (09 Marks)
- b. Explain the concept of pseudo classes. (05 Marks)
- c. Create and test an XHTML document that describes an unordered list of at least five popular books. The bullet for each book must be a small image of its books cover. (06Marks)
- 3 a. Describe briefly major difference between JavaScript and Java. (04 Marks)
- b. Describe the two ways of an array object can be created. (04 Marks)
- c. Develop and demonstrate using JavaScript, a XHTML document that collects the USN (the valid format is a digit from 1 to 4 followed by two upper-case characters followed by two digits followed by two upper_case characters followed by 3 digits (no embedded space allowed) and semester (the valid format is a digit from 1 to 8) of the user. Event handler must be included for the form element that collects this information to validate the input. Messages in the alert windows must be produced when errors are detected. (12 Marks)
- 4 a. Explain the terms: i) DOM ii) Event iii) Event handler iv) Even registration. (10 Marks)
- b. Explain the technique of DOM tree traversal with a program. (10 Marks)

PART – B

- 5 a. What is XML? Explain how to write an XML document. (10 Marks)
- b. Differentiate DOM and SAX. (05 Marks)
- c. What is XSLT? Explain with an example. (05 Marks)
- 6 a. Explain three different types of variables that could be used in Perl with the help of example. (06 Marks)
- b. Explain the following functions : i) Shift() ii) Unshift() iii) Push() iv) Pop(). (08 Marks)
- c. What is the purpose of CGI? How CGI overcomes the limitations of XHTML. (06 Marks)
- 7 a. What are the four scalar types of PHP? (08 Marks)
- b. Write the syntax and semantics of the two forms of the 'foreach' statement with example. (08 Marks)
- c. Define cookie. Where cookie has to be stored? (04 Marks)
- 8 a. Explain the terms : i) MVC ii) ORM. (10 Marks)
- b. Explain the directory structure for the rails1 application. (10 Marks)

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Seventh Semester B.E. Degree Examination, Dec.2018/Jan.2019
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. (10 Marks)
- b. Find the number of dies per 200cm wafer of circular shape that is used to cut die that is 1.5cm side and compare the number of dies produced on the same wafer if die is 1.25cm. (06 Marks)
- c. What is dependability? Explain the two measures of dependability. (04 Marks)
- 2 a. What are the major hurdles of pipelining? Illustrate the branch hazard in detail. (10 Marks)
- b. List and explain five ways of classifying exception in a computer system. (05 Marks)
- c. Consider a unpipelined processor and assume that it has a 1ns 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 are 40%, 20% and 40% respectively. Suppose that due to clock skew and setup, pipelining the processor adds 0.2ns of overhead to the clock. Ignoring any latency impact, how much speedup in the instruction execution rate will be gained from a pipeline. (05 Marks)
- 3 a. List different types of data dependencies. Explain name dependences with example. (05 Marks)
- b. Mention the drawback of 1-bit branch predictor scheme and explain the states in 2-bit predictor scheme used for dynamic branch prediction. (05 Marks)
- c. With a neat diagram give the basic structure of Tomasulo based MIPS FP unit and explain the various field of reservation stations. (10 Marks)
- 4 a. Explain the basic VLIW approach for exploiting ILP, using multiple issues. (10 Marks)
- b. What is branch target buffer? With the neat diagram, explain the steps when using branch target buffer for a simple five stage pipeline. (10 Marks)

PART – B

- 5 a. Explain the different taxonomy of parallel architecture. (04 Marks)
- b. With neat diagrams, explain the basic structure of centralized shared memory and distributed shared memory multiprocessor. (06 Marks)
- c. Explain the directory based cache coherence for a distributed memory multiprocessor system along with the state transition diagram. (10 Marks)
- 6 a. Explain the organization of the data cache in the AMD opteron microprocessor. (05 Marks)
- b. Explain the techniques for fast address translation. (05 Marks)
- c. List and explain six basic cache optimization techniques. (10 Marks)
- 7 a. List eleven advanced optimizations of cache performance and explain any five in detail. (12 Marks)
- b. Explain memory technology and optimizations. (08 Marks)
- 8 a. Explain detecting and enhancing loop level parallelism for VLIW. (10 Marks)
- b. Explain Intel IA – 64 architecture in detail. (10 Marks)

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10CS/IS753

Seventh Semester B.E. Degree Examination, Dec.2018/Jan.2019
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. Explain three OOP principles. (06 Marks)
b. Explain how JAVA is robust and architecture neutral. (08 Marks)
c. Write a JAVA Program to sum only the first five elements of the array. {2, 4, 6, 8, 10, 12, 14, 16, 18} , using "for - each" version of the for loop. (06 Marks)
- 2 a. What is an Applet? With a skeletal code, explain the methods that constitute the life cycle of an applet. (08 Marks)
b. What is super? Explain the use of super, with suitable example. (06 Marks)
c. What is an Exception? Write the syntax of try and catch block to handle multiple exceptions. Explain. (06 Marks)
- 3 a. What is Thread? Explain two ways of creating a thread in JAVA, with example. (10 Marks)
b. Explain the delegation event model used to handle events in Java. What are Events, Event Listeners and Event Sources? (05 Marks)
c. Discuss the significance of Synchronization in Java. (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) JTextField iii) JButton iv) JCheckBox. (12 Marks)

PART - B

- 5 a. Explain the four types of JDBC drivers. (10 Marks)
b. Explain any one type of statement object with necessary codes. (10 Marks)
- 6 a. Explain the different stages in the Life Cycle of a Servlet. (06 Marks)
b. Explain Servlet Interface , Generic class, Cookie class. (06 Marks)
c. Write a program to describe parameter reading using servlets. (08 Marks)
- 7 a. Define JSP. Explain the different types of JSP tags by taking suitable examples. (10 Marks)
b. What is RMI? Describe with code Snippet RMI at server side. (10 Marks)
- 8 a. List and explain EJB transaction attributes. (10 Marks)
b. Explain : i) JAR file ii) Stateless bean versus stateful bean. (10 Marks)

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10CS/IS765

Seventh Semester B.E. Degree Examination, Dec.2018/Jan.2019
Storage Area Network

Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1 a. What is a data center? Explain the key characteristics of the data center elements. (06 Marks)
- b. Explain the key components of the disk drive system. (06 Marks)
- c. Consider a disk I/O system in which an I/O request arrives at a rate of 100 I/Os per second. The service time is 8 ms. Computing the following :
 - i) Utilization of I/O controller
 - ii) Total response time
 - iii) Average queue size
 - iv) Total time spent by a request in queue. (08 Marks)
- 2 a. Discuss in detail the role of cache in the intelligent storage system. (10 Marks)
- b. Explain the working of RAID-4 and RAID-5 with a neat diagram. (10 Marks)
- 3 a. Explain SCSI-3 architecture with a neat diagram. (06 Marks)
- b. Define the term “SAN-storage area network”. Explain the different types of FC-ports with a neat diagram. (08 Marks)
- c. Discuss the concept of zoning and its types. (06 Marks)
- 4 a. What is NAS? What are the benefits of NAS? (06 Marks)
- b. List down the factors affecting NAS performance and availability. (06 Marks)
- c. What is iSCSI? Explain iSCSI protocol stack with a neat block diagram. (08 Marks)

PART – B

- 5 a. Explain the concept of CAS with its architecture. List down any four essential features of CAS solution. (10 Marks)
- b. With a neat diagram, explain the working of In-Band and Out-of-Band methodology in storage virtualization configuration. (10 Marks)
- 6 a. What is failure analysis? How is fault tolerance implementation done to overcome single point of failures in storage network infrastructure? (10 Marks)
- b. Explain the process of Backup operation and restore operation with a neat diagram. (10 Marks)
- 7 a. Explain the concept and working of LVM-based replication with advantages and limitations. (10 Marks)
- b. What is remote replication? Explain the concept of synchronous replication and asynchronous replication. (10 Marks)
- 8 a. Explain the following SAN security mechanism :
 - i) LUN masking and zoning
 - ii) Switch-wide and fabric-wide access control. (08 Marks)
- b. List and explain four security attributes of a storage security framework. (04 Marks)
- c. What is monitoring? Explain the concept of accessibility monitoring with a neat diagram. (08 Marks)

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