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10CS71

Seventh Semester B.E. Degree Examination, Dec.2017/Jan.2018
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 object orientation? Explain its aspects with an example. Explain the concept of OO themes. **(10 Marks)**

b. Explain the following with examples :
i) Links and associations ii) Multiplicity iii) Association class
ii) Qualified association v) Bags and sequences. **(10 Marks)**

2 a. Explain :
i) Aggregation Vs Association ii) Aggregation Vs composition. **(05 Marks)**

b. Prepare a metadata of a CAR model that supports only the following UML concepts : Class, attribute, association, association end, multiplicity, class name and attribute name. Use only these constructs to build the metadata. **(05 Marks)**

c. What is an event? Explain different types of events with an example. **(10 Marks)**

3 a. With an example explain the aggregation concurrency. **(08 Marks)**

b. Explain scenarios and sequence diagram of an online stock broker. **(08 Marks)**

c. Discuss the guidelines for activity models. **(04 Marks)**

4 a. Discuss the steps to construct a domain class model with an example. **(12 Marks)**

b. Explain the software development stages. **(08 Marks)**

PART – B

5 a. Explain any 2 steps to construct an application model with an example. **(06 Marks)**

b. Prepare a state diagram for session controller. **(06 Marks)**

c. Explain batch transformation and continuous transformation architectural styles. **(08 Marks)**

6 a. List and explain the steps involved in the design of algorithms. **(08 Marks)**

b. Write briefly on : i) Fine tuning class ii) Design optimization. **(06 Marks)**

c. Differentiate between forward engineering and reverse engineering. **(06 Marks)**

7 a. What is a pattern? Explain the properties of pattern for software architecture. **(08 Marks)**

b. Explain the model view controller design pattern for software architecture with OMT class diagram. **(06 Marks)**

c. Two peers P1 and P2 communicate with each other. For this purpose P1 uses a forwarder Forw1 and receiver recv1, P2 handles all message transfers with a forwarder Forw2 and receiver recv2. Design a scenario which illustrate a typical example of this use of a forwarder – Receiver structure. **(06 Marks)**

8 a. What are idioms and styles? Explain the Publisher – Subscriber design pattern. **(10 Marks)**

b. Write the steps to implement the counter pointer idiom. **(10 Marks)**

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10CS72

Seventh Semester B.E. Degree Examination, Dec.2017/Jan.2018
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. Mention its characteristics. **(04 Marks)**
b. With a neat flow diagram, explain embedded system design process. **(06 Marks)**
c. Write the requirement chart of MTC and explain the sequence diagram for transmitting a control input in a model train controller. **(10 Marks)**

2 a. Differentiate between Von Neumann and Harvard architectures. **(04 Marks)**
b. What is the average memory access time of a machine whose hit rate is 93%, with a cache access time of 5ns and a main memory access time of 80ns? **(04 Marks)**
c. Explain the following terms :
i) Traps ii) Exceptions iii) Supervisor mode. **(06 Marks)**
d. Explain the format of ARM data processing instruction. **(06 Marks)**

3 a. Explain :
i) Watch dog timer ii) Requirement chart of Alarm clock. **(08 Marks)**
b. Explain the hardware architecture of a typical PC. **(06 Marks)**
c. With a neat diagram, explain bus with a DMA controller. **(06 Marks)**

4 a. Explain any two program optimization techniques with example. **(08 Marks)**
b. With a neat flow diagram, explain the process of program generation from compilation through loading. **(06 Marks)**
c. Sketch and explain the data flow graph model. **(06 Marks)**

PART – B

5 a. What is RTOS? List the different services of RTOS. **(05 Marks)**
b. What is TCB? Explain its structure. **(05 Marks)**
c. What are the factors to be considered for selection of scheduling algorithm. **(04 Marks)**
d. Explain : i) Task ii) Process iii) Thread. **(06 Marks)**

6 a. Explain the two different types of inter-process communication mechanisms. **(10 Marks)**
b. Explain the following :
i) Advanced configuration and power interface
ii) L–shaped usage distribution. **(10 Marks)**

7 a. Explain distributed embedded system? Mention its advantages. **(05 Marks)**
b. Explain the CAN data frame format. **(05 Marks)**
c. Describe the structures of : i) I^2C Bus ii) IP packet. **(10 Marks)**

8 a. Explain the different types of files generated on cross compilation **(08 Marks)**
b. Explain the advantages and limitations of simulator based debugging. **(06 Marks)**
c. Write short notes on target system and host system. **(06 Marks)**

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10CS73

Seventh Semester B.E. Degree Examination, Dec.2017/Jan.2018
Programming the Web

Time: 3 hrs. Max. Marks:100

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

PART – A

1 a. Describe with figure how domain name conversion happens on the web. **(05 Marks)**

b. Explain the syntactic differences between HTML and XHTML. **(05 Marks)**

c. Explain the following tags with examples: (i) img (ii) a (iii) pre (iv) sub (v) meta **(10 Marks)**

2 a. Explain the different levels of style sheets. **(06 Marks)**

b. Create, test and validate an XHTML document that defines a table with columns for states, state bird, state flower and state trees. There must be atleast three states as rows in the table. Include cellpadding and cellspacing attributes. **(07 Marks)**

c. With a neat figure of box model. Explain borders, margin and padding. **(07 Marks)**

3 a. Explain the Javascript string property and methods with example. **(06 Marks)**

b. Write a Javascript to check validity of a mobile phone number. **(05 Marks)**

c. Explain any six Javascript array methods. **(09 Marks)**

4 a. What are the three ways of accessing XHTML document elements in Javascript? **(08 Marks)**

b. Explain the following with an example, (i) Stacking of elements (ii) Element visibility (iii) Absolute positioning (iv) Dynamic content. **(12 Marks)**

PART – B

5 a. Create a XML document for one student of VTU to illustrate XSLT formatting. Create XSLT style sheet by child templates. **(10 Marks)**

b. Create a XML document that lists ads for used airplane. Create a DTD for the same document. **(10 Marks)**

6 a. Explain the Arrays and Hashes in Perl. **(08 Marks)**

b. Explain session and cookies in Perl. **(06 Marks)**

c. Write a note on CGI-PM module. **(06 Marks)**

7 a. List and explain any 6 commonly used string functions in php. **(07 Marks)**

b. Write a note on php files. **(07 Marks)**

c. Explain session tracking in web applications. **(06 Marks)**

8 a. Describe briefly the MVC architecture and the ORM used by rails. **(08 Marks)**

b. Write a note on methods in Ruby. **(06 Marks)**

c. Explain the layouts with respect to rails. **(06 Marks)**

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10IS72

Seventh Semester B.E. Degree Examination, Dec.2017/Jan.2018
Information System

Time: 3 hrs. Max. Marks:100

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

PART – A

1 a. What is an information system? What are the classification of information system? Explain. **(10 Marks)**

b. Explain components of an information system. **(05 Marks)**

c. What is system? Explain cybernetic system with example. **(05 Marks)**

2 a. How a business uses internet technologies to form a virtual company and alliance with business partners? **(10 Marks)**

b. Explain with a neat figure, the business competitive strategies and competitive forces that appear in the market place. **(10 Marks)**

3 a. Explain enterprise collaboration system and the tools associated with it. **(06 Marks)**

b. Explain accounting system with neat diagram. **(06 Marks)**

c. Explain the enterprise application architecture illustrating the major cross functional enterprise application and their interrelationships. **(08 Marks)**

4 a. With a figure, explain how CRM support 3 phases of relationship between a business and its customers. **(06 Marks)**

b. What is ERP? Explain benefits and challenges of ERP. **(06 Marks)**

c. What is SCM? Explain benefits and challenges of SCM. **(08 Marks)**

PART – B

5 a. Explain the nine essential categories of e-commerce process architecture with a neat diagram. **(10 Marks)**

b. Explain e-commerce success factors. **(10 Marks)**

6 a. What is DSS? With a neat block diagram, explain the components of web-enabled marketing DSS. **(10 Marks)**

b. What is expert system? Explain the component of expert system with its benefits and limitations. **(10 Marks)**

7 a. What is Hacking? List and explain the common hacking tactics to assault the companies. **(10 Marks)**

b. Explain : (i) Technology ethics (ii) Firewalls with figure. **(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. With a neat block diagram, explain the three major components of information technology management. **(10 Marks)**

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10CS74

Seventh Semester B.E. Degree Examination, Dec.2017/Jan.2018
Advanced Computer Architectures

Time: 3 hrs. Max. Marks:100

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

PART – A

1 a. What do you mean by instruction set Architecture (ISA)? Briefly explain the various dimensions of ISA addressed during defining the computer architecture. **(10 Marks)**

b. Assume a disk subsystem with the following components and MTTF.
- 10 disks each rated at 1,000,000 hr MTTF
- 1 SCSI controller, 500,000 – hour MTTF
- 1 Power supply, 200,000 – hour MTTF
- 1 Fan, 200, 000 – hour MTTF.
- 1 SCSI cable, 1,000,000 – hour MTTF.

Using the simplifying assumptions that the lifetimes are exponentially distributed and that failure are independent, compute the MTTF of the system as a whole. **(06 Marks)**

c. Write note on the performance equation of processor. **(04 Marks)**

2 a. Enlist the pipeline hazards. Also explain them. **(10 Marks)**

b. With an aid of a neat functional diagram, discuss the classic 5 – stage pipeline for a Risc processor, that highlight how an instruction flows through the data path. **(10 Marks)**

3 a. What do you mean by loop unrolling? Explain the significance of it. Further, discuss the various types of limits to the gains that can be achieved by loop unrolling. **(10 Marks)**

b. What is dynamic production? Draw the state transition diagram for a 2-bit prediction scheme and explain. **(07 Marks)**

c. Compare and contrast the correlating predictors and Tournament predictors. **(03 Marks)**

4 a. Briefly discuss the different strategies employed to exploit Instruction Level Parallelism (ILP) using multiple issue and static dynamic scheduling. **(10 Marks)**

b. Discuss how the following advanced techniques are useful in enhancing the performance of ILP :
i) Branch target buffers
ii) Speculation
iii) Value prediction. **(10 Marks)**

PART – B

5 a. Suppose you want to achieve a speedup of 80 with 100 processors. What fraction of the original computation can be sequential? **(06 Marks)**

b. Discuss the directory – based cache coherence protocol in a distributed memory multiprocessor, indicating the state transition diagram explicitly. **(07 Marks)**

c. What do you understand by memory consistently? Explain furthermore, discuss how relaxed consistently models allow reads and write to complete out of order. **(07 Marks)**

6 a. Briefly explain the six basic cache optimization employed to improve cache performance. **(09 Marks)**

b. Indicate the distinguish features of the following techniques employed to improve cache behavior.
   i) Compulsory misses
   ii) Capacity misses
   iii) Conflict misses **(06 Marks)**

c. In brief, discuss the four memory hierarchy questions for virtual memory. **(05 Marks)**

7 a. Briefly explain the eleven advanced optimizations of cache performance. **(12 Marks)**

b. Explain how the protection of processes is accomplished via the following :
   i) Virtual memory
   ii) Virtual machines. **(08 Marks)**

8 a. Discuss how software pipelining and trance scheduling techniques are useful in uncovering the parallelism among instructions by creating longer sequences of straight sine code. **(10 Marks)**

b. Explain the five different execution unit types in the IA-64 architecture, that hold the corresponding instruction classes. **(10 Marks)**

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10IS74

Seventh Semester B.E. Degree Examination, Dec.2017/Jan.2018

Data Warehousing and Data Mining

Time: 3 hrs. Max. Marks:100

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

PART – A

1 a. Give the definition of data warehousing. Discuss the need for data warehousing. **(06 Marks)**

b. Give the difference between OLTP and data warehouse systems. **(04 Marks)**

c. Discuss the characteristics of operational data store with its design and implementation issues. **(10 Marks)**

2 a. Describe the operations of data cube. **(10 Marks)**

b. Present five major characteristics from Codd's rule. **(05 Marks)**

c. Explain the difference between MOLAP and ROLAP. **(05 Marks)**

3 a. Explain various tasks of data mining with example for each. **(10 Marks)**

b. Explain: (i) Data mining applications, (ii) Issues in proximity calculation. **(10 Marks)**

4 a. What is Frequent Itemset Generation? Explain Frequent Itemset Generation using Apriori principle. **(10 Marks)**

b. Given the following set of transactions in market basket model. Build a frequency pattern (FP tree) show each transaction separately.

Transaction ID	Items bought
01	Milk, bread, cookies, juice
02	Milk, juice
03	Milk, eggs
04	Bread, cookies
05	Juice, eggs
06	Bread, eggs

(10 Marks)

PART – B

5 a. Explain Hunts algorithm. Using Hunts algorithm write decision tree for the following data:

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

(10 Marks)

b. Explain the various measures for selecting the best splits. **(05 Marks)**

c. Explain the rule evaluation criteria for classification. **(05 Marks)**

6 a. What are Bayesian classifiers? Explain Baye's theorem for classification. **(10 Marks)**
b. Explain how the predictive accuracy of classification methods be estimated. **(10 Marks)**

7 a. Give the definition of cluster analysis. Explain desired features of cluster analysis. **(10 Marks)**
b. Explain the following clustering technique with algorithm.
i) K-means method
ii) Divisive hierarchical method. **(10 Marks)**

8 a. What is Web data mining? Explain Web document clustering. **(06 Marks)**
b. Explain different text mining approach. **(08 Marks)**
c. Describe sequential mining technique, with an example. **(06 Marks)**

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10CS/IS753

Seventh Semester B.E. Degree Examination, Dec.2017/Jan.2018
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. List and explain java features/buzzwords. **(08 Marks)**
b. Explain bitwise shift and bitwise logical operators with examples. **(05 Marks)**
c. With code snippets explain Jump statement in Java. **(07 Marks)**

2 a. What is a constructor? Mention the properties and illustrate example to overload constructions. **(08 Marks)**
b. How are exceptions handled in Java? Explain briefly with example. **(06 Marks)**
c. What is an applet? Explain life cycle of an applet. **(06 Marks)**

3 a. How do you make a class threadable? Explain with example. **(07 Marks)**
b. List the sources of events. **(05 Marks)**
c. What is the advantage of multithreading? Illustrate a program to implement multiple threads. **(08 Marks)**

4 a. List the drawbacks of AWT. Explain two key swing features. **(06 Marks)**
b. Create a simple swing applet to contain two buttons "Alpha" and "Beta" and display appropriate message when clicked. **(06 Marks)**
c. Explain briefly swing Buttons with code snippets for each. **(08 Marks)**

PART – B

5 a. Explain the concept of JDBC and JDBC driver types. **(06 Marks)**
b. Explain JDBC process steps with example code. **(07 Marks)**
c. What are the three types of statement objects? Explain with code snippets for each. **(07 Marks)**

6 a. Explain briefly the lifecycle of a servlet. Also mention the packages required. **(06 Marks)**
b. List and explain the need of core classes and interfaces of a servlet. **(07 Marks)**
c. What is a cookie? Write a program to display all cookies using servlets. **(07 Marks)**

7 a. List and explain JSP tags with examples for each. **(08 Marks)**
b. Write a note on session. **(04 Marks)**
c. Explain RMI concept and illustrate server side program. **(08 Marks)**

8 a. Explain the functions of EJB transaction attributes with program to set the attribute. **(10 Marks)**
b. Describe the concept of deployment descriptors and explain the need of a JAR file. **(10 Marks)**

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10CS/IS761

Seventh Semester B.E. Degree Examination, Dec.2017/Jan.2018
C # Programming and •NET

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 •NET framework? List and explain its features. **(08 Marks)**
b. What is metadata? Describe its role in •NET framework. **(06 Marks)**
c. Describe the building blocks of •NET framework. **(06 Marks)**

2 a. Explain how you build C# application using CSC• exe. **(06 Marks)**
b. Write a c# program to display message box dialogue containing "Hello World" message using class. **(07 Marks)**
c. Write a C# program to count the number of object instances create inside or outside of an assembler. **(07 Marks)**

3 a. How do you process command line arguments in C# programs? Give one example. **(06 Marks)**
b. Describe any four members of system•console class. **(04 Marks)**
c. What are method parameter modifiers? Name and explain all the available method parameters modifiers in C#. **(10 Marks)**

4 a. Briefly describe the support of C# language for the main pillars of object oriented programming. **(09 Marks)**
b. What is "has – a" relation? how it is implemented in C#. **(05 Marks)**
c. What are the advantages of using virtual and override key words in C# programs? Give one example. **(06 Marks)**

PART – B

5 a. What are bugs, errors and exceptions? List and explain the core members of system. exception type. How would you build custom exception? **(10 Marks)**
b. What is object lifetime? Explain the garbage collection optimization process in C#. **(06 Marks)**
c. Write C# application to illustrate handling multiple exceptions. **(04 Marks)**

6 a. What is an interface? Explain with an example implementation of interfaces in C#. **(06 Marks)**
b. Explain in detail the IConvertable Interfaces along with its different supporting method types. **(08 Marks)**
c. How do you build ICloneable interface types? Give one example. **(06 Marks)**

7 a. What are delegates in C#? Give one example. **(06 Marks)**

b. Discuss the members of system•Multicast delegate base class. **(08 Marks)**

c. With an example. discuss the advanced keywards of C# : checked, unchecked, unsafe, stackalloc, volatile and sizeof. **(06 Marks)**

8 Write short notes on :

a. •NET framework assembly format

b. Classic COM binaries versus •NET assemblies

c. Cross language inheritance

d Shared assembly. **(20 Marks)**

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10CS/IS765

Seventh Semester B.E. Degree Examination, Dec.2017/Jan.2018

Storage Area Networks

Time: 3 hrs. Max. Marks:100

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

PART – A

1 a. What is data? Mention the factors that have contributed to the growth of digital data. **(04 Marks)**

b. Explain the core elements and key requirements of data center. **(08 Marks)**

c. Discuss "Disk Drive Performance" and Little's and utilization law in detail. **(08 Marks)**

2 a. Explain the terms: striping, mirroring and parity. List and explain different RAID levels where parity technique has been adopted. **(15 Marks)**

b. Define "command queuing". Briefly explain commonly used command queuing algorithm. **(05 Marks)**

3 a. Explain SCSI-3 architecture and SCSI-3 client server model. **(10 Marks)**

b. Name the basic interconnectivity options that is supported by FC architecture. Explain the FC-AL and FC-SW transmission in detail. **(10 Marks)**

4 a. Define NAS. List the benefits of NAS. Explain different NAS implementations in detail. **(10 Marks)**

b. Mention the topologies of iSCSI connectivity. Briefly explain them. Also write the diagram of iSCSI protocol stack. **(10 Marks)**

PART – B

5 a. Define CAS. List the benefits of CAS. Explain CAS Architecture in detail. **(10 Marks)**

b. What is virtualization? Explain the types of storage virtualization in detail. **(10 Marks)**

6 a. Discuss 'BC Planning Lifecycle". **(10 Marks)**

b. Discuss Backup and Restore operations in detail. **(10 Marks)**

7 a. What is the primary purpose of "data replication"? Mention the two major technologies adopted for local replication. Explain any one in detail. **(10 Marks)**

b. Define "Remote Replication". Explain the different storage array based remote replications techniques. **(10 Marks)**

8 a. Mention the different SAN security mechanisms. Explain them in brief. **(12 Marks)**

b. Discuss storage management activities. **(08 Marks)**

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