USN | | | | | | | | | | 06CS71

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 models in OO development. Bring out the relationship among the models.
                                                                                       (08 Marks)
   b. With the help of a sample class model, explain the following :
       i) attributes and operations   ii) qualified associations   iii) multiplicity
       iv) association end names   v) generalization and inheritance.   **(12 Marks)**

2 a. Explain the properties of association ends.   **(08 Marks)**
   b. Define an event in state modeling. Explain the kinds of events.   **(07 Marks)**
   c. Give the general UML system for state diagram and explain.   **(05 Marks)**

3 a. What us an activity diagram? Explain the special constructs for activity models.   **(10 Marks)**
   b. What are use case models? Give the guidelines for constructing a use case model.   **(05 Marks)**
   c. What are nested states? Explain with examples.   **(05 Marks)**

4 a. Explain the stages in the software development process. Which life cycle would you prefer
       in the development? Why?   **(10 Marks)**
   b. Identify the classes of an ATM for a bank. What criteria would you take into consideration
       to select the right classes? Explain.   **(10 Marks)**

PART – B

5 a. What are the steps involved in constructing an application state model.   **(12 Marks)**
   b. Explain any two architectural styles, suited for system design.   **(08 Marks)**

6 a. How would you improve the organization of a class design?   **(06 Marks)**
   b. How would you choose association traversal? Explain the following :
       i)   One-way association
       ii) Two-way association.   **(06 Marks)**
   c. Write short notes on :
       i)   Reverse engineering
       ii) Wrapping.   **(08 Marks)**

7 a. What is a pattern? Explain the model-view-controller design pattern for software
       architecture, with OMT diagram.   **(05 Marks)**
   b. List and explain different pattern categories. Give the differences between patterns and
       methods.   **(05 Marks)**
   c. Explain client-dispatcher-server design pattern.   **(10 Marks)**

8 a. Explain the command processor design pattern.   **(10 Marks)**
   b. Explain publisher-subscriber design pattern.   **(05 Marks)**
   c. What are idioms and styles? Explain with the help of an example, a style guide idiom.
                                                                                     (05 Marks)

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Seventh Semester B.E. Degree Examination, Dec.09/Jan.10
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. Explain the task of a DNS name server.   (05 Marks)
   b. Explain the response phase of HTTP.   (05 Marks)
   c. Give syntax and an example to each of the following tags:
      i) <pre>   ii) <a>   iii) <img>   iv) <sub>   v) <p>   (10 Marks)

2 a. Write an XHTML document to describe an ordered list of your five favorite movies. Each element of the list must have a nested list of at least two actors in your favorite movies.
                                                                                (05 Marks)
   b. With examples, explain a style class selector.   (05 Marks)
   c. Write an XHTML document that has six short paragraphs of text. Define three different paragraph styles p_1, p_2 and p_3. The p_1 style must use left and right margins of 20 pixels, a background color of yellow, and a foreground color of blue. The p_2 style must use font size of 18 points, font name 'Arial' and font style in italic form. The p_3 style must use a text indent of 1 centimeter, a background color of green, and a foreground color of white. The 1st and 4th paragraph must use p_1, the second and 5th must use p_2, and the 3rd and 6th must use p_3.
                                                                                (10 Marks)

3 a. With examples, describe all input and output operations in java script.   (10 Marks)
   b. Give examples for the different ways an array object can be created in java script, and also write XHTML document and java script code to sort 'N' given values using a sorting technique.   (10 Marks)

4 a. Describe functions in java script. Write an XHTML document and java script function to compute and print factorial of a number.   (10 Marks)
   b. Write XHTML document and java script code to implement the following :
      i)   To count the number of names in the given array that end in either "ie" or "y".
      ii) To print the position in the string of the leftmost vowel.   (10 Marks)

PART – B

5 a. With an example, explain on focus event in java script.   (05 Marks)
   b. Describe the approach to addressing XHTML elements using forms and elements. (05 Marks)
   c. Write an XHTML document which displays a form containing text elements to input register number, sub-code, marks in three tests and a button element. Also write java script code to compute average of two better tests on click of button and print average marks using alert.
                                                                                (10 Marks)

6 a. With examples, explain absolute and relative positioning of elements in java script.
                                                                                (10 Marks)
   b. Write an XHTML document that contains three short paragraphs of text, stacked on top of each other, with only enough of each showing, so that mouse cursor can always be placed over some part of them. Write java script code so that when cursor is placed over the exposed part of any paragraph, it should rise to the top to become completely visible.
                                                                                (10 Marks)

7   a.   What are the two primary tasks of a validating XML parser?   **(04 Marks)**

     b.   How does an XSLT processor use an XSLT style sheet with an XML document?   **(06 Marks)**

     c.   With examples, explain string functions in PERL.   **(10 Marks)**

8   a.   Write a Perl program which creates a hash table containing country names keys and their capitals as values and perform the following :

       i)   Print all pair of values (country name and capital)

       ii)   Accept country name and print the capital of it.   **(10 Marks)**

     b.   With an example, explain how files are handled in PERL.   **(10 Marks)**

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Seventh Semester B.E. Degree Examination, Dec.09-Jan.10
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. Compare the definitions of embedded system from the following authors i) Wayne Wolf ii) Todd.D. Mortan. **(04 Marks)**

   b. What are the major differences between Harvard and Von Neuman architecture? Give an example. **(06 Marks)**

   c. What are the functional circuits in a microcontroller chip? Explain them in detail. **(10 Marks)**

2 a. What is charge pump? Explain the following terms related to embedded hardware units :
i) Clock oscillator circuit ii) System timer iii) Power – up reset and watch – dog timer. **(10 Marks)**

   b. Comprehend the procedure to code high level and assembly software into m/c implementable software, for an embedded system. Highlight their differences. **(10 Marks)**

3 a. Compare the parallel ports interfaces for the keypad, stepper motor and touch screen. **(10 Marks)**

   b. Describe and compare UART and HDLC protocol. **(10 Marks)**

4 a. Show the procedure of diversion to higher priority interrupts. **(06 Marks)**

   b. What is DMAC? Explain the steps of DMA to facilitate a multi byte data transfer. **(06 Marks)**

   c. What is virtual device driver? Explain any two of them in detail. **(08 Marks)**

PART – B

5 a. What are the Task and ISR? Distinguish among the ISRs, Tasks and functions. **(10 Marks)**

   b. What is a semaphore? What are the IPC functions used by a software programmer? Explain them. **(10 Marks)**

6 a. What is the function of Kernal in RTOS? Comprehend the different memory management strategy for a system. **(10 Marks)**

   b. What is RTOS? List and explain the different services of RTOS. **(10 Marks)**

7 a. What are the design principles of RTOS to design an embedded system? Explain them. **(10 Marks)**

   b. What is the significance of spin lock? Narrate the petrinet based model for critical section service, by a preemptive scheduler. **(10 Marks)**

8 a. What is industry standard file format for storing the locator file? Show the memory needed in case of Princeton and Harvard architecture in the system. **(10 Marks)**

   b. What is a simulator? Illustrate the detailed design development process using a simulator. **(10 Marks)**

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Seventh Semester B.E. Degree Examination, Dec.09/Jan.10
Java and J2EE

Time: 3 hrs.   Max. Marks:100

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

PART – A

1   a. List and explain the java buzzwords.   (10 Marks)
    b. Explain different access specifiers is Java, with examples.   (06 Marks)
    c. i) int num, den ;
          if (den ! = 0 && num| den > 2){

          }
       ii) int num, den ;
           if (den ! = 0 & num| den = = 2) {

           }.
       Compare and explain the above two snippets.   (02 Marks)
    d. Write a note on object instantiation.   (02 Marks)

2   a. Which is the alternative approach to implement multiple inheritance in Java? Explain, with
       an example.   (06 Marks)
    b. Create a try block that is likely to generate three types of exception and incorporate
       necessary catch blocks to catch and handle them.   (06 Marks)
    c. What are applets? Explain different stages is the cycle of an applet?   (08 Marks)

3   a. What is the need of synchronization? Explain with an example, how synchronization is
       implemented in Java?   (10 Marks)
    b. What is meant by thread priority? How is it assigned?   (06 Marks)
    c. Explain the adapter classes, with examples.   (04 Marks)

4   a. Create swing applet that has two buttons named alpha and beta. When either of the buttons
       pressed, it should display "alpha was pressed" and "beta was pressed", respectively.
                                                                              (06 Marks)
    b. Name and explain different types of swing buttons. Give their syntax. (08 Marks)
    c. Write the steps to create JTable. Write a program to create a table with the column headings
       "Fname, Lname, Age" and insert atleast five records in the table and display.   (06 Marks)

PART – B

5   a. Give and explain J2EE multifier architecture.   (08 Marks)
    b. Describe the various steps of JDBC process, with code snippets.   (08 Marks)
    c. Write a note on database metadata interface.   (04 Marks)

6   a. Explain the lifecycle of a servlet.   (06 Marks)
    b. Describe in detail, how tomcat web server is configured for development of servlet.
                                                                              (06 Marks)
    c. With a code snippet, explain how session tracking is handled in Java with servlets. (04 Marks)
    d. List and explain core classes that are provided in Javax.servlet package. (04 Marks)

7   a. What is the difference between servlets and JSP? Explain different types of JSP tags with
       syntax.   (05 Marks)
    b. Write a JSP to create and read cookie named user id that stores the value JB0007. (05 Marks)
    c. What is RMI? Describe with code snippet RMI at server side.   (10 Marks)

8   a. What is deployment descriptor? List the deployment descriptor for EJB 1.1. (06 Marks)
    b. With a skeleton, explain entity Java bean.   (06 Marks)
    c. How do you disable access to a method in EJB 2.0? Explain, with code. (04 Marks)
    d. Write a note on JAR file, [JAR].   (04 Marks)

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Seventh Semester B.E. Degree Examination, Dec.09/Jan.10
C # Programming and .Net

Time: 3 hrs.　　　　　　　　　　　　　　　　　　　　　　　　　　　Max. Marks:100

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

PART – A

1. a. Explain with a neat diagram, the relationship between .Net runtime layer and the base class library. **(08 Marks)**
   b. What is the role of .Net type meta data? Give example. **(04 Marks)**
   c. List and explain intrinsic CTS data types and .Net name spaces in C #. **(08 Marks)**

2. a. What is meant by command line debugger? Write source code in C# to compute the square root of a number passed as a command line argument. **(07 Marks)**
   b. How would you create object instance in C #? With examples, describe default assignment of .Net data types. **(08 Marks)**
   c. How do you format .Net string and textual output? Give examples. **(05 Marks)**

3. a. Distinguish between value types and reference types, with an examples. **(07 Marks)**
   b. What is the role of master node, system object? **(03 Marks)**
   c. Explain the following terms, with an example, with reference to C #.
      i) foreach　ii) ref　iii) params　iv) verbatim　v) enum. **(10 Marks)**

4. a. What is boxing and unboxing? Explain with an examples. **(08 Marks)**
   b. How would you enforce encapsulation using accessors and mutators? Explain with examples, class properties and static properties in C #. **(08 Marks)**
   c. Illustrate with an example, polymorphic support in C #. **(04 Marks)**

PART – B

5. a. List and explain core members of the system exception type. How would you build custom exception? **(06 Marks)**
   b. Write C # application to illustrate handling multiple exceptions. **(06 Marks)**
   c. What is meant by object life time? Describe the role of .Net garbage collection, finalization process and Ad Hoc destruction method, with examples. **(08 Marks)**

6. a. Which is the alternate approach to support multiple inheritance? List its major features. **(05 Marks)**
   b. Briefly explain, with an example, explicit interface implementation. **(05 Marks)**
   c. Write a program in C # to accept two strings and perform the following operations :
      i) copy string 2 to string 3
      ii) check string 1 ends with "ENGG" or not. If it is true, search character 'a' in string 3.
      iii) insert "VTU" in string 2 at position 6 and display it. **(10 Marks)**

7. a. With an example, discuss advanced keywords of C # : checked, unchecked, un safe stackalloc, volatile and size of. **(12 Marks)**
   b. Write a program in C # to sort and reverse an array of five elements using sort( ) and reverse ( ) methods. **(04 Marks)**
   c. What do you understand by events and delegates in C #? Give example. **(04 Marks)**

8. a. With a neat diagram, explain physical view and logical view of .Net assemblies. **(06 Marks)**
   b. Illustrate with an example, differences between synchronous and asynchronous delegates. **(06 Marks)**
   c. List the key elements and core CIL tokens of the assembly manifest. **(04 Marks)**
   d. Write short notes on process of building a multifile assembly. **(04 Marks)**

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Seventh Semester B.E. Degree Examination, Dec.09/Jan.10
User Interface Design

Time: 3 hrs.   Max. Marks:100

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

PART – A

1 a. Briefly explain the goals of system engineering.   (06 Marks)
   b. List the different diversities that challenge the interactive system designers and explain any one of them.   (06 Marks)
   c. Explain the golden rules of interface design.   (08 Marks)

2 a. What are the techniques for getting users attention?   (06 Marks)
   b. Which are the three pillars of user interface design? What are the pros and cans of participatory design?   (06 Marks)
   c. Give the guidelines for performing field (ethnographic) study.   (08 Marks)

3 a. Give one statement description of the different review methods.   (06 Marks)
   b. List the various design specification methods. Briefly describe any one of them. (06 Marks)
   c. What are direct manipulation systems? What are the benefits and drawbacks of direct manipulation?   (08 Marks)

4 a. Enumerate the guidelines for menu layout.   (06 Marks)
   b. Give the guidelines for internal layout and external relationship for dialog boxes. (06 Marks)
   c. List the elements (guidelines) for form-filler design.   (08 Marks)

PART – B

5 a. With the examples, give the strategies for abbreviation.   (06 Marks)
   b. What are the different display technologies? When is speech generation preferable? (06 Marks)
   c. What are the different variables (factors) to be considered for pointing devices? State Fitt's laws.   (08 Marks)

6 a. What are the guidelines for developing non-anthropomorphic messages?   (06 Marks)
   b. How and when should colours be used for displays?   (06 Marks)
   c. Give the guidelines for error messages and the development process.   (08 Marks)

7 a. What are the guidelines for preparing a good user manual?   (06 Marks)
   b. List the benefits of online tutorials. How can they be made effective?   (06 Marks)
   c. What are the different solutions for providing access to multiple sources of information? (08 Marks)

8 a. Explain the concept of developing coordinated window using tight coupling among windows.   (10 Marks)
   b. Write short notes on:
      i) Elastic windows   ii) OAI model for website design.   (10 Marks)

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Seventh Semester B.E. Degree Examination, Dec.09/Jan.10

Software Architecture

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 a architecture business cycle? (07 Marks)
  b. Why is software architecture important? (03 Marks)
  c. List all the common software architecture structures. Explain the component connector structure. (10 Marks)

2 a. Explain the architecture styles based on :
     i)   Data abstraction and object-oriented organization
     ii) Event-based, implicit invocation (10 Marks)
  b. What are the basic requirements for mobile robot architecture? (04 Marks)
  c. Explain the control loop solution for a mobile robot. (06 Marks)

3 a. What is availability? Explain the general scenario for availability. (10 Marks)
  b. Classify security tactics. What are the different tactics for resisting attacks? (10 Marks)

4 a. With neat diagrams, depict the dynamic behaviour of pipes and filters pattern. (10 Marks)
  b. What are the benefits of a layered pattern? (04 Marks)
  c. Give the structure of blackboard with CRC cards. (06 Marks)

PART – B

5 a. Explain the variants of broker architecture. (10 Marks)
  b. Depict the dynamic behavior of MVC, with any one scenario. (05 Marks)
  c. Give the CRC cards for top level, intermediate level and bottom level PAC agents. (05 Marks)

6 a. Explain the benefits and liabilities of microkernel pattern. (10 Marks)
  b. Enumerate the implementation steps of reflection pattern. (10 Marks)

7 a. Give the structure of whole port design pattern with CRC. (05 Marks)
  b. What are the application areas of master slave pattern? (10 Marks)
  c. What are the variants of proxy pattern? (05 Marks)

8 a. What are the three steps for choosing views for a project? (06 Marks)
  b. Write a note on view catalog. (04 Marks)
  c. What are the options for representing connectors and systems in UML? (10 Marks)

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Seventh Semester B.E. Degree Examination, Dec.09/Jan.10

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. Explain the process of knowledge discovery in databases (KDD).   **(10 Marks)**
   b. Explain the various tasks of data mining.   **(10 Marks)**

2 a. Discuss the four types of data attributes, with suitable examples.   **(08 Marks)**
   b. What are the various data preprocessing tasks?   **(08 Marks)**
   c. Consider the following two binary vectors
       X = (1, 0, 0, 0, 0, 0, 0, 0, 0, 0)
       Y = (0, 0, 0, 0, 0, 0, 1, 0, 0, 1)
       Find : i) Hamming distance   ii) Simple matching coefficient (SMC) iii) Jauard coefficient.
                                                                              (04 Marks)

3 a. Explain the various measures for selecting the best splits, with an example   **(08 Marks)**
   b. Discuss general-to-specific and specific-to-general rule growing strategies. Give suitable
       examples.   **(08 Marks)**
   c. Write the algorithm for k-nearest neighbor classification algorithm.   **(04 Marks)**

4 a. Define the following. Give an example to each.
       i) Support of a rule   ii) Confidence of a rule.   **(04 Marks)**
   b. State and illustrate using lattices the apriory principle with an example.   **(08 Marks)**
   c. Which are the factors affecting the computational complexity of apriory algorithm? Explain
       them.   **(08 Marks)**

PART – B

5 a. Consider the following transaction data set

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

   Construct the FP tree. Show the trees separately after reading each transaction.   **(08 Marks)**
   b. Illustrate the limitations of support –confidence frames work for evaluation of an association
       rule.   **(08 Marks)**
   c. Define cross-support pattern. Suppose the support for milk is 70%, support for sugar is 10%
       and support for caviar is 0.04%. Given $h_c = 0.01$, Is the frequent item set {milk, sugar,
       caviar} the cross-support pattern?   **(04 Marks)**

6 a. Explain the different types of clustering.   **(10 Marks)**
   b. Explain the basic K-means algorithm of clustering.   **(10 Marks)**

7 a. How can the generalization be performed on set-valued, list valued and sequence valued
       attributes? Give examples.   **(10 Marks)**
   b. Explain the following :
       i)   Description-based retrieval
       ii) Content based retrieval for similarity searching in multimedia data.   **(10 Marks)**

8   Write short notes on :
   a. Application of data mining to financial analysis
   b. Features used to assess data mining systems
   c. Forms of coupling between data mining systems and data basis /date warehousing systems.
   d. Basic measures for text retrieved.   **(20 Marks)**

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