CBCS SCHEME

USN [   ] **15CS71**

Time: 3 hrs.   Max. Marks: 80

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1   a.   What is HTML? Explain the structure of HTML documents.   **(06 Marks)**
    b.   Explain the following HTML elements with example : i) images   ii) list.   **(04 Marks)**
    c.   Write the division <div> based HTML semantic structure elements.   **(06 Marks)**

OR

2   a.   Define CSS. Explain the location of styles.   **(08 Marks)**
    b.   Illustrate the CSS Box model besuge to label each of the components of the box. **(04 Marks)**
    c.   What are class sectors and id selectors?   **(04 Marks)**

Module-2

3   a.   Explain the basic table structure. Create an HTML document for the Fig.Q3(a).   **(06 Marks)**

Fig.Q3(a)

ONE	TWO	
	THREE	FOUR

    b.   With the sample HTML form, explain how forms work.   **(06 Marks)**
    c.   List the various form-related HTML elements.   **(04 Marks)**

OR

4   a.   Explain positioning elements in CSS.   **(08 Marks)**
    b.   What is responsive design? Explain the four key components that make responsive design work.   **(08 Marks)**

Module-3

5   a.   What is Javascript? Explain the advantages and disadvantages of client side scripting.   **(04 Marks)**
    b.   How Javascript can be linked to an HTML.   **(04 Marks)**
    c.   Briefly describe the document Object Model.   **(08 Marks)**

OR

6   a.   What are javascript events? Explain Event Handler approaches and Even Types.   **(08 Marks)**
    b.   Define PHP? Explain the PHP quote usage and concatenation approaches.   **(08 Marks)**

Module-4

7   a.   Define Array. Briefly explain the array operations in PHP with example.   **(06 Marks)**
    b.   Illustrate how data will flow from HTML form to PHP $_GET and $_POST array. **(06 Marks)**
    c.   Write a note on $_SERVER Array.   **(04 Marks)**

OR

8   a.   Define class. Describe the accessibility of a class member.   **(06 Marks)**
    b.   Explain three main error reporting flags.   **(06 Marks)**
    c.   Write a note on PHP error and exception handling.   **(04 Marks)**

Module-5

9   a.   What are cookies? Explain how it works.   **(08 Marks)**
    b.   What is caching? Explain two basic strategies of caching web application.   **(08 Marks)**

OR

10   a.   Write a note on Arynchronous file transformation.   **(04 Marks)**
    b.   What is XML? Write the syntax rule for XML.   **(04 Marks)**
    c.   Describe how XML processing in PHP and Javascript.   **(08 Marks)**

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15CS72

Seventh Semester B.E. Degree Examination, Jan./Feb. 2021
Advanced Computer Architectures

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1   a.   Describe with a neat diagram different shared memory multiprocessor models.   **(09 Marks)**

    b.   A 400 MHz processor was used to execute a program with the following instruction mix and clock cycle counts:

Instruction Type	Instruction Count	Clock Cycle Count
Integer Arithmetic	450000	1
Data Transfer	320000	2
Floating Point	150000	2
Control Transfer	80000	2

Determine the effective CPI, MIPS rate and execution time for this program.   **(07 Marks)**

OR

2   a.   Explain the different types of data dependences. Draw the dependence graph for the following code segment:

S_1 : Load R_1, A   /$R_1 \leftarrow$ Memory (A)/
S_2 : Add R_2, R_1 /$R_2 \leftarrow (R_1) + (R_2)$/
S_3 : Move R_1, R_3 /$R_1 \leftarrow (R_3)$/
S_4 : Store B, R_1 /Memory(B) $\leftarrow (R_1)$/   **(08 Marks)**

    b.   List the different types of static connection networks and explain any three in detail.   **(08 Marks)**

Module-2

3   a.   Differentiate between CISC and RISC architecture.   **(06 Marks)**

    b.   Explain in detail Inclusion, coherence and Locality properties.   **(10 Marks)**

OR

4   a.   Explain with a neat diagram Hierarchical Memory Technology.   **(08 Marks)**

    b.   Explain the architecture of VLIW processor and its pipeline operation.   **(08 Marks)**

Module-3

5   a.   What is arbitration? Describe central arbitration and distributed arbitration with relevant sketches.   **(09 Marks)**

    b.   Explain direct mapping cache organization. Mention its advantages and disadvantages.   **(07 Marks)**

OR

6 a. Consider the following reservation table for a three-stage pipeline.

	1	2	3	4	5	6	7	8
S_1	X					X		X
S_2		X		X				
S_3			X		X		X	

    (i)   What are the forbidden latencies and initial collision vector?
    (ii) Draw the state transition diagram.
    (iii) List all simple cycles and greedy cycles.
    (iv) Determine MAL.
    (v) Determine the pipeline throughput. **(10 Marks)**
  b. List the different mechanisms for instruction pipelining. Explain any one in detail. **(06 Marks)**

Module-4

7 a. What is cache coherence problem? What are the different causes of cache inconsistencies? Explain n detail. **(10 Marks)**
  b. Explain store and forward routing and wormhole routing related to message routing. **(06 Marks)**

OR

8 a. Describe with relevant sketches three types of cache directory protocols. **(10 Marks)**
  b. Explain the context switching policies. **(06 Marks)**

Module-5

9 a. Explain synchronous message passing and asynchronous passing related to message passing model. **(08 Marks)**
  b. Explain object oriented programming model. **(08 Marks)**

OR

10 a. Explain the concept of operand forwarding with suitable example. **(08 Marks)**
  b. Describe in brief Tomasulo's algorithm. **(08 Marks)**

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15CS73

Seventh Semester B.E. Degree Examination, Jan./Feb. 2021
Machine Learning

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Define machine learning. Explain with specific examples. **(06 Marks)**
   b. How you will design a learning system? Explain with examples. **(06 Marks)**
   c. List and explain perspectives and issues in Machine Learning. **(04 Marks)**

OR

2 a. Define concept learning. Explain the task of concept learning. **(06 Marks)**
   b. How the concept learning can be viewed as the task of searching? Explain. **(04 Marks)**
   c. Explain with examples:
      i)   Find-S algorithm
      ii) Candidate Elimination algorithm **(06 Marks)**

Module-2

3 a. Define decision tree learning. List and explain appropriate problems for decision tree learning. **(06 Marks)**
   b. Explain the basic decision tree learning algorithm. **(05 Marks)**
   c. Describe Hypothesis space search in decision tree learning. **(05 Marks)**

OR

4 a. Define inductive bias. Explain inductive bias in decision tree learning. **(06 Marks)**
   b. Give the differences between the hypothesis space search in ID3 and candidate elimination algorithm. **(04 Marks)**
   c. List and explain issues in decision tree learning. **(06 Marks)**

Module-3

5 a. Define Artificial neural networks. Explain biological learning systems. **(05 Marks)**
   b. Explain representations of Neural network. **(05 Marks)**
   c. Describe the characteristics of Back propagation algorithm. **(06 Marks)**

OR

6 a. Define Perceptron. Explain representational power of Perceptrons. **(05 Marks)**
   b. Explain gradient descent algorithm. **(06 Marks)**
   c. Describe derivation of the back propagation rule. **(05 Marks)**

Module-4

7 a. List and explain features of Bayesian learning methods. **(06 Marks)**
   b. Describe Brute-Force map learning algorithm. **(05 Marks)**
   c. Explain maximum likelihood and least-squared error hypothesis. **(05 Marks)**

OR

8 a. Describe maximum likelihood hypotheses for predicting probabilities.   (05 Marks)
   b. Define Bayesian belief networks. Explain with an example.   (06 Marks)
   c. Explain EM algorithm.   (05 Marks)

Module-5

9 a. Define the following with examples:
       i) Sample error   ii) True error   iii) Mean   iv) Variance.   (08 Marks)
   b. Explain central limit Theorem.   (04 Marks)
   c. Explain K-Nearest neighbor algorithm.   (04 Marks)

OR

10 a. Explain case-based reasoning.   (06 Marks)
   b. List and explain important differences of reinforcement algorithm with other function
       approximation tasks.   (04 Marks)
   c. Explain Q Learning Algorithm.   (06 Marks)

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CBCS SCHEME

USN ☐☐☐☐☐☐☐☐☐☐ 15CS744

Seventh Semester B.E. Degree Examination, Jan./Feb. 2021
UNIX System Programming

Time: 3 hrs.   Max. Marks: 80

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1. a. Discuss the major differences between ANSIC and K and R C with examples. **(08 Marks)**
   b. Write a C/C++ POSIX compliant program that prints the POSIX defined configuration options supported on any given system using feature test macros. **(08 Marks)**

OR

2. a. What are the API common characteristics? List any six values of the global variable 'errno' along with their meanings. **(08 Marks)**
   b. Write a C/C++ program to check the following compile time limits, along with its minimum value.
      i) Supplemental groups
      ii) Maximum number of likes of a file
      iii) Number of simultaneous Asynchronous I/O
      iv) Maximum Number of child processes. **(08 Marks)**

Module-2

3. a. Explain the different type of files in UNIX. **(06 Marks)**
   b. List and explain all the attributes of UNIX or POSIX file with their meaning. Which attributes remain unchanged for entire life of the file? **(06 Marks)**
   c. Differentiate between stream pointers and File Descriptions. **(04 Marks)**

OR

4. a. Explain the following APIS with prototypes. i) open ii) ℓseek iii) utime. **(08 Marks)**
   b. Consider the following program and its output

   ```
   int main ( )
   {
       struct stat filestat ;
       lstat ("/dev/tty4", &filestat);
       printf("%0\n", filestat.st_mode);
       printf("%d\n", filestat.st_rdev);
       return 0 ;
   }
   OUTPUT :
           27657
           1028
   ```
   What attributes of a file can be extracted using output of the program and demonstrate how? **(08 Marks)**

Module-3

5. a. Explain with a neat diagram how a C – program is started and terminated in various ways. **(05 Marks)**
   b. With a neat sketch, explain the memory layout of a C-program. **(05 Marks)**
   c. What is a race condition? Write a program for generating race condition. **(06 Marks)**

OR

6 a. List and briefly explain various 'exec' functions with prototypes. **(06 Marks)**
   b. Summarize the job control features with the help of neat diagram. **(08 Marks)**
   c. Explain differences between fork( ) and vfork( ). **(02 Marks)**

Module-4

7 a. What are signals? List any four signals along with brief explanation. **(05 Marks)**
   b. What is signal mask of a process? Explain sigprocmask( ) function along with its prototype. **(06 Marks)**
   c. Discuss the different events that may accur when a parent process receive SIGCHLD signals. **(05 Marks)**

OR

8 a. Explain alarm API with its prototype. Also write a program to implement. Sleep API using alarm API. **(06 Marks)**
   b. How POSIX.1b timers are different than UNIX timers. **(04 Marks)**
   c. Define daemon process. Discuss the basic coding rules of the daemon process. **(06 Marks)**

Module-5

9 a. What are pipes? Explain the different ways to view a half duplex pipe. Write a program to create a pipe to send data from parent process to child process. **(10 Marks)**
   b. Explain client/server communication using FIFO with neat diagrams. **(06 Marks)**

OR

10 a. Explain different APIS used with message Queues. **(08 Marks)**
    b. Explain the following functions with corresponding prototypes.
        i) shmget ( )
        ii) shmctl ( ) **(08 Marks)**

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15CS754

Seventh Semester B.E. Degree Examination, Jan./Feb.2021
Storage Area Networks

Time: 3 hrs.

Max. Marks: 80

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1   a.   Explain evolution of storage architecture with neat diagram.   (08 Marks)
    b.   Discuss the key characteristics of a data centre, with neat diagram.   (08 Marks)

OR

2   a.   What is protocol? Explain the popular interface protocols used for host to storage communications.   (08 Marks)
    b.   Explain two different types of intelligent storage systems.   (08 Marks)

Module-2

3   a.   Explain Fibre channel protocol stack with neat diagram.   (08 Marks)
    b.   What is zoning? Explain its types.   (08 Marks)

OR

4   a.   What is FCIP? Explain FCIP protocol stack.   (08 Marks)
    b.   What is NAS? Explain its components with neat sketch.   (08 Marks)

Module-3

5   a.   Explain any two backup topologies with neat diagram.   (08 Marks)
    b.   Discuss Data Deduplication implementations.   (08 Marks)

OR

6   a.   Give different uses of local replicas.   (08 Marks)
    b.   Explain remote replication technologies.   (08 Marks)

Module-4

7   a.   What is cloud computing? Give its characteristics.   (08 Marks)
    b.   Explain different cloud service models.   (08 Marks)

OR

8   a.   Explain various cloud deployment models.   (08 Marks)
    b.   Discuss cloud challenges.   (08 Marks)

Module-5

9   a.   Explain storage security domains.   (08 Marks)
    b.   Explain various security measures of cloud environment.   (08 Marks)

OR

10   a.   Explain various storage infrastructure management activities.   (08 Marks)
     b.   Explain information lifecycle management.   (08 Marks)

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Seventh Semester B.E. Degree Examination, Jan./Feb. 2021
Software Architecture and Design Patterns

Time: 3 hrs.   Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1   a. List out and explain four essential elements of design pattern with small talk MVC example.
                                                                          (08 Marks)
    b. List out the templates used in describing design pattern.   **(04 Marks)**
    c. Name any four design pattern available in catalog of design pattern. **(04 Marks)**

OR

2   a. Name the several approaches to find the design pattern that's rights for your problem.
                                                                          (06 Marks)
    b. Define object oriented development. Name the various key concepts of OOD. **(06 Marks)**
    c. Explain the benefits and drawback of the paradigm in OOD.   **(04 Marks)**

Module-2

3   a. List out the business process of the library system.   **(05 Marks)**
    b. Define business rule. List out the rules of the library system. **(07 Marks)**
    c. Explain how do business rules relate to use cases with its four categories. **(04 Marks)**

OR

4   a. List out the guidelines to remember when writing use cases.   **(07 Marks)**
    b. What is domain analysis? Explain the thumb rules and caveats come on handy. **(06 Marks)**
    c. Compare business process modeling and use case modeling.   **(03 Marks)**

Module-3

5   a. Define structural pattern. List out the consequences of adapter pattern. **(05 Marks)**
    b. Describe the two important issues when implementing the fly weight pattern. **(04 Marks)**
    c. Describe the implementation and sample code of adapter pattern. **(07 Marks)**

OR

6   a. Define the intent of Bridge pattern. Mention the consequences of bridge pattern. **(04 Marks)**
    b. What is decorator pattern? Explain with neat sketch various participants of decorator pattern.
                                                                          (07 Marks)
    c. Explain with necessary diagram how compiler facade makes life easier for most programmers.
                                                                          (05 Marks)

Module-4

7   a. Mention and explain benefits of MVC pattern.   **(05 Marks)**
    b. With suitable use case tables explain analyzing a simple drawing program of MVC pattern.
                                                                          (06 Marks)
    c. Explain interaction diagram for the bridge pattern between the two classes. **(05 Marks)**

OR

8 a. Explain the sequence of operations for adding a label which deals with the Environmental variables. (08 Marks)
   b. Explain the design of the controller subsystem with controller class diagram. (08 Marks)

Module-5

9 a. What is remote object? Explain Java Remote Method Invocation. (06 Marks)
   b. Explain implanting an object oriented system on the web. (06 Marks)
   c. Write short notes on servlet container. (04 Marks)

OR

10 a. Explain the class diagram for library servlets. (06 Marks)
    b. Explain simplified sequence diagram for removing books. (08 Marks)
    c. Define sessions and session object of servlets. (02 Marks)

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