

CBCS SCHEME

USN

--	--	--	--	--	--	--	--	--	--

17CS71

Seventh Semester B.E. Degree Examination, Jan./Feb.2021 Web Technology and Its Applications

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- What are the 3 aims of HTML5? (04 Marks)
 - Explain the need of cascade in CSS. Explain the 3 principles of cascade with suitable CSS script segments. (08 Marks)
 - Explain two types of URL referencing techniques with suitable scripts in HTML5. (08 Marks)

OR

- List and explain the different selectors available in CSS. (08 Marks)
 - Discuss the HTML5 semantic structure elements. (08 Marks)
 - List the different text properties with a description. (04 Marks)

Module-2

- Explain different form widgets created with the <input> tag. (08 Marks)
 - Write HTML code for following table:

Day	SEMIENAR		
	SCHEDULE		TEOPIC
	BEGIN	END	
MONDAY	8:00 am	5:00 pm	Introduction to XML
			Validity : DTD & NG
TUESDAY	11:00 am	2:00 pm	XPAT4
	11:00 am	2:00 pm	
	2:00 pm	5:00 pm	XSL transformations
WEDNESDAY	8:00 am	5:00 pm	XSL Formatting Objects

(12 Marks)

OR

- Explain liquid layout design for websites with an example. List the fluid layout benefits and limitations. (08 Marks)
 - Explain different ways of positioning elements in CSS layout techniques. (08 Marks)
 - What are the importances of responsive design? Explain briefly. (04 Marks)

Module-3

- Write a Javascript code that displays text "CORONA VIRUS" with increasing font size in the interval of 100 ms in blue color, when font size reaches 50 pt in teal color and should stop. (08 Marks)
 - Explain the advantages and disadvantages of client side scripting. (06 Marks)
 - With suitable diagram, explain APACHE modules in PHP. (06 Marks)

OR

- 6 a. With suitable code segment, explain 2 approaches for event handling in Java script. (08 Marks)
b. Write PHP program to greet the user based on time. (08 Marks)
c. Explain 2 methods in Java Script to access DOM nodes with examples. (04 Marks)

Module-4

- 7 a. List and explain different superglobal arrays. (08 Marks)
b. Explain the different error handling methods, with suitable code segments. (08 Marks)
c. How do you read or write file on server from PHP? Give example. (04 Marks)

OR

- 8 a. Write a PHP program to create a class Employee with the following specifications:
Data members : Name, ID, Payment.
Member function : Read (getTters) and write (setters)
Use the above specification to read and print the information of 10 students. (08 Marks)
b. Explain the support for inheritance in PHP with UML class diagram. (06 Marks)
c. Explain 3 approaches to restrict file size in file upload with suitable code segments. (06 Marks)

Module-5

- 9 a. Explain different types of caching used to improve performance of web application. (08 Marks)
b. With suitable PHP script, explain loading and processing an XML document in Java script. (08 Marks)
c. Explain creating and reading cookies with suitable PHP scripts. (04 Marks)

OR

- 10 a. Define AJAX. Explain AJAX request by writing UML diagram. (08 Marks)
b. Explain JavaScript pseudo-classes with examples. (08 Marks)
c. Explain converting a JSON string to JSON object in JavaScript with suitable code segments. (04 Marks)

CBCS SCHEME

USN

--	--	--	--	--	--	--	--	--	--

17CS72

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

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. With the help of block diagrams, explain Flynn's classification of computer architectures. (10 Marks)
- b. Describe the shared-memory multiprocessor models. (10 Marks)

OR

- 2 a. Define the types of data dependence. Also compute the dependence graph for the following code segment:
 - S₁ : Load R1, A
 - S₂ : Add R2, R1
 - S₃ : Move R1, R3
 - S₄ : Store B, R1(10 Marks)
- b. Explain the characteristics of the following static connection networks :
 - (i) Linear array. (ii) Ring. (iii) Binary tree. (iv) Mesh. (10 Marks)

Module-2

- 3 a. Distinguish between RISC and CISC processor architectures, with block diagrams. (10 Marks)
- b. Explain VLIW processor architecture and its pipeline operations. (10 Marks)

OR

- 4 a. Compare the two virtual memory models for multiprocessor systems. (10 Marks)
- b. Illustrate four level memory hierarchy. (04 Marks)
- c. Define the various page replacement policies. (06 Marks)

Module-3

- 5 a. Illustrate daisy-chained and distributed arbitration techniques. (10 Marks)
- b. List the various Cache mapping schemes. Also explain any two schemes. (10 Marks)

OR

- 6 a. Consider the following pipeline reservation table:

		Time →						
		1	2	3	4	5	6	7
Stages	S ₁	X						X
	S ₂		X		X			
	S ₃			X		X		

- (i) What are the forbidden latencies? (10 Marks)
 - (ii) What is the initial collision vector? (06 Marks)
 - (iii) Draw the state transition diagram (04 Marks)
 - (iv) List all the simple cycles.
 - (v) List all the greedy cycles.
 - (vi) Determine the minimal average Latency. (10 Marks)
- b. Explain the usage of prefetch buffers in instruction pipelining. (06 Marks)
 - c. Illustrate internal data forwarding technique. (04 Marks)

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.

Module-4

- 7 a. Define the two approaches of snoopy bus cache coherence protocol. Also write the state transition graphs for write through and write back cache. (10 Marks)
b. Explain in detail, three types of cache directory protocols. (10 Marks)

OR

- 8 a. Explain the flow control methods for resolving a collision between two packets requesting the same outgoing channel. (10 Marks)
b. Distinguish between store-and-forward routing and wormhole routing schemes. (04 Marks)
c. Define the various vector instruction types. (06 Marks)

Module-5

- 9 a. Explain the mechanisms used for interprocess communication. (06 Marks)
b. Describe the compilation phases in parallel code generation. (08 Marks)
c. Explain the sole-access protocols used in synchronization. (06 Marks)

OR

- 10 a. Explain the concept of recorder buffer as a processor element. (06 Marks)
b. With the help of a block diagram, explain the role of reservation stations used in Tomasulo's algorithm. (08 Marks)
c. Write and explain state transition diagram of 2 bit branch predictor. (06 Marks)

CBCS SCHEME

USN

17CS73

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

Machine Learning

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Define machine learning. Mention five applications of machine learning. (06 Marks)
- b. Explain concept learning task with an example. (06 Marks)
- c. Apply candidate elimination algorithm and obtain the version space considering the training examples given Table Q1(c).

Eyes	Nose	Head	Fcolor	Hair?	Smile?(TC)
Round	Triangle	Round	Purple	Yes	Yes
Square	Square	Square	Green	Yes	No
Square	Triangle	Round	Yellow	Yes	Yes
Round	Triangle	Round	Green	No	No
Square	Square	Round	Yellow	Yes	Yes

Table Q1(c)

(08 Marks)

OR

- 2 a. Explain the following with respect to designing a learning system :
 - i) Choosing the training experience
 - ii) Choosing the target function
 - iii) Choosing a representation for the target function. (09 Marks)
- b. Write Find-S algorithm. Apply the Find-S for Table Q1(c) to find maximally specific hypothesis. (06 Marks)
- c. Explain the concept of inductive bias. (05 Marks)

Module-2

- 3 a. Explain the concept of decision tree learning. Discuss the necessary measures required to select the attributed for building a decision tree using ID3 algorithm. (11 Marks)
- b. Explain the following with respect to decision tree learning :
 - i) Incorporating continuous valued attributes
 - ii) Alternative measures for selecting attributes
 - iii) Handling training examples with missing attribute values. (09 Marks)

OR

- 4 a. Construct decision tree using ID3 considering the following training examples :

Weekend	Weather	Parental availability	Wealthy	Decision class
H ₁	Sunny	Yes	Rich	Cinema
H ₂	Sunny	No	Rich	Tennis
H ₃	Windy	Yes	Rich	Cinema
H ₄	Rainy	Yes	Poor	Cinema
H ₅	Rainy	No	Rich	Home
H ₆	Rainy	Yes	Poor	Cinema
H ₇	Windy	No	Poor	Cinema
H ₈	Windy	No	Rich	Shopping
H ₉	Windy	Yes	Rich	Cinema
H ₁₀	Sunny	No	Rich	Tennis

Table Q4(b)

(12 Marks)

- b. Discuss the issues of avoiding overfitting the data, and handling attributes with differing costs. (08 Marks)

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.

Module-3

- 5 a. Discuss the application of neural network which is used to steer an autonomous vehicle. (06 Marks)
- b. Write Gradient descent algorithm to train a linear unit along with the derivation. (08 Marks)
- c. Discuss the issues of convergence, local minima and generalization, overfitting and stopping criterion. (06 Marks)

OR

- 6 a. List the appropriate problems for neural network learning. (05 Marks)
- b. Define perceptron and discuss its training rule. (05 Marks)
- c. Show the derivation of back propagation training rule for output unit weights. (10 Marks)

Module-4

- 7 a. Explain Bayes theorem and mention the features of Bayesian learning. (07 Marks)
- b. Prove that a maximum likelihood hypotheses can be used to predict probabilities. (08 Marks)
- c. Explain Naïve Bayes classifier. (05 Marks)

OR

- 8 a. Describe MAP learning algorithm. (08 Marks)
- b. Classify the test data and {Red, SUV, Domestic} using Naive Bayes classifier for the dataset shown in Table Q8(b).

Color	Type	Origin	Stolen
Red	Sports	Domestic	Yes
Red	Sports	Domestic	No
Red	Sports	Domestic	Yes
Yellow	Sports	Domestic	No
Yellow	Sports	Imported	Yes
Yellow	SUV	Imported	No
Yellow	SUV	Imported	Yes
Yellow	SUV	Domestic	No
Red	SUV	Imported	No
Red	Sports	Imported	Yes

Table Q8(b)

- c. Write and explain EM algorithm.

Module-5

- 9 a. Define :
 i) Sample error
 ii) True error
 iii) Confidence intervals. (06 Marks)
- b. Explain K-nearest neighbor learning algorithm. (08 Marks)
- c. Write a note on Q-learning. (06 Marks)

OR

- 10 a. Define mean value, variance, standard deviation and estimation bias of a random variable. (04 Marks)
- b. Explain locally weighted linear regression and radial basis functions. (10 Marks)
- c. What is reinforcement learning? How it differs from other function approximation tasks? (06 Marks)

CBCS SCHEME

USN

--	--	--	--	--	--	--	--	--	--

17CS744

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

UNIX System Programming

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Discuss the major differences between ANSI 'C' and K and R 'C' with an example each. (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. (05 Marks)
- c. Explain `setlocale()` function with an example program. (07 Marks)

OR

- 2 a. Write a C/C++ POSIX compliant program to check the following limits:
 - (i) Number of clock ticks
 - (ii) Maximum number of child process
 - (iii) Maximum path length
 - (iv) Maximum number of characters in a file name
 - (v) Maximum number of open files
 - (vi) Maximum number of semaphores per process
 - (vii) Number of simultaneous asynchronous I/O(07 Marks)
- b. Distinguish between ANSI C and C++. (03 Marks)
- c. Explain the common characteristics of API and list any six commonly occur error status codes along with their meaning. (10 Marks)

Module-2

- 3 a. Discuss the major difference between hard link and symbolic link with an example. (06 Marks)
- b. Find the actual file permission if `open` is called to create a file `/usr/vtu.txt`. Assume default file permissions is `0777` and `umask` for the calling process is `umask(|S_IWOTH|S_IXOTH|S_IWGRP)` (04 Marks)
- c. Using suitable diagram show the processes File Descriptor Table (FDT), File Table (FT) and Inode Table (IT) contains after the execution: "A process has opening 4 files – "xyz" for read only and "xyz" again write only, "abc" for read write and again "abc" for write only. Discuss the same in detail. (10 Marks)

OR

- 4 a. Discuss the `fcntl()` system call in detail with example. (10 Marks)
- b. Write C/C++ program to read 10 characters form the file "vtu.txt" and display/print. Skip next 5 characters and again read 10 characters and print/display. (06 Marks)
- c. Write C/C++ program rename old file name to the new file name using appropriate API. (04 Marks)

Module-3

- 5 a. Write a C/C++ program to create a child process and display HELLO VTU in parent space and HELLO VTU BELGAUM in child space. (04 Marks)
- b. Explain with neat depiction how a C program is started and terminated in various ways. (10 Marks)
- c. Write a C/C++ program to illustrate how to avoid Zombie process creation. (06 Marks)

OR

- 6 a. What is job control? List and explain three forms of support needed for job control with neat diagram. (10 Marks)
- b. What is the use of 'setjmp' and 'longjmp' function? Explain with an example program. (10 Marks)

Module-4

- 7 a. Explain the term 'signal' and 'signal mask' along with their prototype in detail. (08 Marks)
- b. Write C/C++ program to illustrate the use of 'sigaction'. (06 Marks)
- c. Explain kill() API and alarm() API in brief. (06 Marks)

OR

- 8 a. What is error logging? With neat diagram discuss the error logging facility in BSD. (10 Marks)
- b. Discuss Daemon characteristics and coding rules in detail. (10 Marks)

Module-5

- 9 a. What are pipes? What are their limitations? Write a C program that sends "hello world" message to the child process through the pipe. The child on receiving this message should display it on the standard output. (06 Marks)
- b. With a neat block diagram, explain how FIFO can be used to implement client server communication model. (05 Marks)
- c. Discuss different API's used in message queues along with their prototype. (09 Marks)

OR

- 10 a. What is Semaphore? Explain semget(), semctl() and semop() API's in detail. (10 Marks)
- b. What is shared memory? Discuss different API's used in shared memory along with their prototype. (10 Marks)

CBCS SCHEME

USN

--	--	--	--	--	--	--	--	--	--

17CS754

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

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Explain the key characteristics of Data centre with neat diagram. (08 Marks)
b. Explain the core elements of Data center. (04 Marks)
c. Discuss the process of mapping user files to disk storage with neat diagram. (08 Marks)

OR

- 2 a. Describe the concept of Mirroring and Parity. (04 Marks)
b. What is RAID? Explain the RAID levels with reference to nested RAID, RAID 3 and RAID 5 with neat diagram. (08 Marks)
c. Discuss the components of an intelligent storage system with neat diagram. (08 Marks)

Module-2

- 3 a. List and explain different Fibre channel connectivity options with neat diagram. (08 Marks)
b. Define FCOE. Explain components of an FCOE network. (08 Marks)
c. Define Zoning. Explain types of Zoning. (04 Marks)

OR

- 4 a. Discuss components of NAS with neat diagram. (06 Marks)
b. List and explain benefits of NAS. (06 Marks)
c. Explain object storage and Retrieval in OSD with diagram. (08 Marks)

Module-3

- 5 a. Define Business Continuity. Explain BC terminology in detail. (06 Marks)
b. Discuss different Backup Topologies. (08 Marks)
c. Explain the concept of Backup in virtualized Environments. (06 Marks)

OR

- 6 a. Explain local Replication technology using Host based methods. (08 Marks)
b. Discuss synchronous + Asynchronous and Synchronous + Disk Buffered of three site replication. (06 Marks)
c. Explain the concept of Remote replication and migration in a Virtualized Environment. (06 Marks)

Module-4

- 7 a. Define Cloud Computing. List and explain the essential characteristics of cloud computing. (08 Marks)
b. List the cloud service models and discuss any two of them. (08 Marks)
c. List and explain benefits of cloud computing. (04 Marks)

OR

- 8 a. Explain Cloud Deployment models in detail. (10 Marks)
b. Explain Cloud Computing infrastructure in detail. (10 Marks)

Module-5

- 9 a. List and explain the different types of security threats. (06 Marks)
b. Discuss IPSAN CHAP protocol with neat diagram. (06 Marks)
c. Discuss security solutions for FC-SAN and NAS. (08 Marks)

OR

- 10 a. List and describe storage infrastructure management activities. (04 Marks)
b. Explain Information lifecycle management with proper example. (08 Marks)
Discuss two methods of storage tiering. (08 Marks)

CBBCS SCHEME

USN

--	--	--	--	--	--	--	--	--	--

17IS72

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

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. What is design pattern? Differentiate between patterns and frameworks with suitable example. (06 Marks)
- b. Illustrate the step-by-step approach of applying a design pattern effectively with relevant examples. (14 Marks)

OR

- 2 a. What are the key concepts of object oriented design? (04 Marks)
- b. Illustrate how to maximize reusability of design patterns. (04 Marks)
- c. Explain the common causes of redesign and its design patterns for addressing them. (12 Marks)

Module-2

- 3 a. "The analysis needs to learn the existing system and the requirements". Justify. (05 Marks)
- b. Write a use case diagram for Book-checkout of a library system with business rules applied. (07 Marks)
- c. Describe the guidelines to remember when writing use-cases with suitable examples. (08 Marks)

OR

- 4 a. Briefly explain the major steps involved in designing a library system. (10 Marks)
- b. Describe the conceptual, software and implementation classes. (06 Marks)
- c. Draw a sequence diagram for registering a member. (04 Marks)

Module-3

- 5 a. Given problem context "Decouple an abstraction from its implementation so that the two can be varied independently". Illustrate your understanding with suitable examples. (10 Marks)
- b. Explain the structure and issues to be considered while implementing decorator pattern. (10 Marks)

OR

- 6 a. Demonstrate the structured and implementation of adapter pattern with suitable example and Java code. (10 Marks)
- b. Detail the issues to be considered while implementing composite pattern taking an example of computer or stereo components organized as part-whole hierarchies. (10 Marks)

Module-4

- 7 a. With neat diagram, explain MVC architecture and alternative view of MVC architecture. (10 Marks)
- b. What are the characteristics of architectural patterns? Explain three kinds patterns to be identified while creating software. (10 Marks)

OR

- 8 a. Draw and explain the sequence diagram for adding a label in a simple drawing program. (05 Marks)
b. Define the controller. Explain the steps involved in defining the controller. (08 Marks)
c. Explain the issues needed to be highlighted when implementing the UNDO operation. (07 Marks)

Module-5

- 9 a. Explain the advantages and disadvantages of distributed systems. (05 Marks)
b. Explain the client/server architecture in detail. (08 Marks)
c. How the library system can be deployed on the world-wide-web? (07 Marks)

OR

- 10 a. Briefly explain steps used to setup a remote object system. (14 Marks)
b. Explain Java Remote Method Invocation with suitable example. (06 Marks)
