CBCS SCHEME

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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

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

OR

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

Module-2

3 a. Explain different form widgets created with the <input> tag. (08 Marks)
 b. 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

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

Module-3

5 a. 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)
 b. Explain the advantages and disadvantages of client side scripting. (06 Marks)
 c. 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 (geTters) 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. Expalin 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)

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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:
   S_1 : Load R1, A
   S_2 : Add R2, R1
   S_3 : Move R1, R3
   S_4 : 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 →

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

   (i) What are the forbidden latencies?
   (ii) What is the initial collision vector?
   (iii) Draw the state transition diagram
   (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)**

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)**

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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)**

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 preceptron 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 cab 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 Naine 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) (06 Marks)

c. Write and explain EM algorithm. (06 Marks)

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 no 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)

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Seventh Semester B.E. Degree Examination, Jan./Feb.2021
Information and Network Security

Time: 3 hrs.   Max. Marks: 100

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

Module-1

1 a. Define the basic terminologies of Crypo and Kerckhoff's principle. **(05 Marks)**
   b. Using the letter encodings table, the following ciphertext message was encrypted with a one-time pad : KITLKE **(07 Marks)**

Letter	e	h	i	k	l	r	s	t
Binary	000	001	010	011	100	101	110	111

   (i)   If the plaintext is "thrill", what is the key?
   (ii) If the plaintext is "tiller". What is the key?
   c. Discuss the taxonomy of cryptography. **(08 Marks)**

OR

2 a. Encrypt the message "we are all together" using a double transposition Cipher with 4 rows and 4 columns. Using the row permutation $(1, 2, 3, 4) \rightarrow (2, 4, 1, 3)$ and column permuation $(1, 2, 3, 4) \rightarrow (2, 4, 1, 3)$. **(05 Marks)**
   b. Write a short notes on:
       (i) Project VENONA   (ii) Codebook cipher   (iii) Ciphers of Election of 1876 **(12 Marks)**
   c. Given the Caesar's Cipher find the plaintext from the Ciphertext, DOLFHLPZRQGHUODQG **(03 Marks)**

Module-2

3 a. Suppose that a secure cryptographic hash function generates hash value that are n bits in length. Explain how Brute force attack could be implemented. What is the expected work factor? **(07 Marks)**
   b. Explain HMAC function with an example. **(07 Marks)**
   c. Describe the techniques used in Information hiding. **(06 Marks)**

OR

4 a. Justify that Tiger hash is fast and secure, elaborating its working principle. **(10 Marks)**
   b. Discuss the secret sharing in detail and its types. **(10 Marks)**

Module-3

5 a. List and explain different types of freshness mechanisms. **(10 Marks)**
   b. Explain the stages and challenges of protocol design. **(08 Marks)**
   c. List the components of cryptographic protocol. **(02 Marks)**

OR

6 a. Describe the idea behind the dynamic password scheme. With a neat diagram, explain the example of dynamic password scheme. **(10 Marks)**
   b. Explain about Diffie-Hellman key agreement protocol. **(10 Marks)**

Module-4

7 a. Define key management, policies, practices and procedures.   (03 Marks)
   b. Discuss the key life cycle.   (07 Marks)
   c. Explain the different types of key generation in detail.   (10 Marks)

OR

8 a. Explain the different public key management models.   (12 Marks)
   b. With a neat diagram, explain generic unique key per transaction schemes and its types.
                                                                                 (08 Marks)

Module-5

9 a. Briefly explain simple SSL handshake protocol with a neat diagram.   (08 Marks)
   b. List the security and design issues in SSL.   (04 Marks)
   c. With a neat diagram, explain GSM authentication and encryption.   (08 Marks)

OR

10 a. What are the serious problem with WEP key management?   (04 Marks)
   b. Explain the process of issuing eID card with a neat diagram.   (10 Marks)
   c. What are the potential security concerns for file protection and email security? (06 Marks)

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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 Retrival 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. Discus 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)

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