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17CS71

Seventh Semester B.E. Degree Examination, July/August 2022 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. Explain the structure of HTML document with an example. (08 Marks)
b. Explain the following elements with example :
(i) <a> (ii) (iii) <P> (iv) <h2>. (08 Marks)
c. Write a HTML document to make an ordered list of your five favorite books. (04 Marks)

OR

- 2 a. Define CSS. Explain its benefits. (03 Marks)
b. List and explain different selectors of CSS. (08 Marks)
c. Explain the 3 different location of CSS styles with suitable examples. (09 Marks)

Module-2

- 3 a. Write a HTML document to display the following table:

Column 1	Column 2	Column 3
Row 1 Cell 1	Row 1 Cell 2	Row 1 Cell 3
	Row 2 Cell 2	Row 2 Cell 3
Row 3 Cell 1		

- b. Explain different form widgets created with <input> tag. (07 Marks)
c. Explain how forms work with a neat diagram. (08 Marks)
(05 Marks)

OR

- 4 a. Explain how to construct multicolumn layouts using both positioning and floats. (10 Marks)
b. Explain how to use absolute and relative positioning as a layout techniques in CSS with suitable examples. (10 Marks)

Module-3

- 5 a. Describe the 3 different ways of linking an HTML page to Javascript with examples for each. (04 Marks)
b. Explain String and Date objects of Javascript with built-in functions. (08 Marks)
c. Explain keyboard and mouse events supported by Javascript with examples. (08 Marks)

OR

- 6 a. Write a PHP program to greet the user based on time. (08 Marks)
b. With a neat diagram, explain client and server side script execution. (08 Marks)
c. Write a PHP program to keep track of number of visitors visiting the web page and to display this count of visitors with proper headings. (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. Explain the following concept of object orientation in PHP with an example:
 (i) Data encapsulation
 (ii) Inheritance. (08 Marks)
- b. List and define superglobal arrays. Design a PHP program to display the following information:
 (i) IP address of requestor.
 (ii) Operating system and browser that client is using.
 (iii) Server software. (04 Marks)
- c. Explain the different error handling methods of PHP, with suitable examples. (08 Marks)

OR

- 8 a. Explain how the data will flow from HTML form to PHP and \$_GET and \$_POST array? Illustrate with example and diagram. (07 Marks)
- b. Explain the different approaches to restrict the file size in the file upload with suitable code snippets. (06 Marks)
- c. Write a PHP program to create a class Person with the following specifications:
 Data members – Name, Age, Weight, Height
 Member functions – Readdata () and Writedata () (07 Marks)

Module-5

- 9 a. Design and explain how to read and write a cookie with an example. (10 Marks)
- b. Define session state. Explain how session state works with a neat sketch. (10 Marks)

OR

- 10 a. Sketch and explain UML sequence diagram for AJAX request. (10 Marks)
- b. Describe how XML is processed in PHP and Javascript. (10 Marks)

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Seventh Semester B.E. Degree Examination, July/August 2022 Advanced Computer Architecture

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Explain different shared memory multiprocessor models. (08 Marks)
 b. Explain PRAM model. (06 Marks)
 c. What are different static interconnection networks? Explain any two networks. (06 Marks)

OR

- 2 a. Explain the Bernstein's conditions for parallelism. For the program statements given draw the dependence graph.
 $S1: A = B + D, S2: C = A \times 3, S3: A = A + C, S4; E = A/2.$ (10 Marks)
 b. Explain Amdahl's law. In a multi-processor system with 9 processors, the portion for parallel programming is 75% then calculate overall speedup. If number of processors is doubled and with same program conditions what is the new speed up. Use Amdahl's law to calculate the speed-up. (10 Marks)

Module-2

- 3 a. Explain with diagram general CISC and RISC architectures. (10 Marks)
 b. Explain VLIW architecture with its instruction pipelining. (10 Marks)

OR

- 4 a. Explain different virtual memory models. (10 Marks)
 b. What are different page-replacement policies? A certain program generates following page trace.
 Page trace: 0 1 2 4 2 3 7 2 1 3 1
 These pages are to be mapped on to three page frames (PF_s). Use LRU algorithm and show the pages residing in the page frames. Calculate the hit ratio. (10 Marks)

Module-3

- 5 a. With a diagram, explain backplane bus system. (10 Marks)
 b. Explain sequential and weak consistency memory models. (10 Marks)

OR

- 6 a. Explain with diagram the asynchronous and synchronous models of linear pipeline processors. (08 Marks)
 b. Explain arithmetic pipeline stages with an adder unit. (06 Marks)
 c. What are different branch prediction methods? Explain briefly. (06 Marks)

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Module-4

- 7 a. Explain cross bar network and cross-point switch design in a multiprocessor system. (06 Marks)
b. What is cache coherence problem in data sharing? Explain different causes for that. (08 Marks)
c. What are different vector access memory schemes? Explain any one. (06 Marks)

OR

- 8 a. What are the different latency hiding techniques? Explain two of them. (10 Marks)
b. Explain static, dynamic and pure dataflow machines. (10 Marks)

Module-5

- 9 a. What are different programming models? Explain message-passing model. (08 Marks)
b. Explain the compilation phases in parallel computing environment with a diagram. (06 Marks)
c. Explain testing algorithm with dependence test. (06 Marks)

OR

- 10 a. What are the different synchronization schemes in multiprocessor system? Explain any two of them. (10 Marks)
b. Explain the following terms in parallel architecture:
i) Operand Forwarding
ii) Reorder buffer. (10 Marks)

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17CS73

Seventh Semester B.E. Degree Examination, July/August 2022 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. Discuss with examples, some useful application of machine learning. (06 Marks)
- b. Describe in detail all the steps involved in designing a learning system. (06 Marks)
- c. Describe Find-S algorithm. Explain its working taking the EnjoySports concept and training instances given below:

Example	Sky	Air Temp.	Humidity	Wind	Water	Forecast	Enjoy Sports
1	Sunny	Warm	Normal	Strong	Warm	Same	Yes
2	Sunny	Warm	High	Strong	Warm	Same	Yes
3	Rainy	Cold	High	Strong	Warm	Change	Yes
4	Sunny	Warm	High	Strong	Cool	Change	No

(08 Marks)

OR

- 2 a. What do you mean by well-posed learning problem? Explain with example. (04 Marks)
- b. Explain the various stages involved in designing a learning system in brief. (08 Marks)
- c. Consider the following training example and apply candidate elimination algorithm:

RID	Origin	Manufacture	Color	Decade	Type	Class
1	Japan	Honda	Blue	1980	Economy	Positive
2	Japan	Toyota	Green	1970	Sports	Negative
3	Japan	Toyota	Blue	1990	Economy	Positive
4	USA	Chrysler	Red	1980	Economy	Negative
5	Japan	Honda	White	1980	Economy	Positive

(08 Marks)

Module-2

- 3 a. Discuss the two approaches to prevent over fitting the data. (08 Marks)
- b. Consider the following set of training example:

Instance	Classification	a ₁	a ₂
1	+	T	T
2	+	T	T
3	-	T	F
4	+	F	F
5	-	F	T
6	-	F	T

- (i) What is the entropy of this collection of training example with respect to the target function classification? (08 Marks)
- (ii) What is the information gain of a₂ relative to these training examples? (04 Marks)
- c. Discuss the decision learning algorithm. (04 Marks)

OR

- 4 a. List the issues of decision tree learning. (04 Marks)
 b. Define decision tree. Construct the decision tree to represent the following Boolean functions:
 (i) $A \vee \neg B$ (ii) $A \vee [B \wedge C]$
 (iii) $A \text{ XOR } B$ (iv) $[A \cap B] \vee [C \wedge D]$ (10 Marks)
 c. Write the ID3 algorithm and explain. (06 Marks)

Module-3

- 5 a. Define perceptron. Explain the concept of single perceptron with neat diagram. (06 Marks)
 b. What is Artificial Neural Network? What are the types of problems in which ANN can be applied? (07 Marks)
 c. Discuss the perceptron training rule and delta rule that solves the learning problem of perceptron. (07 Marks)

OR

- 6 a. List the appropriate problems for neural network learning. (04 Marks)
 b. Explain the back propagation algorithm. Why is it not likely to be trapped in local minima? (10 Marks)
 c. What is gradient descent and delta rule? Why stochastic approximation to gradient descent is needed? (06 Marks)

Module-4

- 7 a. Explain Naïve Bayes classifier and Bayesian belief networks. (10 Marks)
 b. Consider a medical diagnosis problem in which there are two alternative hypothesis:
 (i) That the patient has a particular form of cancer (+) and (ii) That the patient does not (-).
 A patient takes a lab test and the result comes back positive. The test returns a correct positive result in only 98% of the cases in which the disease is actually present, and a correct negative in only 97% of the cases in which the disease is not present. Furthermore, 0.008 of the entire population has this cancer. Determine whether the patient has cancer or not using MAP hypothesis. (10 Marks)

OR

- 8 a. Explain the concept of EM algorithm. Discuss what are Gaussian mixtures. (08 Marks)
 b. Define MAP hypothesis. Derive the relation for hMAP using Bayesian theorem. (08 Marks)
 c. Describe Brute-Force MAP learning algorithm. (04 Marks)

Module-5

- 9 a. Define the following terms:
 (i) Sample error (ii) True error (iii) Random variable
 (iv) Expected value (v) Variance (10 Marks)
 b. Explain locally weighted linear regression. (04 Marks)
 c. Explain the Q function and Q learning algorithm. (06 Marks)

OR

- 10 a. Write short notes on the following:
 (i) Estimating Hypothesis Accuracy (08 Marks)
 (ii) Binomial Distribution (08 Marks)
 b. Discuss the learning task and Q learning in the context of reinforcement learning. (08 Marks)
 c. Write a short note on radial basis function. (04 Marks)

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17CS741

Seventh Semester B.E. Degree Examination, July/August 2022 Natural Language Processing

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Define NLP. Explain the challenges of NLP. (07 Marks)
- b. List and explain the applications of NLP. (07 Marks)
- c. Explain n-gram Statistical Language Model. (06 Marks)

OR

- 2 a. Explain Lexical functional grammar and the three conditions imposed by LFG on f-structure. (08 Marks)
- b. Write the C-structure and f-structure for the following sentence "VTU at Belgaum". Consider the following CFG Rules.
 $S \rightarrow NP VP$
 $VP \rightarrow V\{NP\}\{NP\} PP' \{S'\}$
 $PP \rightarrow P NP$
 $NP \rightarrow Det N \{PP\}$
 $S' \rightarrow Comp S$ (08 Marks)
- c. State major issues in Information Retrieval. (04 Marks)

Module-2

- 3 a. Write minimum edit distance algorithm and compute minimum edit distance for tutor and tumour. (07 Marks)
- b. Explain Earley parsing algorithm. (07 Marks)
- c. Explain Rule based Tagger. (06 Marks)

OR

- 4 a. Explain top-down parser and bottom-up parser with a suitable example. (08 Marks)
- b. Interpret Regular expressions and Finite State Automata with an example for each. (08 Marks)
- c. Explain Cocke-Younger-Kasami (CYK) algorithm. (04 Marks)

Module-3

- 5 a. Discuss learning with dependency path with an example. (07 Marks)
- b. Discuss the search techniques employed in InFact system. (07 Marks)
- c. List the steps involved in Active learning in the process of Learning to annotate cases with knowledge rules. (06 Marks)

OR

- 6 a. Explain the Learning Framework architecture in Learning to annotate cases with knowledges rules with brief notes. (08 Marks)
- b. Explain shortest path hypothesis. Write the different shortest paths for the statement "Jelisc created an atmosphere of terror at the camp by killing abusing and threatening the detainees." (08 Marks)
- c. Discuss domain knowledge and domain concepts in mining diagnostic text reports. (04 Marks)

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Module-4

- 7 a. Discuss the evolutionary model for knowledge discovery from texts with a neat diagram. (07 Marks)
b. List and explain any seven evolution criteria to assess the hypothesis. (07 Marks)
c. Discuss hypothesis discovery in automatic evaluation of patterns. (06 Marks)

OR

- 8 a. List the steps in the algorithm for general document separation and explain in brief. (08 Marks)
b. Explain cohesion Coh-Matrix and Predictions. (08 Marks)
c. Discuss Metacognitive statements in iSTART feedback system. (04 Marks)

Module-5

- 9 a. Discuss Boolean information retrieval model with an example. (07 Marks)
b. Define Wordnet. Explain the applications of Wordnet. (07 Marks)
c. Discuss the design features of Information Retrieval Systems. (06 Marks)

OR

- 10 a. Explain cluster and Fuzzy information retrieval models. (08 Marks)
b. A user submitted a query to an IR System. Out of the 1st 18 documents returned by the system those ranked 1, 4, 6, 9, 12, 15, 17 were relevant. Compute non-interpolated average precision for this retrieval. Assume there are seven relevant documents. (08 Marks)
c. List and explain different taggers present in ACOPOST. (04 Marks)
