Tribhuvan University

Institute of Science and Technology

Central Department of Computer Science and IT

End Term -2081

Program: M. Sc. CSIT | **Year/ Sem: I/ II**

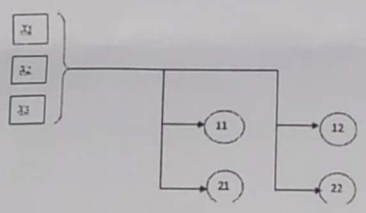
Subject: Neural Networks | **Time: 2 Hr.**

Code: CS 543 | **FM/ PM: 45/22.5**

Group A

Short Answer Questions. Attempt Any TWO.

1. What are the problems with learning rate annealing technique? How Adam works? Explain with suitable example.
2. Consider following 2-D SOM and 3-D inputs. Show the working of SOM for the inputs (0.2,0.3,0.6)



0.2	0.3	0.3	0.4
0.5	0.4	0.1	0.7
0.7	0.6	0.5	0.5

3. Which algorithm is used for training RNNs? Derive weight update rules for the algorithm.

Group B

Short Answer Questions. Attempt ALL.

4. How Sigmoid activation function differs with tanh? Explain with suitable graphs of both.
5. What is meant by polynomial curve fitting? Derive weight update rule for fitting cubic polynomial through given data points.
6. Discuss variants of gradient descent along with their strength and drawbacks.
7. Consider a 3-bit grayscale image having resolution 4x4 and filter of size 3x3. Show convolution operation on the image.
8. State XOR problem. How RBF can be used to solve XOR problem? Explain with example.
9. What is kernel? Discuss various kernels used in SVM.

Tribhuvan University
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Pre board -2081

Program: Masters
Subject: Algorithms and Complexity
Code: C.Sc.540

Year/ Sem: I/ I
Time: 2 Hrs.
FM/ PM: 45/22.5

Section A

Attempt any two questions **[2x10=20]**

1. What do you understand by amortized cost analysis? Explain any one method of performing amortized cost analysis with an example of your own. [2+8]
2. Perform list ranking on the following using the concept of pointer jumping. [10]

4	5	0	2	3	1
A[1]	A[2]	A[3]	A[4]	A[5]	A[6]

3. Sort the given sequence 3, 4, 1, 2, 11, 8, 7, 6 using odd even merge sort in butterfly network. [10]

Section B

Attempt all the questions **[5x5=25]**

4. Carry out prefix computation using mesh on the following sequence [5]
0, 1, 1, 2, 1, 2, 3, 4, 1, 4, 5, 1, 1, 5, 6, 7. The first number represents the position (1, 1) and last number represents the position (4, 4) of the Mesh structure and so on.

5. Differentiate between and P and NP problems. [5]

6. Edit the given source string " aababa" to destination "bbab". [5]

7. What do you understand by online algorithms? Explain ski-rental problem. [1+4]

8. What are the advantages of embedding a network to another structure? Explain the terms dilation, congestion, expansion with an example. [1+4]

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Pre-board -2081

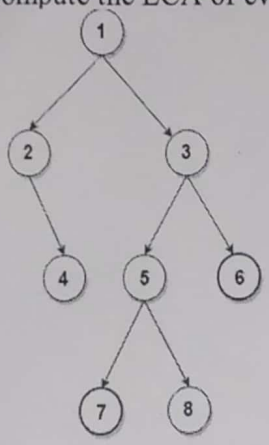
Program: Masters
Subject: Parallel and Distributed Computing
Code: CSc544

Year/ Sem: I/ I
Time: 2 Hrs.
FM/ PM: 45/22.5

Section A

Attempt any TWO questions **[2x10=20]**

1. Describe the parallel processing paradigms. How do you evaluate parallel algorithms? Explain. [6+4]
2. Distinguish between semantic and axiomatic definitions. Describe the different variations of Petri Nets. [4+6]
3. Compute the LCA of every pairs in following tree. [10]



Section B

Attempt ALL the questions **[5×5=25]**

4. Discuss about task scheduling. [5]
5. Explain any one PRAM algorithm. [5]
6. Describe the formal definition of Generalized BSR model. [5]
7. Draw the data flow model for $x = \sum_{i=0}^{n} i^2$. [5]
8. How do you perform scheduling in task graph with communication? Explain. [5]

penalty.

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Pre board -2081

Program: Masters
Subject: Object Oriented Software Engineering
Code: C.Sc.539

Year/ Sem: I/ I
Time: 2 Hrs.
FM/ PM: 45/22.5

Section A

Attempt any two questions **[2x10=20]**

1. Compare between Waterfall model with prototype model of software development. [10]
2. Discuss the steps of the project selection and preparation is of object oriented software development. [10]
3. Explain the responsibility-driven design (RDD) method with advantages and disadvantages. [10]

Section B

Attempt all questions **[5×5=25]**

4. Discuss the process to develop the requirement model from the user requirements. [5]
5. What do you mean by Object Orientation analysis? Explain with practical example. [5]
6. Differentiate between function/data oriented method and object -oriented method. [5]
7. Discuss the real time systems with example. [5]
8. Comparison between components and components management. [5]

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Pre board - 2081

Program: Masters
Subject: Advanced Operating System
Code: C.Sc.538

Year/ Sem: I/ I
Time: 2 Hrs.
FM/ PM: 45/22.5

Section A

Attempt any two questions **[2x10=20]**

1. What is paging? Explain working mechanism of paging with suitable diagram? Also explain page table, page number, page offset. [10]
2. What is disk scheduling? Define SCAN, CSCAN, C-LOOK. [10]
3. What is communication protocol? How communication can be performed using OSI layers? Illustrate with suitable diagram. [10]

Section B

Attempt all questions **[5×5=25]**

4. What are the design issues of distributed operating system? [5]
5. What are the challenges of multimedia operating system? [5]
6. What is real time operating system? What are its types and characteristics? [5]
7. What are the routing strategies? [5]
8. What are the differences between multiprogramming operating system and multiprocessing operating system? [5]