Sylhet Engineering College, Sylhet
(Shahjalal University of Science & Technology)
Department of Computer Science& Engineering

Final Examination, 2019 — **4th Year 2nd Semester**
Course No: CSE 803 — **Course Title: Introduction to Distributed Computing**
Time: 02 (Two) hours — **Full Marks: 50**

N.B. : (i) Answer any two question from each PART (ii) Use separate answer scripts for each PART
(iii) Marks allotted are indicated in the margin (iv) Special Instruction (if any)-------N/A---------

PART-A
(Answer any two questions)

1. (a) What is Consistency? Write about sequential and causal Consistency models. 6.5

   (b) Compare the following: 06
   (i) Remote-Write Protocols Vs Local-Write Protocols.
   (ii) Push Vs Pull.

2. (a) Briefly explain security model for distributed computing. How can we defeat the enemy in a network system? 3+2.5

   (b) How can we configure firewalls? To design a secure system what criteria should follow? 4+3

3. (a) Differentiate between threat and attack? What are the components of distributed shared memory? 2+1

   (b) Write the application areas of DSM? What are the benefits of DSM in terms of shared memory? 1.5+3

   (c) Write short notes on different cryptographic algorithms: **RSA**and **AES**. 5

PART-B
(Answer any two questions)

4. (a) What are total and partial failures? Briefly discuss about fault tolerance technique 1+4

   (b) Explain failure models of Distributed computing. 3

   (c) Write the issues to restore an erroneous state to an error free state in failure recovery. Discuss about different phases of rollback recovery. 1.5+3

5. (a) Write different types of design in replication. Write the key points on Stateless versus stateful servers. 2+2

   (b) Discuss about the challenges in distributed file system. 3.5

   (c) Write short notes on: **Chubby, Google File System** 5

6. (a) Why is it called Cloud in terms of cloud computing? Write the steps of finding cloud services using EC2 with example. 2+3

   (b) Write about different types of cloud computing. 1

   (c) What is PAXOS? Write down a PAXOS algorithm for the assumption of no failures in the system. 6.5

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Final Examination, 2019 — **4th Year 2nd Semester**
Course No: CSE 815 — **Course Title: Machine Learning**
Time: 02 (Two) hours — **Full Marks: 50**

N.B. : (i) Answer any two questions from each PART (ii) Use separate answer scripts for each PART
(iii) Marks allotted are indicated in the margin (iv) Special Instruction (if any)-------N/A---------

PART-A
(Answer any two questions)

1. (a) What is Machine Learning? Differentiate between Supervised and Unsupervised Machine Learning with appropriate examples. 2.5

(b) What is a Neural Network (NN)? Explain Hidden Layer with suitable example. 05

(c) With a suitable example explain back propagation in Neural Network? 05

2. (a) Define Linear Regression with appropriate examples. 2.5

(b) Consider the following data where x is the independent variable and y is the dependent variable. 10
(i) Plot the values of **x** and **y** in a 2-Axis graph.
(ii) Find the values of Coefficient **m** and Intercept **c** between **x** and **y**.
(iii) Draw a Linear Regression line using the straight-line equation **y = mx + c**.

x	y
1.00	1.50
2.00	2.00
3.00	2.50
4.00	3.50
5.00	5.50
6.00	5.00
7.00	8.00

Table: 1

3. (a) Explain two real-life problems where K-th Nearest Neighbour (KNN) may perform better. 2.5

(b) Find out the type of *P1(5.0, 6.0)* with K-th Nearest Neighbour (KNN) Algorithm (where, k=3) 10

Subject	A	B
1	1.0	1.0
2	1.5	2.0
3	3.0	4.0
4	5.0	7.0
5	3.5	5.0
6	4.5	5.0
7	3.5	4.5

Table: 2

PART-B
(Answer any two questions)

4. (a) When and Why should we use K-Means Clustering algorithm? 2.5

(b) Construct two clusters from Table:1 with the K-Means Algorithm and show each step with the proper figure. [Max Iteration=3]. 10

5. (a) Explain Confusion Matrix with respect to detection of "Spam e-mails". 4.5

(b) Construct a decision tree from the following table. 08

Day	Outlook	Temperature	Humidity	Wind	Play Golf
D1	Sunny	Hot	High	Weak	No
D2	Sunny	Hot	High	Strong	No
D3	Overcast	Hot	High	Weak	Yes
D4	Rain	Mild	High	Weak	Yes
D5	Rain	Cool	Normal	Weak	Yes
D6	Rain	Cool	Normal	Strong	No
D7	Overcast	Cool	Normal	Strong	Yes
D8	Sunny	Mild	High	Weak	No
D9	Sunny	Cool	Normal	Weak	Yes
D10	Rain	Mild	Normal	Weak	Yes
D11	Sunny	Mild	Normal	Strong	Yes
D12	Overcast	Mild	High	Strong	Yes
D13	Overcast	Hot	Normal	Weak	Yes
D14	Rain	Mild	High	Strong	No

Table: 3

6. (a) State Bayes theorem with a proper example. 2.5

(b) Consider the Table: 3 as training data to train Naive Bayes Classifier and predict the answer of the following table. 10

Day	Outlook	Temperature	Humidity	Wind	Play Golf
D1	Sunny	Hot	High	Weak	?
D2	Rain	Cool	High	Strong	?

TABLE: 4

Sylhet Engineering College, Sylhet
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Final Examination, 2019 — **4th year 2nd semester**
Course No: CSE 801 — **Course Title: Computer Graphics**
Time: 02 (Two) hours — **Full Marks: 50**

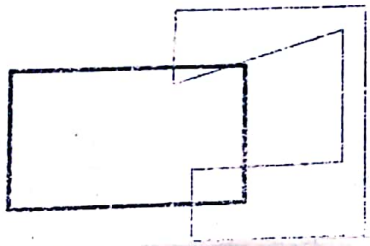
N.B. : (i) Answer any two question from each PART (ii) Use separate answer scripts for each PART
(iii) Marks allotted are indicated in the margin (iv) Special Instruction (if any)----------N/A----------

PART-A
(Answer any two questions)

1) a) What do you mean by scan-converting a point? 2
b) Write the advantages and disadvantages of DDA algorithm to draw a line. 2.5
c) Derive Bresenham's Circle algorithm to scan convert a circle. Also write the algorithm. 6
d) Draw the RGB color space model. 2

2) a) Clip the polygon using the Weiler-Atherton polygon clipping algorithm. 5.5

Here bold lines are a window.



b) Find the new coordinate of triangle A(12,0)B(24,0)C(13,19) after it has been magnified to thrice of its original size. 07

3) a) If the new coordinate of P (x,y) after rotation by θabout the origin is P′ (x′,y′), then prove that $x' = x\cos\theta - y\sin\theta$ 07

$$y' = x\sin\theta + y\cos\theta$$

Draw an appropriate figure.

b) Derive the equation for *geometric* and *coordinate rotation* 03
c) An image has a dimension of 1080*780 and uses a look-up table of 18 entries. How much space it requires to store the image(in kB). 2.5

PART-B
(Answer any twoquestions)

4) a) Let R be the rectangular window whose lower-left corner is at (1,1) and upper-right corner is at (8,8). 08
Given lines are:
AB = (4,4) (5,10) EF = (2,3) (3,5)
CD = (5,3) (4,-4) GH = (9,3) (13,7)
Use the Liang-Barsky algorithm to clip the given lines.

b) Explain the underlying concept of the painter's algorithm? What are the problems in implementing the painter's algorithm? 4.5

5) a) Describe the Cohen–Sutherland algorithm procedure for finding the category of a line segment. 4

b) Let a unit cube is projected onto the xy plane. Draw the projected image using the standard perspective transformation with (i) d=1, where d is distance from the view plane 4.5

c) Represent the different geometric transformations in 3D as metrics functions. 4

6) a) Scan convert a line from (1,0) to (8,5) using Bresenham's Line algorithm and draw the line. 8.5

b) Answer the following questions. 04

i) What is an image's aspect ratio?

ii) Compute the size of a 640 X 480 image at 240 pixels per inch.

iii) Compute the resolution of a 2 X 2 inch image that has 512 X 512 pixels

iv) What is the resolution of an image?