

Course Name: Digital Image Processing

Course Outcome

- CO1-Understand mathematical formulation of an image, its processing steps and relationship between image pixels.
- CO2- Apply Image enhancement using intensity transformations and spatial filtering.
- CO3- Analyze image enhancement for frequency domain using Fourier transform.
- CO4- Formulate region of interest through morphological operations.
- CO5- Evaluate strongly co-related regions obtained through Segmentation using discontinuity and homogeneity-based segmentation techniques
- CO6- Describe an object of an image using Shape Number and Boundary descriptors.

Printed Pages: 4

University Roll No.

End Term Examination, Even Semester 2021-22 B.Tech. (CSE/CCV/DA/CSF/IoT/AIML), III Year, VI Semester BCSE 0101: Digital Image Processing

Maximum Marks: 50

Time: 3 Hours

Section - A

4 X 5 = 20 Marks

Attempt All Questions

| No. | Detail of Question | Marks | CO | BL | KL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----|---|-------|----|----|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | What is Digital Image Processing? Explain fundamental steps in Digital Image Processing. | 4 | 2 | A | C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Perform histogram equalization of an image shown below: $f(m, n) = \begin{bmatrix} 3 & 2 & 4 & 5 \\ 7 & 7 & 8 & 2 \\ 3 & 1 & 2 & 3 \\ 5 & 4 & 6 & 7 \end{bmatrix}$ | 4 | 1 | A | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Assume a 4-bit gray scale image I as shown below, generate the linear contrast stretched image with minimum gray level 5 and maximum gray level 14. <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td></tr> <tr><td>3</td><td>4</td><td>4</td><td>4</td><td>4</td><td>4</td><td>4</td><td>3</td></tr> <tr><td>3</td><td>4</td><td>2</td><td>2</td><td>2</td><td>2</td><td>4</td><td>3</td></tr> <tr><td>3</td><td>4</td><td>2</td><td>5</td><td>5</td><td>2</td><td>4</td><td>3</td></tr> <tr><td>3</td><td>4</td><td>2</td><td>5</td><td>5</td><td>2</td><td>4</td><td>3</td></tr> <tr><td>3</td><td>4</td><td>2</td><td>2</td><td>2</td><td>2</td><td>4</td><td>3</td></tr> <tr><td>3</td><td>4</td><td>4</td><td>4</td><td>4</td><td>4</td><td>4</td><td>3</td></tr> <tr><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td></tr> </table> | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 3 | 4 | 2 | 2 | 2 | 2 | 4 | 3 | 3 | 4 | 2 | 5 | 5 | 2 | 4 | 3 | 3 | 4 | 2 | 5 | 5 | 2 | 4 | 3 | 3 | 4 | 2 | 2 | 2 | 2 | 4 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 2 | A | C |
| 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 4 | 2 | 2 | 2 | 2 | 4 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 4 | 2 | 5 | 5 | 2 | 4 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 4 | 2 | 5 | 5 | 2 | 4 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 4 | 2 | 2 | 2 | 2 | 4 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Assume a 5-bit gray scale image I and consider the spatial filter H given by

$$H = \begin{bmatrix} -1 & -2 & 0 \\ -2 & 0 & 3 \\ 0 & 3 & 1 \end{bmatrix}$$

Determine the maximum and minimum possible values that a pixel, to which this spatial filter is applied, can have. Do not apply any type of normalization.

Use Prewitt gradient operator to find out the gradient magnitude and edges of given image (Assume appropriate value of threshold for edge detection) Use the following to estimate the gradient magnitude:

$$|d(x, y)| = \sqrt{d_1^2(x, y) + d_2^2(x, y)}$$

4

| | | | | | |
|---|---|---|---|---|---|
| 8 | 8 | 8 | 8 | 8 | 1 |
| 8 | 9 | 8 | 8 | 8 | 2 |
| 8 | 9 | 8 | 8 | 2 | 1 |
| 8 | 9 | 8 | 2 | 2 | 2 |
| 8 | 8 | 1 | 2 | 1 | 2 |
| 8 | 1 | 1 | 2 | 2 | 2 |

4

5

A

C

5

Explain Point, Line, Edge Segmentation with the help of an example.

OR

Explain anyone similarity (homogeneity) based Segmentation Algorithm with the help of an example.

4

5

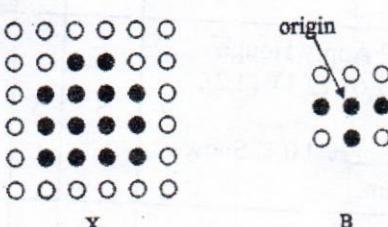
U

F

Section - B

$3 \times 5 = 15$ Marks

Attempt All Questions

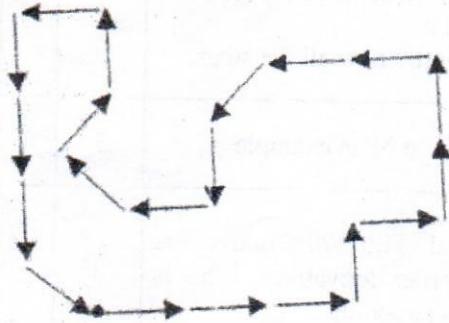
| No | Detail of Question | Marks | CO | BL | KL |
|----|---|-------|----|----|----|
| 1 | <p>Binary image X and structuring element B, are given in Figure.1:</p>  <p style="text-align: center;">X B</p> | 3 | 4 | A | C |
| | <p>Figure:1 Calculate $Y_1 = X \ominus B$, where \ominus denotes the morphological erosion operator and $Y_2 = X \oplus B$ where \oplus denotes the morphological dilation operator;</p> | | | | |
| 2 | <p>Binary image X and structuring element B, are given in Figure.1 (Section B, Question 1): Perform Hit-Miss Transformation. Show all the steps.</p> | 3 | 4 | A | C |
| 3 | Explain Convex Hull with the help of an example | 3 | 4 | R | F |
| 4 | What are Sharpening Spatial Filters? Discuss the response of First and Second order derivatives. What is the Laplacian mask for image sharpening? | 3 | 2 | An | C |
| 5 | <p>Find the strength & the direction of the edge at the highlighted pixel using Gradient method. Pixel in gray have value 0 & in white have value 1</p>  | 3 | 5 | A | P |

Section - C

5 X 3 = 15 Marks

Attempt All Questions

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|---|-------|----|----|----|
| 1 | Discuss the Algorithm of canny Edge Detector by explaining all the steps with example. | 5 | 5 | U | F |
| 2 | What is the use of Hough Transform? Apply Hough Transform to join following points: (2,0), (2,1), (2,2), (2,4) Assume m has range (-0.2, 0.2) and interval 0.1. Show all the steps with the help of a diagram. | 5 | 5 | A | C |
| 3 | What do you mean by chain code? What are the limitations of chain code? What are the advantages of Shape number? Find out shape number of the following diagram: | 5 | 6 | A | C |



Course Name: Machine Learning

Course Outcome

- CO1- Apply the basic concepts of machine learning.
- CO2- Analyze the concepts of regression and re-sampling methods.
- CO3- Design supervised and re-enforcement learning based solutions.
- CO4- Apply the ensemble methods for improving classification.
- CO5- Identify the ways of feature extraction, reduction and selection.
- CO6- Design the applications of machine learning algorithms

Printed Pages:03

University Roll No.

End Term Examination, Even Semester 2021-22

B.Tech CSE, Year III, Semester VI

Subject Code & Subject Name- Machine Learning (BCSE 0105)

Time: 3 Hours

Maximum Marks: 50

Instruction for students: -----

Section - A

Attempt All Questions

4 X 5 = 20 Marks

| No. | Detail of Question | Marks | CO | BL | KL | | | | | | | | | | | | |
|-----|--|-------|-----|----|----|---|----|---|---|---|---|---|---|---|-----|---|---|
| 1 | Discuss Cross- Validation over the training samples in Machine Learning problem. | 4 | CO1 | R | P | | | | | | | | | | | | |
| 2 | Find the least squares regression line for the five-point data set <table style="margin-left: auto; margin-right: auto;"> <tr> <td>x</td><td>2</td><td>2</td><td>6</td><td>8</td><td>10</td></tr> <tr> <td>y</td><td>0</td><td>1</td><td>2</td><td>3</td><td>3</td></tr> </table> | x | 2 | 2 | 6 | 8 | 10 | y | 0 | 1 | 2 | 3 | 3 | 4 | CO2 | E | C |
| x | 2 | 2 | 6 | 8 | 10 | | | | | | | | | | | | |
| y | 0 | 1 | 2 | 3 | 3 | | | | | | | | | | | | |
| 3 | Differentiate between Under-fitting and Over-Fitting. With the help of an example. | 4 | CO2 | R | F | | | | | | | | | | | | |
| 4 | State the mathematical formulation of the SVM problem. Give an outline of the method for solving the problem. | 4 | CO6 | An | p | | | | | | | | | | | | |
| 5 | Describe the significance of soft margin hyperplane and explain how they are computed. Or With respect to given following figure, we state a simple SVM problem. Let us have two training samples: Class A: $X_1 = 1$ $X_2 = 1$ and $y = 1$. Class B: $X_1 = -1$, $X_2 = -1$ and $y = -1$. Let $F(X) = W_1 X_1 + W_2 X_2 + C \quad \left\{ \begin{array}{l} \geq 0, \text{(Class A)} \\ < 0, \text{(Class B)} \end{array} \right.$ | 4 | CO6 | A | C | | | | | | | | | | | | |

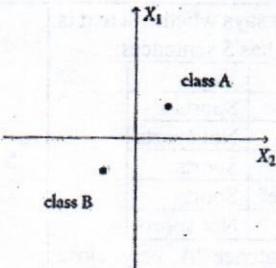
| | | | | | |
|--|--|--|--|--|--|
| | Determine the value of W1, W2 and C and write down the equation for classifier function F(X), (best hypothesis). | | | | |
| |  | | | | |

Fig. Two-dimensional classification problem for SVM.

Section – B

Attempt All Questions

3 X 5 = 15 Marks

| No. | Detail of Question | Marks | CO | BL | KL | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----|---|-------|-----|----|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----|---|---|
| 1 | Describe how to improve classification with ada-boost algorithm. | 3 | CO1 | U | P | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Illustrate K means clustering algorithm with an example. | 3 | CO5 | R | C | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Suppose 10000 patients get tested for flu; out of them, 9000 are actually healthy and 1000 are actually sick. For the sick people, a test was positive for 620 and negative for 380. For the healthy people, the same test was positive for 180 and negative for 8820. Construct a confusion matrix for the data and compute the precision and recall for the data. | 3 | CO6 | A | C | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Use single and complete link agglomerative clustering to group the data described by the following distance matrix. Show the dendograms. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1" data-bbox="314 1054 565 1175"> <tr> <td></td><td>A</td><td>B</td><td>C</td><td>D</td></tr> <tr> <td>A</td><td>0</td><td>1</td><td>4</td><td>5</td></tr> <tr> <td>B</td><td>1</td><td>0</td><td>2</td><td>6</td></tr> <tr> <td>C</td><td>4</td><td>2</td><td>0</td><td>3</td></tr> <tr> <td>D</td><td>5</td><td>6</td><td>3</td><td>0</td></tr> </table> | | A | B | C | D | A | 0 | 1 | 4 | 5 | B | 1 | 0 | 2 | 6 | C | 4 | 2 | 0 | 3 | D | 5 | 6 | 3 | 0 | 3 | CO6 | A | F |
| | A | B | C | D | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A | 0 | 1 | 4 | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B | 1 | 0 | 2 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 4 | 2 | 0 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D | 5 | 6 | 3 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | What is bias and variance in machine learning? What do you expect will happen with bias and variance as you increase the size of training data? | 3 | CO2 | U | C | | | | | | | | | | | | | | | | | | | | | | | | | |

Section – C

Attempt All Questions

5 X 3 = 15 Marks

| No. | Detail of Question | Marks | CO | BL | KL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------|---|--------|------------|----------------|--------|-------------------------|-------------|--------------------|--------|--------------------------------|-------------|---------------------------|------------|----|------------|--------|-----|----|------------|------|-----|----------|-------------|--------|-----|----------|-------------|------|-----|----------|------------|--------|----|----------|------------|--------|----|---|-----|---|---|
| 1 | <p>Build a Naïve Bayesian Classifier that says whether a text is about sports or not. Our training data has 5 sentences:</p> <table border="1"> <thead> <tr> <th>Text</th><th>Tag</th></tr> </thead> <tbody> <tr> <td>"A great game"</td><td>Sports</td></tr> <tr> <td>"The election was over"</td><td>Not sports</td></tr> <tr> <td>"Very clean match"</td><td>Sports</td></tr> <tr> <td>"A clean but forgettable game"</td><td>Sports</td></tr> <tr> <td>"It was a close election"</td><td>Not sports</td></tr> </tbody> </table> <p>Determine which Tag does the sentence "A very close game" belong to?</p> | Text | Tag | "A great game" | Sports | "The election was over" | Not sports | "Very clean match" | Sports | "A clean but forgettable game" | Sports | "It was a close election" | Not sports | 5 | CO6 | A | C | | | | | | | | | | | | | | | | | | | | | | | | |
| Text | Tag | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| "A great game" | Sports | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| "The election was over" | Not sports | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| "Very clean match" | Sports | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| "A clean but forgettable game" | Sports | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| "It was a close election" | Not sports | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | <p>Identify the first splitting attribute for decision tree by using ID3 algorithm with the following dataset.</p> <table border="1"> <thead> <tr> <th>Major</th><th>Experience</th><th>Tie</th><th>Hired?</th></tr> </thead> <tbody> <tr> <td>CS</td><td>programming</td><td>pretty</td><td>NO</td></tr> <tr> <td>CS</td><td>programming</td><td>pretty</td><td>NO</td></tr> <tr> <td>CS</td><td>management</td><td>pretty</td><td>YES</td></tr> <tr> <td>CS</td><td>management</td><td>ugly</td><td>YES</td></tr> <tr> <td>business</td><td>programming</td><td>pretty</td><td>YES</td></tr> <tr> <td>business</td><td>programming</td><td>ugly</td><td>YES</td></tr> <tr> <td>business</td><td>management</td><td>pretty</td><td>NO</td></tr> <tr> <td>business</td><td>management</td><td>pretty</td><td>NO</td></tr> </tbody> </table> | Major | Experience | Tie | Hired? | CS | programming | pretty | NO | CS | programming | pretty | NO | CS | management | pretty | YES | CS | management | ugly | YES | business | programming | pretty | YES | business | programming | ugly | YES | business | management | pretty | NO | business | management | pretty | NO | 5 | CO6 | A | C |
| Major | Experience | Tie | Hired? | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CS | programming | pretty | NO | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CS | programming | pretty | NO | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CS | management | pretty | YES | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CS | management | ugly | YES | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| business | programming | pretty | YES | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| business | programming | ugly | YES | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| business | management | pretty | NO | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| business | management | pretty | NO | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Discuss any four examples of machine learning applications. | 5 | CO1 | R | F | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

CO – Course Outcome, BL – Abbreviation for Bloom's Taxonomy Level (R-Remember, U-Understand, A-Apply, An-Analyze, E-Evaluate, C-Create), KL – Abbreviation for Knowledge Level (F-Factual, C-Conceptual, P-Procedural, M-Metacognitive). However, For Engg. Courses in addition to F, C, P & M include D-Fundamental Design Principles, S-Criteria and Specifications, PC-Practical Constraints, DI- Design Instrumentalities

Course Outcome:

- CO1: Understand the concept and challenges of big data.
 CO2: Work with existing technology to collect, manage, store, query, and analyze the various form of big data.
 CO3: Perform job scheduling of various applications and resource management in the cluster using Hadoop and Yarn.
 CO4: Do the data summarization, query, and analysis over the big data with the help of pig and hive.
 CO5: Prepare the regression model, cluster and decision tree over the real big data.
 CO6: Gain hands-on experience in large-scale analytics tools to solve some open big data problems.

Printed Pages:03

University Roll No.

End Term Examination, Even Semester 2021-22**B. Tech. (CSE), III Year, VI Semester****BCSE0157: INTRODUCTION TO BIG DATA ANALYTICS**

Time: 3 Hours

Maximum Marks: 50

Instructions for students:

1. All questions should be answered into given sequenced order for all sections.
2. Answer should be brief and to-the-point with neat sketch/diagram.
3. Any missing or wrong data may be assumed suitably giving proper justification.
4. Mentioned on the right-hand side margin, indicates the full marks for respective questions.

Section – A**Attempt All Questions****4 X 5 = 20 Marks**

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|--|-------|----|----|----|
| 1 | <p>Consider database as 'GLA_University' with 05 Departments and running 10 Bachelor & Master Courses for their students. Write a Cassandra Query Language (CQL) for below mentioned:</p> <p>(a) Create table for CSE Dept with Primary Key (b) Select students record from Course: B.Tech. & M.Tech. in CSE Dept. (c) Delete students record from civil dept. for roll number 112 in M.Tech.</p> <p style="text-align: center;">OR</p> <p>Write a Java Program for Word Counting using Map Reduce with the role of Mapper & Reducer Class in finding out the frequency of each word in given sentence/textual dataset.</p> | 4 | 2 | C | PC |
| 2 | Demonstrate the different layers of Big Data Stack with description of each layer for processing and analyzing the huge quantities of data. | 4 | 1 | U | P |
| 3 | State the Architecture & Daemons of YARN in Hadoop with neat sketch? | 4 | 3 | R | S |

| | | | | | |
|---|--|---|---|----|---|
| 4 | Discuss the Role of Traditional Business Intelligence (BI) and Big Data Analytics in handling large & complex set of data? | 4 | 2 | U | F |
| 5 | "Apache Pig is a platform for analyzing large data sets and is an alternative to Map Reduce Programming". Differentiate between Map Reduce and Apache Pig for such data analysis and processing? | 4 | 4 | An | M |

Section – B

Attempt All Questions

3 X 5 = 15 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|---|-------|----|----|----|
| 1 | Difference among Hadoop1.0, Hadoop2.0, Hadoop3.0 with features like storage, processing & handling of data? OR There are TWO policies namely – <i>Round Robin & Available Space</i> used by HDFS Intra-DataNode Disk Balancer. Justify the statement with suitable diagram. | 3 | 2 | An | P |
| 2 | Why Bloom Filter is requires as one of the components in Cassandra? Explain with diagram. | 3 | 6 | C | D |
| 3 | Sketch the concept of " <i>Bucketing</i> " in Apache Hive Partitioning the data with suitable example? | 3 | 4 | A | F |
| 4 | Justify the Advantages & Disadvantages of using Apache Flume in Hadoop Ecosystem? | 3 | 5 | E | C |
| 5 | Explain the Architecture of Apache Pig with its components? | 3 | 4 | U | P |

Section – C

Attempt All Questions

5 X 3 = 15 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|--|-------|----|----|----|
| 1 | State the importance of " <i>Replica Placement Strategy</i> " in HDFS with diagram. Also, justify the need for " <i>Erasure Coding</i> ", once the data is split into several blocks in HDFS by taking suitable example. | 5 | 1 | R | C |
| 2 | " <i>MongoDB stores the data into JSON-like documents with dynamic schemas</i> " – Justify the statement by taking suitable example. Also, Write Mongo Commands for below mentioned methods: (a) insertMany () | 5 | 5 | E | PC |

| | | | | | |
|---|---|---|---|---|---|
| | (b) remove () (c) updateOne () (d) find () | | | | |
| 3 | Describe the component of Hive Architecture in detail with its services diagram? What are the functions of ' <i>Metastore</i> ' whenever a table is created or deleted from Hive along with its type. | 5 | 4 | U | F |

Course Name: CLOUD COMPUTING

Course Outcome

- CO1- Describe importance of virtualization along with their technologies like system, network, and storage virtualizations.
- CO2- Identify the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, XaaS, Public Cloud, Private Cloud, Hybrid Cloud and the core issues of cloud computing such as security, privacy, and interoperability.
- CO3- Justify the need of new technology of Virtualization & Cloud Computing and its ecological impact.
- CO4- Identify the known threats, risks, vulnerabilities and privacy issues associated with Cloud based IT services.
- CO5- Apply fundamental concepts in cloud infrastructures to understand the tradeoffs in power, efficiency and cost.
- CO6- Identify the Challenges in managing heterogeneous clouds.
- CO7- Analyze various cloud programming models and apply them to solve problems on the cloud.
- CO8- Describe the key components of Amazon web Service.

Printed Pages: 02

University Roll No.

End Term Examination, Even Semester 2021-22

B.Tech CSE, III Year, VI Semester

BCSE 0207 CLOUD COMPUTING

Time: 3 Hours

Maximum Marks: 50

Instruction for students:

- Strictly follow the order of the question paper
- Attempt all the question of a section at a single place

Section - A

Attempt All Questions

4 X 5 = 20 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|--|-------|----|--------|----|
| 1 | Define Hypervisor. How Hypervisors are different from Virtual Machine? | 4 | 1 | An | C |
| 2 | Compare the cost of Scaling the Hardware in traditional and cloud? Which one is more beneficial and why? | 4 | 2 | An | C |
| 3 | Suggest a cloud computing solution to the following: The mayor of a town wants that everything should be online with its user always accessing the mail on go. The city has a population over 1 million. City employees fulfill a range of important functions – from policing streets to supplying water and power to city residents and businesses, and from operating libraries to designing and building wastewater treatment plants and other public facilities. The mayor want to provide all these employees with modern tools that help them do their jobs The mayor want to reduce the response time of the primary services, users having option of complaining either in the mode of text or by uploading picture. | 4 | 2 | A m | |

| | | | | | |
|---|---|---|---|----|---|
| 4 | Differentiate between: a) Authentication and Authorization. b) Internal and External Attackers | 4 | 4 | An | C |
| 5 | Write Short notes on: a) Host Hopping Attacks b) Malicious Insider and Abuse of Privileges. c) Identity Theft Attacks d) Service Engine Attacks | 4 | 4 | U | F |

Section – B

Attempt All Questions

3 X 5 = 15 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|---|-------|----|----|----|
| 1 | How auditing helps an organization to deliver the deliverable to the customer as mentioned in SLA? | 3 | 3 | U | C |
| 2 | What is data leakage? Why data leakage happens? What are the remedies to avoid it? | 3 | 5 | R | F |
| 3 | How does the Infrastructure Security at network level, host level and application level differs? Explain with the help of example. | 3 | 4 | U | F |
| 4 | What is Service Orchestration? How it supports Business process? | 3 | 6 | R | F |
| 5 | What are the factors that impact availability in cloud? Why there is more security concern in a public cloud at IaaS? | 3 | 2 | U | C |

Section – C

Attempt All Questions

5 X 3 = 15 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|--|-------|----|----|----|
| 1 | Why a public cloud faces more security challenges than a private cloud? Compare traditional IT security measures with cloud security. | 5 | 2 | An | C |
| 2 | Having a large number of dormant virtual machine may increase the security risks associated with system. Discuss the problem by citing the virtual threats that may come due to this problem. The security policy changes when data is at rest and when it is in transit. Discuss the security approach to both scenario. | 5 | 3 | A | D |
| 3 | Discuss the Conceptual Reference Model with the help of diagram. Also, explain the different actors involved in the model. | 5 | 5 | R | F |

Printed Pages: 16

University Roll No.....

End-Term Examination, Even Semester 2021-22

B.Tech. CSE III: Year, VI: Semester

BCSE 0905: Artificial Intelligence for IIoT

Time: 1.5 -hour

Maximum Marks: 50

Section- A

Note: Attempt All Questions.

$30 \times 1 = 30$ Marks

1. _____ is an open-source machine learning library for Python and is completely based on Torch.

- A. Flask
- B. PyTorch
- C. PyBrain
- D. CherryPy

2. PyTorch is known for having _____ levels of abstraction.

- A. 1
- B. 2
- C. 3
- D. 4

3. Which of the following are the advantages of PyTorch?

- A. It is easy to debug and understand the code
- B. It includes many layers as Torch
- C. It includes lot of loss functions
- D. All of the above

4. _____ is an imperative n-dimensional array which runs on GPU.

A. Variable

B. Tensor

C. Module

D. All of the above

5. _____ is a package which is used to wrap a tensor.

A. extend.variable

B. autograd.variable

C. variable

D. auto.variable

6. _____ is a technique or way to find the linear relation between the dependent variable and the independent variable by minimizing the distance.

A. Linear Regression

B. Bilinear Regression

C. Discrete Regression

D. All of the above

7. MSE stands for?

A. Machine Squared Error

B. Mean Simple Error

C. Mean Squared Evaluate

D. Mean Squared Error

8. The activation functions are basically divided into _____ types.

A. 1

B. 2

C. 3

D. 4

9. The Conv1d and Conv2D is used to apply 1D and 2D convolution.
- A. TRUE
 - B. FALSE
 - C. Can be true or false
 - D. Can not say
10. The torch.cuda is a package which adds support for CUDA tensor type.
- A. TRUE
 - B. FALSE
 - C. Can be true or false
 - D. Cannot say
11. A 3-input neuron is trained to output a zero when the input is 110 and a one when the input is 111. After generalization, the output will be zero when and only when the input is?
- A. 000 or 110 or 011 or 101
 - B. 010 or 100 or 110 or 101
 - C. 000 or 010 or 110 or 100
 - D. 100 or 111 or 101 or 001
12. What is an auto-associative network?
- A. neural network that contains no loops
 - B. a neural network that contains feedback
 - C. a neural network that has only one loop
 - D. a single layer feed-forward neural network with pre-processing
13. A 3-input neuron has weights 1, 2, 3. The transfer function is linear with the constant of proportionality being equal to 3. The inputs are 4, 20, 5 respectively. What will be the output?
- A. 38

- B. 76
- C. 119
- D. 177

14. Which of the following is true?

(i) On average, neural networks have higher computational rates than conventional computers.

(ii) Neural networks learn by example.

(iii) Neural networks mimic the way the human brain works.

- A. All of the mentioned are true
- B. (ii) and (iii) are true
- C. (i), (ii) and (iii) are true
- D. None of the mentioned

15. Which of the following is true?

Single layer associative neural networks do not have the ability to:

(i) perform pattern recognition

(ii) find the parity of a picture

(iii) determine whether two or more shapes in a picture are connected or not

- A. (ii) and (iii) are true
- B. (ii) is true
- C. All of the mentioned
- D. None of the mentioned

16. In Feedforward ANN, information flow is _____.

- A. unidirectional
- B. bidirectional
- C. multidirectional
- D. All of the above

17. Which of the following is the abbreviation of JPEG?

- A. Joint Photographic Experts Group
B. Joint Photographs Expansion Group
C. Joint Photographic Expanded Group
D. Joint Photographic Expansion Group
18. Which of the following is an Applications of Neural Networks?
- A. Automotive
B. Aerospace
C. Electronics
D. All of the above
19. The network that involves backward links from output to the input and hidden layers is called?
- A. Self-organizing map
B. Perceptron
C. Recurrent neural network
D. Multi layered perceptron
20. The torch.cuda is a package which adds support for CUDA tensor type.
- A. TRUE
B. FALSE
C. Can be true or false
D. Cannot say
21. Among the following, functions that can be performed by digital image processing is?
- A. Fast image storage and retrieval
B. Controlled viewing
C. Image reformatting
D. All of the above

- 22 Which characteristics are taken together in chromaticity?
- A. Hue and Saturation
 - B. Hue and Brightness
 - C. Saturation, Hue, and Brightness
 - D. Saturation and Brightness
23. Which of the following is the next step in image processing after compression?
- A. Representation and description
 - B. Morphological processing
 - C. Segmentation
 - D. Wavelets
24. Structuring element is also called
- A. Pixel
 - B. Lines
 - C. Noise
 - D. kernel
25. Dilation process on images results
- A. Thinner
 - B. Shrink
 - C. Sharpened
 - D. Thickened
26. At what points, a continuous image is digitized?
- A. Sampling
 - B. Vertex
 - C. Contour
 - D. Random

27. Which of the following correctly describes the slightest visible change in the level of intensity?

- A. Contour
- B. Saturation
- C. Contrast
- D. Intensity Resolution

28. What is the name of the tool that helps in zooming, shrinking, rotating, etc.?

- A. Filters
- B. Interpolation
- C. Sampling
- D. None of the above

29. The dynamic range of the imaging system is a quantitative relation where the upper limit can be determined by

- A. Brightness
- B. Contrast
- C. Saturation
- D. Noise

30. Which of the following is not a correct example of Image Multiplication?

- A. Masking
- B. Shading Correction
- C. Pixelation
- D. Region of Interest Operations

Section- B

Note: Attempt All Questions.

40 x 0.5 =20Marks

31. Which of the following statements are **true** with regard to K-Nearest Neighbours?

- A. The decision boundary becomes smoother with decreasing value of K
- B. k-NN requires an explicit training step
- C. The K-Nearest Neighbour algorithm considers the entire training data for each test point classification
- D. All of the above.

32. Automated vehicle is an example of:

- A. Supervised learning
- B. Unsupervised learning
- C. Active learning
- D. Reinforcement learning

33. Which is the correct sequence of steps in data analysis and data visualisation of Exploratory Data Analysis?

- A. Data Exploration -> Data Cleaning -> Present Results -> Model Building
- B. Data Exploration -> Data Cleaning -> Model Building -> Present Results
- C. Data Exploration -> Model Building -> Present Results -> Data Cleaning
- D. Data Exploration -> Model Building -> Data Cleaning -> Present Results

34. What are the objectives of exploratory data analysis?

- A. Check for missing data and other mistakes.
- B. Gain maximum insight into the data set and its underlying structure.
- C. Uncover a parsimonious model, one which explains the data with a minimum number of predictor variables.
- D. All of the above

35. Exploratory Data Analysis is majorly performed using the following methods:

- A. Univariate
- B. Bivariate
- C. Both A and B
- D. None of the above

36. Which of the following is not true about Exploratory Data Analysis?

- A. Generates a posteriori hypothesis.
- B. Discovers new knowledge.
- C. Does not provide insight into the data.
- D. Deals with unknowns.

37. Which of the following is not a component of Exploratory Data Analysis?

- A. Accounting and Summarizing
- B. Anomaly Detection
- C. Statistical Analysis and Clustering
- D. Hyper-parameter tuning

38. Which of the following is characteristic of exploratory graph?

- A. Made slowly
- B. Axes are not cleaned up
- C. Colour is used for personal information
- D. All of the mentioned

39. Which of the following graph can be used for simple summarization of data?

- A. Scatterplot
- B. Overlaying
- C. Bar plot
- D. All of the above three

40. What is the role of exploratory graphs in data analysis?
- A. They are made for formal presentations
 - B. They are typically made very quickly
 - C. Axes, legends, and other details are clean and exactly detailed
 - D. They are used in place of formal modelling
41. Which of the following is true about the base plotting system?
- A. Margins and spacing are adjusted automatically depending on the type of plot and the data
 - B. Plots are typically created with a single function call
 - C. Plots are created and annotated with separate functions
 - D. The system is most useful for conditioning plots
42. MSE stands for.
- A. Machine Squared Error
 - B. Mean Simple Error
 - C. Mean Squared Evaluate
 - D. Mean Squared Error
43. PyTorch is known for having _____ levels of abstraction.
- A. 1
 - B. 2
 - C. 3
 - D. 4
44. Basically, the activation function is generally categorized into:
- A. 1
 - B. 2
 - C. 3
 - D. 4
45. _____ is an imperative n-dimensional array which runs on GPU.
- A. Variable
 - B. Tensor

- C. Module
 - D. All of the above
46. How many Loss function in PyTorch?
- A. 2
 - B. 4
 - C. 5
 - D. 6
47. The numbers of pooling layers in PyTorch are:
- A. 3
 - B. 1
 - C. 4
 - D. 2
48. What does the import cv2 statement do?
- A. Imports the SciPy library for numerical processing.
 - B. Imports the NumPy library for numerical processing.
 - C. Imports our OpenCV Python bindings.
 - D. Displays an image to our screen.
49. Suppose our image has a width of 700 pixels, a height of 550 pixels, and 3 channels, one for each Red, Green, and Blue component. How would we express this image as a NumPy array shape?
- A. (550, 700, 3)
 - B. (3, 550, 700)
 - C. (700, 550, 3)
 - D. (3, 700, 550)
50. The RGB tuple (0, 0, 255) codes for blue. But OpenCV would actually interpret this colour as:
- A. Orange
 - B. Blue
 - C. Green
 - D. Red

51. Which of the following Python library deals with computer vision
- A. matplotlib
 - B. SciPy
 - C. OpenCV
 - D. Pandas
52. OpenCV stands for?
- A. Open source computing vision
 - B. Open source computing visual
 - C. Open source Computer vision
 - D. None of the above
53. Suppose I want to extract a rectangular region from my image starting at $x=1$, $y=48$ and ending at $x=80$, $y=69$. What is the correct line of code to perform this cropping?
- A. Crop = image[80:69, 1:48]
 - B. Crop = image[1:48, 80:69]
 - C. Crop = image[48:80, 48:69]
 - D. Crop = image[48:69, 1:80]
54. Suppose, we have an image whose resolution is 760x 512. How many total pixels are in the image?
- A. 280,800
 - B. 93,600
 - C. 389120
 - D. 389320
55. The process of converting an image from other colour space, varying the pixel intensity in between the black and white region is known as:
- A. Blurring of image
 - B. Eroding of image
 - C. Gray scaling of image
 - D. Enhancement of image
56. Which function is used to draw line in OpenCV?

- A. cv.line()
 - B. cv2.inline()
 - C. cv2.line()
 - D. cv2.text()
57. Which filter in OpenCV is used to detect edges of the image?
- A. Liner filter
 - B. Median filter
 - C. Sobel filter
 - D. Wiener filter
58. Which function in OpenCV is used to show an output image?
- A. cv.show()
 - B. cv.imshow()
 - C. cv2.im2show()
 - D. cv2.imshow()
59. The average positive difference between computed and desired outcome values is known as:
- A. root mean squared error
 - B. mean squared error
 - C. mean absolute error
 - D. mean positive error
60. Which of the following statements is true for the Perceptron Learning Algorithm?
- Statement1: Threshold needs to be hand coded
 - Statement2: Threshold can be learnt
- A. Statement1 & Statement2
 - B. Statement1
 - C. Statement2
 - D. None
61. Sigmoid function is:
- A. Smooth

- B. Continuous
- C. Differentiable
- D. All of the above

62. Which parameter(s) need to be learnt in minimizing objective function in Supervised learning?

- A. Only Weight
- B. Only Bias
- C. Learning rate
- D. Both Weight and Bias

63. Consider the following equation:

$$Y = ax^2 + bx + c \text{ (polynomial equation of degree 2).}$$

Can a neural network of single hidden layer with linear threshold represent this equation?

- A. True
- B. False

64. What will happen, if we use a learning rate that is too large in neural network?

- A. Network will converge
- B. Network will not converge
- C. Can't determine
- D. Partially learns

65. Which of the following statement is true?

- A. An event with high probability has high information content
- B. An event with low probability has high information content
- C. An event with low probability has low information content
- D. None

66. Consider the scenario. The problem you are trying to solve has a small amount of data. Fortunately, you have a pre-trained neural network that was trained on a similar problem. Which of the following methods would you choose to make use of this pre-trained network?

- A. Re-train the model for the new data set
 - B. Assess on every layer how the model performs and only select a few of them
 - C. Fine tune the last couple of layers only
 - D. Freeze all the layers except the last, re-train the last layer
67. Suppose that you are training a neural network for classification, but you have noticed that the training loss is much lower than the validation loss. Which of the following can be used to address the issue?
- A. Use a network with fewer layers
 - B. Decrease dropout probability
 - C. Use a network with more number of layers
 - D. Increase the size of each hidden layer
68. Which of the following is a representation of learning algorithm?
- A. Neural network
 - B. Random forest
 - C. K-Nearest neighbour
 - D. All of the above
69. Which of the following is FALSE about Perceptron?
- A. Perceptron can learn both linearly and non-linearly separable functions
 - B. It cannot implement XOR gate as it cannot be classified by a linear separator
 - C. It can easily implement OR and AND gates as these are linearly separable
 - D. Weights can be learnt
70. Which of the following is TRUE about Kernels in CNN?
- A. Kernels can be used in convolutional as well as pooling layers
 - B. Kernels keep sliding over an image to extract different components or patterns of an image
 - C. Kernels keep sliding over an image to extract different components or patterns of an image

D. Kernels extract simple feature in initial layers and complex features in deeper layers

As discussed earlier, for a given input image, the output of the first few layers of a CNN is relatively simple, such as edges and corners. As we move deeper into the network, the output becomes increasingly complex, such as faces and objects. This is because the layers in a CNN are designed to extract increasingly complex features from the input image. A common way to visualize this process is to look at the activation maps produced by different layers of the network. For example, the first layer might produce activation maps showing edges and corners, while the last layer might produce activation maps showing entire objects or scenes.

Another way to think about this is to consider the receptive field of each neuron in the network. The receptive field of a neuron is the portion of the input image that it can "see" and use to make its decision. In the early layers of a CNN, the receptive field is small, typically covering only a small portion of the input image. As we move deeper into the network, the receptive field of each neuron increases, eventually covering the entire input image. This allows the network to learn increasingly complex features, such as faces and objects, by combining information from across the entire input image.

It's also worth noting that the receptive field of a neuron in a CNN is not necessarily a contiguous region of the input image. A neuron's receptive field can be composed of multiple disjointed regions, which are called "blobs". These blobs represent the locations in the input image where the neuron has been activated. By combining information from these blobs, the network can learn complex features, such as faces and objects, even if they are not contiguous in the input image.

Course Name: AGILE SOFTWARE DEVELOPMENT**Course Outcome**

CO1-Understand the significance of Agile Methodologies in software development.

CO2-Compare and contrast the different agile methods.

CO3-Determine the suitability of agile methods for a particular Project.

CO4-Evaluate how well a project is following agile principles, and assist the project to become more agile (where appropriate).

CO5-Understand the relationship between the customer and the development team in agile projects and the responsibilities of both communities.

Printed Pages:2**University Roll No.****End Term Examination, Even Semester 2021-22****B. TECH (CSE), Year: III, Semester: VI****Subject Code: BCSE0053, Subject Name: AGILE SOFTWARE DEVELOPMENT****Time: 3 Hours****Maximum Marks: 50**

Instruction for students:

Section – A*Attempt All Questions***4 X 5 = 20 Marks**

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|---|-------|----|----|----|
| 1 | Why is Agile so popular? Write some crucial benefits of Agile methodology. | 4 | 1 | E | C |
| 2 | Discuss and explain various design principles(SOLID) with suitable examples. | 4 | 1 | R | F |
| 3 | Why Kanban framework is more popular in agile software development? Write down all the seven principles of lean software development. | 4 | 2 | R | F |
| 4 | Cloud computing and virtualization make it easy for agile development teams to seamlessly combine multiple development, discuss the important ways cloud computing and virtualization enhance agile software development. | 4 | 4 | An | C |
| 5 | You have been just hired as a new Scrum Master. The team you're going to work with doesn't have any experience in Agile and is very skeptic about Scrum. They want to focus only on coding and don't want to track their progress or attend any meetings. How do you influence and motivate them to use Scrum? OR You already performed Scrum training for stakeholders. After an initial phase of trying to apply the concepts, when first obstacles/hurdles are encountered, you see that these colleagues build serious resistance in continuing with Scrum adoption. What is your strategy/experience to handle such situations? | 4 | 5 | E | P |

Section – B

Attempt All Questions

3 X 5 = 15 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|---|-------|----|----|----|
| 1 | Define risk based testing. Explain various steps of risk management. | 3 | 1 | R | F |
| 2 | Write down the four manifesto of agile. Suppose you are working as an agile tester what should be your approach when requirements change continuously? | 3 | 1 | U | C |
| 3 | Define exploratory testing. Write down the various techniques of regression testing. | 3 | 2 | R | F |
| 4 | How version control is used to manage software configuration. Explain following terminologies with reference to version control. A. Delta Compression B. Tag and Trunk | 3 | 4 | R | F |
| 5 | Explain all the phases of Test Driven Development. | 3 | 3 | U | P |

Section – C

Attempt All Questions

5 X 3 = 15 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|--|-------|----|----|----|
| 1 | Consider a case in which you are appointed as a fresher software tester at AMDOCS Development Centre India Private Limited. What is Agile Testing? List the principles of agile testing you need to follow? | 5 | 3 | An | P |
| 2 | Your team approaches major release deadline and, as a result of the mid-iteration assessment, you realize that due to internal team reasons, release deadline has to be shifted significantly and this impacts marketing and other operational activities by the client which depend on product release date. Please make a draft to client(s) explaining the situation and your next steps. | 5 | 4 | E | P |
| 3 | Differentiate between Application Life Cycle Management and AGILE Life cycle. Explain various steps of agile life cycle with suitable diagram. | 5 | 5 | An | C |

Course Name: Information Retrieval Systems

Course Outcome

- CO1: Apply different information retrieval techniques in real-life applications.
- CO2: Analyze indexing and pre-processing of textual documents for the IR system.
- CO3: Apply IR principles into Spelling Correction, Phonetic Correction.
- CO4: Analyze the performance of retrieval systems.
- CO5: Apply IR techniques to XML Retrieval.
- CO6: Develop retrieval systems for web search tasks.
- CO7: Demonstrate similarity computation for the document

Printed Pages: 04

University Roll No.

End Term Examination, Even Semester 2021-22

B.Tech (CSE), III year, VI semester

Subject Code & Subject Name- BCSE0154 Information Retrieval Systems

Maximum Marks: 50

Time: 3 Hours

Instruction for students:

1. Attempt all questions
2. Do not switch between section A, B and Section C; first, solve one section, then move to second
3. Use only a blue pen to answer
4. No B sheet will be given

Section – A

Attempt All Questions

4 X 5 = 20 Marks

| N.o. | Detail of Question | Marks | CO | BL | KL |
|------|--|-------|-----|----|----|
| 1 | Consider the following document collection: Doc1: Information Retrieval Systems Doc2: Information Storage Management Doc3: Digital Speech Processing Systems Doc4: Speech Synthesis Speech Retrieval a. Draw the term-document incidence matrix for this document collection. b. Draw the inverted index representation for this collection. | 4 | CO2 | A | P |
| 2 | A database contains 80 records on a particular topic A search was conducted on that topic and 60 records were retrieved. Of the 60 records retrieved, 45 were relevant. Calculate the precision and recall scores for the search. | 4 | CO4 | AN | M |
| 3 | Compute the Cosine similarity between Document 1 and Document 2 | 4 | CO7 | A | M |

| | | | | |
|---|--|---|-----|------|
| | Document 1 = “data science course is the best” Document 2 = “data science course is very popular” | | | |
| 4 | What is crawler? Discuss crawler architecture with help of diagram describing all the important components. | 4 | CO6 | R F |
| 5 | Describe the techniques of creating valid XML document? How XSD file differs with DTD file Provide suitable example to differentiate between these two file extensions? | 4 | CO5 | AN P |

Section – B

Attempt All Questions

3 X 5 = 15 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|--|-------|-----|----|----|
| 1 | <p>Consider the following document collection:</p> <p>Doc1: Information Retrieval Systems</p> <p>Doc2: Information Storage</p> <p>Doc3: Digital Speech Synthesis Systems</p> <p>Doc4: Speech Filtering Speech Retrieval</p> <p>a. Compute tf for each term and document</p> <p>b. Compute IDF for each term</p> <p>c. Compute Jaccard Coefficient between doc1 and doc2.</p> | 3 | CO7 | A | M |
| 2 | <p>We are building a facial recognition algorithm to allow people to unlock their phone. If the phone recognizes the person as the authorized user, it will unlock the phone. If it doesn't recognize the user, it will prompt them to try again or try an alternative method.</p> <p>1 What is the positive class? 2 What would a recall of 80% mean? 3 What would a precision of 70% mean?</p> | 3 | CO1 | AN | P |
| 3 | <p><i>Draw the XML DOM representation of below XML file</i></p> <pre><play> <author>Shakespeare</author> <title>Macbeth</title> <act number="I"> <scene number="vii"> <title>Macbeth's castle</title> <verse>Will I with wine and wassail ...</verse> </scene></pre> | 3 | CO5 | A | P |

| | </act> </play> | | | | | | | | | | | | | | | | | | |
|--------------|---|------|---------------|------|--------|--------------|-------|-----------|--------|-------|--------|-----------|-------|-------|--------|---|-----|---|---|
| 4 | Discuss the Features that crawler <i>must</i> provide and <i>should</i> provide. | 3 | CO6 | R | C | | | | | | | | | | | | | | |
| 5 | <p>Discuss any five uses of XML in regard to developing effective retrieval system?</p> <p>Recommend a query processing order for (tangerine OR trees) AND (marmalade OR skies) AND (kaleidoscope OR eyes) On the given postings list sizes:</p> <table> <thead> <tr> <th>Term</th> <th>Postings size</th> </tr> </thead> <tbody> <tr> <td>eyes</td> <td>213312</td> </tr> <tr> <td>kaleidoscope</td> <td>87009</td> </tr> <tr> <td>marmalade</td> <td>107913</td> </tr> <tr> <td>skies</td> <td>271658</td> </tr> <tr> <td>tangerine</td> <td>46653</td> </tr> <tr> <td>trees</td> <td>316812</td> </tr> </tbody> </table> | Term | Postings size | eyes | 213312 | kaleidoscope | 87009 | marmalade | 107913 | skies | 271658 | tangerine | 46653 | trees | 316812 | 3 | CO6 | U | F |
| Term | Postings size | | | | | | | | | | | | | | | | | | |
| eyes | 213312 | | | | | | | | | | | | | | | | | | |
| kaleidoscope | 87009 | | | | | | | | | | | | | | | | | | |
| marmalade | 107913 | | | | | | | | | | | | | | | | | | |
| skies | 271658 | | | | | | | | | | | | | | | | | | |
| tangerine | 46653 | | | | | | | | | | | | | | | | | | |
| trees | 316812 | | | | | | | | | | | | | | | | | | |

Section – C

Attempt All Questions

5 X 3 = 15 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|--|-------|-----|----|----|
| 1 | <p>Explain with an example the use of Context resemblance function? XML applications refers to applications of various domains. Justify this statement with examples?</p> | 5 | CO6 | AN | P |
| 2 | <p>Elucidate XLink, XPointer and XPath with suitable example? Discuss the concept of Schema heterogeneity and the process to deal with it?</p> <p>Draw the XML tree representation using proper symbology for Elements, Attributes and Text for given XML file.</p> <pre><chapter id="cmds"> <chapttitle>FileCab</chapttitle> <para>This chapter describes the commands that manage the <tm>FileCab</tm>inet application. </para> </chapter></pre> | 5 | CO5 | A | P |

| | | | | |
|---|---|---|-----|---|
| 3 | Explain Question Answering retrieval systems? Discuss its types along with different parameters for modeling any question answering based retrieval system? What are the parameters on which Named Entity Recognition based system can be made? | 5 | CO6 | U |
|---|---|---|-----|---|

Course Name: DISTRIBUTED SYSTEMS

Course Outcome

- CO1: Understand basic elements and concepts related to distributed system technologies; and core architectural aspects of distributed systems.
- CO2: Identify the advantages and challenges in designing distributed algorithms for different primitives like mutual exclusion, deadlock detection, and agreement.
- CO3: Understand principle behind IPC and use various interposes communication techniques, such as remote method invocation, remote events for building distributed systems.
- CO4: Introduce the concepts of distributed file system with its architecture and components along with case studies.
- CO5: Distinguish the main failure types in a Distributed System and specify algorithms for achieving fault tolerance and error recovery within such a system.
- CO6: Understand how balancing of resources is done; issues, components and algorithms for load balancing in distributed environment.

University Roll No.

Printed Pages: 03

End Term Examination, Even Semester 2021-22

B.Tech. (CSE), Year III, Semester VI

BCSE0205: DISTRIBUTED SYSTEMS

Maximum Marks: 50

Time: 3 Hours

Section - A

Attempt All Questions

| No. | Detail of Question | 4 X 5 = 20 Marks | | | |
|-----|--|------------------|----|----|----|
| | | Marks | CO | BL | KL |
| 1 | Why deadlock handling is difficult in distributed system? Explain different control organizations for distributed deadlock detection. Compare two phase algorithm with one phase algorithm | 4 | 2 | An | P |
| 2 | What are the new messages introduced in Maekawa's Algorithm to overcome the problem of deadlock? Discuss the performance of the algorithm under low and high load. | 4 | 2 | U | C |
| 3 | Define oral and signed messages. What is the relationship among various agreement protocols? Show diagrammatically whether agreement can/cannot be reached if two processors out of four are faulty. | 4 | 2 | An | M |
| 4 | Write short notes on (with proper diagram) a. Orphan Messages b. Lost Messages c. Domino Effect d. Livelocks | 4 | 5 | R | F |

| | | | | | |
|---|---|---|---|---|---|
| 5 | How mounting and caching affects the performance of the distributed file systems. Explain with example. | 4 | 4 | A | M |
|---|---|---|---|---|---|

Section – B

Attempt All Questions

$3 \times 5 = 15$ Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|---|-------|----|----|----|
| 1 | With respect to load balancing algorithms explain following: a. Why receiver initiated algorithms are more stable than sender initiated algorithms? b. Why CPU utilization is not considered as a threshold value for selection policy? c. Why preemptive job transfer is more expensive than non-preemptive job transfer? | 3 | 6 | A | M |
| 2 | Discuss with diagram the architecture of Sun Network File System. | 3 | 5 | U | C |
| 3 | Why two phase commit protocol is said to be blocking protocol? Explain the three phase commit protocol with failure transaction? | 5 | 5 | An | M |
| 4 | Compare sender and receiver initiated algorithm on various parameters. | 3 | 6 | E | M |
| 5 | Which features of the AFS design make it more scalable than NFS? What are the limits on its scalability, assuming that servers can be added as required? Which recent developments offer greater scalability? | 3 | 5 | U | C |

Section – C

Attempt All Questions

$5 \times 3 = 15$ Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|--|-------|----|----|----|
| 1 | Illustrate the DDBS Check pointing approach using a suitable algorithm. | 5 | 5 | E | P |
| 2 | What is Venus and Vice in AFS? How they help in file sharing? Discuss the call back mechanism in Andrew file system? | 5 | 6 | E | C |
| 3 | Consider a system where suppose 5 replicas of a file stored at sites A, B, C, D, and E. Each replica has been updated 3 times. Show the state of the | 5 | 6 | An | M |

| | | | | |
|---|--|--|--|--|
| system after every request for dynamic majority based protocol. a. A receives an update request, finds it can communicate only to B & C. b. B needs to do an update and finds it can communicate only to C. c. D makes an update, finds it can communicate with B, C, & E. d. B receives an update, finds it can communicate only with C. e. A receives an update request, finds it can communicate only to B & C. | | | | |
|---|--|--|--|--|

Course Name: Full Stack Using Node JS**Course Outcome**

- CO1- Apply programming concepts using NodeJS.
 CO2- Develop web application using MongoDB and AngularJS
 CO3- Develop web application based on MongoDB.
 CO4- Understand project management and code
 CO5- Develop REST full and MVC based web application.

Printed Pages: 2

University Roll No.

End Term Examination, Even Semester 2021-22**B. Tech. (CSE), III Year, VI Semester****BCSE 0252 : Full Stack Using Node JS****Time: 3 Hours****Maximum Marks: 50**

Instruction for students:

- 1) Write the complete code in one place neatly.
- 2) Mention the correct question number.

Section - A*Attempt All Questions***4 x 5 = 20 Marks**

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|---|-------|-------------|-----|----|
| 1 | What is MongoDB? Why MongoDB is the best NoSQL database? Explain in detail. | 4 | CO3 | R | C |
| 2 | <p>Write the queries for below questions:-</p> <ol style="list-style-type: none"> 1. Create a collection called 'Movies'. 2. Add 5 Movies to the database. 3. Give each document the following properties: <ul style="list-style-type: none"> • name, year, genre, rating (out of 100). 4. Write a query that returns all the movies. 5. Write a query that returns the 3 highest rated movies. 6. Update your favorite movie to have one achievement called 'Movie Master'. 7. Write a query that returns all the games that have the 'Movie Master' achievement. | 4 | CO2 | C | F |
| 3 | What are the directive scopes in AngularJS? Explain in detail with the help of example. | 4 | CO2 | U | P |
| 4 | What do you mean by data binding? Explain the differences between one-way binding and two-way binding. | 4 | CO4 | U | M |
| 5 | <p>Why do you use nodejs? Write down the steps to create web server in nodejs.</p> <p>Or</p> <p>What is an arrow function and how is it used in React? Give code snippet.</p> | 4 | CO1/ CO2 | R/A | C |

Section – B*Attempt All Questions*

3 x 5 = 15 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|--|-------|-----|----|----|
| 1 | Explain Mongorestore utility with all options | 3 | CO1 | U | P |
| 2 | Distinguish between AngularJS and JavaScript expressions. | 3 | CO4 | R | A |
| 3 | What are the components in React? Which component is used to implement state in react? Give example. | 3 | CO4 | R | C |
| 4 | What is Node.js? How do you create a simple server in Node.js that returns Hello World? | 3 | CO1 | A | M |
| 5 | Why you use pros and state? Write down the differences between state and props? | 3 | CO4 | U | C |

Section – C*Attempt All Questions*

5 X 3 = 15 Marks

| No. | Detail of Question | Marks | CO | BL | KL | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----|---|--------|--------|--------|--------|--------|---|-------|-------|------|-------|---|----------|--------|------|-------|---|-------|-------|--------|-------|---|--------|-------|--------|-------|---|-----|---|---|
| 1 | Print an array of given (Student Details) in table format using angularJS <table border="1"> <thead> <tr> <th>ID</th> <th>Name</th> <th>Email</th> <th>Gender</th> <th>Course</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Akhil</td> <td>a@a.a</td> <td>Male</td> <td>Btech</td> </tr> <tr> <td>2</td> <td>Abhishek</td> <td>ab@b.b</td> <td>Male</td> <td>Btech</td> </tr> <tr> <td>3</td> <td>Vincy</td> <td>v@v.v</td> <td>Female</td> <td>Btech</td> </tr> <tr> <td>4</td> <td>Romana</td> <td>r@r.r</td> <td>Female</td> <td>Btech</td> </tr> </tbody> </table> | ID | Name | Email | Gender | Course | 1 | Akhil | a@a.a | Male | Btech | 2 | Abhishek | ab@b.b | Male | Btech | 3 | Vincy | v@v.v | Female | Btech | 4 | Romana | r@r.r | Female | Btech | 5 | CO2 | A | C |
| ID | Name | Email | Gender | Course | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Akhil | a@a.a | Male | Btech | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Abhishek | ab@b.b | Male | Btech | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Vincy | v@v.v | Female | Btech | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Romana | r@r.r | Female | Btech | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | What is file system module in node JS? Explain the basic operations using file system module? | 5 | CO1 | C | M | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | What is a State in React and How is it used? What are the differences between the Class component and the Functional component? | 5 | CO4 | An | C | | | | | | | | | | | | | | | | | | | | | | | | | |

Course Name: PHP - Scripting Language

Course Outcome

- CO1- Explain the basics of web development using PHP and HTML.
- CO2- Develop a program using controls structures and array.
- CO3- Develop the PHP programs based on functions, and file handling.
- CO4- Demonstrate the concepts of object and exception handling in PHP.
- CO5- Demonstrate web application using PHP, CSS and MYSQL on XAMPP/WAMP framework.

Printed Pages: 4

University Roll No.

End Term Examination, Even Semester 2021-22

B. Tech (CS), III- Year, VI- Semester

BCSE 0254 : PHP - Scripting Language

Time: 3 Hours

Maximum Marks: 50

Instruction for students:

All the questions are compulsory.

Attempt the questions as per section wise order.

Section – A

Attempt All Questions

4 X 5 = 20 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|--|-------|-----|----|----|
| 1 | Name any four password hashing functions in PHP with examples. | 4 | 1,2 | R | F |
| 2 | Differentiate the working of array_diff() and array_diff_key() with an example. | 4 | 2 | A | C |
| 3 | Explain any four rules to initialize a constant in PHP. Write a PHP Script to store the user's device name and IP address inside the constant. | 4 | 1 | A | P |
| 4 | a) Elaborate the role of "action" and "method" attributes inside a form tag. b) Differentiate between GET and POST methods. | 2+2 | 1,5 | R | F |

| | | | | | |
|---|---|-----|---|----|---|
| | What will be the output of the following code? Explain with justification. | | | | |
| 5 | <pre> <?php class Test { public \$num_one; public \$num_two; public function __construct(int \$test) { echo(\$this->inti(10) . "World"); \$this->num_two = \$test; } public function inti(\$val) { echo("Hello"); \$this->num_one = \$val; } public function __destruct() { echo \$this->num_one + \$this->num_two; } } \$t = new Test(20); echo \$t->num_one; \$t->__destruct(); \$t->num_two = 10; ?> ?></pre> | 2+2 | 4 | An | P |

Section – B

Attempt All Questions

3 X 5 = 15 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|---|-------|----|----|----|
| 1 | a) Explain Cookies in PHP. Describe the working process of cookies with an example. b) Explain the working of \$this variable in PHP | 2+1 | 4 | An | F |
| 2 | There is a text file on the server named as data.txt you have to read the content of that file by using fgets() and fread(). Write down the PHP script for reading the data as well delete the file at the end. | 3 | 3 | A | C |
| 3 | Suppose you have three different pages inside the website name as: Login.php Home.php Logout.php | 3 | 5 | A | C |

| | | | | |
|---|--|---|-----|------|
| | Write the PHP script for all three pages to show the working of session variable. | | | |
| 4 | How can you use exit() or die() function to exit from the current script after displaying the error message. Write the code for the same. | 3 | 5 | U F |
| 5 | Being a developer your client is demanding you to design a registration page having the following fields with same validation: Users name, Email*, Password*, Confirm Password*, Contact, save button, forgot button and reset button. Write down the complete HTML code for the same while fields having * are mandatory. | 3 | 1,5 | An C |

Section – C

Attempt All Questions

5 X 3 = 15 Marks

| No. | Detail of Question | Marks | CO | BL | KL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------|--|-------------|--------------|-------------|----|--|--|---|-------|----------|---|-------|-------|---|-------|------|---|--------|-------|---|--------|-------|---|--|--|---|--|--|---|--|--|-----|---|---|---|
| 1 | <p>a) Create a connection with MySQL server using PHP?</p> <p>b) Write a PHP script to display the following data on the browser screen in the given database table pattern.</p> <p>i. Button name: display</p> <p>ii. Table name: stu_record</p> <p>iii. Database name: students</p> <table border="1"> <thead> <tr> <th>Id</th> <th>uname</th> <th>pass</th> </tr> </thead> <tbody> <tr><td>1</td><td></td><td></td></tr> <tr><td>2</td><td>akash</td><td>qwedrqtr</td></tr> <tr><td>3</td><td>mohan</td><td>rohit</td></tr> <tr><td>4</td><td>rahul</td><td>deep</td></tr> <tr><td>5</td><td>myugbh</td><td>jhjgh</td></tr> <tr><td>6</td><td>myugbh</td><td>jhjgh</td></tr> <tr><td>7</td><td></td><td></td></tr> <tr><td>8</td><td></td><td></td></tr> <tr><td>9</td><td></td><td></td></tr> </tbody> </table> | Id | uname | pass | 1 | | | 2 | akash | qwedrqtr | 3 | mohan | rohit | 4 | rahul | deep | 5 | myugbh | jhjgh | 6 | myugbh | jhjgh | 7 | | | 8 | | | 9 | | | 2+3 | 5 | C | P |
| Id | uname | pass | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | akash | qwedrqtr | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | mohan | rohit | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | rahul | deep | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | myugbh | jhjgh | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | myugbh | jhjgh | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

a) Write a PHP script insert query to insert the data into the database for the following designed input fields.

- i. Username
- ii. Password

When user clicked on the save button.

b) Write a PHP script to delete the following row data from the given database table. All those rows having no uname and pass values you have to delete them.

2

| Id | uname | pass |
|-----------|--------------|-------------|
| 1 | | |
| 2 | akash | qwedrqtr |
| 3 | mohan | rohit |
| 4 | rahul | deep |
| 5 | myugbh | jhjgh |
| 6 | myugbh | jhjgh |
| 7 | | |
| 8 | | |
| 9 | | |

2+3 5 C P

3

Create a PHP script that gets two inputs from the user numerator and denominator and handled the exception based on the input value over the button clicked.

You have to handle three exception

1. DivisionByZero Exception
2. DivisionByNegativeNumber
3. DivisionByGreaterNumberThanNumerator

Write the complete exception handling mechanism so that your scripts terminates gracefully.

Sample Input/output:

2/0 => DivisionByZero Exception

2/1 => 2

2/-1 => DivisionByNegativeNumber

2/3 => DivisionBy Greater number than numerator.

5 4 C F

Course Name: Cloud and Business Process Management

Course Outcome

- CO1: Understand basics of cloud Storage systems.
 CO2: Explain the technologies and approaches for the business related issues.
 CO3: Understand the operation view and service catalog of cloud management.
 CO4: Understand the concepts of VPM cloud computing.
 CO5: Design process interactions interface for business users.

Printed Pages: 02

University Roll No.

End Term Examination, Even Semester 2021-22
B. Tech. CSE (CCV), III – Year, VI - Semester
BCSE 0508 : Cloud and Business Process Management

Time: 3 Hours

Maximum Marks: 50

Instruction for students: Strictly follow the question no. sequence while writing answers.

Section – A

Attempt All Questions

4 X 5 = 20 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|--|-------|----|----------|---------|
| 1 | Explain the working of Aneka Cloud architecture with suitable diagram. | 4 | 4 | R | F |
| 2 | Explain IBM CCRA with the help of diagrammatic representation. Also, differentiate between IBM CCRA and NIST Cloud Reference Architecture. | 4 | 5 | R, An | F, C |
| 3 | Describe any five IBM's IT infrastructure services. | 4 | 4 | U | F |
| 4 | What is Business Process Management (BPM) Life Cycle? Explain the four phases of BPM. | 4 | 2 | R | F |
| 5 | What do you understand by Business Processes? Give an example of Business Process in SaaS tool development. OR What is Business Process Modeling? Describe the different types of Business Process Modeling Tools. | 4 | 2 | R | F, C |

Section – B

Attempt All Questions

3 X 5 = 15 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|--|-------|----|---------|----|
| 1 | Give an overview on Patch management? Give the name of any five tools of patch management. | 3 | 2 | U | F |
| 2 | Establish the importance of customer-facing processes. | 3 | 1 | R | F |
| 3 | Suppose an organization has decided to make its cloud resilient. Suggest a solution that will make cloud solution of this organization resilient? Also, explain about the support system capabilities? | 3 | 3 | E, R | M |
| 4 | How to create a Business Process Definition (BPD)? | 3 | 2 | Ap | C |
| 5 | Illustrate the various steps involved in creating a user interface design development. | 3 | 4 | Ap | C |

Section – C

Attempt All Questions

5 X 3 = 15 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|---|-------|----|----------|---------|
| 1 | What slows down a computer? Explain the benefits of routine PC health check, patching and updates in computers. | 5 | 2 | R, U | F, F |
| 2 | Describe the Goals, Structure, and Classify various types of Business Process Management (BPM). | 5 | 3 | U, An | F, C |
| 3 | Identify the type of services that can be hosted inside Aneka container. Also, list out the features of Aneka that provides scalability of the resources. | 5 | 4 | Ap, R | C, F |

Course Name: IT Business Continuity and Disaster Recovery

Course Outcome

CO1- Comprehend Information Technology, Business Continuity & Disaster Recovery Planning.

CO2- Appreciate the essence of different phases of Business Continuity & Disaster Recovery planning life cycle.

CO3- Realize the probes of Risk Assessment and Mitigation.

CO4- Interpret the management, auditing and maintenance of Business Continuity & Disaster Recovery planning.

CO5- Deploy Catalyst software for Business Continuity & Disaster Recovery planning.

Printed Pages: 2

University Roll No.

End Term Examination, Even Semester 2021-22

B.Tech. CSE(CSF), III Year, VI Semester

BCSE 0605 : IT Business Continuity and Disaster Recovery

Time: 3 Hours

Maximum Marks: 50

Instruction for students: ***Attempt all questions***

Section – A

Attempt All Questions

4 X 5 = 20 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|---|-------|----|----|----|
| 1 | Elaborate the four important aspects business continuity management. | 4 | 1 | A | C |
| 2 | What do you mean by business enablers? Discuss its different categories. How they are useful for business continuity. | 4 | 2 | U | P |
| 3 | Explain the salient features of ISO 22302 standard. | 4 | 2 | U | C |
| 4 | What features of ISO 22302 makes it more realistic for any business operation? | 4 | 2 | U | C |
| 5 | Discuss the four areas on which any business impact analysis should focus on. | 4 | 3 | A | P |
| 5 | Explain with example Risk Mitigation, Management and Monitoring (RMMM) plan by using suitable example. | 4 | 3 | A | P |

Section – B

Attempt All Questions

3 X 5 = 15 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|---|-------|----|----|----|
| 1 | How do you develop a mitigation strategy of any business? Discuss by giving proper steps. | 3 | 3 | An | P |
| 2 | Discuss the key points of any communication plan in detail. | 3 | 4 | U | C |
| 3 | Discuss the purpose and structure impact report. | 3 | 4 | U | C |

| | | | | | |
|---|---|---|---|---|---|
| 4 | What are the methods of gathering business information? Explain any three methods in detail. | 3 | 4 | U | C |
| 5 | It is very important to take regularly backup of any application oriented system. Justify this statement. | 3 | 5 | A | P |

Section – C

Attempt All Questions

5 X 3 = 15 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|--|-------|----|----|----|
| 1 | Discuss the five important risk mitigation strategies. | 5 | 3 | U | C |
| 2 | What do you mean by crisis management? Explain with example. Suppose you are maintaining a portal which provides services to various categories of end users and the administrators. Discuss the steps that one should follow to manage any generated crisis for the given scenario. | 5 | 4 | An | P |
| 3 | What is the difference between the business continuity management and business continuity plan? Discuss BCM core and important issues. | 5 | 5 | U | C |

Course Name: Big Data Analytics

Course Outcome

- CO1- Understand Architecture for Big Data.
- CO2- Understand concept of Hadoop and its various versions.
- CO3- Understands YARN, HDFS and Map Reduce Algorithm.
- CO4- Understand Hadoop Eco system.
- CO5- Understand data access through HIVE, PIG etc
- CO6-Understand MongoDB database and Cassandra file system

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University Roll No.

End Term Examination, Even Semester 2021-22

B.Tech (CSE(IoT), IIIrd Year, VI Semester

Subject Code & Subject Name- BCSE0655 & Big Data Analytics

Time: 3 Hours

Maximum Marks: 50

Instruction for students:

Attempt all the questions.

Section – A

Attempt All Questions

4 X 5 = 20 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|---|-------|----|----|----|
| 1 | Suppose Hadoop spawned 100 tasks for a job and one of the task failed. What will Hadoop do? How does speculative execution work in Hadoop? | 4 | 2 | A | C |
| 2 | Hadoop achieves parallelism by dividing the tasks across many nodes; it is possible for a few slow nodes to rate-limit the rest of the program and slows down the program. What mechanism Hadoop provides to combat this? | 4 | 3 | A | C |
| 3 | If we want to copy 10 blocks from one machine to another, but another machine can copy only 8.5 blocks, can the blocks be broken at the time of replication? | 4 | 3 | U | C |
| 4 | Define Keyspace in Cassandra. How is a Keyspace created in Cassandra? & What are the parameters used? | 4 | 6 | R | F |
| 5 | Define Capped Collection. Write down syntax for the same. How do we perform the Join operations in MongoDB? | 4 | 6 | U | C |

Section – B*Attempt All Questions*

3 X 5 = 15 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|--|-------|----|----|----|
| 1 | Define Primary Key and list down various types of primary key in Cassandra. | 3 | 6 | R | F |
| 2 | Define the Term Thrift. Describe what happens if you alter the block size of a column family on an already occupied database? | 3 | 6 | U | C |
| 3 | Differentiate among Hive and HBase and RDBMS. | 3 | 5 | U | F |
| 4 | Suppose we have a file name with abc.csv and having the attribute like id, name, year, rating, duration. How will you upload this file to a pig? | 3 | 5 | A | P |
| 5 | What kind of data warehouse application is suitable for Hive? Describe different types of tables in Hive? | 3 | 5 | R | C |

Section – C*Attempt All Questions*

5 X 3 = 15 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|---|-------|----|----|----|
| 1 | You have a file movies.txt in the HDFS directory with 1000 records. You want to see only the first 10 records from the movies.txt file. How will you do this? | 5 | 6 | A | C |
| 2 | How to skip header rows from a table in Hive? Is it possible to create multiple tables in hive for same data? | 5 | 5 | A | C |
| 3 | Describe the query for sorting of user-defined function in MongoDB. For example, x and y are integers, and how do we calculate “x-y”? | 5 | 6 | U | P |

Course Name: Applications of Machine Learning in Industries**Course Outcome**

- CO1-Understand the cyber security in banking sector and loan underwriting
 CO2-Understand the usage of ML and AI in real time social media analytics
 CO3-Understand the sentimental analysis for student's feedback using machine learning approach
 CO4-Learn about machine learning approaches in drug discovery

Printed Pages: 03**University Roll No.****End Term Examination, Even Semester 2021-22****B.Tech (CSE - AIML), III Year, VI Semester****Subject Code & Subject Name- BCSE0705 Applications of Machine Learning in Industries****Time: 3 Hours****Maximum Marks: 50****Instruction for students:**

1. Attempt all questions
2. don't switch between the section A, B and Section C, first solve one section then move to second
3. Use only blue pen to answer
4. No B sheet will be given

Section - A**Attempt All Questions****4 X 5 = 20 Marks**

| No. | Detail of Question | Marks | CO | BL | KL | | | | | | | | | | | | | | | | | | | | |
|-----------|---|-----------|--------|--------|--------|--------|---|---|---|--------|---|---|---|--------|---|---|---|--------|---|---|---|--|--|--|--|
| 1 | Differentiate Content-based filtering and Collaborative filtering with an example. | 4 | CO2 | U | F | | | | | | | | | | | | | | | | | | | | |
| 2 | What is the difference between Matrix factorization and tensor factorization in the context of a Recommender System? | 4 | CO2 | C | P | | | | | | | | | | | | | | | | | | | | |
| 3 | The users' ratings on three items are given. Use the Item-Item-based Similarity Approach, and calculate the missing ratings in the table. Use sine similarity and adjusted cosine similarity. | 4 | CO2 | U | P | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th>User/Item</th><th>Item 1</th><th>Item 2</th><th>Item 3</th></tr> </thead> <tbody> <tr> <td>User 1</td><td>2</td><td>-</td><td>3</td></tr> <tr> <td>User 2</td><td>5</td><td>2</td><td>-</td></tr> <tr> <td>User 3</td><td>3</td><td>3</td><td>1</td></tr> <tr> <td>User 4</td><td>-</td><td>2</td><td>2</td></tr> </tbody> </table> | User/Item | Item 1 | Item 2 | Item 3 | User 1 | 2 | - | 3 | User 2 | 5 | 2 | - | User 3 | 3 | 3 | 1 | User 4 | - | 2 | 2 | | | | |
| User/Item | Item 1 | Item 2 | Item 3 | | | | | | | | | | | | | | | | | | | | | | |
| User 1 | 2 | - | 3 | | | | | | | | | | | | | | | | | | | | | | |
| User 2 | 5 | 2 | - | | | | | | | | | | | | | | | | | | | | | | |
| User 3 | 3 | 3 | 1 | | | | | | | | | | | | | | | | | | | | | | |
| User 4 | - | 2 | 2 | | | | | | | | | | | | | | | | | | | | | | |
| 4 | What is Adaptive Learning? What are its advantages? How is it different from personalized adaptive learning? | 4 | CO3 | U | F | | | | | | | | | | | | | | | | | | | | |

| | | | | | |
|---|--|---|-----|---|---|
| 5 | A Researcher is using a dataset which is highly unbalanced in categories how he/she will resolve this issue. Explain one sampling strategy with an example. What is the role of the Standard scalar in data preprocessing? | 4 | CO2 | U | C |
|---|--|---|-----|---|---|

Section - B

Attempt All Questions

3 X 5 = 15 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|---|-------|-----|----|----|
| 1 | <p>GLA University runs a machine learning primary diabetes scan on all of its students. The output is diabetic (+ve) or healthy (-ve). There are only 4 cases any student X could end up with.</p> <p>Case 1- Prediction is +ve, and X has diabetes (True positive)</p> <p>Case 2- Prediction is -ve, and X is healthy (True negative)</p> <p>Case 3- Prediction is +ve, and X is healthy, False Alarm (False positive)</p> <p>Case 4: Prediction is -ve, and X has diabetes, the worst (False negative) A total of 12,000 tests are performed. Outcome values of test are TP = 2000, TN = 9100, FP = 200, FN = 700, Calculate the Accuracy, Precision and Recall</p> | 3 | CO3 | F | C |
| 2 | Differentiate ANN and CNN with Diagram. | 3 | CO2 | U | F |
| 3 | How the Autoencoders for feature extraction help in diagnosing cancer. explain | 3 | CO4 | U | C |
| 4 | <p>In the ML methodology applied in drug discovery we can differentiate the following steps: 1) data collection; 2) generation of mathematical descriptors; 3) search for the best subset of variables; 4) model training; 5) model validation.</p> <p>Explain what are the mathematical descriptors of interest and strategy to select the best subset of variables.</p> | 3 | CO4 | U | C |

| | | | | | |
|---|--|---|-----|---|---|
| 5 | How semi-supervised learning algorithms are different from supervised and unsupervised learning approaches. Explain any two semi-supervised learning approaches. | 3 | CO2 | U | F |
|---|--|---|-----|---|---|

Section - C

Attempt All Questions

5 X 3 = 15 Marks

| No | Detail of Question | Mar ks | CO | B L | K L |
|----|--|-----------|-----|--------|--------|
| 1 | What are the different deep learning models available for Medical Diagnosis? explain | 5 | CO4 | U | F |
| 2 | Explain 4 different ways to develop a sentiment Analyzer in Machine Learning. | 5 | CO3 | U | P |
| 3 | Answer the following: a. If the Input Image size is $1 \times 28 \times 28$. After applying the following convolution operation how many parameters for each filter will be there also find the size of an output image if the stride size is 2 model2.add (convolution2D, filter (3,3)) Input shape ($28 \times 28 \times 1$) b. What is the size of an output image after applying the following syntax? model2.add (Maxpooling2D (2,2)) | 5 | CO2 | U | P |

Course Name: DevOps

Course Outcome

- CO1- Explain the benefits of DevOps Methodology with respect to traditional Software Development Methodology.
- CO2- Identify difference between DevOps and Agile Software Development methodology.
- CO3- Explain the concepts of DevOps while being Agile.
- CO4- Explain the Continuous Development, Continuous Integration, Continuous Testing and Continuous Delivery of Software.
- CO5- Work with the tools for DevOps
- CO6- Relate DevOps with the emerging technologies like BigData and IoT.

Printed Pages: 02

University Roll No.

End Term Examination, Even Semester 2021-22

B. Tech. CSE-CCV, III Year, VI Semester

Subject Code & Subject Name: BCSE 0511 & DevOps

Time: 3 Hours

Maximum Marks: 50

Instruction for students:

- Make necessary assumptions wherever required

Section – A

Attempt All Questions

4 X 5 = 20 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|--|-------|----|----|----|
| 1 | <p>Consider that you have created your EC2-instance on AWS. Write commands to implement the following on the Linux platform:</p> <ol style="list-style-type: none"> Install Apache web server on EC2-instance. Start the service httpd. Enable the service httpd Change directory to the appropriate directory where you need to store your index.html file. | 4 | 5 | R | C |
| 2 | How is Agile Methodology different from traditional waterfall model and DevOps? Justify your answer with a neat diagram. | 4 | 2 | U | F |
| 3 | How is Monolithic development different from Micro-services development? Which type of development is better in context to DevOps? Justify your answer. | 4 | 1 | An | F |
| 4 | Explain any four branches in GITFLOW workflow and show their use in a neat diagram assuming a scenario of your choice. | 4 | 5 | R | F |
| 5 | <p>What are the benefits of testing a software before deploying it to production? Differentiate between Verification and Validation in context to testing.</p> <p>Or</p> <p>What are the advantages of Continuous testing over</p> | 4 | 4 | U | F |

| | | | | |
|--|--|--|--|--|
| | hand-off-centric testing? Also, differentiate between the White Box and Black Box testing. | | | |
|--|--|--|--|--|

Section – B

Attempt All Questions

3 X 5 = 15 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|---|-------|----|----|----|
| 1 | Give Docker commands to implement the following: a. Show installed Docker version b. Start a new container named nginx c. Show the list of running containers d. Delete a running container | 3 | 5 | R | C |
| 2 | Enlist one tool for each of the following: a. Continuous Testing b. Continuous Monitoring c. Configuration Management | 3 | 5 | R | F |
| 3 | Explain the working of Ansible in DevOps. Support your answer with a neat diagram of its architecture. | 3 | 5 | U | P |
| 4 | Explain the 3V's of Big Data. Explain how DevOps culture benefits the Big Data projects? | 3 | 6 | An | F |
| 5 | Write commands in GIT to do the following: a. Create an empty Git repo in your current directory. b. Stage all changes in a file named A.java for the next commit. c. Commit the staged snapshot and give a message “Java file committed”. | 3 | 5 | R | P |

Section – C

Attempt All Questions

5 X 3 = 15 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|---|-------|----|----|----|
| 1 | What is Docker? What are the advantages of Docker? How is it different from Virtual Machines? | 5 | 5 | An | F |
| 2 | What do you mean by Continuous Integration? What is the role of Jenkins in DevOps? Show steps to install Jenkins on your server. | 5 | 4 | U | P |
| 3 | Discuss the phases in the life cycle of DevOps in an organization. | 5 | 4 | R | F |

Course Name: Hadoop & Big Data Analytics

Course Outcome

- CO1-Understand the concept and challenges of big data
- CO2-Apply the existing technology to collect, manage, store, query, and analyze the big data.
- CO3-Implement job scheduling and resource management of the cluster using Hadoop and Yarn.
- CO4-Apply data summarization, query, and analysis over the big data with the help of pig and hive.
- CO5-Design the regression model, cluster and decision tree over the real big data.
- CO6-Implement different real life applications by using large-scale analytics tools.

Printed Pages:3

University Roll No.

End Term Examination, Even Semester 2021-22

B.Tech (CS(DA)), IIIrd Year, VIth Semester

Subject Code & Subject Name-BCSE0556 & Hadoop & Big Data Analytics

Time: 3 Hours

Maximum Marks: 50

Instruction for students: All questions are compulsory.

Section - A

Attempt All Questions

4 X 5 = 20 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|--|-------|----|----|----|
| 1 | List down the steps followed by the application while running a YARN job when calling a Submit Application method? | 4 | 1 | U | F |
| 2 | Imagine that you are uploading a file of 500MB into HDFS. 100MB of data is successfully uploaded into HDFS and another client wants to read the uploaded data while the upload is still in progress. What will happen in such a scenario, will the 100 MB of data that is uploaded will it be displayed? | 4 | 2 | An | C |
| 3 | In MapReduce tasks, each reduce task writes its output to a file named part-r-nnnnn. Here nnnnn is the partition ID associated with the reduce task. Is it possible to ultimately merge these files? Describe your answer. | 4 | 3 | An | C |
| 4 | Suppose you have one table in HBase. It is required to create a Hive table on top of it, where there should not be any manual movement of data. Changes made to the HBase table should be replicated in the Hive table without explicitly making any changes to it. How can you achieve this? | 4 | 4 | U | C |
| 5 | State the usage of 'filters', 'group' , 'orderBy', | 4 | 6 | U | F |

| | | | | |
|--|-------------------------------------|--|--|--|
| | 'distinct' keywords in pig scripts. | | | |
|--|-------------------------------------|--|--|--|

Section – B

Attempt All Questions

3 X 5 = 15 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|--|-------|----|----|----|
| 1 | Define The Consistency Levels For Read Operations In Cassandra. | 3 | 4 | R | F |
| 2 | Suppose you are inserting data into a table based on partitions dynamically. But, you received an error – FAILED ERROR IN SEMANTIC ANALYSIS: Dynamic partition strict mode requires at least one static partition column. Mention the commands to remove this error? | 3 | 4 | U | F |
| 3 | If we have a file employee.txt in the Hadoop Data File System directory with minimum 100 records, & want to see the first 25 records only from the employee.txt file. Mention procedure for doing this task. | 3 | 4 | U | C |
| 4 | List down and describe the components of Pig Execution Environment? | 3 | 4 | R | F |
| 5 | You have a file personal_data.txt in the HDFS directory with 100 records. You want to see only the first 5 records from the employee.txt file. How will you do this? | 3 | 6 | A | P |

Section – C

Attempt All Questions

5 X 3 = 15 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|---|-------|----|----|----|
| 1 | Mention any problems which can only be solved by MapReduce and cannot be solved by PIG? In which kind of scenarios MR jobs will be more useful than PIG? | 5 | 6 | An | C |
| 2 | Suppose, I create a table that contains details of all the transactions done by the customers of year 2016: CREATE TABLE transaction_details (cust_id INT, amount FLOAT, month STRING, country STRING) ROW FORMAT DELIMITED FIELDS TERMINATED BY ','; | 5 | 6 | An | C |

| | | | | |
|---|--|---|---|-----|
| | Now, after inserting 50,000 tuples in this table, I want to know the total revenue generated for each month. But, Hive is taking too much time in processing this query. How will you solve this problem and list the steps that you will be taking in order to do so? | | | |
| 3 | Describe what happens if you alter the block size of a column family on an already occupied database? While reading data from HBase, from which three places data will be reconciled before returning the value? | 5 | 6 | U C |

Course Name: BCSE0606: DIGITAL FORENSICS

Course Outcome

CO1: Understanding computer forensics investigative procedures.

CO2: Evaluate the systematic collection of evidence at incident scenes.

CO3: Discuss and analyze computer forensics findings.

CO4: Understanding of the trade-offs and differences between various forensic tools.

CO5: Implement and evaluate numbers of methodologies for validating and testing computer forensics tools and evidence.

CO6: Exhibit forensics ethical behavior and comply with professional conduct requirements

Printed Pages:2

University Roll No.

End Term Examination, Even Semester 2021-22

B. TECH-CSE (CSF), Year-III, Semester-VI

Subject Code: BCSE0606, Subject Name- DIGITAL FORENSICS

Time: 3 Hours

Maximum Marks: 50

Instruction for students

Section – A

Attempt All Questions

4 X 5 = 20 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|--|-------|------|----|----|
| 1 | How will you perform Domain name ownership investigation? Write down the various goals of incidence response. | 4 | CO:1 | R | F |
| 2 | Define order of volatility. Explain various RAID levels. | 4 | CO:3 | R | F |
| 3 | Write down the procedures to capture network logs from chrome browser. What kind of difficulties you may face in web browsers forensic analysis. | 4 | CO:3 | R | C |
| 4 | If you are doing a mobile forensic investigation, then write down all the challenges you will face during investigation. | 4 | CO:6 | U | C |
| 5 | You received a piece of evidence and before you did anything with it you noticed that there was a big rip on the bag and part of the evidence on the inside could be seen through the rip. What should you do? Or If you see that one of your co-workers is falsifying data in the lab, how would you handle the situation? Write down the various rules of evidence. | 4 | CO:5 | U | C |

Section – B*Attempt All Questions*

3 X 5 = 15 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|---|-------|------|----|----|
| 1 | Write down the Mobile phone evidence extraction process. Enlist Potential evidence stored on mobile phones. | 3 | CO:2 | R | C |
| 2 | Define steganography and write down its various techniques. Name any two steganography soft wares. | 3 | CO:1 | R | F |
| 3 | How is Memory Forensics Different from Hard Drive Forensics ?Explain. | 3 | CO:2 | R | F |
| 4 | Explain the malware analysis process. Write down the various types of malware analysis. | 3 | CO:2 | An | P |
| 5 | Define reverse engineering. Write down the various Steps of Software Reverse Engineering. | 3 | CO:3 | R | F |

Section – C*Attempt All Questions*

5 X 3 = 15 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|---|-------|------|----|----|
| 1 | Define Shadow Paging. Write down the Database Recovery Techniques. | 5 | CO:3 | R | F |
| 2 | Write down any three ways hackers install rootkits on target machines. How will you prevent rootkits. | 5 | CO:2 | R | C |
| 3 | What is the first thing you should do with a hard drive that is being forensically inspected? An employee at your organization had his password stolen and it is only his first week on the job. You discover a program on his computer named keylog.exe. What should you do? | 5 | CO:4 | U | C |

Course Name: IoT for Industries

Course Outcome

CO1- Describe IoT and IIoT

CO2-Understand the main characteristics of next generation industrial sensors.

CO3-Understand, design and develop the real life IIoT applications.

Printed Pages:2

University Roll No.

End Term Examination, Even Semester 2021-22

B.Tech IoT-CSE, III Year, VI Semester

BCSE-0656 IoT for Industries

Time: 3 Hours

Maximum Marks: 50

Instruction for students:

- Strictly follow the order of the question paper
- Attempt all the question of a section at a single place

Section – A

Attempt All Questions

4 X 5 = 20 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|--|-------|----|---------------|----|
| 1 | Explain the immediate Benefits Of Industrial IoT. | 4 | 1 | A | C |
| 2 | What are the differences between Raspberry 4 B+ model and Raspberry Zero Model? | 4 | 1 | A | P |
| 3 | Explain the LwM2M protocol with working model. | 4 | 2 | An | C |
| 4 | What are the two powerful and fundamental opportunities for companies, which are created by IoT? | 4 | 2 | U | C |
| 5 | Write the OEM plant capability after implementing the IoT based system. | 4 | 3 | U and E | P |

Section – B

Attempt All Questions

3 X 5 = 15 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|---|-------|----|----|----|
| 1 | Write the main enhancement via IoT in airlines industries. | 3 | 3 | U | DI |
| 2 | How IoT play important role to make smart Pharma/Food Industry? | 3 | 3 | E | P |
| 3 | The supply chain or logistics problems in an automobile industry can be divided into three major areas. Write the name of it. | 3 | 3 | E | P |
| 4 | How IoT network play a significant role to improve customer satisfaction for the Supply Chain and Logistics industries? | 3 | 3 | U | P |

| | | | | | |
|---|--|---|---|---|----|
| 5 | Write Short Note on: a. Smart Building Management b. Controlling payments using IoT c. Tracking Quality of the Shipment | 3 | 1 | U | DI |
|---|--|---|---|---|----|

Section - C

Attempt All Questions

5 X 3 = 15 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|--|-------|----|----|----|
| 1 | Explain how the IoT system work with In-Vehicle Infotainment system (IVI) | 5 | 3 | E | P |
| 2 | What are the common items that are managed by the Logistics framework, explain? | 5 | 3 | E | DI |
| 3 | Write step by step process of creating a solution for a Vehicle to Vehicle (V2V) Infrastructure. | 5 | 2 | An | C |

Course Name: NEURAL NETWORKS**Course Outcome**

- CO1- Understand the differences between networks for supervised and unsupervised learning
 CO2- Design single and multi-layer Perceptron neural networks
 CO3- Understand Back Propagation Non-Linear Neural network architecture
 CO4- Understand Convolutional Neural Network and Recurrent Neural Network

Printed Pages: 2**University Roll No.****End Term Examination, Even Semester 2021-22****B.Tech. CSE(AIML) III Year, VI Semester****BCSE 0706 NEURAL NETWORKS****Time: 3 Hours****Maximum Marks: 50****Section – A***Attempt All Questions***4 X 5 = 20 Marks**

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|--|-------|-----|----|----|
| 1 | The perceptron may be used to perform numerous logic functions. Demonstrate the implementation of the binary logic functions AND, OR, and COMPLEMENT. | 4 | CO1 | A | M |
| 2 | What is the purpose of a loss function in machine learning? | 4 | CO2 | U | F |
| 3 | Draw the architecture of MLP network. Derive the expressions used to update weights in back propagation algorithm for MLP network. | 4 | CO3 | A | C |
| 4 | Explain the architecture of a LSTM unit. | 4 | CO4 | U | F |
| 5 | Explain the significance of the RELU Activation function in Convolution Neural Network OR In a simple MLP model with 8 neurons in the input layer, 5 neurons in the hidden layer and 1 neuron in the output layer. What is the size of the weight matrices between hidden output layer and input hidden layer? | 4 | CO4 | U | F |

Section – B*Attempt All Questions***3 X 5 = 15 Marks**

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|--|-------|-----|----|----|
| 1 | An input image has been converted into a matrix of size 12 X 12 along with a filter of size 3 X 3 with a Stride of 1. Determine the size of the convoluted matrix. | 3 | CO4 | E | C |

| | | | | | |
|---|---|---|-----|---|---|
| 2 | What are the different types of Pooling? Explain their characteristics. | 3 | CO4 | U | F |
| 3 | What is the role of the Fully Connected (FC) Layer in CNN? | 3 | CO4 | U | F |
| 4 | What's the difference between Traditional Feedforward Networks and Recurrent Neural Networks? | 3 | CO4 | U | F |
| 5 | Explain the intuition behind RNN having a Vanishing Gradient Problem? | 3 | CO4 | U | C |

Section - C

Attempt All Questions

5 X 3 = 15 Marks

| No. | Detail of Question | Marks | CO | BL | KL |
|-----|---|-------|-----|----|----|
| 1 | Why a confusion matrix is important? How to calculate a confusion matrix for binary classification ? | 5 | CO3 | A | C |
| 2 | What impact do Bias and Variance in data have on Machine Learning models? Can Machine models overcome underfitting on biased data and overfitting on data with variance? Does this guarantee correct results? | 5 | CO3 | U | C |
| 3 | How do we handle categorical variables in Logistic Regression? Why can't we use Linear Regression in place of Logistic Regression for Binary classification? | 5 | CO3 | An | C |

CO – Course Outcome, BL – Abbreviation for Bloom's Taxonomy Level (R-Remember, U-Understand, A-Apply, An-Analyze, E-Evaluate, C-Create), KL – Abbreviation for Knowledge Level (F-Factual, C-Conceptual, P-Procedural, M-Metacognitive). However, For Engg. Courses in addition to F, C, P & M include D-Fundamental Design Principles, S-Criteria and Specifications, PC-Practical Constraints, DI- Design Instrumentalities