



Answer any FIVE Questions

(Each question carries 14 marks)

Q. No.	Stem of the question	M	L	CO	PO
Unit-I					
1. a)	List and explain the various activation functions used in modeling of artificial neuron. Also explain their suitability with respect to applications.	7	2	2	1
b)	Compare and contrast single layered model and multi layered perceptron model.	7	2	2	1
Unit-II					
2. a)	Explain the architecture of pre trained CNN Models.	7	3	1	2
b)	Illustrate the operation of pooling layer in CNN with simple example.	7	2	2	1
Unit-III					
3. a)	Justify the advantage of auto encoder over principal component analysis for dimensionality reduction.	7	3	1	2
b)	Explain the working of Gated Recurrent Unit.	7	2	2	1
Unit-IV					
4. a)	Demonstrate the basic framework of reinforcement learning.	7	2	2	1
b)	Describe the role of bootstrapping for value function learning.	7	3	1	2
Unit-V					
5. a)	Compare and contrast LSTM and gated recurrent units.	7	3	1	2
b)	Explain competitive learning using self-organizing maps.	7	2	2	1
a. Unit-I b. Unit-II					
6. a)	Explain Back propagation with its algorithm.	7	2	1	2
b)	Explain the operation of deep learning feed forward neural networks.	7	3	1	2
a. Unit-III b. Unit-IV					
7. a)	Explain different deep unsupervised learning methods.	7	3	1	2
b)	Compare and contrast stateful and stateless LSTMS.	7	4	1	2
a. Unit-V b. Unit-I/II/III/IV/V					
8. a)	Explain different types of back propagation networks.	7	3	1	2
b)	Explain competitive learning using self-organizing maps.	7	2	2	1

M: Marks; L: Bloom's Taxonomy Level; CO: Course Outcome; PO: Programme Outcome



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Q. No.	Stem of the question	M	L	CO	PO																						
Unit-I																											
1. a)	$\begin{bmatrix} 9 & 7 & 36 \\ 5 & -1 & 41 \\ 6 & 8 & 24 \end{bmatrix}$ Reduce the matrix into normal form and find its rank.	7	2	1	2																						
b)	Find a LU decomposition of the matrix A, where $A = \begin{bmatrix} -3 & 12 & -6 \\ 1 & -2 & 2 \\ 0 & 1 & 1 \end{bmatrix}$	7	2	1	2																						
Unit-II																											
2. a)	Fit a straight line to the given data regarding x as the independent variable <table border="1" style="margin-left: 20px;"> <tr> <td>x</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> </tr> <tr> <td>y</td> <td>1200</td> <td>900</td> <td>600</td> <td>200</td> <td>110</td> <td>50</td> </tr> </table>	x	1	2	3	4	5	6	y	1200	900	600	200	110	50	7	3	2	2								
x	1	2	3	4	5	6																					
y	1200	900	600	200	110	50																					
b)	Find the curve of best fit of the type $y = ae^{bx}$ to the following data by the method of least squares: <table border="1" style="margin-left: 20px;"> <tr> <td>x</td> <td>1</td> <td>5</td> <td>7</td> <td>9</td> <td>12</td> </tr> <tr> <td>y</td> <td>10</td> <td>15</td> <td>12</td> <td>15</td> <td>21</td> </tr> </table>	x	1	5	7	9	12	y	10	15	12	15	21	7	3	2	2										
x	1	5	7	9	12																						
y	10	15	12	15	21																						
Unit-III																											
3. a)	Explain the method of linear optimization and solve the following using graphical method Minimize: $z = 5x + 4y$ $4x + y \geq 40$; $2x + 3y \geq 90$; $x, y \geq 0$	7	2	3	1																						
b)	Explain convex quadratic optimization method with an example	7	2	3	2																						
Unit-IV																											
4. a)	Discuss Stochastic gradient descent method.	7	2	4	1																						
b)	Explain in detail accelerated gradient descent method.	7	2	4	1																						
Unit-V																											
5. a)	Using Newton Raphson method, find a real root of $\cos x - x^2 - x = 0$.	7	2	5	2																						
b)	Find a real root of $e^x \sin x - 1 = 0$, using Regula- Falsi method.	7	2	5	2																						
a. Unit-I b. Unit-II																											
6. a)	Find all the Eigen values and basis of each Eigen space of the linear operator $T: R^3 \rightarrow R^3$ defined by $T(x, y, z) = (x + y + z, 2y + z, 2y + 3z)$	7	2	1	2																						
b)	Find the rank correlation coefficient for the following data <table border="1" style="margin-left: 20px;"> <tr> <td>x</td> <td>68</td> <td>64</td> <td>75</td> <td>50</td> <td>64</td> <td>80</td> <td>75</td> <td>40</td> <td>55</td> <td>64</td> </tr> <tr> <td>y</td> <td>62</td> <td>58</td> <td>65</td> <td>70</td> <td>60</td> <td>68</td> <td>48</td> <td>50</td> <td>70</td> <td></td> </tr> </table>	x	68	64	75	50	64	80	75	40	55	64	y	62	58	65	70	60	68	48	50	70		7	3	2	2
x	68	64	75	50	64	80	75	40	55	64																	
y	62	58	65	70	60	68	48	50	70																		
a. Unit-V b. Unit-I/II/III/IV/V																											
7. a)	Describe semi-definite optimization system.	7	3	3	2																						
b)	Using PCA algorithm, compute the principal component for the two dimensional patterns $(2,1), (3,5), (4,3), (5,6), (6,7), (7,8)$.	7	3	4	2																						
a. Unit-V b. Unit-I/II/III/IV/V																											
8. a)	A body moving with velocity v at any time t satisfies the data <table border="1" style="margin-left: 20px;"> <tr> <td>t</td> <td>0</td> <td>1</td> <td>3</td> <td>4</td> </tr> <tr> <td>v</td> <td>21</td> <td>15</td> <td>12</td> <td>10</td> </tr> </table> Using Lagrange's Interpolation formula, obtain the distance travelled in 4 second and acceleration at the end of 4 seconds	t	0	1	3	4	v	21	15	12	10	7	3	5	2												
t	0	1	3	4																							
v	21	15	12	10																							
b)	Using Gauss backward interpolation formula, find the population for the year 1936 given that <table border="1" style="margin-left: 20px;"> <tr> <td>x (Years)</td> <td>1901</td> <td>1911</td> <td>1921</td> <td>1931</td> <td>1941</td> <td>1951</td> </tr> <tr> <td>y (Population in thousands)</td> <td>12</td> <td>15</td> <td>20</td> <td>27</td> <td>39</td> <td>52</td> </tr> </table>	x (Years)	1901	1911	1921	1931	1941	1951	y (Population in thousands)	12	15	20	27	39	52	7	3	5	2								
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MAHATMA GANDHI INSTITUTE OF TECHNOLOGY (Autonomous)

M.Tech. II Semester End Examinations

Model Question Paper

Course Title: Fundamentals of Data Science

Course Code: CS211PE

Time : 3 hours

Max. Marks : 70

Answer any FIVE Questions

(Each question carries 14 marks)

Q. No.	Stem of the question	M	L	CO	PO
Unit-I					
1. a)	Explain the Data Science process.	7	1	1	1
b)	Explain the various tool kits used for data science.	7	2	1	1
Unit-II					
2. a)	Explain various sources of data in detail.	7	2	1	1
b)	Social media data like Facebook need to be stored. Which database best suits for this? Explain.	7	1	1	1
Unit-III					
3. a)	How SVM is used in Classification.	7	2	2	1
b)	How confusion matrix helps in analyzing classifications.	7	3	2	3
Unit-IV					
4. a)	Explain various visualization techniques.	7	1	4	1
b)	How we can map variables to encodings.	7	3	4	2
Unit-V					
5. a)	What are the recent trends in Data collections?	7	1	5	2
b)	How data science is used in Health care systems.	7	1	5	1
a.Unit-I b. Unit-II					
6. a)	What are different types of data? Explain them with an example.	7	2	1	1
b)	What are ways to fix data to make it ready for processing?	7	2	2	2
a.Unit-III b. Unit-IV					
7. a)	How Naïve Bayes used in classification.	7	2	3	1
b)	What visual techniques you use when we are want to analyze two values at the same time.	7	2	4	1
a.Unit-V b. Unit-I/II/III/IV/V					
8. a)	What are the recent trends in Data Analysis?	7	2	5	2
b)	During a survey, huge amount of data is collected from various sources. Propose how this data is stored and managed.	7	5	2	3

M: Marks; L: Bloom's Taxonomy Level; CO: Course Outcome; PO: Programme Outcome

**MAHATMA GANDHI INSTITUTE OF TECHNOLOGY (Autonomous)****M.Tech. II Semester End Examinations****Model Question Paper****Course Title: Cloud Security****Course Code: CS216PE**

Time : 3 hours

Max. Marks : 70

Answer any FIVE Questions
(Each question carries 14 marks)

Q. No.	Stem of the question	M	L	CO	PO
Unit-I					
1. a)	Explicate the Five Essential Characteristics of cloud computing?	7	2	1	1
b)	Explain the NIST Cloud Reference Model architecture with a neat sketch.	7	1	1	1
Unit-II					
2. a)	Explain about the privacy issues in cloud with an example cloud application.	7	2	2	1
b)	Explain the benefits and drawbacks of cloud infrastructure security?	7	1	2	2
Unit-III					
3. a)	Explain the differences between full-virtualization and para-virtualization and give one example VMM (virtual machine monitor), that was built in each of the two categories.	8	3	3	5
b)	Explain any 3 common types of attacks on cloud computing?	6	2	3	1
Unit-IV					
4. a)	Discuss about the four areas of cloud security with example?	8	1	4	2
b)	Explain in detail about the data storage and data security mitigation in cloud.	6	3	4	1
Unit-V					
5. a)	Explain about AWS containers cloud and its security policy.	7	5	5	5
b)	Discuss in detail about the challenges of using standard security algorithms in cloud computing.	7	2	5	
a. Unit-I b. Unit-II					
6. a)	Describe the basic component of an IaaS-based solution for cloud computing?	7	1	1	2
b)	Discuss in detail about SaaS in cloud computing with an example?	7	1	2	3
a. Unit-III b. Unit-IV					
7. a)	Enlist and explain the requirements that need to be considered for cloud attacks.	7	1	3	2
b)	Explain the cloud security policy implementation for providers.	7	2	4	1
a. Unit-V b. Unit-I/II/III/IV/V					
8. a)	Discuss about the security management standards and availability management in cloud infrastructure management.	9	3	5	2
b)	Explain the five elements in aspects of data security in cloud.	5	1	4	1

M: Marks; L: Bloom's Taxonomy Level; CO: Course Outcome; PO: Programme Outcome