PRN		QP Code	CM-156

D.K.T.E. Society's TEXTILE AND ENGINEERING INSTITUTE, ICHALKARANJI.

(An Autonomous Institute)

Semester End Examination - Makeup 2018-19

Class - Program	Third Year B.Tech. (CS)	Day &Date	Monday,24/06/2019
Course Code	CSL-301	Time	10 am To 1 pm
Course Title	Operating System-I	Max.Marks	100

Instructions :

1. *All Questions are compulsory; assume suitable data if necessary and mention it clearly.*
2. *Mobile phones and programmable calculators are strictly prohibited.*
3. *Writing anything on question paper(except PRN), exchange/sharing of stationery, calculator etc. are not allowed.*

Que No		Question	Marks	BL	CO
1	A	Write and explain operating system components and their functionalities.	8	2	1
	B	Explain five major groups of system calls categories.	7	2	1
2	A	Assume you have the following jobs to execute with one processor with the job arranging in the order Processes / Arrival time / Burst time P1 / 0 / 8 P2 / 1 / 4 P3 / 2 / 9 P4 / 3 / 5 P5 / 4 / 6 Use FCFS and Shortest-remaining-time-first scheduling and calculate the average waiting time for the processes	8	3	2
		Attempt any one of B & C			
	B	Explain the role of long term scheduler, medium term scheduler and short term scheduler in Operating System	7	2	2
	C	Explain the interprocess communication with two different communication models	7	2	2
3	A	What is a deadlock? Explain how resource allocation graph can be used to check for deadlock in a system	8	1	3
	B	Describe the Bounded - buffer problem and give a solution for the same using semaphores. Write the structure of producer and consumer processes.	7	2	3
4	A	Explain with the help of supporting diagram how TLB improves the performance of a demand paging system	8	2	4
		Attempt any one of B & C			
	B	Given 3 processes A,B and C, three resources x, y and z and following events, i) A requests x ii) A requests y iii) B requests y iv) B requests z v) C requests z vi) C requests x vii) C requests y Assume that requested resources should always be allocated to the request process if it is available. Draw the resource allocation graph for the sequences. And also mention whether it is a deadlock? If it is, how to recover the deadlock	7	4	4
	C	Describe the FIFO page replacement algorithm, assuming there are 3 frames and the page reference string is 7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1 Find the number of page faults	7	3	4

PRN		QP Code	CM-156

Que No		Question	Marks	BL	CO
5		**Attempt any one ofA&B**			
	A	Explain paging scheme of memory management. What hardware support is needed for its implementation?	8	2	5
	B	Explain the following i) file types ii) file operation iii) file attributes	8	2	5
		Attempt any twoof C, D & E			
	C	Explain Sequential and Direct file access methods	6	2	5
	D	Draw and explain two level Directory structure.	6	2	5
	E	What is Directory? Explain which different operations can be performed on Directory	6	2	5
6		**Attempt any one ofA&B**			
	A	Explain Direct Memory Access as I/O hardware.	8	2	5
	B	Draw and explain a typical bus structure in computer architectute.	8	2	5
		Attempt any twoof C, D & E			
	C	Draw and explain the interrupt driven I/O system in detail	6	2	5
	D	Write note on "Interrupt".	6	1	5
	E	Explain four different types of registers for I/O port.	6	2	5

---------- X ---------- X ----------

PRN		QP Code	CM-014

D.K.T.E. Society's TEXTILE AND ENGINEERING INSTITUTE, ICHALKARANJI.

(An Autonomous Institute)

Semester End Examination - Makeup 2018-19

Class - Program	Third Year B.Tech. (CS)	Day & Date	Monday,17/06/2019
Course Code	CSL302	Time	10 am To 1 pm
Course Title	Database Engineering	Max.Marks	100

Instructions :

1. *All Questions are compulsory; assume suitable data if necessary and mention it clearly.*
2. *Mobile phones and programmable calculators are strictly prohibited.*
3. *Writing anything on question paper(except PRN), exchange/sharing of stationery, calculator etc. are not allowed.*

Que No		Question	Marks	BL	CO
1	A	Write SQL queries to perform following tasks on given schema. Student(snum: integer, sname: string, major: string, level: string, age: integer) Class(cname: string, room: string, fid: integer) Enrolled(snum: integer, cname: string) Faculty(fid: integer, fname: string, deptid: integer) 1] Find the names of all Juniors (Level = JR) who are enrolled in a class taught by I. Teach. 2] Find the age of the oldest student who has History major 3] Find the age of the oldest student who is enrolled in a course taught by I. Teach. 4] Find the names of all classes that meet in room R128 5] Find the names of all classes that have five or more students enrolled. 6] Find the names of all students who are enrolled in two classes	8	6	4
	B	List and Explain different Data Manipulation Language (DML) Statements with their syntax	7	1	1
2	A	Draw E-R diagram for National Hockey League (NHL), with following assumptions. The NHL has many teams, each team has a name, a city, a coach, a captain, and a set of players, each player belongs to only one team, each player has a name, a position (such as left wing or goalie), a skill level, and a set of injury records, a team captain is also a player, a game is played between two teams (referred to as host_team and guest_team) and has a date and a score.	8	6	2
		Attempt any one of B & C			
	B	Explain – generalization, specialization and aggregation with example	7	2	1
	C	Explain strong entity set and weak entity set with example.	7	2	1
3	A	Explain B+ tree indexing with example.	8	2	5
	B	Compare Dense Indices with Sparse Indices	7	4	5

PRN		QP Code	CM-014

Que No		Question	Marks	BL	CO
4	A	Apply different applicable normal forms on the schema given in un-normalized form. video(title,director,serial) customer(name,addr,memberno) hire(memberno,serial,date)	8	3	3
		Attempt any one of B & C			
	B	What is functional dependency? Explain different types of functional dependency with example.	7	1	3
	C	Explain First Normal Form (1NF) and Second Normal Form (2NF) with example.	7	1	3
5		**Attempt any one of A & B**			
	A	Explain Lock-based protocols for concurrency control.	8	1	6
	B	Explain Timestamp-Based Protocols for concurrency control.	8	1	6
		Attempt any two of C, D & E			
	C	What is transaction? Give ACID properties of transaction.	6	1	6
	D	Describe the following terms i] Conflict Serializability ii] View Serializability	6	1	6
	E	What is granularity? What are the different types of granularity?	6	1	6
6		**Attempt any one of A & B**			
	A	Explain Log-based Recovery Mechanism.	8	2	1
	B	Explain use of Shadow Paging for Data Recovery. Give advantages and disadvantages of shadow paging.	8	2	1
		Attempt any two of C, D & E			
	C	Give different Deadlock Prevention Strategies.	6	2	1
	D	Explain different types of failure in DBMS.	6	2	1
	E	Explain the following terms i] Volatile Storage ii] Non-volatile Storage iii]Stable Storage	6	2	1

---------- X ---------- X ----------

PRN	.	QP Code	CM-211

D.K.T.E. Society's TEXTILE AND ENGINEERING INSTITUTE, ICHALKARANJI.

(An Autonomous Institute)

Semester End Examination - Makeup 2018-19

Class - Program	Third Year B.Tech. (CS)	Day & Date	Wednesday,26/06/2019
Course Code	CSL303	Time	10 am To 1 pm
Course Title	Machine Learning	Max.Marks	100

Instructions :

1. *All Questions are compulsory; assume suitable data if necessary and mention it clearly.*
2. *Mobile phones and programmable calculators are strictly prohibited.*
3. *Writing anything on question paper(except PRN), exchange/sharing of stationery, calculator etc. are not allowed.*

<table>
<tr><th colspan="2">Que No</th><th>Question</th><th>Marks</th><th>BL</th><th>CO</th></tr>
<tr><td rowspan="4">1</td><td>A</td><td>Identify two clusters in following data using K-mean clustering technique
Data: 43,13, 17,37,9</td><td>5</td><td>3</td><td>3</td></tr>
<tr><td colspan="5">Attempt any one of B & C</td></tr>
<tr><td>B</td><td>Find the root node of the Decision Tree to classify fitness using following Data
<table>
<tr><th>Age</th><th>Eat fastfood</th><th>Do Exercise</th><th>Fitness</th></tr>
<tr><td>< 30</td><td>yes</td><td>No</td><td>Unfit</td></tr>
<tr><td>< 30</td><td>No</td><td>No</td><td>fit</td></tr>
<tr><td>< 30</td><td>No</td><td>Yes</td><td>fit</td></tr>
<tr><td>> 30</td><td>yes</td><td>No</td><td>Unfit</td></tr>
<tr><td>> 30</td><td>No</td><td>No</td><td>fit</td></tr>
<tr><td>> 30</td><td>No</td><td>Yes</td><td>fit</td></tr>
</table></td><td>10</td><td>3</td><td>3</td></tr>
<tr><td>C</td><td>Use data in Q.1 B to predict fitness of person having attributes as age > 30 , Eat fastfood = No , and Do exercise = yes using Bayesian Classifier.</td><td>10</td><td>3</td><td>3</td></tr>
<tr><td rowspan="5">2</td><td colspan="5">Attempt any three of A, B, C & D</td></tr>
<tr><td>A</td><td>Explain learning rate in regression.</td><td>5</td><td>2</td><td>1</td></tr>
<tr><td>B</td><td>How centroid is calculated for multiple attribute data in clustering</td><td>5</td><td>2</td><td>1</td></tr>
<tr><td>C</td><td>Write hypothesis function for logistic regression.</td><td>5</td><td>2</td><td>1</td></tr>
<tr><td>D</td><td>What is gini index? How is it calculated.</td><td>5</td><td>2</td><td>1</td></tr>
<tr><td rowspan="5">3</td><td colspan="5">Attempt any three of A, B, C & D</td></tr>
<tr><td>A</td><td>Explain collaborative filter based recommender system.</td><td>5</td><td>2</td><td>1</td></tr>
<tr><td>B</td><td>How Similarity is measured in clustering Techniques?</td><td>5</td><td>2</td><td>1</td></tr>
<tr><td>C</td><td>Explain the gradient decent learning algorithm for simple perceptron.</td><td>5</td><td>2</td><td>1</td></tr>
<tr><td>D</td><td>Explain merits and demerits of Decision Tree Classifier</td><td>5</td><td>2</td><td>2</td></tr>
<tr><td rowspan="2">4</td><td>A</td><td>i) Determine class of iris flower having following attributes using K-nn classifier with K =3
<table>
<tr><th>sepal length</th><th>sepal width</th><th>petal length</th><th>petal width</th></tr>
<tr><td>5</td><td>3.2</td><td>1.2</td><td>0.2</td></tr>
</table></td><td>15</td><td>3</td><td>3</td></tr>
</table>

Que No		Question	Marks	BL	CO

Training Dataset

sepal length	sepal width	petal length	petal width	class
5.1	3.5	1.4	0.2	Iris-setosa
4.9	3	1.4	0.2	Iris-setosa
4.7	3.2	1.3	0.2	Iris-setosa
7	3.2	4.7	1.4	Iris-versicolor
6.4	3.2	4.5	1.5	Iris-versicolor
6.9	3.1	4.9	1.5	Iris-versicolor

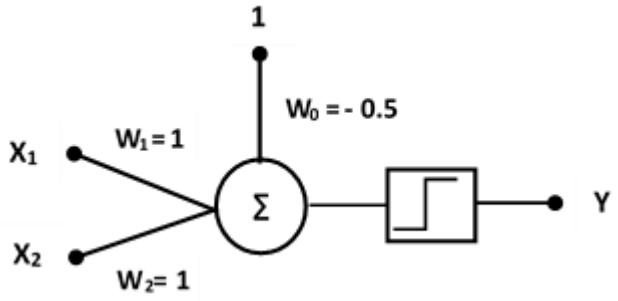
ii) Design an artificial neuron to recognize logical AND operation.

5 **Attempt any two of A, B & C**

A Calculate cost (MSE) of linear regression for following data when $W_0 = 1$, $W_1 = 4$ and $W_0 = -1$, $W_1 = 2$ Which parameter are more appropriate? Why? — 10 | 4 | 2

X	Y
5	21
10	38
15	62
20	83
25	101

B Analyze the following Artificial Neural with hardlimit Thresholding function and determine the logical operation it has implemented. — 10 | 4 | 2



C compare simple linear, multiple linear and polynomial regression. — 10 | 4 | 2

6 **Attempt any four of A, B, C, D & E**

A What is recommender system? Why is it needed? List applications of recommender system. — 5 | 2 | 1

B Explain performance parameters of classification techniques. — 5 | 2 | 1

C What the assumptions made for linear regression? — 5 | 2 | 1

D Explain Regularization in multiple linear regression. — 5 | 2 | 1

E Explain structure of a biological neuron. — 5 | 2 | 1

---------- X ---------- X ----------

PRN		QP Code	CM-100

D.K.T.E. Society's TEXTILE AND ENGINEERING INSTITUTE, ICHALKARANJI.

(An Autonomous Institute)

Semester End Examination - Makeup 2018-19

Class - Program	Third Year B.Tech. (CS)	**Day &Date**	Friday,21/06/2019
Course Code	CSL304	**Time**	10 am To 1 pm
Course Title	Information Security	**Max.Marks**	100

Instructions :

1. *All Questions are compulsory; assume suitable data if necessary and mention it clearly.*
2. *Mobile phones and programmable calculators are strictly prohibited.*
3. *Writing anything on question paper(except PRN), exchange/sharing of stationery, calculator etc. are not allowed.*

Que No		Question	Marks	BL	CO
1	A	Explain following substitution cipher techniques a. Caeser Cipher b. Playfair Cipher	8	2	1
	B	Explain X.500 security architecture	7	2	1
2	A	Discuss public key cryptosystems to achieve secrecy and authentication	8	2	2
		Attempt any one of B & C			
	B	Explain Key generation schedule of DES	7	2	2
	C	Explain Single round in DES encryption scheme	7	2	2
3	A	What are the four ways of public key distribution	8	1	2
	B	Define simple hash functions? List the basic uses of Hash functions.	7	1	2
4	A	Solve using RSA algorithm to perform encryption & decryption using RSA algorithm if p= 3, q = 11, e = 7, M = 5. Find C	8	3	3
		Attempt any one of B & C			
	B	List the details of message authentication dialog for Kerberos version 4	7	1	3
	C	What is direct digital signature and arbitrated digital signature?	7	1	3
5		**Attempt any one ofA&B**			
	A	Explain Pretty Good Privacy operation in detail	8	2	4
	B	Explain IPSec ESP format	8	2	4
		Attempt any twoof C, D & E			
	C	List the applications of IPSec Protocol	6	1	4
	D	What is S/MIME?	6	1	4
	E	What is enveloped data and signed data in S/MIME	6	1	4
6		**Attempt any one ofA&B**			
	A	Explain Secure Socket Layer (SSL) architecture with block diagram?	8	2	4
	B	Explain SSL alert protocol	8	2	4
		Attempt any twoof C, D & E			
	C	Explain are the Web security threats	6	2	4
	D	Explain SSL record header format	6	2	4
	E	Briefly explain Secure Electronics Transaction	6	2	4

---------- X ---------- X ----------

PRN		QP Code	CM-056

D.K.T.E. Society's TEXTILE AND ENGINEERING INSTITUTE, ICHALKARANJI.

(An Autonomous Institute)

Semester End Examination - Makeup 2018-19

Class - Program	Third Year B.Tech. (CS)	Day & Date	Wednesday,19/06/2019
Course Code	CSL305	Time	10 am To 1 pm
Course Title	System Programming	Max.Marks	100

Instructions :

1. *All Questions are compulsory; assume suitable data if necessary and mention it clearly.*
2. *Mobile phones and programmable calculators are strictly prohibited.*
3. *Writing anything on question paper(except PRN), exchange/sharing of stationery, calculator etc. are not allowed.*

Que No		Question	Marks	BL	CO
1	A	Discuss the Pass Structure of Assembler. How is the problem of forward reference resolved in single pass & two pass translation?	8	2	2
	B	List and explain Advanced Assembler Directives.	7	2	2
2	A	Illustrate the Front End of Toy Compiler with neat diagram.	8	2	1
		Attempt any one of B & C			
	B	Explain the fundamentals of language specification.	7	2	1
	C	Illustrate Language Processor Development Tools.	7	2	1
3	A	Enlist and explain various data structures used in Macro Preprocessor Design.	8	2	2
	B	Illustrate Macro definition & Macro Call with example.	7	2	2
4	A	Explain triple, quadruple & expression tree in Intermediate Code for expression.	8	2	3
		Attempt any one of B & C			
	B	Illustrate Code Optimization in detail.	7	2	3
	C	Explain Operand Descriptor & Register Descriptor with example.	7	2	3
5		**Attempt any one of A & B**			
	A	Illustrate with a neat diagram the structure of an Editor.	8	2	4
	B	Illustrate Enhancement of Program Performance.	8	2	4
		Attempt any two of C, D & E			
	C	Illustrate Program Testing & Debugging.	6	2	4
	D	How Command Dialogs are implemented?	6	2	4
	E	Explain structure of User Interface.	6	2	4
6		**Attempt any one of A & B**			
	A	What is Program Linking? Explain the use of ENTRY & EXTRN statements in relocation along with example.	8	2	3
	B	What steps are involved in execution of a program? Explain translated, linked & load time addresses with example.	8	2	3
		Attempt any two of C, D & E			
	C	Write a note on Object Module.	6	2	3
	D	Discuss about Self- Relocating programs.	6	2	3
	E	Explain Linking for overlays with example.	6	2	3

---------- X ---------- X ----------

PRN		QP Code	CM-185

D.K.T.E. Society's TEXTILE AND ENGINEERING INSTITUTE, ICHALKARANJI.

(An Autonomous Institute)

Semester End Examination - Makeup 2018-19

Class - Program	Third Year B.Tech. (CS)	Day & Date	Monday,25/06/2019
Course Code	CS314	Time	10 am To 1 pm
Course Title	Data Science	Max.Marks	100

Instructions :

1. *All Questions are compulsory; assume suitable data if necessary and mention it clearly.*
2. *Mobile phones and programmable calculators are strictly prohibited.*
3. *Writing anything on question paper(except PRN), exchange/sharing of stationery, calculator etc. are not allowed.*

Que No		Question	Marks	BL	CO
1	A	Explain Statistical Data Modeling techniques.	8	2	1
	B	Explain Bonferroni's Principle with suitable example.	7	2	1
2	A	What are four ways to handle missing data in dataset? Of the four methods for handling missing data, which method is preferred?	8	2	2
		Attempt any one of B & C			
	B	For the stock price data given below, find the decimal scaling stock price for all the stock prices. 10, 7, 20, 12, 75, 15, 9, 18, 4, 12, 8, 14	7	3	2
	C	For the stock price data given below, identify all possible stock prices that would be outliers using Interquartile Range (IQR) method. 12, 9, 22, 14, 77, 17, 11, 20, 6, 14, 10, 17	7	3	2
3	A	What is Exploratory Data Analysis (EDA)? What are objectives of EDA?	8	1	2
	B	Explain method of binning based on predictive value.	7	2	2
4	A	What is Feature Selection? Explain methods of Feature Selection used in text categorization.	8	2	3
		Attempt any one of B & C			
	B	Explain Text Categorization (TC) using Example-Based Classifiers and Support Vector Machines.	7	2	3
	C	Explain document clustering algorithms.	7	2	3
5		**Attempt any one of A & B**			
	A	What is Betweenness? How Betweenness can be used to find Communities in Social Network Graph?	8	2	4
	B	How to discover Communities in Social-Network Graph directly?	8	2	4
		Attempt any two of C, D & E			
	C	How Social-Network Graph can be partitioned to identify Communities?	6	2	4
	D	How to find overlapping communities in Social Network Graph?	6	2	4
	E	Why triangles in Social-Network Graph are counted? Explain algorithm for finding triangles in Social Network Graph.	6	2	4
6		**Attempt any one of A & B**			
	A	Explain classification evaluation measures accuracy, overall error rate, sensitivity and specificity.	8	2	5
	B	Why do we not use the average deviation as a model evaluation measure? How is the square root of the MSE interpreted?	8	2	5

Que No		Question	Marks	BL	CO
		Attempt any two of C, D & E			
	C	What is the minimum descriptive length principle, and how does it represent the principle of Occam's razor?	6	2	5
	D	What might be a drawback of evaluation measures based on squared error? How might we avoid this?	6	2	5
	E	With suitable example explain decision cost/benefit analysis.	6	2	5

---------- X ---------- X ----------