PRN		QP Code	CS-184

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

(An Autonomous Institute)

Semester End Examination - Summer 2018-19

Class - Program	Third Year B.Tech. (CS)	Day &Date	Tuesday, 14/05/2019
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	Differentiate between single-processor system and Multiprocessor system. Explain Symmetric and Asymmetric multiprocessing system with neat diagram.	8	2	1
	B	What is Operating System? Explain the components of computer system with neat diagram.	7	1	1
2	A	For the following set of process find the average waiting time using Gantt chart for i) SJF ii) Priority scheduling process Burst time Priority p1 5 5 p2 3 4 p3 8 3 p4 2 1 p5 1 2 The process has arrived in the order p2, p1, p4, p3 and p5.	8	3	2
		Attempt any one of B & C			
	B	What do you mean by PCB? Where is it used? What are its contents? Explain	7	1	2
	C	Explain process states with a diagram. What is the need for a context switch?	7	2	2
3	A	What is a semaphore? Explain how a semaphore can be used so that statement S1 of process P1 is always executed first, and only then statement S2 of process P2 is executed.	8	3	3
	B	Explain the critical section problem with example. What are the requirements for solution of critical section problem	7	2	3
4	A	Describe the LRU 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.	8	3	4
		Attempt any one of B & C			
	B	Distinguish between static memory allocation and dynamic memory allocation	7	2	4
	C	Explain external & internal fragmentation in memory management	7	2	4
5		**Attempt any one of A & B**			
	A	Define file system. Explain the different directory structure.	8	1	5
	B	With the help of a neat diagram explain Paging and Swapping	8	2	5

PRN		QP Code	CS-184

Que No		Question	Marks	BL	CO
		Attempt any twoof C, D & E			
	C	Explain the different file protection schemes	6	2	5
	D	Explain file system mounting operation.	6	2	5
	E	Explain the following i) file types ii) file operation	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 Asynchronous and Synchronous I/O methods	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	Distinguish between a STREAMS driver and a STREAMS module.	6	1	5
	E	How the I/O-related portions of the kernel are structured in software layers	6	1	5

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PRN		QP Code	CS-025

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

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Semester End Examination - Summer 2018-19

Class - Program	Third Year B.Tech. (CS)	Day & Date	Tuesday, 07/05/2019
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. Suppliers(sid: integer, sname: string, address: string) Parts(pid: integer, pname: string, color: string) Catalog(sid: integer, pid: integer, cost: real) 1] Find the pnames of parts for which there is some supplier. 2] Find the snames of suppliers who supply every red part. 3] Find the pnames of parts supplied by Acme Widget Suppliers and by no one else. 4] For each part, Find the sname of the supplier who charges the most for that part. 5] Find the sids of suppliers who supply only red parts. 6] Find the sids of suppliers who supply a red part and a green part.	8	6	4
	B	List and Explain different Joins in SQL with example	7	1	1
2	A	Draw E-R diagram for banking application, with following assumptions. There are multiple banks and each bank has many branches. Each branch has multiple customers. Customers have various types of accounts. Some Customers also had taken different types of loans from these bank branches. One customer can have multiple accounts and Loans	8	6	2
		Attempt any one of B & C			
	B	What are the different levels of data abstraction	7	2	1
	C	Explain different mapping cardinalities with example.	7	2	1
3	A	Explain bitmap index with example.	8	2	5
	B	Compare Open Hashing with Closed Hashing.	7	4	5

PRN		QP Code	CS-025

Que No		Question	Marks	BL	CO
4	A	Apply different applicable normal forms on the schema given in un-normalized form. Grade_report (StudNo, StudName, Branch, Mentor, CourseNo, Ctitle, InstructName, InstructLocation, Grade)	8	3	3
		Attempt any one of B & C			
	B	Explain Canonical Cover and Closure of set of functional dependency.	7	1	3
	C	Explain Third Normal Form (3NF) and Boyce Codd Normal Form (BCNF) with example.	7	1	3
5		**Attempt any one of A & B**			
	A	What are different locking modes used in lock-based protocols? Give compatibility matrix.	8	1	6
	B	Explain Graph-based protocols for concurrency control.	8	1	6
		Attempt any two of C, D & E			
	C	Draw and Explain abstract transaction model.	6	1	6
	D	Describe the following terms i] Equivalent Schedules ii] Serializable Schedules	6	1	6
	E	Explain recoverable schedule and non-recoverable schedule.	6	1	6
6		**Attempt any one of A & B**			
	A	Explain use of checkpoint for data recovery.	8	2	1
	B	Explain Deferred database modification and Immediate database modification.	8	2	1
		Attempt any two of C, D & E			
	C	Explain Deadlock Detection and Recovery mechanisms.	6	2	1
	D	What is starvation? Give different techniques to avoid starvation.	6	2	1
	E	Explain how stable storage can be implemented.	6	2	1

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PRN		QP Code	CS-238

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

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Semester End Examination - Summer 2018-19

Class - Program	Third Year B.Tech. (CS)	Day & Date	Thursday,16/05/2019
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.*

Que No		Question	Marks	BL	CO
1	A	Identify two clusters in following data using Agglomerative Hierarchical clustering technique Object: A, B, C, D, E X1: 4, 9, 13, 40, 46	5	3	3
		Attempt any one of B & C			
	B	Design root node of a Decision Tree to determine driving risk using following Data Driving Risk Table Age / Car Type / Road lanes / Risk < 25 / Family / 1 / High < 25 / Family / 4 / Low < 25 / Sports / 1 / High < 25 / Sports / 4 / Low > 25 / Sports / 1 / Low > 25 / Family / 4 / Low > 25 / Truck / 1 / Low < 25 / Truck / 1 / High < 25 / Truck / 4 / Low	10	3	3
	C	Use data in Q.1 B to predict driving risk for attributes as age < 25 ,Road lanes = 4 and Car Type = Sports, using Bayesian Classifier.	10	3	3
2		**Attempt any three of A, B, C & D**			
	A	Explain learning rate in regression.	5	2	1
	B	Explain different learning techniques.	5	2	1
	C	Explain hypothesis function for multiple linear regression.	5	2	1
	D	What is gini index? How is it calculated.	5	2	1
3		**Attempt any three of A, B, C & D**			
	A	Explain Content based recommender system.	5	2	1
	B	Explain the gradient decent learning algorithm for multilayer perceptron.	5	2	1
	C	How Similarity is measured in clustering Techniques?	5	2	1
	D	Explain Bayesian Classifier.	5	2	1

<table>
<tr><th colspan="2">Que No</th><th>Question</th><th>Marks</th><th>BL</th><th>CO</th></tr>
<tr><td>4</td><td>A</td><td>i) Calculate linear regression parameters for following data.

<table>
<tr><td>X</td><td>Y</td></tr>
<tr><td>5</td><td>21</td></tr>
<tr><td>10</td><td>38</td></tr>
<tr><td>15</td><td>62</td></tr>
<tr><td>20</td><td>83</td></tr>
<tr><td>25</td><td>101</td></tr>
</table>

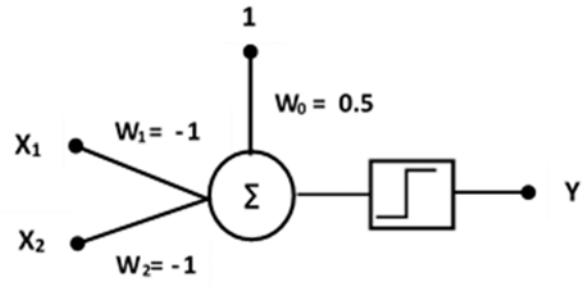
ii) Predict whether a loan will be sanctioned to a person with given attributes based on given data set using K-nn with K=1.

<table>
<tr><td>Age</td><td>Income</td><td>Cards</td></tr>
<tr><td>30</td><td>35000</td><td>2</td></tr>
</table>

<table>
<tr><td colspan="4">Training Data</td></tr>
<tr><td>Age</td><td>Income</td><td>Cards</td><td>Loan</td></tr>
<tr><td>35</td><td>35000</td><td>3</td><td>No</td></tr>
<tr><td>22</td><td>50000</td><td>2</td><td>Yes</td></tr>
<tr><td>63</td><td>200000</td><td>1</td><td>No</td></tr>
<tr><td>25</td><td>45000</td><td>2</td><td>Yes</td></tr>
<tr><td>59</td><td>175000</td><td>1</td><td>No</td></tr>
</table>
</td><td>15</td><td>3</td><td>3</td></tr>
<tr><td>5</td><td colspan="5">Attempt any two of A, B & C</td></tr>
<tr><td></td><td>A</td><td>For following confusion matrix of an animal classifier, determine accuracy, precision and recall parameters.

<table>
<tr><td colspan="2" rowspan="2"></td><td colspan="2">Actual Class</td></tr>
<tr><td>Animal</td><td>Non Animal</td></tr>
<tr><td rowspan="2">Predicted class</td><td>Animal</td><td>15</td><td>3</td></tr>
<tr><td>Non Animal</td><td>1</td><td>12</td></tr>
</table>

Comment on the classification performance of this classifier.</td><td>10</td><td>4</td><td>2</td></tr>
<tr><td></td><td>B</td><td>Analyze the following Artificial Neural with hardlimit Thresholding function and determine the logical operation it has implemented.</td><td>10</td><td>4</td><td>2</td></tr>
</table>

Que No		Question	Marks	BL	CO
					
	C	A dataset to be used for predicting weight is given below. Is it suitable for making prediction? Why? Height (inches) | Weight (Kg) 36 | 25 42 | 38 48 | 55 54 | 60 60 | 65	10	4	2
6		**Attempt any four of A, B, C, D & E**			
	A	What are the reasons of incorporating recommender system in information systems?	5	2	1
	B	What is machine learning? Explain architecture of machine learning system.	5	2	1
	C	What is overfitting in linear regression? How can overfitting be avoided?	5	2	1
	D	Explain activation functions used in an artificial neural network.	5	2	1
	E	What is Data Cleaning? Explain techniques used for data cleaning.	5	2	1

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PRN		QP Code	CS-123

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

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Semester End Examination - Summer 2018-19

Class - Program	Third Year B.Tech. (CS)	**Day &Date**	Saturday, 11/05/2019
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	Illustrate following substitution cipher techniques a. Monoalphabetic cipher b. Polyalphabetic Cipher	8	2	1
	B	Compare Symmetric and Asymmetric cryptographic system?	7	2	1
2	A	What are the principles of public key cryptosystems?	8	1	1
		Attempt any one of B & C			
	B	Explain with Block diagram, Encryption and Decryption in DES Algorithm	7	2	1
	C	Explain Block cipher design principles	7	2	1
3	A	Apply Diffie-Hellman key exchange algorithm to find out shared secret key for following data. q= 11, α=2, YA=9, YB=3	8	3	1
	B	What is MAC? What are the requirements of MAC?	7	1	2
4	A	Explain hierarchy of Certificate Authorities (CA's).	8	2	3
		Attempt any one of B & C			
	B	How are the certification authorities useful for distribution of public keys?	7	1	3
	C	What is Woo-Lam approach for authentication protocol	7	1	3
5		**Attempt any one ofA&B**			
	A	What are the functions provided by S/MIME?	8	1	4
	B	What are the operations performed in PGP	8	1	4
		Attempt any twoof C, D & E			
	C	Explain IPSec AH (Authentication Header) format	6	2	4
	D	Explain IPSec ESP (Encapsulating Security Payload) format	6	2	4
	E	How Key is derived from pass phrase in Pretty good privacy	6	2	4
6		**Attempt any one ofA&B**			
	A	Explain SSL Handshake protocol	8	2	4
	B	Explain SSL architecture	8	2	4
		Attempt any twoof C, D & E			
	C	List in detail the Key Features of Secure Electronic Transaction (SET) Protocol ?.	6	1	4
	D	What is SSL Record protocol	6	1	4
	E	What is TLS	6	1	4

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PRN		QP Code	CS-074-

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

(An Autonomous Institute)

Semester End Examination - Summer 2018-19

Class - Program	Third Year B.Tech. (CS)	Day & Date	Thursday, 09/05/2019
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.*
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Que No		Question	Marks	BL	CO
1	A	What is Language Processor? What is the necessity of Language Processor? Illustrate Problem Oriented & Procedure Oriented Languages.	8	2	1
	B	What is Parse Tree? Explain Derivation and Reduction with example.	7	2	1
2	A	Which are the various data structures used and generated while designing a two pass Assembler? Illustrate with example.	8	2	2
		Attempt any one of B & C			
	B	Give assembly language statement format & explain different assembly language statements.	7	2	2
	C	What is Macro Expansion? Explain working of Macro Expansion Counter (MEC).	7	2	2
3	A	Given the following Macro MACRO COMPUTE &A, &B, &REG=BREG LCL &M &M SET 0 MOVER &REG, ='0' .SEND MOVEM &REG, &A + &M &M SET &M+1 AIF (&M NE B) .SEND MEND Show the contents of the data structures for the call COMPUTE AREA,15	8	3	2
	B	Explain different kinds of parameters in Macro.	7	2	2
4	A	Discuss major issues in code generator for expressions.	8	2	3
		Attempt any one of B & C			
	B	Discuss the PL features that contribute to the semantic gap between PL domain & Execution domain which is bridged by compiler.	7	2	3
	C	What is memory binding? Explain different types of memory allocation techniques.	7	2	3
5		**Attempt any one of A & B**			
	A	What is debugger? Illustrate dynamic debugging.	8	2	4
	B	What is Command Dialog? Explain the ways to implement Command Dialogs.	8	2	4
		Attempt any two of C, D & E			
	C	State and explain different types of editors.	6	2	4
	D	Explain the following Software tools - i) Profile Monitor ii) Test Data Generator	6	2	4

Que No		Question	Marks	BL	CO
	E	Explain the components of Programming Environments.	6	2	4
6		**Attempt any one of A & B**			
	A	What are overlays? Illustrate the execution of overlay structured program with suitable example.	8	2	3
	B	Illustrate the Program Relocation algorithm with suitable example.	8	2	3
		Attempt any two of C, D & E			
	C	Explain the following- i) Bootstrap Loader ii) "Compile-and-Go" Loader	6	2	3
	D	What are pure & impure interpreters?	6	2	3
	E	List & explain the functions of Loader.	6	2	3

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