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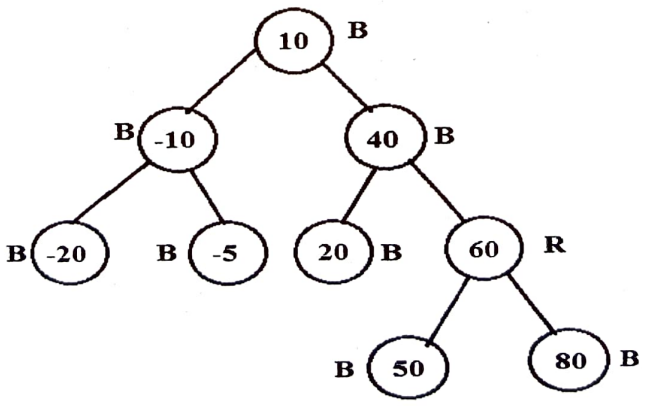
DWARKADAS J. SANGHVI COLLEGE OF ENGINEERING
(Autonomous College Affiliated to the University of Mumbai)
NAAC Accredited with "A" Grade (CGPA : 3.18)

Department of Computer Engineering
A.Y. 2022-23 (Even Semester)
Continuous Assessment: Term Test – I

SET - I

Max. Marks: 25	**Duration: 1 Hr.**
Class: T.Y. B. Tech.	**Semester: VI**
Course: Advance Algorithm	**Course Code: DJ19CEC602**
Program: Computer Engineering	

Instructions:
(1) Write Set no on the answer sheet at the top.
(2) Question Number 1 is Compulsory.
(3) Attempt any THREE out of remaining questions.

Q. No.	Question Description	Marks
Q.1	Discuss significance of Randomized approach in Game Tree.	**04**
Q.2	Perform Amortized Analysis of Dynamic Tables using **Potential method.**	**07**
Q.3	Give complexity analysis of Randomized Quick Sort algorithm. (Give detailed derivation)	**07**
Q.4	What is a Black Depth of Red-Black Tree? Give suitable example. Delete node "10" from the following Red-Black Tree (show all the steps of deletion)  	**07**
Q.4	Insert given elements in the Treap (Show Treap structure after each insertion) (10), (20), (30), (40), (50), (60), (70)	**07**

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	Compute the priority of above nodes using pseudocode given below: Priority = [element] mod [(element/3)] Is above constructed Treap is skewed data structure?	

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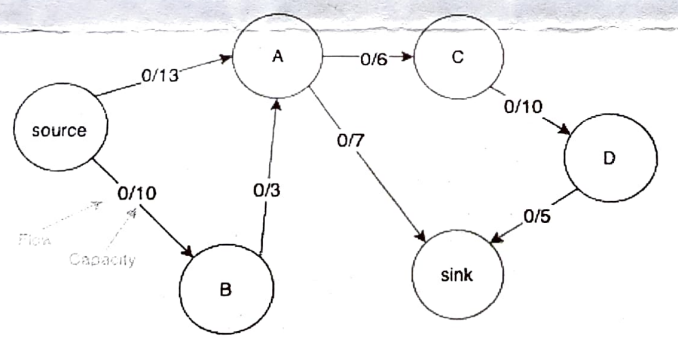
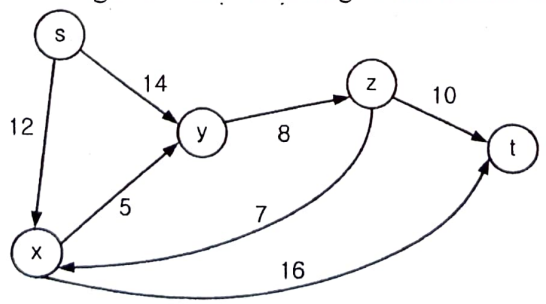
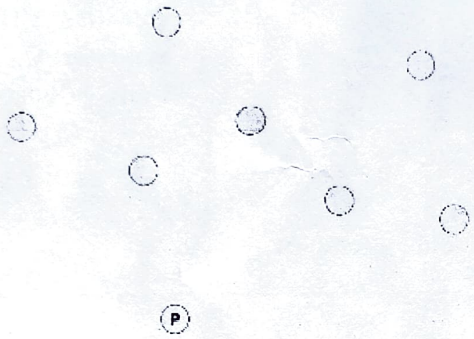
Department of Computer Engineering
A.Y. 2022-23 (Even Semester)
Continuous Assessment: Term Test – II

Max. Marks: 25	**Duration: 1 Hr.**
Class: T.Y. B. Tech.	**Semester: VI**
Course: Advance Algorithm	**Course Code: DJ19CEC602**
Program: Computer Engineering	

Instructions:
(1) Question Number 1 is Compulsory.
(2) Attempt any THREE out of remaining questions.

Q. No.	Question Description	CO	Blooms Taxonomy	Marks
Q.1	List and explain Line Segment Properties in brief.	CO2	Understand	**04**
Q.2	Create a Balanced KD Tree for given data points: (4, 72, 239), (29, 2, 312), (336, 45, 3), (42, 41, 64), (5, 40, 148), (453, 43, 2), (5, 32, 92), (23, 94, 45), (56, 2, 61), (553, 40, 6)	CO2	Apply	**07**
Q.3	Find Maximum Flow for given network using Push Relabel algorithm. 	CO1, CO2	Apply	**07**
Q.4	Find Max-Flow in given Network Using Ford Fulkerson algorithm.  A flow network **P.T.O.**	CO2	Understand, Apply	**07**

Q.5	What is Convex Hull? Run the Graham Scan algorithm to compute the Convex Hull of given points: 	CO1, CO2	Understand, Apply	**07**

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Department of Computer Engineering
A.Y. 2022-23 (Even Semester)
Continuous Assessment: Term Test – I

Max. Marks: 25	**Duration: 1 Hr.**
Class: TE (A & B)	**Semester: VI**
Course: Software Engineering	**Course Code: DJ19CEC601**
Program: Computer Engineering	**Date: 27/03/2023**

Instructions: (If any)

(1) Please solve questions in order with clear and dark ink pens

(2) Draw figures wherever required

Q.No.	Question Description	Marks
Q.1 (a)	Explain advantages and disadvantages of prototype model. In which scenarios is the prototype model suitable?	08
	OR	
Q.1 (a)	Explain the Scrum Model. Justify which feature of Scrum model do you find useful?	08
Q.2 (a)	i. Draw the diagram of Function Point Estimation model. ii. Compute the function point value for a project with the following information domain characteristics: Number of user inputs: 7 Number of user outputs: 10 Number of user inquiries: 6 Number of files: 17 Number of external interfaces: 4 Assume average complexity for the domain values and low complexity for all the other attributes.	02 04
	OR	

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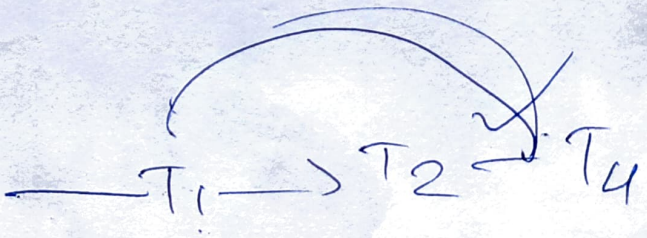
<table>
<tr><td rowspan="2">Q.2 (a)</td><td>i. Explain Work Breakdown Structure.</td><td>02</td></tr>
<tr><td>ii. For the following tasks, draw the task network diagram and find the critical path.
<table>
<tr><td>Task</td><td>T1</td><td>T2</td><td>T3</td><td>T4</td><td>T5</td><td>T6</td><td>T7</td><td>T8</td><td>T9</td><td>T10</td></tr>
<tr><td>Duration (in days)</td><td>10</td><td>15</td><td>15</td><td>7</td><td>20</td><td>5</td><td>4</td><td>8</td><td>10</td><td>12</td></tr>
<tr><td>Dependency</td><td>-</td><td>T1</td><td>T1</td><td>T1, T2</td><td>T1</td><td>T4, T5</td><td>T6</td><td>T7</td><td>T6, T8</td><td>T9</td></tr>
</table></td><td>04</td></tr>
<tr><td>Q.2 (b)</td><td>Explain any 2 design principles in detail.</td><td>03</td></tr>
<tr><td>Q.3</td><td>Explain the steps of requirements engineering process in brief.</td><td>08</td></tr>
<tr><td></td><td>OR</td><td></td></tr>
<tr><td>Q.3</td><td>Explain the elements of analysis model with suitable diagram.</td><td>08</td></tr>
</table>

********** All the best **********



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Department of Computer Engineering
A.Y. 2022-23 (Even Semester)
Continuous Assessment: Term Test – II

Max. Marks: 25	**Duration: 1 Hr.**
Class: TE (A & B)	**Semester: VI**
Course: Software Engineering	**Course Code: DJ19CEC601**
Program: Computer Engineering	**Date: 24/04/2023**

Instructions: (If any)

(1) Please solve questions in order with clear and dark ink pens

(2) *Draw figures wherever required*

Q.No.	Question Description	CO	Blooms Taxonomy	Marks

1	For the following unit code, draw flow graph, identify independent paths and compute the cyclomatic complexity by all three formulas.
	
	`function getDiscountedPrice(price, discountPercent, isMember, isPromoActive)`
	`{`
	`let discountedPrice = price;`
	
	`if (discountPercent > 0) {`
	`discountedPrice = discountedPrice * (1 - discountPercent / 100);`
	`}`
	
	`if (isMember) {`
	`discountedPrice = discountedPrice * 0.9;`
	`}`
	
	`if (isPromoActive) {`
	`if (discountedPrice > 100)`
	`{`
	`discountedPrice = discountedPrice - 10;`
	`}`
	`else {`
	`discountedPrice = discountedPrice * 0.95;`
	`}`
	`}`
	
	`return discountedPrice;`
	`}`
		CO5	Apply	4

1b	Explain the different types of system testing? OR Explain Control structure testing.	CO5	Understand	5

2	Explain the steps in Building a Risk table. OR Explain the features of a SCM repository.			8
3	Explain DevOps Toolchain. OR Explain Docker Architecture.			8

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Department of Computer Engineering
A.Y. 2022-23 (Even Semester)
Continuous Assessment: Term Test – I

Max. Marks: 25	**Duration: 1 Hr.**
Class: TE A	**Semester: VI**
Course: Information Security	Course Code: DJ19CEC603
Program: Third Year B.Tech. in Computer Engineering	

Instructions:
1. All questions are compulsory.
2. Check for internal options.
3. Assume suitable data wherever required.

Q.No.	Question Description	Marks
Q.1	a) Explain in details key generation techniques in DES Algorithm.. **OR** b) Convert following plain text into cipher text using playfair techniques. Plain Text : DWARKADAS Key : SHAH	**05**
Q.2	a) Convert Plain Text (PT) into cipher text (CT) using RSA : P=17, Q=13, Find e, d and CT if PT is 12	**05**
Q.3	a) Discuss the key expansion process of AES 128 algorithm. Generate word w4,w5 from given word w0,w1,w3 w0={23,12,34,C2} w1={ 42,51,A2, D1} w3={31,E2,12,00} Rconst: { 01,00,00,00} S Box (w3) 31 E2 12 00 A1 76 21 42	**10**
Q.4	a) Discuss in details about following security services I)Authentication II) Non repudiation. **OR** b) Explain in details about various threats to data/information delivery over transit.	**05**

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Department of Computer Engineering
Academic Year 2022-2023

Term Test – II
T.E. (Semester VI) DIV-A
Course: Information Security (DJ19CEC603)

Duration: 1 hour **Maximum Marks: 25**

Instructions:

1. Draw neat labelled diagrams wherever necessary.
2. Read the questions carefully. Question 1 is compulsory. Solve any three question out of five (Q2 to Q5)

Q.No.	Question	Max. Marks
1.	a) Discuss in details how man in middle attack is launch on Diffie Hellman techniques. b) Alice and Bob have agreed to use prime no q=11 and (alpha)=2 1) If Alice choose random value if Xa=4 (Private Key), what value Alice send to Bob 2) If Alice received the value 5 from Bob , find out private key of Bob (Ya) . 3) Calculate final key X1 and X2 of Alice and Bob.	[10]
2.	Explain in details SHA1 Hashing Techniques.	[05]
3.	Discuss the process of Ticket generation and Ticket grant in Kerberos system.	[05]
4.	Explain various attacks on RSA digital signature scheme.	[05]
5.	Explain in details various services offered by digital signature.	[05]

---------- All the Best ----------

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Department of Computer Engineering

A.Y. 2022-23 (Even Semester)

Continuous Assessment: Term Test – I

Max. Marks: 25	**Duration: 1 Hr.**
Class: T.Y. B. Tech. (A & B Division)	**Semester: VI**
Course: Big Data Infrastructure	**Course Code: DJ19CEEC6011**
Program: T.Y. B. Tech. in Computer Engineering	**Date: 28/03/2023 (11:00 am – 12:00 noon)**

Instructions:

(1) All questions are compulsory.

(2) Assume suitable data wherever required, but clearly state it.

<table>
<tr><th>Q. No.</th><th>Question Description</th><th>Marks</th></tr>
<tr><td>Q.1</td><td>Consider the following database table:
<table>
<tr><th>Id</th><th>Name</th><th>Branch</th><th>Mobile</th></tr>
<tr><td>101</td><td>Darsheel</td><td>Computer</td><td>9876502314</td></tr>
<tr><td>102</td><td>Ayush</td><td>Mechanical</td><td>9932416578</td></tr>
<tr><td>103</td><td>Yash</td><td>Computer</td><td>9810324576</td></tr>
</table>
i. Create the following table in Hive with transactional property = true and partitions.
ii. Insert the following values in the table.
iii. Display the count of students with respect to branch.
iv. Update the name to “Yashvi” where ID =103.
v. Alter the table to add new column “CGPA” with float datatype.</td><td>10</td></tr>
<tr><td>Q.2</td><td>Define Big Data. List and discuss types of Big Data.
<u>OR</u>
Define Big Data. List and discuss the 5V’s of Big Data.</td><td>05</td></tr>
<tr><td>Q.3</td><td>Apply MapReduce on the following document to count the frequency of words. Show all the phases properly.
The quick brown fox
The fox ate the mouse
Now how brown cow

<u>OR</u>
Write the HDFS commands for the following with suitable example:
i. To display recursively the contents in the directory.
ii. To copy files/folders from local file system to HDFS store.
iii. To copy files/folders from HDFS store to local file system.
iv. To give the size of each file in directory.
v. To change the replication factor of a file/directory in HDFS.</td><td>05</td></tr>
<tr><td>Q.4</td><td>Explain the core components of Hadoop.
<u>OR</u>
State the advantages and limitations of Hadoop.</td><td>05</td></tr>
</table>

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Department of Computer Engineering

A.Y. 2022-23 (Even Semester)

Continuous Assessment: Term Test – II

Max. Marks: 25	**Duration: 1 Hr.**
Class: T.Y. B. Tech.	**Semester: VI**
Course: Big Data Infrastructure	**Course Code: DJ19CEEC6011**
Program: T.Y. B. Tech. in Computer Engineering	**Date: 25/04/2023 (11:00 – 12:00 am)**

Instructions:

(1) All questions are compulsory.

(2) Assume suitable data wherever required, but clearly state it.

Q. No.	Question Description	CO	Blooms Taxonomy	Marks
Q.1	Consider the following collection "Student": **ID** | **Name** | **Branch** | **Admission_Year** | **Semester** 1001 | Vinit | Computer | 2020 | 4 4506 | Mandar | Mechanical | 2021 | 6 3201 | Avani | Computer | 2022 | 8 (a) Create a collection named "Student". (1 Mark) (b) Insert all the documents as shown in the collection in a **single statement**. (2 Marks) (c) Update the Student "Mandar" and set Branch = Computer: (2 Marks)	CO5	Apply	**05**
Q.2	Explain different types of schedulers supported by Apache Spark. **OR** Explain RDD with its features, advantages and imitations.	CO4	Understand	**05**
Q.3	Compare SQL Vs NoSQL. **OR** Compare MongoDB Vs RDBMS.	CO5	Understand	**05**
Q.4	Explain the Cluster Architecture of Apache Kafka. Also explain the workflow of Kafka. **OR** Explain the Cluster Architecture of Apache Storm. Also explain the workflow of Storm.	CO6	Understand	**10**

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Department of Computer Engineering
A.Y. 2022-23 (Even Semester)
Continuous Assessment: Term Test – I

Max. Marks: 25	**Duration: 1 Hr.**
Class: Third Year B.Tech (A & B)	**Semester: VI**
Course: Machine Learning	**Course Code: DJ19CEEC6021**
Program: Computer Engineering	
Instructions: All Questions are Compulsory	

Q. No.	Question	Marks
Q.1	Explain the steps in developing machine learning applications. **OR** Explain any four applications of Machine Learning	**04** **04**
Q.2		**07**

RID	age	income	student	credit_rating	Class: buys_computer
1	youth	high	no	fair	no
2	youth	high	no	excellent	no
3	middle_aged	high	no	fair	yes
4	senior	medium	no	fair	yes
5	senior	low	yes	fair	yes
6	senior	low	yes	excellent	no
7	middle_aged	low	yes	excellent	yes
8	youth	medium	no	fair	no
9	youth	low	yes	fair	yes
10	senior	medium	yes	fair	yes
11	youth	medium	yes	excellent	yes
12	middle_aged	medium	no	excellent	yes
13	middle_aged	high	yes	fair	yes
14	senior	medium	no	excellent	no

Compute the GINI index for the attributes age and income along with the overall collection of training example. Consider the CART algorithm approach while computing GINI index.

Q.3	Describe how logistic regression can be used for classification? How do we maximize log likelihood function in logistic regression?	07
Q.4	What are the steps of Principal Component Analysis algorithm? Prove mathematically that the Eigen Vectors point in the direction of greatest variance. **OR** Find principal components by applying PCA on the following data.	07 07

Systolic BP	Diastolic BP
126	78
128	80
128	82
130	82
130	84
132	86

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Department of Computer Engineering
A.Y. 2022-23 (Even Semester)
Continuous Assessment: Term Test – II

Max. Marks: 25	**Duration: 1 Hr.**
Class: Third Year B.Tech (A & B)	**Semester: VI**
Course: Machine Learning	**Course Code: DJ19CEEC6021**
Program: Computer Engineering	
Instructions: All Questions are Compulsory	

Q. No.	Question	Marks
Q.1	Apply **K means clustering** on given data for K=3. Use C1(2), C2(16) as C3(38) as initial cluster centres. Data: 2,4,6,3,31,12,16,15,38,35,14,21,23,25,30 **OR**	**05**
	Apply **K Nearest Neighbor algorithm** on the following data and classify the tuple {Interview Score=30, Exam Rank=70}. Assume K=3. Interview Score | Exam Rank | Type 70 | 70 | Not hired 70 | 40 | Hired 30 | 40 | Not hired 10 | 40 | Not hired	**05**
Q.2	a) Describe any five applications of Deep Learning b) Write a short note on the application of machine learning for image recognition.	**05** **05**
Q.3	Explain Quadratic Programming solution for finding maximum margin separators in SVM. **OR**	**10**

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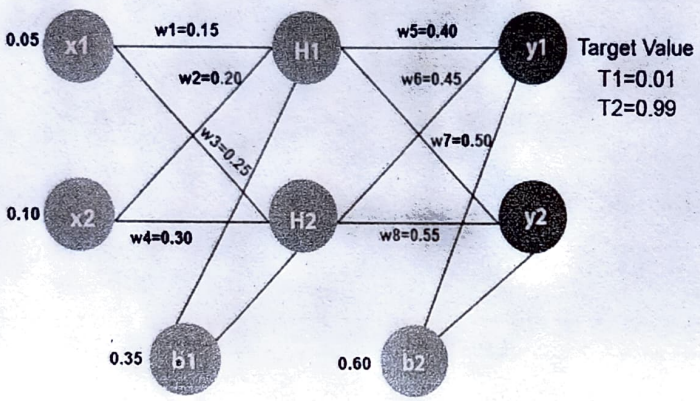
	Apply EBPTA algorithm on the given example and calculate the new weights after one iteration. Consider the values provided in the diagram as initial values. $\alpha = 0.9$ 	10

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Academic Year: 2022-23

Continuous Assessment: Term Test – I
Duration: 1 Hour
Date: 29-03-2023
Course: Environmental Studies

T.Y. B. Tech. (Semester: VI)
Maximum Marks: 25
Time: 9:30-10:30 AM
Course Code: DJ19A5

Instructions:

1. Attempt any 5 questions from Q.1 to Q.7
2. Assume suitable data wherever required, but justify it.
3. Figures to the right indicate full marks.
4. Draw neat-labelled diagrams wherever necessary.

Q No.	Question	Max. Marks
1	What are the solutions to depletion of natural resources?	[05]
2	What are the causes of depletion of natural resources?	[05]
3	What are the effects of climate change?	[05]
4	Why does carbon dioxide let heat in, but not out?	[05]
5	What does the Ecological Footprint measure?	[05]
6	What is overshoot?	[05]
7	What is a global hectare?	[05]

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Academic Year: 2022-23

Continuous Assessment: Term Test – II | **T.Y. B. Tech. (Semester: VI)**
Duration: 1 Hour | **Maximum Marks: 25**
Date: 26-04-2023 | **Time: 9:30 am – 10:30 am**
Course: Environmental Studies (SET-I) | **Course Code: DJ19A5**

Instructions:

1. Attempt any 5 questions from Q.1 to Q.7
2. Assume suitable data wherever required, but justify it.
3. Figures to the right indicate full marks.
4. Draw neat-labelled diagrams wherever necessary.

Q No.	Question	Max. Marks
1	What is energy harvesting?	[05]
2	Explain Wind energy harvesting.	[05]
3	What Are Carbon Credits?	[05]
4	Why should levels of carbon and greenhouse gases in the atmosphere be reduced?	[05]
5	What are the Functions of CPCB?	[05]
6	What are the Powers of SPCB?	[05]
7	What makes a building "green"?	[05]

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Department of Computer Engineering
A.Y. 2022-23 (Even Semester)
Continuous Assessment: Term Test – I

Max. Marks: 25	**Duration:** 1 Hr.
Class: TE A & B	**Semester:** VI
Course: Ubiquitous Computing	**Course Code:** DJ19CEHN1C2
Program: Department of Computer Engineering	

Instructions: (If any)

(1) All Questions are compulsory.

(2) Draw neat, labelled diagrams wherever applicable.

Q. No.	Question Description	Marks
Q.1 (a)	Justify the need of Ubiquitous systems to be intelligent.	8
Q.2 (a)	Explain Service Architecture Models.	9
Q.3 (a)	Compare reflective vs active displays.	8

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Department of Computer Engineering
A.Y. 2022-23 (Even Semester)
Continuous Assessment: Term Test – 2

Max. Marks: 25	**Duration:** 1 Hr.
Class: TE A & B	**Semester:** VI
Course: Ubiquitous Computing	**Course Code:** DJ19CEHN1C2
Program: Department of Computer Engineering	

Instructions: (If any)

(1) All Questions are compulsory.
(2) Draw neat, labelled diagrams wherever applicable.

Q. No.	Question Description	Marks
Q.1 (a)	Compare and contrast sensor-based systems and context aware systems.	9
Q.2 (a)	Explain how smart devices are managed in a Human User-Centered Environment.	8
Q.3 (a)	Explain eco-friendly UbiCom devices.	8

********** All the best **********