DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD -402 103
Winter Semester Examination – Dec - 2019

Branch: Computer Engineering

Subject: - Business Communication, BTCOE505B

Date: 18/12/2019

Sem.:- 5TH

Marks: 60

Time: - 3 Hr.

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Instructions to the Students
1. Each question carries 12 marks.
2. Attempt **any five** questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly

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(Marks)

Q.1. Solve any two of the following questions. (12)
a) What is Business Communication? Discuss its main features.
b) Define Communicative Competence and explain its various aspects.
c) Explain the main objectives of Business Communication.

Q.2. Solve any two of the following questions. (12)
a) How to solve the problem of translation?
b) Explain the factors which affect thought and speech.
c) What is Inter Cultural Communication? How to manage it?

Q.3.a) Discuss the barriers in communication. (12)
 b) Explain the various communication rules in detail.

Q.4. a) How to become an effective Interpersonal Communicator? (12)
 b) Discuss the importance of Organizational Communication.

Q.5. Solve any two of the following questions. (12)
 a) What is Collaboration? Explain the elements of Collaboration.
 b) Explain the effective Persuasive Communication.
 c) Discuss the importance of Team Communication.

Q.6.a) Discuss the Ethics in Business Communication. (12)
 b) Why is Business Communication important for leaders and managers?

_____PAPER END_____

Course: T.Y. B. Tech.   **Branch : Computer Science & Engineering**   **Semester- V**

Subject Code & Name: (BTHM505B) Business Communication

Max Marks: 60   **Date:19/08/2023**   **Duration: 3 Hr.**

Instructions to the Students:
1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		Level/CO	Marks
Q. 1	**Solve Any Two of the following.**		**12**
A)	Explain different features of business communication.	Understand	6
B)	Explain different channels used in business communication.	Remember	6
C)	Explain the concept of communicative competence.	Analysis	6
Q.2	**Solve Any Two of the following.**		**12**
A)	What do you mean by communication? Explain in brief different types of communication.	Remember	6
B)	What is Intercultural communication? What is the importance's of intercultural communication.	Analysis	6
C)	Elaborate on various leadership skills and discuss the distinguishing qualities that set apart a good manager from a great leader.	Understand	6
Q. 3	**Solve Any Two of the following.**		**12**
A)	What do you mean by Barriers? Explain different types of barriers incommunication.	Understand	6
B)	Explain different effective listening techniques used in business communication.	Remember	6
C)	Explain different communication rules adapted in Business world?	Analysis	6
Q.4	**Solve Any Two of the following.**		**12**
A)	Explain the directions in which communication flows within an organization.	Understand	6
B)	What is Organization? Explain the concept of Organizational Communication.	Remember	6
C)	Explain how Relational Communication is done in the field of Business.	Understand	6
Q. 5	**Solve Any Two of the following.**		**12**
A)	What is the difference between logical persuasion, emotional persuasion, and fear-based persuasion?	Understand	6
B)	Explain the purpose of written communication in business? Briefly explain the power of written communication.	Remember	6
C)	What is Ethics? Explain different types of Ethics used in Business Communication.	Understand	6

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Winter Examination – 2022

Course: T.Y. B. Tech.   Branch : Computer Science & Engineering   Semester :V

Subject Code & Name: (BTCOE505 B) Business Communication

Max Marks: 60   **Date:14/02/2023**   **Duration: 3 Hr.**

Instructions to the Students:
1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		**12**
A)	What is Competence? Explain the concept of communicative competence.	Understand	6
B)	Explain how different process of business communication has certain other characteristics.	Remember	6
C)	Explain different types of elements in business communication.	Analysis	6
Q.2	**Solve Any Two of the following.**		**12**
A)	What do you mean by communication? Explain types of communication done in business world.	Remember	6
B)	What is Intercultural communication? What is the importance's of intercultural communication.	Analysis	6
C)	Write a short note on Thoughts & Speech.	Understand	6
Q. 3	**Solve Any Two of the following.**		**12**
A)	What do you mean by Barriers? Explain different types of barriers in communication.	Understand	6
B)	Explain different effective listening techniques used in business communication.	Remember	6
C)	Explain different communication rules adapted in Business world?	Analysis	6
Q.4	**Solve Any Two of the following.**		**12**
A)	Explain how Interpersonal Communication is beneficial in Business.	Understand	6
B)	What is Organization? Explain the concept of Organizational Communication.	Remember	6
C)	Explain how Relational Communication is done in the field of Business.	Understand	6
Q. 5	**Solve Any Two of the following.**		**12**
A)	What is persuasive communication? Explain how different types of persuasive communication are done in Business.	Understand	6
B)	What is leadership? Explain the different characteristics and importance of leadership.	Remember	6
C)	What is Ethics? Explain different types of Ethics in Business Communication.	Understand	6

*** End ***

Course: TY **Branch : CSE** **Semester : V**		
Subject Code & Name: EL-IV (Business Communication)		
Max Marks: 60 **Date:** **Duration: 3 Hr.**		

Instructions to the Students:
1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		
A)	Define process of communication and also state components of communication.	**2**	**6**
B)	Brief out goals of Business Communication	**2**	**6**
C)	State in brief five types communication	**2**	**6**
Q.2	**Solve Any Two of the following.**		
A)	What is Formal and Informal Communication in Internal Communication.	**1**	**6**
B)	State and brief out forms of communication.	**1**	**6**
C)	Explain in brief Downward and Upward Business Communication	**1**	**6**
Q. 3	**Solve Any One of the following.**		
A)	State some reasons why to write the Business Letters.	**2**	**12**
B)	Define Communicative Competence and explain Linguistic Communicative area that contributes to Communicative competence.	**2**	**12**
C)	List out the types of Cultural Communication and explain in brief Intercultural Communication.	**1**	**12**
Q.4	**Solve Any Two of the following.**		
A)	Explain the different ways to overcome barriers of communication.	**1**	**6**
B)	Define the terms for Communication Styles. -Assertive -Aggressive -Passive	**1**	**6**
C)	What is Interpersonal Communication, also state the principles of Interpersonal Communication.	**1**	**6**

Q. 5	**Solve Any One of the following.**		
A)	What is Relational Communication also explain principals of relational communication.	2	12
B)	What is communication persuasive also explain three essential tips in effective Persuasive Communication.	2	12
C)	What are the conflicts in Business Communication and explain how does the conflict affect communication?	2	12
	*** End ***		

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	DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE		
	Regular & Supplementary Winter Examination-2023		
	Course: B. Tech. Branch: Computer Engineering & Allied Branches Semester: 5TH		
	Subject Code & Name: Business Communication, BTHM505B		
	Max Marks: 60 Date: 10/01/2024 Duration: 3 Hr.		
	Instructions to the Students: *1. All the questions are compulsory. 2. The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question. 3. Use of non-programmable scientific calculators is allowed. 4. Assume suitable data wherever necessary and mention it clearly.*		
		(Level/ CO)	Marks
Q. 1	**Solve Any Two of the following.**		**12**
A)	**What is Business Communication? Discuss the process of communication in detail.**	**2/CO1**	**6**
B)	**Describe the characteristics of competent communicators.**	**3/CO1**	**6**
C)	**What are the main objectives of Business Communication? Explain in brief.**	**3/CO1**	**6**
Q.2	**Solve Any Two of the following.**		**12**
A)	**What are the importance of non-verbal communication? Explain in brief.**	**2/CO2**	**6**
B)	**Define Culture. Discuss in brief the barriers for intercultural communication.**	**2/CO2**	**6**
C)	**What is translation and explain in brief the problems that may need to face translation process?**	**3/CO2**	**6**
Q. 3	**Solve Any Two of the following.**		**12**
A)	**What do you mean by Barriers to Communication? Discuss the various steps to overcome the barriers to communication.**	**2/CO3**	**6**
B)	**Define listening. Differentiate listening with hearing.**	**4/CO3**	**6**
C)	**Describe various communication styles.**	**3/CO3**	**6**
Q.4	**Solve Any Two of the following.**		**12**
A)	**What is an Organization? Discuss various types of organizational Communication.**	**2/CO4**	**6**
B)	**Explain how Interpersonal Communication is beneficial in Business.**	**3/CO4**	**6**
C)	**What is persuasive communication? Explain various skills of persuasive communication.**	**3/CO4**	**6**

Q. 5	Solve Any Two of the following.		12
A)	Differentiate Leadership Vs Management	4/CO4	6
B)	What is Ethics? Explain different principles of Ethical Business Communication	2/CO4	6
C)	What is Crisis Communication? How do you write crisis communication plan?	3/CO4	6
	*** End ***		

The grid and the borders of the table will be hidden before final printing.

	DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE		
	Regular & Supplementary Winter Examination-2023		
	Course: B. Tech. Branch: Computer Engineering & Allied Branches Semester: 5TH		
	Subject Code & Name: Business Communication, BTHM505B		
	Max Marks: 60 Date: 10/01/2024 Duration: 3 Hr.		
	Instructions to the Students: 1. *All the questions are compulsory.* 2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.* 3. *Use of non-programmable scientific calculators is allowed.* 4. *Assume suitable data wherever necessary and mention it clearly.*		
		(Level/ CO)	Marks
Q. 1	**Solve Any Two of the following.**		**12**
A)	**What is Business Communication? Discuss the process of communication in detail.**	**2/CO1**	**6**
B)	**Describe the characteristics of competent communicators.**	**3/CO1**	**6**
C)	**What are the main objectives of Business Communication? Explain in brief.**	**3/CO1**	**6**
Q.2	**Solve Any Two of the following.**		**12**
A)	**What are the importance of non-verbal communication? Explain in brief.**	**2/CO2**	**6**
B)	**Define Culture. Discuss in brief the barriers for intercultural communication.**	**2/CO2**	**6**
C)	**What is translation and explain in brief the problems that may need to face translation process?**	**3/CO2**	**6**
Q. 3	**Solve Any Two of the following.**		**12**
A)	**What do you mean by Barriers to Communication? Discuss the various steps to overcome the barriers to communication.**	**2/CO3**	**6**
B)	**Define listening. Differentiate listening with hearing.**	**4/CO3**	**6**
C)	**Describe various communication styles.**	**3/CO3**	**6**
Q.4	**Solve Any Two of the following.**		**12**
A)	**What is an Organization? Discuss various types of organizational Communication.**	**2/CO4**	**6**
B)	**Explain how Interpersonal Communication is beneficial in Business.**	**3/CO4**	**6**
C)	**What is persuasive communication? Explain various skills of persuasive communication.**	**3/CO4**	**6**

Q. 5	Solve Any Two of the following.		12
A)	Differentiate Leadership Vs Management	4/CO4	6
B)	What is Ethics? Explain different principles of Ethical Business Communication	2/CO4	6
C)	What is Crisis Communication? How do you write crisis communication plan?	3/CO4	6
	*** End ***		

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD -402 63
Semester Examination – December - 2019

Branch: Information Technology
Subject with Subject Code:- Database Management System(BTITC501)
Date:- 09/12/2019

Sem.:-V
Marks: 60
Time:- 3 Hr.

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Instructions to the Students
1. Each question carries 12 marks.
2. Attempt **any five** questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately
   Assume it and should mention it clearly

		(Marks)
Q1. A)	Explain data abstraction and different data models in DBMS	6M
B).	Explain different advantages of DBMS over file processing systems	6M

Q2. A) From given tables, write relational algebra expressions for following   1*5=6M
branch (branch_name, branch_city, assets)
customer (customer_name, customer_street, customer_city)
account (account_number, branch_name, balance)
loan (loan_number, branch_name, amount)
depositor (customer_name, account_number)
borrower (customer_name, loan_number)

    a. Find all loans of over Rs.6000
    b. Find the loan number for each loan of an amount greater than Rs.50000
    c. Find the names of all customers who have a loan, an account, or both, from the bank
    d. Find the names of all customers who have a loan and an account at the bank
    e. Find names of customer who have an account in all branches located at Aurangabad.
    f. Find name of customer who lives in pune

B) Explain unary and binary operations in relational algebra.   6M

Q3. A) Explain DDL, DML and DCL commands with suitable examples.   6M

B) From given tables , write SQL queries for following   1*5=6M
Salesman(s_id, name, city, commission)
Customer(c_id, c_name, city, grade, s_id)
Orders(o_no, amount, date_of_order, customer_id)

    a. Find out name of customer for each order
    b. Find out name of customer, who has placed 2nd highest amount of order
    c. Find out names of customers who have who have placed order of higher amount than Ram.
    d. Find out city wise count of customers.
    e. Find out names of customers who lives in same city as that of salesman
    f. Find c_id,s_id and date for each order.

Q4. A)   Explain RAID in detail   6M

   B)   Explain normalization with different normal forms with suitable example.   6M

Q5. A)   Explain ACID properties of transaction using suitable examples   6M

   B)   Explain different aggregate functions in SQL with suitable examples.   6M

Q6. A)   Explain different concurrency control protocols   6M

   B)   Write short note on backup and recovery systems   6M

_____ Paper End_____

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular/Supplementary Summer Examination – 2023

Course: B. Tech.   **Branch : CSE(AI&DS)/AI&DS**   **Semester : IV**

Subject Code & Name: BTAIC402   Database Management System

Max Marks: 60   **Date: 15-7-2023**   **Duration: 3 Hr.**

Instructions to the Students:
1. All the questions are compulsory.
2. The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		**12**
A)	What is DBMS? Explain the need of DBMS. Write any 3 application of DBMS	R/CO1	6
B)	What are the disadvantages of file processing system?	R/CO1	6
C)	With the help of block diagram, describe the basic architecture of a database management system.	R/CO1	6
Q.2	**Solve Any Two of the following.**		**12**
A)	Define Normalization. Explain 1NF, 2NF, 3NF with example.	K CO2	6
B)	What is ER model? Explain various symbols/components used in ER diagram.	U/CO2	6
C)	Explain in detail the Data Model and its types.	U/CO2	6
Q. 3	**Solve Any Two of the following.**		**12**
A)	Differentiate between RDBMS and NoSQL databases.	K/CO3	6
B)	Explain in detail about CAP theorem.	U/CO3	6
C)	Describe the properties of Key-Value Store.	U/CO3	6
Q.4	**Solve Any Two of the following.**		**12**
A)	Discuss characteristics of columnar databases.	U/CO4	6
B)	Describe distributed database system with suitable diagram	U/CO4	6
C)	Elaborate suitable use cases of document databases.	A/CO4	6
Q. 5	**Solve Any Two of the following.**		**12**
A)	Explain various graph representation techniques (data structures) with suitable examples.	U/CO5	6
B)	Explain LSM trees in detail.	U/CO5	6
C)	Explain properties of graph database model.	U/CO5	6

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Supplementary Summer Examination – 2024

Course: B. Tech.   Branch : Computer Engineering/Computer Science and Engineering

Subject Code & Name: Database Systems (BTCOC501)   **Semester :V**

Max Marks: 60   **Date:01/07/2024**   **Duration: 3 Hr.**

Instructions to the Students:

1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		**12**
A)	**Draw and explain the detailed system architecture of DBMS.**	**Understand**	**6**
B)	**Explain in detail about various key constraints used in database system.**	**Understand**	**6**
C)	**Discuss the main characteristics of the database approach and specify how it differs from traditional file system?**	**Analysis**	**6**
Q.2	**Solve Any Two of the following.**		**12**
A)	**Write a short notes on**	**Understand**	**6**

i) Foreign Key   ii) Relation state   iii) Database schema.

		(Level/CO)	Marks
B)	**account(account_number, branch_name, balance)**	**Apply**	**6**

branch (branch_name, branch_city, assets)

customer (customer_name ,customer_street, customer_city)

 loan (loan_number, branch_name, amount)

depositor((customer_name, account_number)

borrower(customer_name, loan_number)

 Write the following queries in SQL:

1)For all customers who have a loan from the bank, find their names, loan numbers, and loan amount.

2) Find the customer names, loan numbers, and loan amounts, for all loans at the Panvel branch.

3)Find the names of all branches that have assets greater than those of at least one branch located in Mumbai.

4)Find the average account balance of those branches where the account balance is greater than Rs. 1500.

5) Find the maximum across all branches of the total balance at each branch.

		(Level/CO)	Marks
C)	**Write the SQL syntax for the following with example:**	**Understand**	**6**

1)SELECT   2) ALTER   3)UPDATE

Q. 3	**Solve Any Two of the following.**		**12**
A)	**Write an SQL query for the following:**	**Apply**	**6**
	a)To create a table of Hospital database with minimum 4 fields		
	b) To insert two records		
	c) To add new field		
	d)To display all records		
B)	**What are JOINS? Explain INNER JOIN and OUTER JOIN.**	**Understand**	**6**
C)	**Explain different types of trigger.**	**Understand**	**6**
Q.4	**Solve Any Two of the following.**		**12**
A)	**State BCNF. How does it differ from 3NF?**	**Analysis**	**6**
B)	**Explain about dynamic multilevel indexing using B+ trees.**	**Understand**	**6**
C)	**Define Multi-valued dependency. Explain the Fourth normal form with an example.**	**Understand**	**6**
Q. 5	**Solve Any Two of the following.**		**12**
A)	**Explain in detail about timestamp based concurrency control techniques.**	**Understand**	**6**
B)	**Explain ACID properties of a transaction.**	**Understand**	**6**
C)	**Explain how Concurrency control can be achieved with locking methods?**	**Understand**	**6**

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE
Regular & Supplementary Winter Examination-2023

Course: B. Tech

Branch : Computer Engineering / Computer Science and Engineering

Semester :V

Subject Code & Name: BTCOC501   **Database Systems**

Max Marks: 60   **Date:01-01-24**   **Duration: 3 Hr.**

Instructions to the Students:
1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	Solve Any Two of the following.		12
A)	We develop database applications directly on top of file systems. But some problems arise because of this, Discuss those problems.	CO1/3	6
B)	Explain two tier and three tier architectures of DBMS with schematic diagram and mention at least 1 example of each.	CO1/2	6
C)	Draw the symbols of ER Diagram. Draw ER Diagram for Library Management System.	CO1/2	6
Q.2	Solve Any Two of the following.		12
A)	What is Relational algebra? Explain basic operations along with symbols of Relational Algebra.	CO2/2	6
B)	Write Relational Algebra Queries for following.	CO2/3	6

Note: Consider Relational Table - Account(Acno, AcName, Br_name, Amount).
a) To display all tuples from Accounts table.
b) To display Acno, AcName from accounts.
c) To display the tuples for the account whose amount>25000 and Br_name="Dharashiv)
d) To display Acno, AcName, Amount From Account where the amount>50000

		(Level/CO)	Marks
C)	Explain Equijoin, left join and right join with suitable example and write proper relational algebraic query for each of them.	CO2/2	6
Q. 3	Solve Any Two of the following.		12
A)	Mention different SQL languages. Explain their purpose with suitable SQL commands.	CO3/1,2	6
B)	Write the SQL Queries for the following.	CO3/3	6

a) Creating, Using, showing and deleting databases.
b) To create BOOK table with Bkid, Title, Author, branch, cost and date of publishing. (Assume proper data type for each column).
c) Write query to insert 2 valid rows of values into the BOOK table.
d) Write query to increase the length of Title and Author.
e) Write query to list books with cost less than 100.
f) Write query to list all books with title "RDBMS".

C) Consider the following schema: CO3/3   6

Suppliers (sid : integer, sname : string, address : string)
Parts (pid : integer, pname : string, color : string)
Catalog (sid : integer, pid : integer, cost : real)
Write query for the following

a) To create above tables
b) Find the name of suppliers who supply some red parts
c) Find the sids of suppliers who supply some red or green parts
d) Find the sids of suppliers who supply some red part or are at 221 packer Ave
e) Find the sids of suppliers who supply some red part and some green part

Q.4	Solve Any Two of the following.		12
A)	What is normalization? Why one need to normalize the database tables?	CO4/2	6
B)	Explain 1st, 2nd and 3rd normal form with the help of suitable example.	CO4/2	6
C)	Why we need to organize database files? Mention the type of organisations, and explain any one with suitable example.	CO3/2	6

Q. 5	Solve Any Two of the following.		12
A)	Define Transaction and their properties with suitable example.	CO5/2	6
B)	Define serial and non-serial schedules. Explain serilisabilty with suitable example.	CO5/2	6
C)	Explain the need of concurrency control. Mention the concurrency control methods. Explain any one with suitable example.	CO5/2	6

*** End ***

Course: B. Tech.   Branch :   CSE   Semester :V

Subject Code & Name: BTCOE504A   Human Computer Interaction

Max Marks: 60   Date:17/08/2023   Duration: 3 Hr.

Instructions to the Students:
1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	Solve Any Two of the following.		12
A)	Examine how text entry devices use in interaction	L4	6
B)	Explain the display technology CRT in detail.	L2	6
C)	Interpret short term memory model in detail.	L3	6
Q.2	Solve Any Two of the following.		12
A)	Explain interaction design process with diagram	L2	6
B)	Examine the activities in the water fall model of software life cycle.	L4	6
C)	Justify Shneiderman's eight golden rules of interface design.	L5	6
Q. 3	Solve Any Two of the following.		12
A)	Discuss architectures of windowing system	L2	6
B)	Define evaluation. Analyze the cognitive walkthrough evaluation approach.	L4	6
C)	Explain the Seeheim model of UIMS.	L2	6
Q.4	Solve Any Two of the following.		12
A)	What is stakeholders? Distinguish different categories of stakeholders.	L4	6
B)	Explain face to face communication in detail.	L2	6
C)	Define task analysis. Explain knowledge based techniques.	L2	6
Q. 5	Solve Any Two of the following.		12
A)	Explain centralized architecture of groupware.	L2	6
B)	Compare virtual and augmented reality	L4	6
C)	Examine application areas of hypermedia in detail.	L4	6

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD -402 103
Winter Semester Examination — Dec. 2019

Branch: Information Technology   **Sem.:- V**
Subject:- Human Computer Interaction(BTITOE505B)   **Marks: 60**
Date:- 18/12/2019   **Time:- 3 Hr.**

Instructions to the Students
1. Each question carries 12 marks.
2. Attempt **any five** questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly

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Q.1.
a) Illustrate human eye with suitable diagram.   **06**
b) Elucidate Human memory in detail   **06**
Q.2.
a) Describe any 5 Nielsen's heuristics principle in details.   **06**
b) Enlist three principles that support usability of system.Explain any one in detail.**06**

Q.3.
a) What is Socio-technical models ? Explain any three key stages in CUSTOM methodology .   **06**
b) Illustrate GOMS in detail.   **06**

Q.4.
a) Describe Interaction styles ,Explain Direct Manipulation method   **06**
b) Explain in detail Interaction Devices and its applications.   **06**

Q.5.
a) How Information will be treated as wealth of human, Describe Information search in detail.   **06**
b) Describe User Documentation with suitable examples   **06**

Q.6.
a) What is Hypertext used for, how does Hypertext work   **06**
b) Illustrate Ubiquitous computing also explain its application   **06**
_____ **Paper End** _____

	DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE		
	Winter Examination – 2022		
	Course: B. Tech. **Branch :** Computer **Semester :** V		
	Subject Code & Name: (BTCOE504A) Human computer Interaction		
	Max Marks: 60 **Date:** **Duration: 3 Hr.**		

	Instructions to the Students:
	    1. *All the questions are compulsory.*
	    2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
	    3. *Use of non-programmable scientific calculators is allowed.*
	    4. *Assume suitable data wherever necessary and mention it clearly.*		

		(Level/CO)	**Marks**
Q. 1	**Solve Any Two of the following.**		**12**
A)	**Interpret long term Memory in detail.**	**L3**	**6**
B)	**Explain concept of human Input Output Channel in detail.**	**L2**	**6**
C)	**Examine how text entry devices use in interaction.**	**L4**	**6**
Q.2	**Solve Any Two of the following.**		**12**
A)	**Explain Activities in software life cycles.**	**L2**	**6**
B)	**Where we use screen design and layout in HCI.**	**L3**	**6**
C)	**Justify Nielsons ten heuristics in details.**	**L5**	**6**
Q. 3	**Solve Any Two of the following.**		**12**
A)	**Define Evaluation? Analyze evaluation through Expert analysis.**	**L4**	**6**
B)	**Discuss elements of windowing system.**	**L2**	**6**
C)	**What is universal design? Explain principles of universal design.**	**L2**	**6**
Q.4	**Solve Any Two of the following.**		**12**
A)	**Discuss Goal and task hierarchy in cognitive model.**	**L2**	**6**
B)	**Explain Physical and Device Model in detail.**	**L2**	**6**
C)	**Explain Face to Face communication in detail.**	**L2**	**6**
Q. 5	**Solve Any Two of the following.**		**12**
A)	**Examine World Wide Web in detail.**	**L4**	**6**
B)	**Explain concept of computer mediated communication.**	**L2**	**6**
C)	**Compare Virtual and Augmented reality.**	**L4**	**6**
	*** End ***		

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular & Supplementary Winter Examination-2023

Course: B. Tech. **Branch : Computer Engineering /** **Semester : 5**

Computer Science and Engineering

Subject Code & Name: **BTCOE504A & Human-Computer Interaction**

Max Marks: 60 **Date:08-01-24** **Duration: 3 Hr.**

Instructions to the Students:
1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO)onwhich the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		**12**
A)	Write a note on Reasoning and Problem Solving.	CO1	6
B)	Write a note on Devices For Virtual Reality And 3d Interaction.	CO1	6
C)	State and explain the elements of the WIMP Interface.	CO1	6
Q.2	**Solve Any Two of the following.**		**12**
A)	What do we understand by Scenarios in Design?	CO2	6
B)	What is Design and explain the Golden Rule of Design.	CO2	6
C)	State Shneiderman's Eight Golden Rules of Interface Design	CO2	6
Q. 3	**Solve Any Two of the following.**		**12**
A)	State Nielsen's ten heuristics for evaluation.	CO3	6
B)	State the Universal Design Principles.	CO3	6
C)	Explain UIMS as a conceptual architecture.	CO3	6
Q.4	**Solve Any Two of the following.**		**12**
A)	Write a note on GOMS.	CO4	6
B)	Explain Keystroke-level model.	CO4	6
C)	Explain face to face communication in detail.	CO4	6
Q. 5	**Solve Any Two of the following.**		**12**
A)	Explain Computer Mediated Communication.	CO5	6
B)	Write a note on Virtual Reality and Augmented Reality.	CO5	6
C)	Explain the concept of Dynamic Web Content.	CO5	6

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular & Supplementary Winter Examination-2023

Course: B. Tech.   **Branch : Electronics & CE / Electronics & CSE**

Semester :V

Subject Code & Name: BTECPE503D Software Engineering

Max Marks: 60   **Date:05.01.2024**   **Duration: 3 Hr.**

Instructions to the Students:
1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		**12**
A)	**Explain the Software Engineering Ethics.**	**1**	**6**
B)	**Explain the Waterfall Process Model also state where it is used.**	**1**	**6**
C)	**State the four fundamental activities used in various process models.**	**1**	**6**
Q.2	**Solve Any Two of the following.**		**12**
A)	**What do you mean by agility in software development?**	**2**	**6**
B)	**Give comparison between Plan-driven & Agile Project Management Methodologies.**	**2**	**6**
C)	**Differentiate between functional & non-functional requirements.**	**2**	**6**
Q. 3	**Solve Any Two of the following.**		**12**
A)	**What do you mean by system modelling? Explain interaction Model.**	**3**	**6**
B)	**What is model driven Engineering?**	**3**	**6**
C)	**Explain Pipe and filter architecture**	**3**	**6**
Q.4	**Solve Any Two of the following.**		**12**
A)	**Explain student management system.**	**4**	**6**
B)	**What do you mean by open source licensing?**	**4**	**6**
C)	**Explain the configuration management activities.**	**4**	**6**
Q. 5	**Solve Any Two of the following.**		**12**
A)	**Which are the different benefits of software testing?**	**5**	**6**
B)	**Explain the concept of performance testing.**	**5**	**6**
C)	**Explain the types of user testing.**	**5**	**6**

	*** End ***	

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Supplementary Summer Examination – 2024

Course: B. Tech.   Branch : Computer Engineering / CSE   **Semester :VII**

Subject Code & Name: BTCOC701_Y20: Software Engineering

Max Marks: 60   **Date: 01/07/2024**   **Duration: 3 Hr.**

Instructions to the Students:
1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		**12**
A)	**Explain spiral model and iterative waterfall for software life cycle and discuss various activities in each phase.**	**Understand**	**6**
B)	**What is the use of software development process models?**	**Understand**	**6**
C)	**Describe about requirements validation and management.**	**Understand**	**6**
Q.2	**Solve Any Two of the following.**		**12**
A)	**Write a difference between functional and non-functional requirements.**	**Analysis**	**6**
B)	**What are the Extreme Programming Advantages?**	**Understand**	**6**
C)	**What are the Characteristics of Agile software development?**	**Understand**	**6**
Q. 3	**Solve Any Two of the following.**		**12**
A)	**Explain about the importance of sequence and activity diagrams in system design.**	**Understand**	**6**
B)	**What is the use of an Activity diagram and draw an activity diagram for withdrawing money from a Bank ATM.**	**Apply**	**6**
C)	**What is Use case diagram in UML? Draw use case diagram for an Online Shopping System.**	**Apply**	**6**
Q.4	**Solve Any Two of the following.**		**12**
A)	**Explain about software architecture with suitable example.**	**Understand**	**6**
B)	**What is Pattern Designing? Explain Characteristics of Pattern Designing.**	**Understand**	**6**
C)	**Explain Structural design patterns. Make the list of Types of Structural Design Patterns and explain any three of them.**	**Understand**	**6**
Q. 5	**Solve Any Two of the following.**		**12**

A)	What are dependability properties in software engineering?	Understand	6
B)	What is development testing? Write its advantages and disadvantages.	Understand	6
C)	Write the differences between black box testing and white box testing.	Analysis	6

*** End ***

	DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE		
	Winter Examination – 2022		
	Course: B. Tech. **Branch : CSE** **Semester :V**		
	Subject Code & Name: BTCOC503 : Software Engineering		
	Max Marks: 60 **Date: 02-02-2023** **Duration: 3 Hr.**		

Instructions to the Students:
1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		**12**
A)	What are the four important attributes that all professional software should have? state and explain.	**Understand**	**6**
B)	Explain software Process activities.	**Understand**	**6**
C)	Explain the software Engineering code of ethics and professional practice	**Remember**	**6**
Q.2	**Solve Any Two of the following.**		**12**
A)	Compare Plan driven approach and Agile methods.	**Understand**	**6**
B)	An automated ticket-issuing system sells rail tickets. Users select their destination and input a credit card and a personal identification number. The rail ticket is issued and their credit card account charged. When the user presses the start button, a menu display of potential destinations is activated, along with a message to the user to select a destination. Once a destination has been selected, users are requested to input their credit card. Its validity is checked and the user is then requested to input a personal identifier. When the credit transaction has been validated, the ticket is issued. For above case study find functional and non-functional requirements.	**Apply**	**6**
C)	What is requirements elicitation? explain requirement elicitation and analysis process in brief	**Understand**	**6**
Q. 3	**Solve Any Two of the following.**		**12**
A)	What is system model? Explain types of system models in brief	**Understand**	**6**
B)	What are Architectural views? Explain 4 + 1 view model of software architecture	**Understand**	**6**
C)	What are the Architectural patterns? Explain Model view controller (MVC) pattern	**Understand**	**6**

Q.4	Solve Any Two of the following.		12
A)	What is software reuse? Explain software reuse levels.	Understand	6
B)	A group diary and time management system is intended to support the timetabling of meetings and appointments across a group of co-workers. When an appointment is to be made that involves a number of people, the system finds a common slot in each of their diaries and arranges the appointment for that time. If no common slots are available, it interacts with the user to rearrange his or her personal diary to make room for the appointment. For above case study Draw the use-case diagram	Apply	6
C)	For the Case study in Q.4(B) Draw the sequence diagram for use case book an appointment (free slot)	Apply	6
Q. 5	Solve Any Two of the following.		12
A)	Compare software inspection and testing	Understand	6
B)	What is Test-driven development (TDD)? Explain TDD process activities	Understand	6
C)	Explain principal dependability properties in brief	Understand	6
	*** End ***		

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Supplementary Summer Examination – 2023

Course: B. Tech.   Branch: Computer Engineering   Semester: Fifth

Subject Code & Name: BTCOC503 Software Engineering

Max Marks: 60   Date: 11 August 2023   Duration: 3 Hr.

Instructions to the Students:
1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *The use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		**12**
A)	What is object-oriented programming (OOP)? Describe the fundamental principles of OOP and how they contribute to software design and development.	Understand	6
B)	Provide an OO design for the following specifications.	Analyse	6
	"Build a software system that stores customers' contact details such as mobile number, WhatsApp number, mail ID and date of birth. The system should give birthday greetings and festival greetings to the customers."		
	The OO design should include classes, relationships and methods. Draw a class diagram in UML.	Remember	6
C)	Compare and contrast agile and waterfall software development methodologies. Highlight the advantages and disadvantages of each approach.		
			12
Q.2	**Solve Any Two of the following.**	Analyse	6
A)	Define software testing and its importance in the development process. Describe at least three different types of testing and provide scenarios where each type would be most effective	Analyse	6
B)	Explain the significance of continuous development and continuous integration in the DevOps project pipeline	Analyse	6
C)	Suggest an appropriate process model for the projects. Justify your answers.		
	1. IOT-based water-level monitoring system.		
	2. Website development for a restaurant		
	3. A Mobile application to track students' attendance		
Q. 3	**Solve Any Two of the following.**		**12**

A) Given a scenario, design a class diagram for a library management system that includes classes for books, library members, and transactions. Include associations, attributes, and methods.	Create	6
B) Give the syntax of the following commands and explain their purpose in the context of GitHub. (1) fork, (2) merge, (3) pull request, (4) cloning a repository	Remember	6
C) Consider a scenario where you are developing software for a medical clinic. Identify and categorize three functional and three non-functional requirements for the software. Explain why each requirement is important for the successful implementation of the system.	Remember	6
Q.4 **Solve Any Two of the following.**		**12**
A) Imagine you're developing a banking application. Describe how you would handle concurrent access to a shared bank account to ensure data consistency and avoid conflicts.	Analyse	6
B) Define the following quality attributes : (1) Modifiability, (2) Portability, (3) Scalability, (4) Reliability	Remember	6
C) Analyse a recent software project failure and identify the key reasons behind its failure. Discuss what could have been done differently to prevent or mitigate these issues.	Remember	6
Q. 5 **Solve the following.**		**12**
A) Write pseudocode for a function that takes a list of integers as input and returns the sum of all even numbers in the list.	Remember	6
B) C) Define the following quality attributes : (1) Cohesion (2) Coupling (3) LOC (4) Fan-in and Fan-out	Create	6
What is Hyrum's law? Explain with an example	Remember	6

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE
Supplementary Winter Examination – 2023

Course: B. Tech.   **Branch: Information Technology**   **Semester: V**

Subject Code & Name: BTITC503_Y19 Software Engineering

Max Marks: 60   **Date: 05/01/2024**   **Duration: 3 Hr.**

Instructions to the Students:
1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

			(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**			**12**
A)	Explain the software engineering as a layered technology.		CO 1	**6**
B)	Give the comparison between Incremental and Spiral Models.		CO 1	**6**
C)	Explain Rapid Application Development Model with its advantages.		CO 1	**6**
Q.2	**Solve Any Two of the following.**			**12**
A)	Explain the different types of cohesion with examples.		CO 2	**6**
B)	Discuss the distinct tasks involved in requirement engineering process.		CO 2	**6**
C)	Draw a Use case Diagram for user interaction with ATM System.		CO 2	**6**
Q. 3	**Solve Any Two of the following.**			**12**
A)	Differentiate between black box and white box testing.		CO 2	**6**
B)	Give the comparison between verification and validation.		CO 2	**6**
C)	Explain Load and Stress testing.		CO 2	**6**
Q.4	**Solve Any Two of the following.**			**12**
A)	Explain WebApps engineering layers.		CO 2	**6**
B)	Consider a software project using Semi-detached mode with 30,000 lines of code. Obtain effort estimation, Duration estimation and person estimation.		CO 3	**6**
C)	Elaborate on how LOC and FP can be used in project estimation.		CO 3	**6**
Q. 5	**Solve Any Two of the following.**			**12**
A)	Describe Formal Technical Review.		CO 4	**6**
B)	Write a note on: SCM		CO 4	**6**
C)	Explain the phases in risk management.		CO 4	**6**

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular & Supplementary Winter Examination-2023

Course: B. Tech.   **Branch: CSE/CE**   **Semester : V**

Subject Code & Name: BTCOC503 Software Engineering

Max Marks: 60   **Date:05-01-24**   **Duration: 3 Hr.**

Instructions to the Students:
1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		**12**
A)	What is Software Engineering Ethics? Explain ACM/IEEE code of ethics.	Remember	**6**
B)	Why requirements engineering considered as a critical stage of the software process? Discuss the three main activities involved in the requirements engineering process.	Understand	**6**
C)	Explain software process activities.	Understand	**6**
Q.2	**Solve Any Two of the following.**		**12**
A)	Explain refactoring and pair programming as agile development techniques.	Understand	**6**
B)	Discuss Functional and Non-Functional Requirements	Understand	**6**
C)	Explain requirements validation software process.	Understand	**6**
Q. 3	**Solve Any Two of the following.**		**12**
A)	What is System Modelling? Explain different types of System Models in brief.	Understand	**6**
B)	What are Architectural Patterns? Explain Layered Architecture Pattern with suitable diagram.	Understand	**6**
C)	Explain application architecture for Transaction Processing System with suitable diagram.	Understand	**6**
Q.4	**Solve Any Two of the following.**		**12**
A)	Write a note on Open-Source Development and Open-Source Licensing.	Understand	**6**
B)	Discuss Object Oriented Design using UML in brief.	Understand	**6**
C)	Compare Software Inspection and Testing.	Understand	**6**

Q. 5	Solve Any Two of the following.		12
A)	Discuss Component testing in detail	Understand	6
B)	What is Test-driven development (TDD)? Explain TDD process activities.	Understand	6
C)	Write a note on User Testing	Understand	6
	*** End ***		

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Supplementary Winter Examination-2023

Course: B. Tech.   **Branch : CSE/CE**   **Semester :VII**

Subject Code & Name: BTCOC701_Y20: Software Engineering

Max Marks: 60   **Date:02-01-2024**   **Duration: 3 Hr.**

Instructions to the Students:
1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		**12**
A)	What are the most important differences between generic software product development and custom software development?	**Understand**	**6**
B)	Explain the Waterfall software process model.	**Understand**	**6**
C)	Explain software Process activities	**Understand**	**6**
Q.2	**Solve Any Two of the following.**		**12**
A)	Compare Plan driven approach and Agile methods.	**Understand**	**6**
B)	What do you mean by Functional and non-functional requirements in software system requirements? Explain	**Apply**	**6**
C)	What is requirements elicitation ? explain requirement elicitation and analysis process in brief	**Understand**	**6**
Q. 3	**Solve Any Two of the following.**		**12**
A)	What is system model ? Explain types of system models in brief	**Understand**	**6**
B)	What are Architectural views? Explain 4 + 1 view model of software architecture	**Understand**	**6**
C)	What are the Architectural patterns? Explain Model view controller (MVC) pattern	**Understand**	**6**
Q.4	**Solve Any Two of the following.**		**12**
A)	What is software reuse? Explain software reuse levels.	**Understand**	**6**

B)	A group diary and time management system is intended to support the timetabling of meetings and appointments across a group of co-workers. When an appointment is to be made that involves a number of people, the system finds a common slot in each of their diaries and arranges the appointment for that time. If no common slots are available, it interacts with the user to rearrange his or her personal diary to make room for the appointment. For above case study Draw the use-case diagram	**Apply**	6
C)	For the Case study in Q.4(B) Draw the sequence diagram for use case book an appointment (free slot)	**Apply**	6
Q. 5	**Solve Any Two of the following.**		**12**
A)	Compare software inspection and testing	**Understand**	6
B)	What is Test-driven development (TDD)? Explain TDD process activities	**Understand**	6
C)	Explain principal dependability properties in brief	**Understand**	6
	*** End ***		

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	DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE		
	Supplementary Examination – Summer 2022		
	Course: B. Tech. Branch : CSE Semester :5th		
	Subject Code & Name: BTCOC502: Theory of Computations		
	Max Marks: 60 Date: Duration: 3 Hr.		

	Instructions to the Students:
	  1. *All the questions are compulsory.*
	  2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
	  3. *Use of non-programmable scientific calculators is allowed.*
	  4. *Assume suitable data wherever necessary and mention it clearly.*		

		(Level/CO)	Marks
Q. 1	Solve Any Two of the following.		2*6= 12M
A)	**Find DFA that accepts only the language of all strings with b as the second letter over the alphabet Σ={a,b}.**		6M
B)	**Construct a Mealy machine of the following Moore machine** 		6M
C)	**Construct the DFA for the following NFA** 		6M
Q.2	Solve Any Two of the following.		2*6= 12M
A)	**Explain Chomsky classification of grammars**		6M
B)	**Consider the grammar given as G = ({S,A}, {a,b}, P , S)** **Where production P consists of ,**		6M

	S→ aAS | a
	
	A→ SbA | SS | ba
	
	Find
	
	  a) **Leftmost derivation**
	  b) **Rightmost derivation**
	  c) **Parse tree**
	
	    for the string " aabbaa ".		

C)	**Find a reduced grammar G to the grammar given below**
	
	        S→ AB|CA
	        A→ a
	
	        B→BC|AB
	
	        C→aB|b
			6M

Q. 3	Solve Any One of the following.		2*6= 12M
A)	**Convert the following CFG to CNF:** **S→ aSa| bSb | a | b | aa | bb**		6M
B)	**Obtain RLG from the given Finite Automata** 		6M
C)	**For the grammar given find L(G)** **S → a | Sa | b | bS .**		6M
Q.4	Solve Any Two of the following.		2*6= 12M
A)	**Construct a PDA accepting L = { $a^n b^m a^n$ |m, n ≥1} by a null stack. Is it deterministic?**		6M

B)	**Construct a PDA equivalent to the following context free grammar**
	    S→aAA
	    A→aS|bS|a
			6M

C)	Let M = ({ q_0 , q_1 } , { 0 , 1}, { X , Z_0} , δ , q_0 , Z_0 , Φ} whereδ is given by $\quad\delta(q_0 , 0 , Z_0) = \{ (q_0 , X Z_0) \}$ $\quad\delta(q_0 , 0 , X) = \{ (q_0 , X X) \}$ $\quad\delta(q_0 , 1 , X) = \{ (q_1 , \varepsilon) \}$ $\quad\delta(q_1 , 1 , X) = \{ (q_1 , \varepsilon) \}$ $\quad\delta(q_1 , \varepsilon , X) = \{ (q_1 , \varepsilon) \}$ $\quad\delta(q_1 , \varepsilon , Z_0) = \{ (q_1 , \varepsilon) \}$ Construct a CFG		6M
Q. 5	Solve Any One of the following.		2*6= 12M
A)	Obtain a Turing machine to accept the language $\quad\quad$ L= { $0^n 1^n 2^n$ | n≥ 1}.		6M
B)	Design a TM to find one's complement of the binary number.		6M
C)	Explain the following $\quad$ 1)Turing Machine with stay-option $\quad$ 2) Multiple Tapes Turing Machine		6M
	*** End ***		

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Winter Examination – 2022

Course: B. Tech. **Branch:** Computer Science & Engineering **Semester:** V

Subject Code & Name: BTCOC502 Theory of Computation

Max Marks: 60 **Date:** 31-01-2023 **Duration:** 3 Hrs

Instructions to the Students:
1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		**12**
A)	Explain in brief FSM Properties and Limitations? Write Applications of FSM?	Understand / CO-1	**6**
B)	Construct Mealy Machine for the given Moore Machine?	Apply/ CO-2	**6**

Present state	Next State		Output
	a=0	a=1	
→q1	q1	q2	0
q2	q1	q3	0
q3	q1	q3	1

		(Level/CO)	Marks
C)	Design a FSM to check whether a given decimal number is divisible by 5?	Understand/ CO-1	**6**
Q.2	**Solve Any Two of the following.**		**12**
A)	Explain in brief Chomsky hierarchy with suitable examples?	Understand / CO-2	**6**
B)	Eliminate NULL production from the grammar G given below:	Apply / CO-3	**6**

    a. S❼ a / Xb /aYa

    b. X❼ Y / ^

    c. Y❼ b / X

Write the productions after elimination.

C)	Check whether the given grammar is ambiguous or not-	Analyse / CO-3	**6**

    a. S → a / abSb / aAb

    b. A → bS / aAAb

Q. 3 **Solve Any Two of the following.**   **12**

A)   Consider a left linear grammar as given below −   Apply / CO-3   **6**

     a. S→ Sa|Abc

     b. A→ Sa|Ab|a

Convert left linear grammar to right linear grammar.

B)   Convert the given to context free grammar to CNF forms   Apply / CO-3   **6**

```
a. S → ASB
b. A → aAS|a|ε
c. B → SbS|A|bb
```

C)   Derive a derivation tree for the string aabbabba for the given context free   Analyse   / **6**
grammar (CFG) −   CO-3

     a. S->aB|bA

     b. A->a|aS|bAA

     c. B->b|bS|aBB

Q.4 **Solve Any Two of the following.**   **12**

A)   Define a PDA & list three important properties of a PDA Machine?   Understand   / **6**
CO-2

B)   Construct a PDA to check well formedness of parenthesis?   Create / CO-3   **6**

C)   Convert the following grammar to a PDA that accepts the same language.   Apply / CO-3   **6**

     a. S → 0S1 | A

     b. A → 1A0 | S | ε

Q. 5 **Solve Any Two of the following.**   **12**

A)   Design a TM for an equal number of a's and b's must follow a.   Create / CO-3   **6**

B)   Design a TM which recognizes palindromes over = {a, b}   Create / CO-3   **6**

C)   Explain 'Halting Problem of turning machine' with neat diagrams?   Understand   / **6**
CO-4

*** End ***

Regular/Supplementary Winter Examination – 2023

Course: B. Tech.   **Branch : Computer and Allied**

Semester :V

Subject Code & Name: Theory Of Computation (BTCOC502)

Max Marks: 60   **Date:03/01/2024**   **Duration: 3 Hrs.**

Instructions to the Students:
1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		**12**
A)	**Find the string set for following regular expressions.** **(i)00* (ii)a*b* (iii) (0+1)***	**Create**	**6**
B)	**What are the elements of Deterministic Finite Automaton? How it is represented?**	**Remember**	**6**
C)	**Design Non Deterministic Finite Automaton that accepts set of all strings over {0,1} that start with 0 or 1 and end with 01 or 10.**	**Design**	**6**
Q.2	**Solve Any Two of the following.**		**12**
A)	**Distinguish between Mealy machine and Moore machine.**	**Remember**	**6**
B)	**Apply subset construction algorithm to convert following Non Deterministic Finite Automaton to Deterministic Finite Automaton**	**Apply**	**6**
C)	**Consider the following production rules.** **S➔ aAB** **A➔bBb** **B➔ A|ϵ** **Obtain leftmost and rightmost derivation for string "abbbb"**	**Apply**	**6**

Q. 3	Solve Any Two of the following.		12
A)	Show that the given grammar is ambiguous grammar. E→ E+E E→E*E E → a	Apply	6
B)	Explain Chomsky classification of grammar.	Remember	6
C)	Find Context Free Grammar without ϵ- productions equivalent to the following grammar . S→ABaC A→BC B→b | ϵ C→ D| ϵ D → d	Apply	6
Q.4	Solve Any Two of the following.		12
A)	Reduce the following grammar to Chomsky Normal Form(CNF). S→aAD A→aB | bAB B→b D→d	Apply	6
B)	Design Push down Automata (PDA) to accept language L=(a,b)* where $n_a = n_b$.	Design	6
C)	Distinguish between Deterministic and Non Deterministic PDA.	Remember	6
Q. 5	Solve Any Two of the following.		12
A)	What are the different components of Turing machine?	Remember	6
B)	What is halt state of Turing machine? Explain Church Turing thesis.	Understand	6
C)	Design Turing machine that erases all non-blank symbols from its tape .	Design	6
	*** End ***		