	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	on: 3 Hr.	
	<ol> <li>Instructions to the Students:         <ol> <li>All the questions are compulsory.</li> <li>The level of question/expected answer as per OBE or the Course Out which the question is based is mentioned in () in front of the question</li> <li>Use of non-programmable scientific calculators is allowed.</li> <li>Assume suitable data wherever necessary and mention it clearly.</li> </ol> </li> </ol>	1.	Marks
		(Level/	Marks
		CO)	
Q. 1	Solve Any Two of the following.		12
<b>A</b> )	What is Business Communication? Discuss the process of communication detail.	on in 2/CO1	6
<b>B</b> )	Describe the characteristics of competent communicators.	3/CO1	6
<b>C</b> )	What are the main objectives of Business Communication? Explain in b	rief. 3/CO1	6
Q.2	Solve Any Two of the following.		12
A)	What are the importance of non-verbal communication? Explain in brid	ef. 2/CO2	6
<b>B</b> )	Define Culture. Discuss in brief the barriers for intercultural communication.	2/CO2	6
<b>C</b> )	What is translation and explain in brief the problems that may need to f translation process?	face 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>B</b> )	Define listening. Differentiate listening with hearing.	4/CO3	6
<b>C</b> )	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>B</b> )	Explain how Interpersonal Communication is beneficial in Business.	3/CO4	6
<b>C</b> )	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>B</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	3/CO4	6
	plan?		
	*** End ***		

	DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LO	NERE	
	Regular & Supplementary Winter Examination-2023		
	Course: B. Tech. Branch: Artificial Intelligence & Allied Branches Semes	ter: 5TH	
	Subject Code & Name: Business Communication, BTAIHM503B		
	Max Marks: 60 Date: 05/01/2024 Duration: 3	Hr.	
	<ol> <li>Instructions to the Students:         <ol> <li>All the questions are compulsory.</li> <li>The level of question/expected answer as per OBE or the Course Outcome which the question is based is mentioned in () in front of the question.</li> <li>Use of non-programmable scientific calculators is allowed.</li> <li>Assume suitable data wherever necessary and mention it clearly.</li> </ol> </li> </ol>		
		(Level/	Marks
		CO)	
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>B</b> )	What are the main objectives of Business Communication? Explain in brief.	3/CO1	6
<b>C</b> )	Describe the characteristics of competent communicators.	3/CO1	6
Q.2	Solve Any Two of the following.		12
A)	Give any three examples of positive and negative body language.	2/CO2	6
<b>B</b> )	Define Culture. Discuss in brief the barriers for intercultural communication.	2/CO2	6
<b>C</b> )	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)	Briefly describe the barriers to effective communication.	2/CO3	6
<b>B</b> )	What are the techniques of effective listening? Explain in brief.	4/CO3	6
<b>C</b> )	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>B</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
<b>A</b> )	Differentiate Leadership Vs Management	4/CO4	6

<b>B</b> )	r in F	2/CO4	6
<b>C</b> )	cation What is Crisis Communication? How do you write crisis communication	3/CO4	6
	plan?		
	*** 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>B</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>B</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
<b>Q.4</b>	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>B</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

### DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD -402 103

### Winter Semester Examination - Dec - 2019

**Branch: Computer Engineering** Sem.:- 5TH **Subject: - Business Communication, BTCOE505B** 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 (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

	DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY	, LUNEKE	
	Supplementary Examination – Summer 2023		
	1	ster :Fifth	
	Subject Code & Name: Business Communication (BTCOE505B)		
	Max Marks: 60 Date: 19/08/2023 Duration	on: 3 Hr.	
	<ol> <li>Instructions to the Students:         <ol> <li>All the questions are compulsory.</li> <li>The level of question/expected answer as per OBE or the Course Out which the question is based is mentioned in () in front of the question</li> <li>Use of non-programmable scientific calculators is allowed.</li> <li>Assume suitable data wherever necessary and mention it clearly.</li> </ol> </li> </ol>		
		(Level/CO)	Mark
Q. 1	Solve Any Two of the following.		
A)	Define Business communication. Explain Features and Importance of	CO1	6
	<b>Business Communication</b> .		
<b>B</b> )	Define Communicative Competence and Explain its various aspects.	CO1	6
C)	Which are the factors that affect communication and how to improve	CO1	6
	your communication explain in brief.		
Q.2	Solve Any Two of the following.		
A)	What is intercultural Communication? Explain need of Intercultural	CO2	6
	Communication.		
<b>B</b> )	Write Short note on Thoughts & Speech	CO2	6
C)	What is Speech Communication? Explain Types of Speech	CO2	6
	communication.		
Q. 3	Solve Any Two of the following.		
A)	What is communication Barriers? Explain in brief the Types of	CO3	6
	Barriers		
<b>B</b> )	Explain different effective listening techniques used in Communication	CO3	6
C)	What are communication rules adapted in Business Communication	CO3	6
Q.4	Solve Any Two of the following.	1	
A)	Give the characteristics and importance of Organizational	CO4	6
	Communication.		
<b>B</b> )	Explain Benefits and Types of business collaboration.	CO4	6
C)	Why planning is important in communication explain in brief. And give	CO4	6
	planning process.		

Q. 5	Solve Any Two of the following.		
A)	What is Leadership? Explain the different characteristics and importance of leadership.	CO5	6
<b>B</b> )	Define Conflict and explain Conflict process in detail	CO5	6
C)	What is Ethics? Explain different types of Ethics in Business Communication.	CO5	6
	*** End ***		

A) Illustrate the process of communication stating its elements.  2 6 B) Describe the different communicative competencies.  2 6 C) Summarize the goals of Business Communication.  2 6 Q.2 Solve Any Two of the following.  A) Explain the importance of non-verbal communication in Business Communication.  B) State the relation between thought and speech.  C) Discuss the intercultural communication as essential element of Business Communication.  Q.3 Solve Any Two of the following.  A) Explain the psychological barrier with example.  C) Illustrate the leadership qualities in brief.  1 6 Q.4 Solve Any Two of the following.  A) Compare the different communicative styles.  Discuss the different communicative styles.  Discuss the different communicative styles.  C) Illustrate the leadership qualities in brief.  1 6 C) Examine the importance of Business Letters.  2 6 C) Solve Any Two of the following.  1 2 C) Examine the importance of Business Letters.  2 6 C) Solve Any Two of the following.  1 2 C) Examine the importance of Business Communication and explain how does the conflict affect the communication?		DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY	, LONERE	
Subject Code & Name: Business Communication (BTAIHM503B) Max Marks: 60 Date: 11/08/2023 Duration: 3  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 questions 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.  Q.1 Solve Any Two of the following.  Q.1 Bustrate the process of communication stating its elements. 2 6  B) Describe the different communicative competencies. 2 6  C) Summarize the goals of Business Communication. 2 6  Q.2 Solve Any Two of the following. 3 Explain the importance of non-verbal communication in Business 2 6  Communication.  B) State the relation between thought and speech. C) Discuss the intercultural communication as essential element of Business 2 6  Communication.  Q.3 Solve Any Two of the following. 4 Explain the psychological barrier with example. 2 6  B) Discuss the different types of listening with example. 2 6  C) Illustrate the leadership qualities in brief. 1 6  Q.4 Solve Any Two of the following. 3 12  A) Compare the different Communication with appropriate example. 1 6  C) Examine the importance of Business Letters. 2 6  Q.5 Solve Any Two of the following. 3 12  A) What are the conflicts in Business Communication and explain how does the conflict affect the communication?		Supplementary Summer Examination – 2023		
Max Marks: 60 Date: 11/08/2023 Duration: 3  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.  Q.1 Solve Any Two of the following.  Q.1 Illustrate the process of communication stating its elements.  Q.2 Solve Any Two of the following.  Q.3 Solve Any Two of the following.  A) Explain the importance of non-verbal communication in Business  Communication.  B) State the relation between thought and speech.  C) Discuss the intercultural communication as essential element of Business  Communication.  Q.3 Solve Any Two of the following.  A) Explain the psychological barrier with example.  C) Illustrate the leadership qualities in brief.  C) Illustrate the leadership qualities in brief.  C) Solve Any Two of the following.  A) Compare the different Communication with appropriate example.  C) Examine the importance of Business Letters.  C) Solve Any Two of the following.  A) Compare the different Communication with appropriate example.  C) Examine the importance of Business Communication and explain how does the conflict affect the communication?		Course: B. Tech. Branch : CSE Seme	ster :V	
Irr.   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		Subject Code & Name: Business Communication (BTAIHM503B)		
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C) Summarize the goals of Business Communication.  Q.2 Solve Any Two of the following.  A) Explain the importance of non-verbal communication in Business Communication.  B) State the relation between thought and speech.  C) Discuss the intercultural communication as essential element of Business Communication.  Q.3 Solve Any Two of the following.  A) Explain the psychological barrier with example.  C) Illustrate the leadership qualities in brief.  C) Illustrate the leadership qualities in brief.  C) Examine the different Communication with appropriate example.  C) Examine the importance of Business Letters.  C) Examine the importance of Business Letters.  C) Solve Any Two of the following.  C) Examine the importance of Business Communication and explain how does the conflict affect the communication?	A)		2	6
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A) Explain the importance of non-verbal communication in Business Communication.  B) State the relation between thought and speech.  C) Discuss the intercultural communication as essential element of Business Communication.  Q. 3 Solve Any Two of the following.  A) Explain the psychological barrier with example.  C) Illustrate the leadership qualities in brief.  Q. 4 Solve Any Two of the following.  A) Compare the different Communicative styles.  B) Illustrate the Organizational Communication with appropriate example.  C) Examine the importance of Business Letters.  Q. 5 Solve Any Two of the following.  A) What are the conflicts in Business Communication and explain how does the conflict affect the communication?	C)	Summarize the goals of Business Communication.	2	6
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B) State the relation between thought and speech.  C) Discuss the intercultural communication as essential element of Business Communication.  Q. 3 Solve Any Two of the following.  A) Explain the psychological barrier with example.  C) Illustrate the leadership qualities in brief.  1 6  Q. 4 Solve Any Two of the following.  Q. 5 Solve Any Two of the following.  C) Examine the importance of Business Letters.  Q. 5 Solve Any Two of the following.  Q. 5 Solve Any Two of the following.  Q. 6  Q. 6 Solve Any Two of the following.  Discuss the different types of listening with example.  Di	<b>A</b> )	Explain the importance of non-verbal communication in Business	2	6
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C) Illustrate the leadership qualities in brief.  Q.4 Solve Any Two of the following.  A) Compare the different Communicative styles.  B) Illustrate the Organizational Communication with appropriate example.  C) Examine the importance of Business Letters.  2 6  Q.5 Solve Any Two of the following.  12  A) What are the conflicts in Business Communication and explain how does the conflict affect the communication?	<b>A</b> )	Explain the psychological barrier with example.	2	6
Q.4 Solve Any Two of the following.  A) Compare the different Communicative styles.  B) Illustrate the Organizational Communication with appropriate example.  C) Examine the importance of Business Letters.  2 6  Q.5 Solve Any Two of the following.  12  A) What are the conflicts in Business Communication and explain how does the conflict affect the communication?	B)	Discuss the different types of listening with example.	2	6
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B) Illustrate the Organizational Communication with appropriate example.  C) Examine the importance of Business Letters.  2 6  Q. 5 Solve Any Two of the following.  A) What are the conflicts in Business Communication and explain how does the conflict affect the communication?			2	6
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A) What are the conflicts in Business Communication and explain how does the conflict affect the communication?			2	6
A) What are the conflicts in Business Communication and explain how does the conflict affect the communication?				
conflict affect the communication?	Q. 5			12
B) Explain Persuasive Communication in brief. 2 6	<b>A)</b>		1	6
	B)	Explain Persuasive Communication in brief.	2	6

<b>C</b> )	What is the role of technology in international Business Communication?	1	6
	*** End ***		

	DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY	, LONERE	
ļ	Winter Examination – 2022		
	Course: B. Tech. Branch : CSE Semester :	$\mathbf{V}$	
	Subject Code & Name: BTCOC501		
ļ	Max Marks: 60 Date:28/01/2023 Duratio	n: 3 Hr.	
	<ol> <li>Instructions to the Students:         <ol> <li>All the questions are compulsory.</li> <li>The level of question/expected answer as per OBE or the Course Outcombic which the question is based is mentioned in () in front of the question</li> <li>Use of non-programmable scientific calculators is allowed.</li> <li>Assume suitable data wherever necessary and mention it clearly.</li> </ol> </li> </ol>	' '	
		(Level/CO)	Marks
Q. 1	Solve Any Two of the following.		12
<b>A</b> )	Why would you choose a database system instead of simple storing data in	L1,L2/CO	6
ļ	file processing system? Compare file processing system and DBMS.	1	
<b>B</b> )	Define an Entity and Attribute. Explain the different types of attributes that occur in an ER diagram model, with an example.	L2/CO1	6
<b>C</b> )	Draw an E-R diagram of Banking system taking into account at least five entities, indicate all keys, constraints and assumptions that are made.	L3/CO1	6
Q.2			12
A)	Define and differentiate the following relational algebra operators with	L1,L2/	6
	suitable example:	CO2	
ļ	(i) Cartesian product (ii) Natural join		
<b>B</b> )	Consider the following relational schema.	L3,L5/	6
	Suppliers(sid, sname, address)	CO2	
	Parts(pid, pname, address)		
	Catalog(sid, pid, cost)  (i) Write relational algebra query to find the names of suppliers who supply		
	some red part		
	(ii) Write relational algebra query to find the sid of suppliers who supply some red or green parts		
C)	Consider the following employee database. Give expression in tuple rela-	L3,L5/	6
	tional calculus for each of the following queries.	CO2	
	employee(employee_name,street,city)		
	works(employee_name,company_name,salary)		
	company(company_name,city)		
	manages(employee_name,manager_name)		
	(i) Find the names of all employees who work for First Bank Corporation.		

	(ii)Find the names and cities of residence of all employees who work for		
	First Bank Corporation		
	(iii)Find all employees who live in the same city as that in which the com-		
	pany for which the work is located.		
Q. 3	Solve Any Two of the following.		12
A)	Consider the following schema and solve following queries using SQL.	L3,L5/	6
12)	constant and some wang sometime and source round wang queeness assuig size.	CO2	v
	employee (emp_no, name, skill ,pay_rate)	002	
	position (posting_no, skill)		
	duty-allocation (posting_no, emp_no, day, shift)		
	(i) Get duty allocation details for emp_no 123461 for the month of april		
	1986.		
	(ii) Get employees whose rate of pay is more than or equal to the rate of pay		
	of employee 'XYZ'.		
	(iii) Get the names and pay rates of employees with emp_no less than		
	123460 whose rate of pay is more than the rate of payoff atleast one em-		
	ployee with emp_no greater than or equal to 123460.		
B)	Consider the following relational schema.	L3,L5/	6
	Weather (city, temperature, humidity, condition)	CO2	
	Location (city, country)		
	Write the following queries in SQL:		
	(i) Find all the tuples having temperature greater than that of Paris.		
	(ii) Find the names of those cities with temperature and condition whose		
	condition is neither Sunny nor Cloudy but temperature must be greater than		
	70.		
	(iii) Find all the cities with temperature, condition and humidity, whose hu-		
	midity is in the range of 63 to 79.		
<b>C</b> )	What is view? What are its advantages? Explain views in SQL with suitable	L2/ CO2	6
	example.		
Q.4	Solve Any Two of the following.		12

<b>A</b> )	What is Normalization? Explain the importance of normalization. What is	L2/ CO3	6
	the criteria for good relation design?		
<b>B</b> )	Explain BCNF with suitable example and distinguish between BCNF and	L2,L3,L4/	6
	3NF.	CO3	
	Is relation R(student_no, course_no,instr_no) with		
	$F = \{ \{ student\_no, course\_no \} \rightarrow instr\_no, instr\_no \rightarrow course\_no \}$		
	in BCNF and 3NF? Justify your answer.		
C)	Consider the relation schema R=(A,B,C,G,H,I) and Set of functional de-	L3,L4/	6
	pendencies:	CO3	
	$A \to B$ $A \to C$		
	$\begin{array}{c} A \to C \\ CG \to H \end{array}$		
	$CG \rightarrow I$		
	$B \to H$		
	Compute (AG)+Is it candidate key? Justify your answer.		
Q. 5	Solve Any One of the following.		12
A)	Explain ACID properties in detail	L2/CO5	6
<b>B</b> )	What are ordered indices? Explain with suitable example. Distinguish	L2,L4/	6
	between dense index and sparse index.	CO4	
<b>C</b> )	Construct a B+-tree for the following set of key values:	L3/ CO4	6
	(2, 3, 5, 7, 11, 17, 19, 23, 29, 31) Assume that the tree is initially empty and values are added in ascending		
	order. Construct B+-trees for four pointers that will fit in one node		
	*** End ***		

### DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD -402 103

### **Semester Winter Examination – December - 2019**

Branch: Computer Science and Engineering
Subject with Subject Code:-Database Systems BTCOC501

Sem.:- 5th Marks: 60

Date:-09/12/2019

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

Marks

(6)

(6)

- Q. 1 a) Explain the difference between two-tier and three-tier architectures. Which is better suited for Web applications? Why?

  - b) Construct an E-R diagram for a car insurance company whose customers own one or more cars each. Each car has associated with it zero to any number of recorded accidents. Each insurance policy covers one or more cars, and has one or more premium payments associated with it. Each payment is for a particular period of time, and has an associated due date, and the date when the payment was received.
- Q. 2 a) Let the following relation schemas be given

(6)

R = (A, B, C), S = (A, D, E)

Let relations r (R) and s (S) be given. Give an expression in SQL that is equivalent to each of the following queries.

- (1)  $\prod_{A,E} (\sigma_{C=D}(r X s))$
- (2) r  $\bowtie$  s
- (3)  $\prod_{A}(r) \cap \prod_{A}(s)$
- b) Consider the following database

(6)

Student(name, s no, class, major)

Course(c-name, c no, credit hours, department)

Write SQL statements to do the following update on the database schema

- (1) Insert a new student, <'Johnson', 25,1, 'Math'>, in the database.
- (2) Change the credit hours of course 'Data Science' to 4.

		6143
Q. 3 a) Compute the closure of the fol schema	lowing set F of functional dependencies for relation	(6)
r (A, B, C	, D, E).	
$A{ ightarrow}BC$		629
CD→E	\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	19.00°
$B{ ightarrow}D$		
E→A		
List the candidate keys for R.		
b) Illustrating the concept of fully with example.	y functional dependency, explain 2NF	(6)
20,000 tuples, r2 has 45,000 tuples of r2 fit on one block. Estimate the number of block	r2(C, D, E) have the following properties: r1 has tuples, 25 tuples of r1 fit on one block, and 30 transfers and seeks required, using each of the r1 × r2: (r1 Natural Join r2)	(6)
<ol> <li>Nested-loop join</li> <li>Block nested-loop</li> </ol>		
b) Explain Query processing? Exof neat sketch.	plain various steps in query processing with the help	(6)
Assume that the ascending order. Const	7, 11, 17, 19, 23, 29, 31) tree is initially empty and values are added in	(6)
b) Define ordered indices. Diffe suitable example.	erentiate between Dense and sparse indices with	(6)
Q. 6 Write short note on following (1) ACID pr	: roperties of transaction	(12)
(2) View ser	rializable schedule	
9	Paper End	

(3) Delete the record for the student whose name is 'Smith' and whose

### DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Supplementary End Semester Examination – Summer Semester 2023

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

Subject Code & Name: (BTCOC501) Database System

Max Marks: 60 Date:07/08/2023 Duration: 3 Hr.

### z 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.

	<ul><li>3. Use of non-programmable scientific calculators is allowed.</li><li>4. Assume suitable data wherever necessary and mention it clearly.</li></ul>		
		(Level/CO)	Marks
<b>Q.</b> 1	Solve any two of the following.		
A)	Illustrate the database characteristics. How they are different from File	L 2	6 M
	systems.		
B)	Illustrate about integrity and key constraints with suitable examples?	L3	6 M
C)	Explain the importance of Null values in Relational Model.	L2	6 M
Q.2	Solve all two of the following.		
A)	Explain in detail, the form of a basic SQL query with a suitable	<b>L2</b>	6 M
	example.		
B)	List out various SET comparison operator in SQL and also write about	L3	6 M
	its use in writing SQL queries.		
Q. 3	Solve any two of the following.		
A)	Write SQL Queries for the following set of tables:	L3	6 M
	account(account_number, branch_name, balance)		

account(account\_number, branch\_name, balance)
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)

- a. For all customers who have a loan from the bank, find their names and loan numbers with the attribute loan\_number replaced by loan id.
- b. Find the names of all customers whose street address includes the substring 'Main'.
- c. List loan data, ordered by decreasing amounts, then increasing loan numbers.

<b>B</b> )	Write SQL Queries for the following set of tables:	L3	6 M
	EMPLOYEE (FNAME, MINIT, LNAME, SSN, BDATE, ADDRESS, SEX, SALARY, #SUPERSSN, #DNO), DEPARTMENT (DNAME, DNUMBER, #MGRSSN, MGRSTARTDATE), DEPT_LOCATIONS (#DNUMBER, DLOCATION), PROJECT (PNAME, PNUMBER, PLOCATION, #DNUM), WORKS_ON (#ESSN, #PNO, HOURS),		
	DEPENDENT (#ESSN, DEPENDENT_NAME, SEX, BDATE, RELATIONSHIP)		
C)	<ul> <li>a. Retrieve the name and address of all employees who work for the 'Research' department</li> <li>b. Retrieve the birthdate and address of the employee(s) whose name is 'Raj V Naik'</li> <li>c. Retrieve all the attributes of an EMPLOYEE and the attributes of the DEPARTMENT he or she works in for every employee of the 'Research' department</li> <li>By considering an example describe various data update operations in SQL.</li> </ul>	L2	6 M
Q.4	Solve all two of the following.		
A)	State BCNF. How does it differ from 3NF?	<b>L2</b>	6 M
<b>B</b> )	Explain insertion, deletion and modification anomalies with suitable examples.	L2	6 M
Q. 5	Solve any two of the following.		
A)	Explain in detail about internal hashing Techniques.	L2	6 M
<b>B</b> )	Discuss in detail about cluster and Multilevel indexes.	L2	6 M
C)	Explain Concurrency control with locking methods.  *** End ***	L2	6 M

## Dr. Babasaheb Ambedkar Technological University Lonere - Raigad

Semester Examination: The May 2015

Class: B. Tech. Computer Engineering / Information Technology
Semester: V

Subject: Database Management System

Lime	ime: 3 hours Date: 25 22/05/15 Maximum Marks: 70					
Instru	ictio	1. Question 1 is con 2. Attempt Any of 3. Attempt one question 1 is con 2.	ne question fr		III, IV.	
Q.1.		Solve the following (2)	Mark Each):	•		(10)
	A	In an E-R diagram doul (A) Total participation. (C) Cardinality N.		ate (B) Multiple p (D) None of th		•
	B.		not considered Selection.	d a basic operation (C) Union.	n of relational algebra is (D) Cross product.	
	C.	When an E-R diagram (A) weak entity sets (C) strong entity sets	is mapped to t	ables, the represe (B) weak relat (D) strong rela	<b>—</b>	
	D.	If the closure of an attri (A) superkey (B) c	•	entire relation th (C) primary key	•	
	E.	If two relations R and Sare ignored in (A) left outer join (C) full outer join	S are joined, th	en the non match (B) right outer (D) inner join	ning tuples of both R and S join	
				Group - I		
Q.2.	A				that takes ResultSet as an m, with appropriate names	(06)
	B.	Give an expression in to queries: a. Find all employees	he tuple relationshe who work direction idence of all e	onal calculus for ctly for "Jones". mployees who w	ork directly for "Jones".	(06)
Q.3.	<b>A</b> .	Give the syntax, purportion of the syntax	se and example 2. ROUN. 5. LENG	D	g functions : 3. INITCAP 6. AVG	(06)

(06)

Write the following queries in relational algebra, using the university schema.

a. Find the titles of courses in the Comp.Sci department that have 3 credits. b. Find the highest salary of any instructor. c. Find the IDs of all students who were taught by an instructor named Einstein; make sure there are no duplicates in the result. Group - II Which key is used for a dependent entity, a Non-composite or a Composite key? (06)How is a dependent entity represented in an E-R diagram? If Teacher entity depends on Department entity how will you represent it in an E-R diagram? Suppose there is table of the following form: BooksWritten Aname MS SQL Server 100 Mehta Sybase 100 Mehta Informix Nanda 110 Oracle 110 Nanda What kind of relationship is represented — One-to-one, one-to-many, many-to-one or many-to-many? How will you break this into multiple tables? Explain By using Aggregation or Having clause, write the query for the following (06)a. Find the average salary in each department. b. Find the average salary of instructors in those departments where the salary is more than \$42,000. Write the SQL queries for the following: (06)a. Create a view that lists all course sections offered by the Physics department in the Fall 2009 semester with the building and room number of each section. b. Show how to define a view tot\_credits (year, num\_credits), giving the total number of credits taken by students in each year. Group - III Which factors should to be taken into consideration while choosing a RAID level? (06)Compare BCNF and 3NF with suitable example. (06)Explain with a diagram 1. Shared Nothing Parallel database architecture 2. Hierarchical Parallel database architecture Consider the following relations with primary key underlined (06)Customer (C#, Cname, Address) Item (1#, Iname, Price, Weight) Order (O#, C#, I#, Quantity) Write SQL queries for the following:

## DBM8 22/05

- a. List the names of customers who have ordered items weighing more than 1000 and only those.
- b. List the names of customers who have ordered atleast one item priced over Rs.500.
- c. Create a view called "orders" that has the total cost of every order.

### Group - IV

A.	Define the following related to indices:		(06)
	a. Access types b. Access time		
	d. Deletion time e. Space overhead	f. Search key	
В.	Explain basic steps involved in Query pr	acessing with the help of black diagram	(06)
	Exhigit paste stebs monteau mi dacià bi	occasing with the neip of block magiain.	(OO)
•	· · · · · · · · · · · · · · · · · · ·		
Α.	What is mean by Ordered Indices? Expla	in the structure of Dense and Sparse	(06)
	Index.		
	Explain the Server System Architecture of	of a database system	(06)
		a authority by contrib	(0.0)

	DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY	, LONERE		
	Supplementary Summer Examination – 2023			
	Course: B. Tech. Branch: CSE Seme	ster :V		
	Subject Code & Name: BTCOE504A Human Computer Interaction			
	Max Marks: 60 Date:17/08/2023 Duration: 3 H	ír.		
	<ol> <li>Instructions to the Students:         <ol> <li>All the questions are compulsory.</li> <li>The level of question/expected answer as per OBE or the Course Out which the question is based is mentioned in () in front of the question 3. Use of non-programmable scientific calculators is allowed.</li> <li>Assume suitable data wherever necessary and mention it clearly.</li> </ol> </li> </ol>	1.		
		(Level/CO)	Marks	
Q. 1	Solve Any Two of the following.		12	
A)	Examine how text entry devices use in interaction	L4	6	
<b>B</b> )	Explain the display technology CRT in detail.	L2	6	
<b>C</b> )	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>B</b> )	Examine the activities in the water fall model of software life cycle.  L4			
<b>C</b> )	Justify Shneiderman's eight golden rules of interface design.	L5	6	
Q. 3	Solve Any Two of the following.		12	
<b>A</b> )	Discuss architectures of windowing system	L2	6	
<b>B</b> )	Define evaluation. Analyze the cognitive walkthrough evaluation  L4  approach.			
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>B</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>B</b> )	Compare virtual and augmented reality	L4	6	
<b>C</b> )	Examine application areas of hypermedia in detail.	L4	6	
	*** End ***			

### DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

**Supplementary Summer Examination – 2023** 

**Semester: Fifth** 

**Branch:** Computer Engineering

Course: B. Tech.

	Subject Code & Nan	ne: BTCOC	503 Software Engine	ering		
	Max Marks: 60	Date:	11 August 2023	<b>Duration: 3</b>	Hr.	
	which the ques  3. The use of non	ns are compu estion/expect tion is based -programma	ulsory. ted answer as per OBI ' is mentioned in () in ble scientific calculato ever necessary and me	front of the questions is allowed.	, ,	Marks
Q. 1	Solve Any Two of the	e following.			( )	12
A)	What is object-oriente	<u> </u>	ing (OOP)? Describe t	he fundamental	Understand	6
	principles of OOP and	I how they co	ontribute to software de	esign and		
	development.					
B)	Provide an OO design	for the follo	wing specifications.		Analyse	6
	"Build a softw	vare system	that stores customers	' contact		
	detailssuch as	mobile numl	ber, WhatsApp numbe	r, mail ID		
	and date ofbir	th. The syste	em should give birth	nday		
	greetings and	festivalgreet	tings to the customers.	"		
	The OO design should	l include clas	ses, relationships and	methods.		
	Draw aclass diagram i	n UML.				
C)	Compare and contras	t agile and w	aterfall software devel	lopment	Remember	6
	methodologies. Highliapproach.	ight the advar	ntages and disadvantaş	ges of each		
Q.2	Solve Any Two of the	e following.				12
A)	Define software testi	ng and its in	nportance in the deve	lopment process.	Analyse	6
	Describe at least three	ee different t	ypes of testing and p	provide scenarios		
	where each type woul	d be most eff	ective			
B)	Explain the significa	nce of cont	inuous development	and continuous	Analyse	6
	integration in the DevC	ps project pi	peline			
C)	Suggest an appropriat	e process mo	del for the projects. Ju	stify your	Analyse	6
	answers.					
	1. IOT-based wat	er-level mon	itoring system.			
	2. Website develo	opment for a	restaurant			
	3. A Mobile appl	ication to tra	ck students' attendanc	e		
Q. 3	Solve Any Two of the	e following.				12

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

	DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSIT	Y, LONERE	
	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 Dura	tion: 3 Hrs.	
	<ol> <li>Instructions to the Students:         <ol> <li>All the questions are compulsory.</li> <li>The level of question/expected answer as per OBE or the Course Out which the question is based is mentioned in () in front of the question</li> <li>Use of non-programmable scientific calculators is allowed.</li> <li>Assume suitable data wherever necessary and mention it clearly.</li> </ol> </li> </ol>	, ,	Marks
Q. 1	Solve Any Two of the following.	(Levell 23)	12
A)	Find the string set for following regular expressions.	Create	6
A)	(i)00* (ii)a*b* (iii) (0+1)*	Create	0
B)	What are the elements of Deterministic Finite Automaton? How it is	Remember	6
В)	represented?	Kemember	
C)	Design Non Deterministic Finite Automaton that accepts set of all	Design	6
	strings over {0,1} that start with 0 or 1 and end with 01 or 10.		
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	Apply	6
	Deterministic Finite Automaton to Deterministic Finite Automaton  a, b  d  q  q  q  q  q  q  q  q  q  q  q  q		
C)	Consider the following production rules.  S→ aAB  A→bBb  B→ A €  Obtain leftmost and rightmost derivation for string "abbbb"	Apply	6

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

### DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD -402 103

### **Semester Winter Examination – December - 2019**

Branch: B.Tech Computer Science Subject:- Theory of Computation (BTCOC502) Date:- 11/12/2019

Marks: 60

Sem.:- V

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

### Q.1. a) What is FA(Finite Automaton)? Explain with example. Elaborate on 'Automaton and complexity'. (06)

### Q1. b) Convert following regular expression to their equivalent FA. (06)

- i) ba\*b
- ii) (a+b) c
- iii) a (bc)

### Q.2. a) Let G be the grammar:

i.  $S \rightarrow 0B \mid 1A$ 

ii.  $A \rightarrow 0 \mid 0S \mid 1AA$ 

iii.  $B \rightarrow 1 \mid 1S \mid 0BB$ 

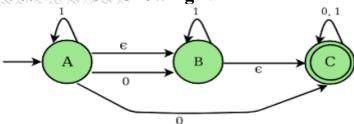
For the string 00110101and 11001010 find:

1) Left most derivation

2)Right most derivation (06)

### Q.2. b) Explain Pumping Lemma and its applications. (06)

### Q.3. a) Construct DFA for following NFA



(06)

Q.3. b) Discuss the Chomsky of each classification.	Hierard	chy of la	nguages	s by taking suitable example (06)
Q.4 a) Convert the given Gram $S \rightarrow ASB$	ımar int	o Chom	sky Norn	nal Form (CNF)
$A \rightarrow aAS \mid a \mid \epsilon$ $B \rightarrow SbS \mid A \mid bb$				(06)
Q.4. b) Explain:		A A		\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
<ol> <li>Recursively Enumerable L</li> <li>Greibach Normal Form</li> </ol>	anguag	e		(06)
Q.5. a) Explain Turing Mac	hine in	details :	along wit	
state its applications. Q.5. b) Construct a PDA for la			OXX/R I XX/—	(06)
where w <sup>R</sup> is the reverse of w.	inguage	20,0,0,0,0		(06)
		12000 C		
Q.6. a) Explain Random acce	ss Turii	ng Mac	hines and	d Non deterministic Turing
Machines.			A 200	(06)
Q.6. b) Define Mealy machine	and M		obino one	
Convert following Mealy machine		/ ~/ / / / / / / / / / / / / / / / / /		\$ <sup>7</sup>
22 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		In	4. U A "AL VA "A	y
	State	a	b	
	$Q_0$	$Q_{2,1}$	$Q_{3,0}$	
	$Q_1$	Q <sub>0,0</sub>	$Q_{1,1}$	
	Q <sub>2</sub>	Q <sub>1,1</sub>	$\mathbf{Q}_{2,0}$	
	$Q_3$	Q <sub>2,0</sub>	$Q_{0,1}$	
		Plogt.		(06)
	Pap	oer Er	ıd	
	2,20			

	DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSIT	Y, LONERE	
	Supplementary Summer Examination – 2023		
	Course: B. Tech. Branch : Computer Engineering	Semester :V	
	Subject Code & Name: Theory Of Computation (BTCOC502)		
	Max Marks: 60 Date:09/08/2023 D	uration: 3 Hr.	
	<ol> <li>Instructions to the Students:         <ol> <li>All the questions are compulsory.</li> <li>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.</li> <li>Use of non-programmable scientific calculators is allowed.</li> <li>Assume suitable data wherever necessary and mention it clearly.</li> </ol> </li> </ol>		
		(Level/CO)	Marks
Q. 1	Solve Any Two of the following.		12
<b>A</b> )	Construct a Deterministic Finite Automaton for the set of string over	Design	6
	$\{a, b\}$ such that length of the string $ w =2$ .		
<b>B</b> )	State and explain applications of Regular Expressions.	Understand	6
<b>C</b> )	Design an NFA with $\Sigma = \{0, 1\}$ accepts all string ending with 01.	Design	6
Q.2	Solve Any Two of the following.		12
<b>A</b> )	Distinguish between Moore machine and Mealy machine.	Analyze	6
<b>B</b> )	Write a regular expression over alphabet $\Sigma = \{0, 1\}$ for following.	Create	6
	(i) begins with 1, ends with 1 (ii) ends with 00 (iii) contains at least three		
	consecutive 1s		
<b>C</b> )	Convert the following Non Deterministic Automaton into Deterministic	Apply	6
	Finite Automaton .		
	q <sub>0</sub> a,b q <sub>1</sub> b q <sub>2</sub>		
Q. 3	Solve Any Two of the following.		12
(A)	Write the steps for grammar reduction. Eliminate Unit Productions from the	e Apply	6
	following grammar.	- ippiy	U
	S -> Aa B c		
	B -> A bb		
	A -> a bc B		

<b>B</b> )	Explain Chomsky classification of grammar.	Remember	6
<b>C</b> )	When does context free grammar is said to be in Chomsky Normal	Understand	6
	Form(CNF)? Write steps to convert context free grammar into CNF.		
Q.4	Solve Any Two of the following.		12
<b>A</b> )	Write the productions rule of Context free grammar for following regular	Design	6
	expressions. (i) 0* (ii) (a+b)* (iii) (ab)*		
<b>B</b> )	What are the different components of Pushdown Automaton? Explain with	Remember	6
	neat diagram.		
C)	Distinguish between Deterministic and Non Deterministic PDA.	Analyze	6
Q. 5	Solve Any Two of the following.		12
A)	Design Turing machine that accepts the language of all strings over alphabet	Design	6
	$\sum = \{a, b\}$ whose second letter is b.		
<b>B</b> )	Explain the following (i)Multihead Turing machine (ii)Universal Turing	Understand	6
	machine (iii) Non Deterministic Turing machine		
C)	What is Church Turing Thesis? Explain.	Remember	6
	*** End ***		

	DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSIT	Y, LONERE	
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		(Level/CO)	Marks
Q. 1	Solve Any Two of the following.		12
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	Finite Automaton .		
	q <sub>0</sub> a,b q <sub>1</sub> b q <sub>2</sub>		
Q. 3	Solve Any Two of the following.		12
(A)	Write the steps for grammar reduction. Eliminate Unit Productions from the	e Apply	6
	following grammar.	- ippiy	U
	S -> Aa B c		
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	expressions. (i) 0* (ii) (a+b)* (iii) (ab)*		
<b>B</b> )	What are the different components of Pushdown Automaton? Explain with	Remember	6
	neat diagram.		
C)	Distinguish between Deterministic and Non Deterministic PDA.	Analyze	6
Q. 5	Solve Any Two of the following.		12
A)	Design Turing machine that accepts the language of all strings over alphabet	Design	6
	$\sum = \{a, b\}$ whose second letter is b.		
<b>B</b> )	Explain the following (i)Multihead Turing machine (ii)Universal Turing	Understand	6
	machine (iii) Non Deterministic Turing machine		
C)	What is Church Turing Thesis? Explain.	Remember	6
	*** End ***		

# Dr. Babasaheb Ambedkar Technological University, Lonere Department Of Computer Engineering/Information Technology End Semester Examination-May 2015

## Subject - Theory of Computation

25/05/15 Semester - V	Time- 3 Hrs	Max Marks- 70
Instructions:		
Question no. 1 is compulsory		
Attempt ANY FIVE questions	from question no. 2 to question no. 7	
Q.1) Fill in the blanks		(10)
<ol> <li>is the compile</li> <li>Tree representation for</li> <li>If it is possible to find a called</li> <li>Positive closure of a+b</li> <li>The presence of</li> <li>Halt state of turing made</li> <li>The specific problems</li> <li>Turing machine which</li> </ol>	rrences of symbols is denoted byler component that breaks input text to led derivations when used in compiler is called terminal string with more than one parallel is denoted as	ogical units.  lled as  se tree, such a grammar is  amount of information.  are called
finite automaton using	deterministic finite automaton for followsubset construction algorithm.  q1  q2	owing non deterministic (8)
	at correspond to following regular express) (a + b*)*	ession. (4)
Q.3)a) What is minimal deterministic finite au	ministic finite automaton? Write an algo itomaton.	orithm for minimization of (6)
b) Explain Moore and Mo	ealy machine.	(6)

Q.4) Attempt ANY TWO from the following questions.	
a)Distinguish between regular language and context free language.	
b) State formal defination of context free grammar. Obtai context free grammar for following regular expression.  (a+b) bb (a+b)	
c) What is ambiguous and unambiguous grammar? Determine whether following grammar is ambiguous or not. (i) S> aSa   bSb   a  b  $\epsilon$ (ii) S> aS   aSb   X , X> Xa   a	r (f
Q.5) a) Explain Chomsky classification of grammar.	(4
<ul> <li>b) What is Griebach normal form ? Convert the follwoing grmmar into Griebach normal form.</li> <li>S&gt; AB</li> <li>A&gt;BSB</li> <li>A&gt; a</li> <li>B&gt;b</li> <li>Q.6) Attempt ANY TWO from the following questions.</li> <li>a) State the formal definition of pushdown automata ? Distinguish between deterministic and non deterministic PDA.</li> </ul>	
b) Explain how pushdown automaton is represented using transition diagram.	(6)
c) What are the steps to convert context free grammar into pushdown automata.	(6)
Q.7)a) Explain various components of turing machine with neat diagram.	(6)
b) What is halting of Turing machine? Design a turing machine that accepts language of all strings over alphabet set $\Sigma=\{a,b\}$ whose second letter is b.	(6)
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