

Government College of Engineering, Aurangabad

Department of MCA

Class Test 2022-23 (First Semester)

Class – FYMCA

Date – 23/01/2023

Subject – MC1102 Computer Programming

Max. Marks – 20

Q.1 Attempt any two from the following.

(10 Marks)

- a) List the basic data types in C programming and describe them in brief. **K1 (CO2)**
- b) Write a C program to enter radius of a circle and find its diameter, circumference and area. **K3 (CO1)**
- c) Write a C program to convert days into years, weeks and days. **K3 (CO5)**
(For e.g. 402 days → 1 year, 5 weeks and 2 days)

Q.2 Attempt any two from the following.

(10 Marks)

- a) Differentiate between break and continue statements with suitable examples. **K1 (CO3)**
- b) Write a program to find factorial of a number. **K3 (CO5)**
- c) Write a program to add array elements. **K3 (CO1)**

GOVERNMENT COLLEGE OF ENGINEERING, AURANGABAD
Department of Master of Computer Application
Mid-Term Class Test January-2023

Class: FYMCA (2Yrs) CBCS

Marks: 20

Date: 27/01/2023

MC1103: Database Management System

Time: 11am To 12pm

Note: 1) Solve any four questions.

2) Each question carries 5 marks.

- 1) What is a database management system? List and explain the application areas of the DBMS.
 - 2) Explain data abstraction. Describe the three levels of abstraction with suitable diagram.
 - 3) With suitable diagram explain the major components of the DBMS architecture.
 - 4) Explain the following relational algebra operations with example:
 - a) Natural Join Operation
 - b) Rename Operation

EMPLOYEE (Ecode, Ename, Esal)

DEPENDENT(Ecode, Dependent)

Write SQL queries for:

- a) Find all the dependents of the employees whose salary is less than 25000/-
- b) Find the number of employees who have more than 3 dependents.

Government College of Engineering, Aurangabad

Department of MCA

Class Test

Subject: Data Structures and Algorithms

Date: 24/01/23

Max. Marks: 20

Solve any four questions. Each question carries 5 marks.

	BT Level	CO
Q1. Write algorithm for different operations used in stack.	K2	CO1
Q2. a) Transform the following expressions to prefix and postfix $(A + B) * (C - D) \leq E * F$ b) Evaluate the following postfix expression. Assume A = 1, B = 2, C = 3 $A\ B\ C\ +\ * \ C\ B\ A\ -\ +\ *$	K3	CO2
Q3. Implement linked list operations insafter and delaftter to insert node and delete a node using dynamic variables.	K3	CO4
Q4. Explain singly linked list, circular linked list and doubly linked list with diagram.	K1	CO1
Q5. Compare use of array and use of dynamic variable in implementation of data structures like linked list.	K3	CO2
Q6. Define stack and queue. Which functions are required to do the following operations? 1. Add 3 in stack 2. Add 7 in stack 3. Remove one element from stack 4. Add 9 in stack	K2	CO2

Government College of Engineering, Aurangabad

Master in Computer Applications

Class Test FYMCA 2022-23 Date: 24-01-2023

MC1105: Software Engineering

Time: 1:00 Hours

Max. Marks: 20

Q.	Questions	Marks	CO	Level
1	Attempt any two of the following. a. Define the terms and write in brief about following: i) software process, ii) requirements specifications, iii) Software design, iv) Software testing and validation, v) Software evolution b. Explain the prototyping model in detail. c. Differentiate between the functional and non-functional requirements.	5	CO1	K2
2.	Attempt any two of the following. a. Explain various formal specification techniques used in requirement elicitation. b. Explain the importance and IEEE structure of SRS with format. c. Explain the Spiral model in detail	5	CO2	K2
		5	CO2	K2
		5	CO2	K2

Government College of Engineering, Aurangabad

(An Autonomous Institute of Government of Maharashtra)

FYMCA Examination (CBCS)

Class Test – I,

MC1104: System Software and Operating systems

Time: One Hour

Date of Examination: 27 Jan 2023

Max. Marks: 20

Q1) Attempt any 4 from the following. Each question carries 5 Marks each

- | | | |
|-----------------------------------------------------------------------------------------------------------------------|----|-----|
| a) Discuss the structure of OPTAB and SYMTAB and What are the uses of OPTAB and SYMTAB during the assembling process? | K2 | CO1 |
| b) Explain the working of a single pass assembler with an example | K2 | CO2 |
| c) Differentiate between the terms Absolute and Relocating Loaders | K3 | CO4 |
| d) Draw and Explain the General Machine Structure for a typical VON Neumann machine. | K2 | CO1 |
| e) Write short notes on the following | K2 | CO3 |
| iii) Bootstrap Loader | | |
| iv) USING and BALR with reference to Assembly language Program | | |
| f) Describe the input and output of Macro processor. Explain features of macro facility | K2 | CO1 |

Government College of Engineering, Aurangabad

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Government College of Engineering, Aurangabad

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F.Y. MCA. 2 Years MCA

End Semester Examination March -2023

MC1105: Software Engineering

Time: 3.0 Hours

18 MAR 2023

Max. Marks: 60

N.B. "Verify the Course Code and check whether you have got the Correct Question Paper"

1. Attempt all questions.
2. Figures to the right indicate full marks
3. Assume suitable data if necessary and state it clearly
4. Use of Non-Programmable Calculator and Data Sheet is allowed

Q1	Attempt any two	CO	LEVEL	MARKS
a)	Define the terms and write in brief about following: i) software process, ii) design, iii) evolution and vi) project management.	1	K2	6
b)	With the help of neat sketch explain the V Model in detail.	2	K3	6
c)	Explain object-oriented design with the help of example UML design diagrams.	3	K3	6
Q2	Attempt any two			
a)	Differentiate between the functional and non-functional requirements.	2	K2	6
b)	What is modularity? Explain the coupling in details with types.	3	K3	6
c)	What is system testing? What technique falls under system testing? Explain.	4	K2	6
Q3	Attempt any two			
a)	What are different techniques used in black box testing? Explain BVA, Equivalence class, Decision table with suitable example.	4	K2	6
b)	What are different techniques used in white box testing? Explain DD Path, Cyclo-metric complexity, mutation testing with suitable example.	4	K2	6
c)	Explain how testing at various levels are carried out? Explain Alpha, Stress, Security, UAT with example.	4	K2	
Q4	Attempt the following			
a)	Explain maintenance process with neat diagram	5	K3	6
b)	Explain the iterative enhance model & Taut's model used for maintenance.	5	K3	6
Q5	Attempt the following			
a)	Compare Manual testing with Automated testing	3	K3	6
b)	Compare reverse engineering with re-engineering.	5	K3	6

Government College of Engineering, Aurangabad

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MCA 2 Years (CBCS) Examination

End Semester Examination December 2021

MC1105 : Software Engineering

016

Time: 2 Hours 30 Minutes

04 APR 2022

Max. Marks: 60

"Verify the Course Code and check whether you have got the Correct Question Paper"

N.B.

1. Attempt all questions.
2. Figures to the right indicate full marks
3. Assume suitable data if necessary and state it clearly
4. Use of Non-Programmable Calculator and Data Sheet is allowed

Q1	Attempt any TWO	CO	B.T. Level	Marks	
A	Define the terms and write in brief about following: software process, ii) requirements specifications, design, iv) testing and validation, v) evolution and project management,	i) iii) vi)	CO1	K1	06
B	Who are stake holders in software engineering? What is role and responsibility of the Stake holders in Software Engineering? State and explain myths of stake holders with justification why is it wrong?	CO1	K2	06	
C	Draw the detailed DFD for M. Tech result declaration for certain university. State the assumptions.	CO2	K3	06	
Q2	Attempt any TWO				
A	Explain the spiral models in details	CO2	K2	06	
B	What is Requirements elicitation? What are the steps in requirement analysis modelling technique? Explain.	CO2	K2	06	
C	Explain the importance and IEEE structure of SRS.	CO2	K2	06	
Q3	Attempt the following				
A	What is modularity? Explain the coupling and cohesion in details.	CO3	K2	06	
B	What are structured design strategies? Explain top down bottom up and hybrid design.	CO3	K2	06	
Q4	Attempt the following				
A	Explain how the testing at various levels are carried out.	CO4	K2	06	
B	What are different techniques used in white box testing? Explain with suitable example.	CO4	K2	06	
Q5	Attempt the following				
A	Explain the role and the nature of the configuration management.	CO5	K2	06	
B	What is reverse and re-engineering? Explain.	CO5	K2	06	

Government College of Engineering, Aurangabad

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MCA (CBCS) Examination

End Semester Examination Nov/December 2021-22

MC1102: Computer Programming

Time: 3 Hours

Max. Marks: 60

"Verify the Course Code and check whether you have got the Correct Question Paper"

N.B.

1. Attempt all questions.
2. Figures to the right indicate full marks
3. Assume suitable data if necessary and state it clearly
4. Use of Non-Programmable Calculator and Data Sheet is allowed

Q1	Attempt any TWO	CO	B.T. Level	Marks
	A. Name and describe the various data types supported by C programming language	CO2	K1	06
	B. Write a program to exchange values of two variables.	CO3	K3	06
	C. If a four digit number is input through the keyboard, write a program to find the sum of first and last digit.	CO3	K2	06
Q2	Attempt any TWO	CO	B.T. Level	Marks
	A. Distinguish between while and do-while statement.	CO3	K2	06
	B. Write a program to add digits of a given number.	CO3	K3	06
	C. Write a program to find length of the string without using the built in function.	CO5	K3	06
Q3	Attempt any TWO	CO	B.T. Level	Marks
	A. What is Array? Explain how to pass an array as argument to a function.	CO2	K1	06
	B. Write a program using a recursive function to add first 10 natural numbers.	CO5	K3	06
	C. Write a program to reverse digits of a number using function.	CO5	K3	06
Q4	Attempt any TWO	CO	B.T. Level	Marks
	A. Write the differences between structure and union.	CO1	K2	06
	B. Explain dynamic memory allocation using malloc() function.	CO4	K1	06
	C. Write a program to reverse a string using pointers.	CO5	K3	06
Q5	Attempt any TWO	CO	B.T. Level	Marks
	A. Write short note on: register variables.	CO1	K2	06
	B. Write a program to display the contents of the file using command line argument.	CO2	K3	06
	C. Write a program to find largest of three numbers by defining a multiline macro.	CO1	K3	06

Note: CO: Course Outcome; B.T. Level: Bloom's Taxonomy Level

Government College of Engineering, Aurangabad

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FYMCA (CBCS) Examination

End Semester Examination Mar2022

MC1103 : Database Management Systems

29 MAR 2022

Time: 3 Hours**Max. Marks: 60***"Verify the Course Code and check whether you have got the Correct Question Paper"***N.B.**

1. Attempt all questions.
2. Figures to the right indicate full marks
3. Assume suitable data if necessary and state it clearly
4. Use of Non-Programmable Calculator and Data Sheet is allowed

Q1	Attempt any TWO	CO	B.T. Level	Marks
	A. What is Data Modeling? What are the different types of Data Models used in DBMs explain in brief.	CO2	02	06
	B. Discuss the Three Schema Architecture in detail.	CO2	06	06
	C. Draw an ER-diagram for the company database which is described below <ul style="list-style-type: none"> • The company is organized into departments. each department has a unique name, a unique number and a particular employee who manages the department . We keep track of the start date when that employee began managing the department. A department may have several locations. • A department controls a number of projects, each of which has a unique name, a number, and a single location. • We store each employee's name, social security number, address, salary, sex, and birth date. An employee is assigned to one department but may work on several projects. We keep track of the number of hours per week that an employee works on each project. We also keep track of the direct supervisor of each employee. • We want to keep track of the dependents of each employee for insurance purpose. We keep each dependent's first name, sex, birth date, and relationship to the employee. 	CO5	04	06

Q1 Attempt any TWO

A Consider the following sample database:

Employee	Assigned To
Emp1	Comp453
Emp2	Comp354
Emp3	Comp343
Emp4	Comp354
Emp5	Comp231
Emp6	Comp278
Emp7	Comp553
Emp8	Comp354
Emp9	Comp453
Emp10	Comp354
Emp11	Comp231
Emp12	Comp353
Emp13	Comp278
Emp14	Comp353
Emp15	Comp354

Project	Project-name	Manager
Comp31	Project	107
Comp378	Person(Object	110
Comp353	database	107
Comp354	Operating Sys	101
Comp453	Database	101

- Using Relational Algebra queries solve the following:
 i) find the employee numbers of employees who work on at least all of the projects that employee 107 works on.
 ii) Get complete details of employees on a database project.
 iii) List the complete details of employees working on both comp353 and comp354.

B. Discuss the Mapping Cardinalities in Relational Data Model

Project	Project-name	Manager	CO1	CO2	Marks
Comp31	Project	107	CO4	06	
Comp378	Person(Object	110			
Comp353	database	107			
Comp354	Operating Sys	101			
Comp453	Database	101			

Q2 Attempt any TWO

A Consider the following sample database:

Employee	Assigned To
Emp1	Comp453
Emp2	Comp354
Emp3	Comp343
Emp4	Comp354
Emp5	Comp231
Emp6	Comp278
Emp7	Comp553
Emp8	Comp354
Emp9	Comp453
Emp10	Comp354
Emp11	Comp231
Emp12	Comp353
Emp13	Comp278
Emp14	Comp353
Emp15	Comp354

Project	Project-name	Manager
Comp31	Project	107
Comp378	Person(Object	110
Comp353	database	107
Comp354	Operating Sys	101
Comp453	Database	101

B. Normalize the following relation into 2NF

EMP-PROJ	SSN	Plumber	Hours	Ename	Pname	location
FD1						
FD2						
FD3						

Q3 Attempt any TWO

A Give an efficient algorithm to compute the closure of attribute X under a set of FD's.

Project	Project-name	Manager
Comp31	Project	107
Comp378	Person(Object	110
Comp353	database	107
Comp354	Operating Sys	101
Comp453	Database	101

Project	Project-name	Manager
Comp31	Project	107
Comp378	Person(Object	110
Comp353	database	107
Comp354	Operating Sys	101
Comp453	Database	101

B. Normalize the following relation into 3NF

EMP	ENAME	DEPTNO	DEPTNAME	ADDRESS	PHONE	MANAGER	JOBNUMBER	JOBTITLE	JOBLIMIT
101	SCOTT	10	ACCOUNTING	1754 King Edward Ave., Vancouver, BC V6T 5G9	(604) 555-2424	105	7369	SALESMAN	20
102	KING	10	ACCOUNTING	1754 King Edward Ave., Vancouver, BC V6T 5G9	(604) 555-2424	105	7369	SALESMAN	20
103	ADAMS	20	RESEARCH	1754 King Edward Ave., Vancouver, BC V6T 5G9	(604) 555-2424	105	7369	SALESMAN	20
104	JONES	20	RESEARCH	1754 King Edward Ave., Vancouver, BC V6T 5G9	(604) 555-2424	105	7369	SALESMAN	20
105	TURNER	30	SALES	1754 King Edward Ave., Vancouver, BC V6T 5G9	(604) 555-2424	105	7369	SALESMAN	20
106	WARD	30	SALES	1754 King Edward Ave., Vancouver, BC V6T 5G9	(604) 555-2424	105	7369	SALESMAN	20
107	ADAMS	30	SALES	1754 King Edward Ave., Vancouver, BC V6T 5G9	(604) 555-2424	105	7369	SALESMAN	20
108	MILLER	30	SALES	1754 King Edward Ave., Vancouver, BC V6T 5G9	(604) 555-2424	105	7369	SALESMAN	20

Q4 Attempt any TWO

C Consider the following Database Schema

EMPLOYEE	ENAME	DEPTNO	DEPTNAME	ADDRESS	PHONE	MANAGER	JOBNUMBER	JOBTITLE	JOBLIMIT
101	SCOTT	10	ACCOUNTING	1754 King Edward Ave., Vancouver, BC V6T 5G9	(604) 555-2424	105	7369	SALESMAN	20
102	KING	10	ACCOUNTING	1754 King Edward Ave., Vancouver, BC V6T 5G9	(604) 555-2424	105	7369	SALESMAN	20
103	ADAMS	20	RESEARCH	1754 King Edward Ave., Vancouver, BC V6T 5G9	(604) 555-2424	105	7369	SALESMAN	20
104	JONES	20	RESEARCH	1754 King Edward Ave., Vancouver, BC V6T 5G9	(604) 555-2424	105	7369	SALESMAN	20
105	TURNER	30	SALES	1754 King Edward Ave., Vancouver, BC V6T 5G9	(604) 555-2424	105	7369	SALESMAN	20
106	WARD	30	SALES	1754 King Edward Ave., Vancouver, BC V6T 5G9	(604) 555-2424	105	7369	SALESMAN	20
107	ADAMS	30	SALES	1754 King Edward Ave., Vancouver, BC V6T 5G9	(604) 555-2424	105	7369	SALESMAN	20
108	MILLER	30	SALES	1754 King Edward Ave., Vancouver, BC V6T 5G9	(604) 555-2424	105	7369	SALESMAN	20

Q5 Attempt any TWO

D Elaborate on Buffering of blocks.

DEPT	DEPTNAME	DEPTNO	DEPTNO	DEPTNAME	DEPTNO	DEPTNAME	DEPTNO	DEPTNAME	DEPTNO
101	ACCOUNTING	10	101	ACCOUNTING	10	101	ACCOUNTING	10	101
102	RESEARCH	20	102	RESEARCH	20	102	RESEARCH	20	102
103	SALES	30	103	SALES	30	103	SALES	30	103
104	MANAGEMENT	40	104	MANAGEMENT	40	104	MANAGEMENT	40	104

E Write short note on:

DATAFILE	LOGFILE	TEMPFILE
DATAFILE1	LOGFILE1	TEMPFILE1
DATAFILE2	LOGFILE2	TEMPFILE2
DATAFILE3	LOGFILE3	TEMPFILE3
DATAFILE4	LOGFILE4	TEMPFILE4

F Allocating File Blocks on Disks

DATAFILE	LOGFILE	TEMPFILE
DATAFILE1	LOGFILE1	TEMPFILE1
DATAFILE2	LOGFILE2	TEMPFILE2
DATAFILE3	LOGFILE3	TEMPFILE3
DATAFILE4	LOGFILE4	TEMPFILE4

G Discuss the Armstrong's inference rules.

EMPLOYEE	ENAME	DEPTNO	DEPTNAME	ADDRESS	PHONE	MANAGER	JOBNUMBER	JOBTITLE	JOBLIMIT
101	SCOTT	10	ACCOUNTING	1754 King Edward Ave., Vancouver, BC V6T 5G9	(604) 555-2424	105	7369	SALESMAN	20
102	KING	10	ACCOUNTING	1754 King Edward Ave., Vancouver, BC V6T 5G9	(604) 555-2424	105	7369	SALESMAN	20
103	ADAMS	20	RESEARCH	1754 King Edward Ave., Vancouver, BC V6T 5G9	(604) 555-2424	105	7369	SALESMAN	20
104	JONES	20	RESEARCH	1754 King Edward Ave., Vancouver, BC V6T 5G9	(604) 555-2424	105	7369	SALESMAN	20
105	TURNER	30	SALES	1754 King Edward Ave., Vancouver, BC V6T 5G9	(604) 555-2424	105	7369	SALESMAN	20
106	WARD	30	SALES	1754 King Edward Ave., Vancouver, BC V6T 5G9	(604) 555-2424	105	7369	SALESMAN	20
107	ADAMS	30	SALES	1754 King Edward Ave., Vancouver, BC V6T 5G9	(604) 555-2424	105	7369	SALESMAN	20
108	MILLER	30	SALES	1754 King Edward Ave., Vancouver, BC V6T 5G9	(604) 555-2424	105	7369	SALESMAN	20

H Discuss the External hashing technique for technique for disk files.

DATAFILE	LOGFILE	TEMPFILE
DATAFILE1	LOGFILE1	TEMPFILE1
DATAFILE2	LOGFILE2	TEMPFILE2
DATAFILE3	LOGFILE3	TEMPFILE3
DATAFILE4	LOGFILE4	TEMPFILE4

I. Discuss the Buffering of blocks.

DATAFILE	LOGFILE	TEMPFILE
DATAFILE1	LOGFILE1	TEMPFILE1
DATAFILE2	LOGFILE2	TEMPFILE2
DATAFILE3	LOGFILE3	TEMPFILE3
DATAFILE4	LOGFILE4	TEMPFILE4

J. Discuss the Armstrong's inference rules.

EMPLOYEE	ENAME	DEPTNO	DEPTNAME	ADDRESS	PHONE	MANAGER	JOBNUMBER	JOBTITLE	JOBLIMIT
101	SCOTT	10	ACCOUNTING	1754 King Edward Ave., Vancouver, BC V6T 5G9	(604) 555-2424	105	7369	SALESMAN	20
102	KING								

Q2 Attempt any TWO

A Consider the following sample database:

Assigned To

Project#	Emp#
Comp453	101
Comp354	103
Comp343	104
Comp354	104
Comp231	106
Comp278	106
Comp353	106
Comp354	106
Comp231	107
Comp353	107
Comp278	110
Comp353	112
Comp354	112

Project

Project#	Project-name	mgr
Comp231	Pascal	107
Comp278	Pascal/Object	110
Comp353	database	107
Comp354	Operating Sys	101
Comp453	Database	101

Using Relational Algebra queries solve the following:

i) Find the employee numbers of employees who work on at least all of the projects that employee 107 works on.

ii) Get complete details of employees on a database project.

iii) List the complete details of employees working on both comp353 and comp354.

B. Discuss the Mapping Cardinalities in Relational Data Model

CO1 02 06

C. Consider the following Database Schema

EMP: COLUMNNAME DATATYPE(SIZE)

EMPNO NUMBER (4)

ENAME VARCHAR2 (10)

JOB VARCHAR2 (9)

MGR NUMBER (4)

HIREDATE DATE

SAL NUMBER (7,2)

COMM NUMBER (7,2)

DEPT: COLUMNNAME DATATYPE(SIZE)

DEPTNO NUMBER (2)

DNAME VARCHAR2 (14)

CO4 06 06

Answer the following queries
a) Modify the column job present in the EMP table with the following information given below:

COLUMNNAME DATATYPE(SIZE)
JOB VARCHAR2 (15)

b) Add a new column nationality placed between JOB and MGR columns and verify the result.

c) Modify the column name of EMPNO to EMPLOYEE_NUMBER present in the EMP table

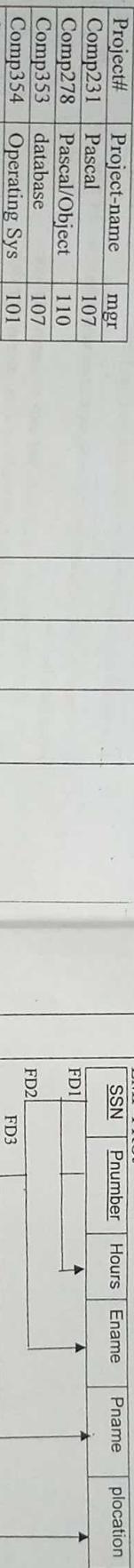
Q3 Attempt any TWO

A Give an efficient algorithm to compute the closure of attribute X under a set of FD's.

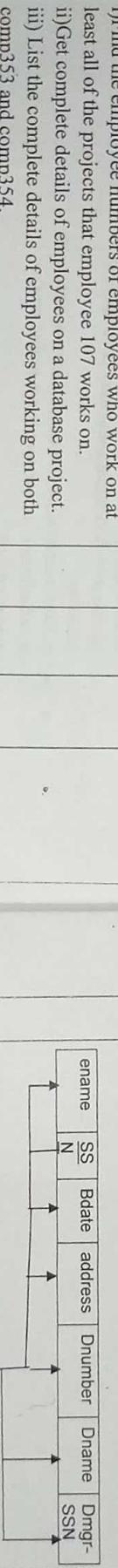
CO4 06 06

Q3 Attempt any TWO

B. Normalize the following relation into 2NF



Normalize the following into 3NF



C. Discuss the Armstrong's inference rules.

CO2 02 06

Q4 Attempt any TWO

A. Discuss External hashing technique for disk files.

CO2 02 06

B. Elaborate on Buffering of blocks.

CO2 05 06

C. Write short note on:
Allocating File Blocks on Disks

CO1 02 06

Q5 Attempt any TWO

A. What are Checkpoints? Explain with the help of an example.

CO3 05 06

B. Discuss System log and the typical kind of records in a system log.

CO2 04 06

	C. Consider the following log entries: <T0,Start> <T0, A, 1000, 950> <T0, B, 2000, 2050> <T0, Commit> <T1, Start> <T1, C, 700, 600> System Crash Explain which transactions need to be undone and which transactions need to be redone considering the immediate database modification strategy.	<i>CO5</i>	<i>04</i>	<i>06</i>
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Government College of Engineering, Aurangabad

(An Autonomous Institute of Government of Maharashtra)

FYMCA (CBCS)(2 Years) Examination

Re End Semester Examination March 2022 *July 2022*

MC1101- DATA STRUCTURES AND ALGORITHM

[11 JUL 2022]

Max. Marks: 60

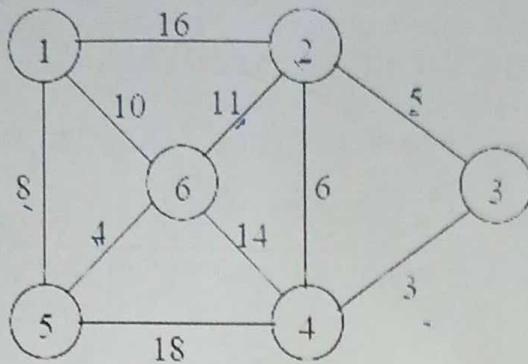
Time: 3 Hours

"Verify the Course Code and check whether you have got the Correct Question Paper"

N.B.

1. Attempt all questions.
2. Figures to the right indicate full marks
3. Assume suitable data if necessary and state it clearly
4. Use of Non-Programmable Calculator and Data Sheet is allowed

Q1	Attempt any TWO	CO	B.T. Level	Marks
	<p>A) Which asymptotic notations are used for analysis of algorithm? Compare time complexity of merge sort, quick sort and heap sort algorithms?</p>	<i>CO1</i>	<i>K3</i>	<i>06</i>
	<p>B) Convert given infix expressions to prefix and postfix.</p> <p>i) $(A + B)^{*} (C - D)$ <i>$\leftarrow A B + * \leftarrow C D$</i> ii) $A \\$ B ^{*} C - D + E / F / (G + H)$ <i>$\leftarrow A B - C D$ - \\$ + A B C D</i></p>	<i>CO1</i>	<i>K2</i>	<i>06</i>
	C) Write a program to evaluate a postfix expression.	<i>CO4</i>	<i>K2</i>	<i>06</i>
Q2	Attempt any TWO	CO	B.T. Level	Marks
	<p>A) Evaluate the following postfix expression using stack.</p> <p>6 2 3 + - 3 8 2 / + * 2 \\$ 3 +</p>	<i>CO5</i>	<i>K5</i>	<i>06</i>
	B) Write getnode and freenode operations and apply it to insert and remove a node by writing its functions.	<i>CO2</i>	<i>K3</i>	<i>06</i>
	C) Which are basic operations on linked list? Explain each.	<i>CO1</i>	<i>K1</i>	<i>06</i>
Q3	Attempt any TWO	CO	B.T. Level	Marks
	<p>A) Create binary search tree for the given numbers below.</p> <p>25, 30, 12, 3, 20, 25, 14</p>	<i>CO3</i>	<i>K5</i>	<i>06</i>
	B) Write an algorithm to implement binary search tree. Give an example.	<i>CO4</i>	<i>K2</i>	<i>06</i>
	C) Apply heap sort method to Sort the given numbers.	<i>CO3</i>	<i>K3</i>	<i>06</i>
	56, 23, 3, 43, 10, 1			
Q4	Attempt any TWO	CO	B.T. Level	Marks
	A) Write Prim's algorithm to find minimum cost spanning tree.	<i>CO3</i>	<i>K2</i>	<i>06</i>
	B) Define spanning tree and minimum cost spanning tree. Find spanning tree for the following graph.	<i>CO2</i>	<i>K2</i>	<i>06</i>



C) Write Dijkstra's algorithm for shortest path.

CO4 K2 06

Q5 Solve the following.

CO B.T. Marks
Level

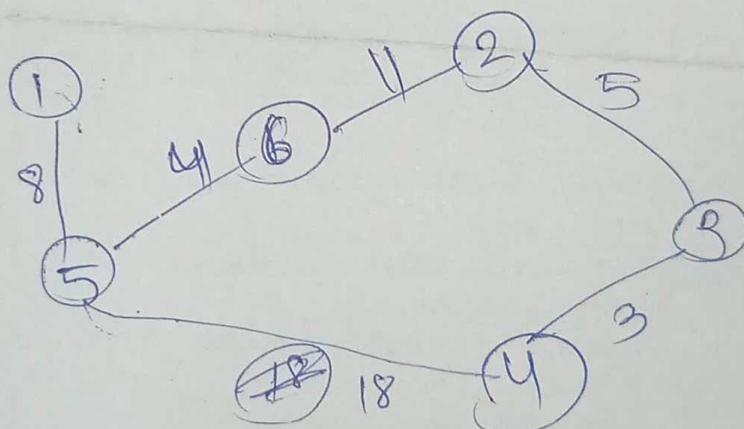
A) What is collision resolution in hashing? Give two names of searching and hashing algorithms each.

CO2 K1 06

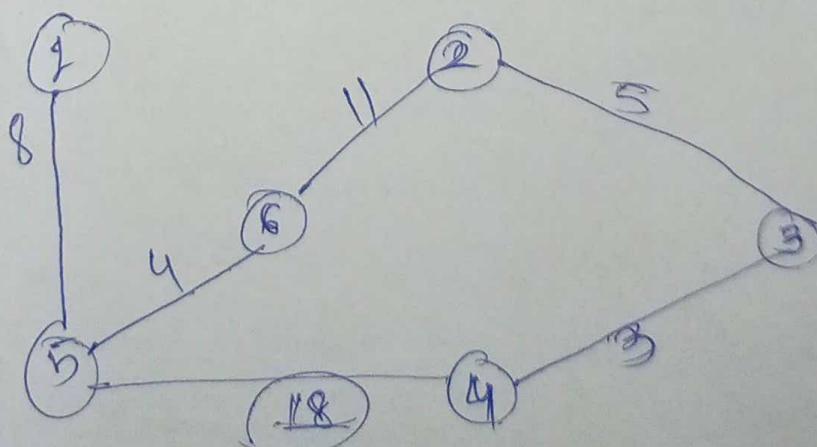
B) Apply binary search method to search the number 12 from the given list.

20, 2, 34, 55, 60, 43, 12

CO4 K3 06



BFS
Algorithm



Kruskals
Algorithm

~~1, 2, 3, 4, 5, 6~~
~~3, 4, 5, 6, 18 or 10, 11, 14, 16, 18~~

Government College of Engineering, Aurangabad

(An Autonomous Institute of Government of Maharashtra)

FYMCA (CBCS)(2 Years) Examination

End Semester Examination March 2022

MC1101- DATA STRUCTURES AND ALGORITHM

23 MAR 2022

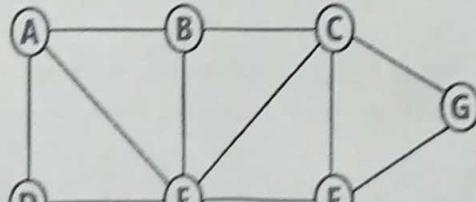
Time: 3 Hours

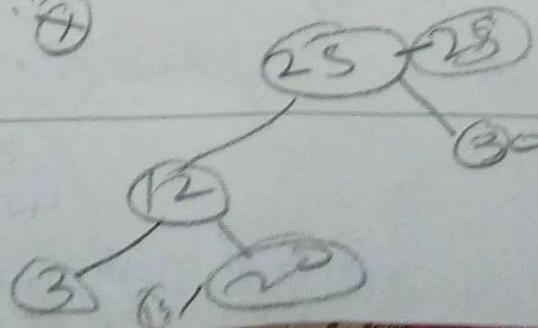
Max. Marks: 60

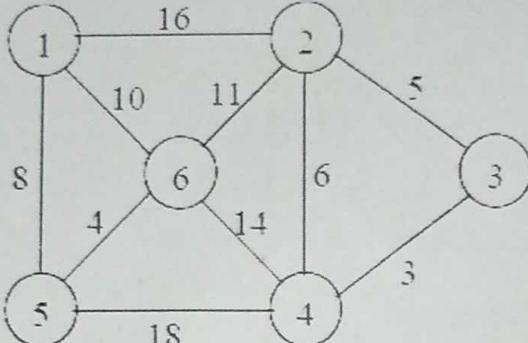
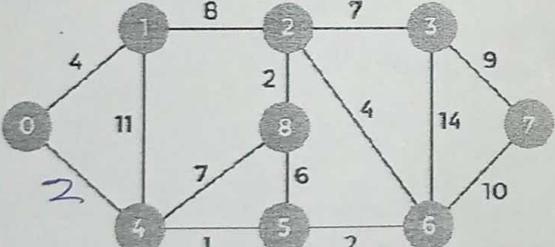
"Verify the Course Code and check whether you have got the Correct Question Paper"

N.B.

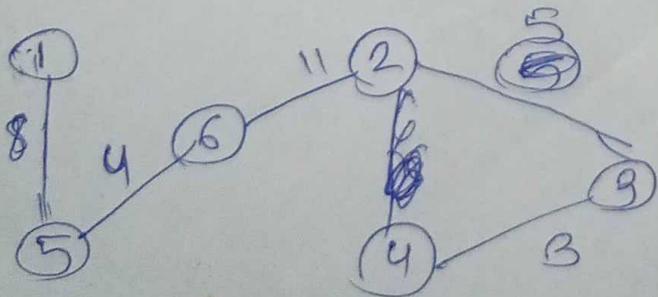
1. Attempt all questions.
2. Figures to the right indicate full marks
3. Assume suitable data if necessary and state it clearly
4. Use of Non-Programmable Calculator and Data Sheet is allowed

Q1	Attempt any TWO	CO	B.T. Level	Marks
	A) Compare different sorting methods based on its complexity.	CO3	K2	06
	B) Evaluate the given expression using stack. $7 - ((X * Y) / (J - 3)) + Y) / (4 - 2.5))$	CO4	K5	06
	C) Which are different tree traversal methods? What are applications of it?	CO2	K3	06
Q2	Attempt any TWO	CO	B.T. Level	Marks
	A), Write an algorithm to insert an element after the nth element of a list. Illustrate circular list and doubly linked list with diagram.	CO4	K2	06
	B) Write a function to insert and remove nodes from a list.	CO4	K1	06
	C) Compare representing a group of items as an array versus a linear linked list. Write algorithm for stack implementation using array and linked list.	CO1	K2	06
Q3	Attempt any TWO	CO	B.T. Level	Marks
	A) Traverse the following graph with BFS and DFS traversal methods.	CO4	K3	06
				
	B) Create binary search tree for the given numbers below. 25, 30, 12, 3, 20, 25, 14	CO3	K5	06

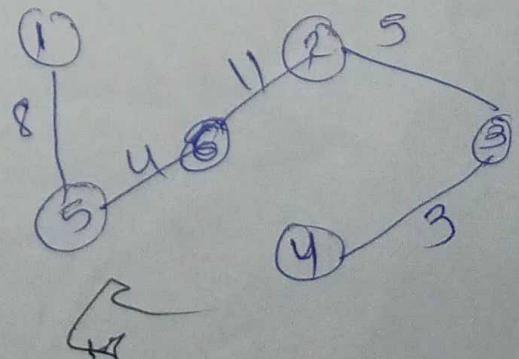


	C) Sort the following list of numbers with radix sort method. What is time complexity of radix sort. 23, 44, 3, 20, 15, 10, 45, 50, 7 <i>20, 3, 15, 3, 23, 44, 15, 45, 7</i>	CO5	K3	06
Q4	Attempt any TWO <i>3, 7, 10, 15, 23, 20</i>	CO	B.T. Level	Marks
	A) Find minimum spanning tree with Prim's algorithm.	CO3	K3	06
				
	B) Write Kruskal's algorithm to find minimum cost spanning tree.	CO3	K1	06
	C) Find shortest path from source to all nodes with Dijkstra's algorithm. Consider 0 as source node.	CO4	K4	06
				
Q5	Solve the following.	CO	B.T. Level	Marks
	A) What is collision resolution in hashing? Give two names of searching and hashing algorithms each.	CO1	K2	06
	B) Compare sequential search and binary search with example.	CO2	K3	06

Prim Algorithm



Kruskal's Algorithm



3, 4, 5, 6, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18

Department of Engineering, Associated
 The Government Institute of Engineering & Technology
 (E.I.T.) Mysore A Department U.G.C ACREDITED
 For Semester Examination March - 2011
 ME 1102: Computer Programming

Max. Marks: 06

Time: 3 hours

"With the Photo Print and don't forget to have your Photo Identity Card."

- X.8
 Answer any four
 A question is of equal value to each
 Total weightage of questions will not exceed

	Ques	LEVE	MARKS
Q1	Attempt any two	CQ LEV	MARKS
	a) List various operators used in C programming and explain any two of them in detail.	CQ2 X1	6
	b) Write a program that accepts three integers and find the maximum of three without using if statement or conditional operator.	CQ1 X2	6
	c) Write a program to read seconds as integer value and convert it into hours, minutes and seconds.	CQ3 X3	6
Q2	Attempt any two	CQ LEV	MARKS
	a) What is an array? Explain the declaration and initialisation of one dimensional array.	CQ2 X1	6
	b) Write a program to calculate the value of S where $S = 1 + 1/2 + 1/3 + \dots + 1/20$.	CQ3 X3	6
	c) Write a program to find largest and smallest element stored in an array.	CQ1 X2	6
Q3	Attempt any two	CQ LEV	MARKS
	a) What is storage class? What are the different storage classes in C? Explain in brief.	CQ1 X2	6
	b) Write a program to find factorial of a number using recursion.	CQ3 X3	6
	c) Write a program to concatenate two strings without using any built in function.	CQ2 X2	6
Q4	Attempt any two	CQ LEV	MARKS
	a) Explain structure within structure with an example.	CQ2 X1	6
	b) Write a program to compare two strings using pointers.	CQ4 X4	6
	c) Create the structure named Marks having elements roll no, name, chem marks, maths marks and phy marks. Write a program to enter details of 5 students and then display the percentage marks scored by each student.	CQ3 X3	6
Q5	Attempt any two	CQ LEV	MARKS
	a) What are bit fields? What is the use of bit fields in a Structure declaration? Explain with an example.	CQ2 X2	6
	b) Write a program to copy contents of one file to another.	CQ3 X3	6
	c) Write a program to find largest of three numbers by defining a multiline macro.	CQ1 X1	6

Computer Programming

W

Government College of Engineering, Aurangabad
 (An Autonomous Institute of Government of Maharashtra)

F.Y. MCA. (MCA Department) FT (CBCS) Examination

End Semester Examination March -2023

MC1102: Computer Programming

Time: 3 Hours

8 MAR 2023

Max. Marks: 60

"Verify the Course Code and check whether you have got the Correct Question Paper"

N.B.

1. Attempt all questions.
2. Figures to the right indicate full marks
3. Assume suitable data if necessary and state it clearly

Q1	<u>Attempt any two</u>	CO	LEVEL	MARKS
	a) List various operators used in C programming and explain any two of them in detail.	CO2	K1	6
	b) Write a program that accepts three integers and find the maximum of three without using if statement or conditional operator.	CO1	K2	6
	c) Write a program to read seconds as integer value and convert it into hours, minutes and seconds.	CO3	K3	6
Q2	<u>Attempt any two</u>	CO	LEV	MARKS
	a) What is an array? Explain the declaration and initialization of one dimensional array.	CO2	K1	6
	b) Write a program to calculate the value of S where $S = 1 + 1/2 + 1/3 + \dots + 1/50$.	CO3	K3	6
	c) Write a program to find largest and smallest element stored in an array. <i>Write a program to find largest and smallest element stored</i>	CO3	K3	6
Q3	<u>Attempt any two</u> <i>in an array</i>	CO	LEV	MARKS
	a) What is storage class? What are the different storage classes in C? Explain in brief.	CO1	K2	6
	b) Write a program to find factorial of a number using recursion.	CO3	K3	6
	c) Write a program to concatenate two strings without using any built in function.	CO5	K2	6
Q4	<u>Attempt any two</u>	CO	LEV	MARKS
	a) Explain structure within structure with an example.	CO2	K1	6
	b) Write a program to compare two strings using pointers.	CO4	K4	6
	c) Create the structure named Marks having elements roll_no, name, chem_marks, maths_marks and phy_marks. Write a program to enter details of 5 students and then display the percentage marks scored by each student.	CO5	K6	6
Q5	<u>Attempt any two</u>	CO	LEV	MARKS
	a) What are bit fields? What is the use of bit fields in a Structure declaration? Explain with an example.	CO2	K2	6
	b) Write a program to copy contents of one file to another.	CO5	K6	6
	c) Write a program to find largest of three numbers by defining a multiline macro.	CO5	K2	6

Government College of Engineering, Aurangabad

(An Autonomous Institute of Government of Maharashtra)

Master of Computer Application (2 Years-CBCS) Examination

End Semester Examination March 2023

MC1103: Database Management System

Time: 3 Hours

10 MAR 2023

Max. Marks: 60

"Verify the Course Code and check whether you have got the Correct Question Paper"

N.B.

1. Attempt all questions.
2. Figures to the right indicate full marks.
3. Assume suitable data if necessary and state it clearly.
4. Use of Non-Programmable Calculator and Data Sheet is allowed.

Q. 1) Attempt any TWO

- | | B.T. Level | Marks |
|--------------------------------------------------------------------------------------------------|------------|-------|
| (A) Define 'Database Management System? List and explain few application areas of DBMS in short. | K1 | 06 |
| (B) Compare the conventional file system versus database management system. | K4 | 06 |
| C) Explain the various components of DBMS with suitable architectural diagram. | K2 | 06 |

Q. 2) Attempt any TWO

- | | B.T. Level | Marks |
|------------------------------------------------------------------------------------------------------------------|------------|-------|
| (A) Demonstrate the different levels of views with a suitable diagram.✓ | K3 | 06 |
| (B) Discuss with example, the relational algebra operations:
i) Selection ii) Projection iii) Union | K2 | 06 |
| (C) Explain the concept of 'Key'. List and explain with example the various keys in DBMS. | K2 | 06 |

Q. 3) Attempt any TWO

- | | B.T. Level | Marks |
|--------------------------------------------------------------------------------------------------------------------------------------------|------------|-------|
| (A) What is 'Database Normalization'? What is the purpose of database normalization? | K1 | 06 |
| (B) Illustrate with example:
i) Insertion Anomalies ii) Deletion Anomalies
Discuss with proper example "Multivalve Dependency". | K2 | 06 |
| (C) Discuss with proper example "Multivalve Dependency". | K2 | 06 |

Q. 4) Attempt any TWO

- | | B.T. Level | Marks |
|------------------------------------------------------------------------------------------------------------|------------|-------|
| A) Describe: Fixed Length Records and Variable Length Records. | K1 | 06 |
| B) Describe with example:
i) Domain Constraints ii) Referential Integrity constraints | K2 | 06 |
| C) Define 'hashing'. Explain hash key and hash function in brief.
List the properties of hash function. | K1 | 06 |

Q. 5) Attempt All

B.T. Level Marks

- A) Consider the following database relations with appropriate data types and Constraints. K5

$\text{Emp}(\text{eno}, \text{ename}, \text{designation}, \text{salary}, \text{Date_Of_Joining})$

$\text{Dept}(\text{dno}, \text{dname}, \text{loc}, \text{eno})$

Consider the above relations and develop SQL queries for the following:

1) Delete the details of Employee whose designation is 'Manager'.

2) Display all the employees under 'Accounts' department.

Delete from

- B) Consider the following database relations with appropriate data types and Constraints. K5

$\text{Sales_order}(\text{ordNo}, \text{ordDate})$

$\text{Client}(\text{clientNo}, \text{ClientName}, \text{addr}, \text{ordNo})$

Consider the above relations and develop SQL queries for the following:

1) Add column amount into Sales_order table with data type int. Alter

2) Delete the details of the clients whose names start with 'A' character. $\text{Alike}((8,2), \text{int})$

Note: B.T. Level: Bloom's Taxonomy Level

go in sales_order
Delete client where
name like 'A%'

$\Pi(\text{entid}, \text{contact})$, 6, (Composite)
= Harm S(employees)

Selection (6)

6(emp_name) = 'Penridge'(street)

where name of and
select employee.name who
start name B 'Penridge'

$\Pi(\text{emp_name}, \text{id}) = S(\text{employees})$

Show emp id and name
from emp table