Enrollment No……

Master of Computer Application
First Semester Main Examination, Dec-2020
Programming in C and Data Structure [MCA101]

Time: 3:00 Hrs **Max Marks 70**

Note : Answer any five questions. All question carry equal marks.

Q.1 (a) What are the characteristics of a good program? Explain each characteristic by taking suitable example.
(b) Implement the push and Pop operation on a stack.

Q.2 (a) Differentiate between structure and union.
(b) Explain the working of binary search.

Q.3 (a) What do you understand by Top down design, Bottom-up design? Give the name of language that used this approach.
(b) Write an algorithm to insert a node into a binary search tree.

Q.4 (a) What is the various data type in C? Explain mix mode operation and automatic type conversion?
(b) What is doubly linked list? Compare doubly linked list and singly linked list?

Q.5 (a) Describe Kruskal's minimum cost spanning tree algorithm?
(b) Write a program to evaluate a postfix expression using a linked stack implementation.

Q.6 (a) What is the Difference between call by value and call by reference? Give any example?
(b) What do you understand by Type conversion & type casting? Compare with example.

Q.7 (a) Differentiate between Testing and Debugging with example?
(b) Explain if-else, for, while, do-while statement with the help of any program

Q.8 Write short note on the following:
(i) Operator Overloading
(ii) Tree
(iii) Shorting

Enrollment No……

Master of Computer Application
First Semester Main Examination, Dec-2020
Statistical Mathematics [MCA102]

Time: 3:00 Hrs **Max Marks 70**

Note: Answer any five questions. All questions carry equal marks.

Q.1 (a) Briefly explain equivalence relation. And give the properties of relation?
(b) What are graphs, sub graphs and union of graphs? Explain with example.

Q.2 (a) Briefly explain Sets, Subsets and Power Sets. With example.
(b)What is Spanning Tree? Is spanning tree is connected graph explain with example?

Q.3 (a) What is Lattices & sub lattices. How it differ from Relation?
(b) What is the Matrix Representation of Graph? Draw a finite graph and its matrix?

Q.4 (a) A graph is following adjacency matrix prove that it is connected or not?

$$\begin{bmatrix} 0 & 1 & 2 & 3 \\ 1 & 0 & 3 & 2 \\ 2 & 3 & 0 & 1 \\ 3 & 2 & 1 & 0 \end{bmatrix}$$

(b)Explain the principal of inclusion and exclusion with example?

Q.5 (a) Show that every connected graph has at list one spanning tree with example?
(b)Prove that the identity element of a subgroup is the same as that of the group?

Q.6 (a) Show that the every field is integral domain with example?
(b)Prove the Morgan's law of a set with an example?

Q.7 (a) Show that the relation € is a partial order relation on the set of all integer?
(b) Show that the maximum number of edges in a simple graph with n vertices is n (n-1)/2.

Q.8 Write short note on:

(i) Pendant vertices in tree

(ii) Finite Graph

(iii) Discrete numeric functions

(iv) Isomorphism

Enrollment No……

Master of Computer Application
First Semester Main Examination, Dec-2020
Operating System and Architecture [MCA103]

Time: 3:00 Hrs **Max Marks 70**

Note : Attempt any five questions.
All question carry equal marks.

Q. (a) What is operating system? Explain briefly about various types of operating system.
(b)What is thread and what are the differences between user-level threads and kernel supported threads?

Q.2 (a) Explain different types of schedules along with the purpose of each.
(b)Write a Semaphore solution for dining philosopher's problem.

Q.3 (a) Briefly explains the following: i) Mutual exclusion ii) Critical section problem
(b)What is Deadlock? What are the four necessary conditions for a deadlock Occur?

Q.4 (a) Define Distributed Shared Memory.
(b) Write in brief about DMA.

Q.5 (a) What is meant by thrashing? Explain various causes of thrashing.
(b) Differentiate between external and internal fragmentation.

Q.6 (a) Differentiate among the following:
(i) Physical address and logical address
(ii) Paging and segmentation
(b) What is paging? Explain Paging Principle. How is it different from Segmentation?

Q.7 (a) Define spooling and for it explain its working with necessary diagram?
(b) Discuss various security threats in file system of OS. What is fragmentation? Why it is needed? Explain differences between external and internal fragmentation.

Q.8 Write short note on the following:
(i) Turnaround Time
(ii) Process management in LINUX
(iii) Key feature of windows

Enrollment No……

Master of Computer Application
First Semester Main Examination, Dec-2020
Information Technology [MCA104]

Time: 3:00 Hrs **Max Marks 70**

Note : Attempt any five questions.
All questions carry equal marks.

Q.1 (a) Compare and describe compiler interpreter and assembler?
(b) What is indexing? Discuss dense index and sparse index with example.

Q.2 (a) Describe the advanced macro facilities and illustrate their use.
(b) What is TCP/IP model? Explain the layering concept of TCP/IP model.

Q.3 (a) What is the basic concept of IT? Explain in the term of data and data processing model?
(b) What is the File Organization, explain types of file organization?

Q.4 (a) What do you understand by insertion & deletion of memory? Explain allocation technique in memory?
(b) Explain Code Optimization. What are the ways in which code optimization can be archived?

Q.5 (a) What are the different scientific applications of information technology?
(b)What is assembler? Why it is different form interpreter?

Q.6 (a) What is linker explain its working and explain why MS DOS linker is necessary?
(b) Explain sequential file system organization in FAT system?

Q.7 (a) What are the different characteristics of computers and compare the characteristics according to computer generation?
(b) What are indexed Sequential File? Explain its Structure. Why Overflow area is required in indexed Sequential files?

Q.8 Write short note on:
(i) CPU storage devices
(ii) Assembly languages
(iii) Network communication devices.
(iv) World Wide Web

Enrollment No……

Master of Computer Application
First Semester Main Examination, Dec-2020
Communication Skills [MCA105]

Time: 3:00 Hrs **Max Marks 70**

Note : Attempt any five questions.
All question carry equal marks.

Q.1 (a) Create a telephonic conversion between two friends discussing impending examination.
(b) What are the differences between creative writing and technical writing?

Q.2 (a) What are the important points you will remember while conducting an oral presentation?
(b)Define the concept of negotiation. Why negotiation necessary in decision making process?

Q.3 (a) What is report writing? What is the structure of formal report?
(b)What are the characteristics found in oral and written communication?

Q.4 (a) Describe in detail the communication process model and explain the steps of coding and decoding in this process.
(b) Discuss the importance of listening in communication?

Q.5 (a) What are the guidelines for pre interview preparation explain?
(b)Write an application for the post of Senior Manager with resume.Q.6 (a) What is oral communication? How can oral communication be made more effective?
(b) What is written communication? Give advantages and disadvantages of written communication.

Q.7 (a) What is media of communication? Explain.
(b) What do you understand by term noise in communication system?

Q.8 Write short note on:
(i) Bibliography
(ii) Index
(iii) Abstract
(iv) Summary