MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE
(UGC-AUTONOMOUS)
MCA I Year I Semester (R20) Supplementary End Semester Examinations – August 2022
Mathematical Foundations for Computer Applications

Time: 3Hrs   Max Marks: 60

Attempt all the questions. All parts of the question must be answered in one place only.
In Q.no 1 to 5 answer either A or B only

Q.No	Question	Marks	CO	BL
Q.1(A)	i. Find A x B and B x A of the given sets. A = {1,2} B = {a,b,c}	6M	1	3
	ii. Let A = {0,1,2,3,4,6,8,10} B = {0,1,2,3,4,5,6} C = {4,5,6,7,8,9,10} Find (a). (A∩B)UC (b). (AUB)∩C	6M	1	3
	OR			
Q.1(B)	i. Explain the following: Contrapositive, Inverse, Converse statements for the given statement.	6M	1	2
	ii. Explain about Tautology and Contradiction with example?	6M	1	2
Q.2(A)	Write Dijkstra's algorithm with the help of an example?	12M	2	2
	OR			
Q.2(B)	What is meant by Graph coloring? Mention some real time applications that uses graph coloring methods?	12M	2	3
Q.3(A)	Explain Ogives and Percentiles with the help of example?	12M	3	2
	OR			
Q.3(B)	iFind the correlation co-efficient between x and y from the given data:	12M	3	3
Q.4(A)	i. State and prove Bayes theorem?	6M	4	3
	ii. Explain Discrete Probability Density Function?	6M	4	2
	OR			
Q.4(B)	A drug is used to maintain a steady heart rate in patients who have suffered a mild heart attack. Let X denotes the number of heart beats per minute obtained per patient	12M	4	3
Q.5(A)	i. Write about the Poisson Distribution?	6M	5	2
	ii. Explain Normal Distribution and its characteristics?	6M	5	2
	OR			
Q.5(B)	i. Discuss Central Limit Theorem?	6M	5	2
	ii. State and prove Chebyshev's inequality?	6M	5	2

Q.3(B) table:

x	78	89	97	69	59	79	68	57
y	125	137	156	112	107	138	123	108

Q.4(B) table:

x	40	60	68	70	72	80	100
$f(x)$	0.01	0.04	0.05	0.80	0.05	0.04	0.01

Find the (i) $p(68 \le X \le 72)$ (ii) Distribution function (iii) average heart-beat of the patients (iv) variance of heart beats.

END

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE
(UGC-AUTONOMOUS)
MCA I Year I Semester (R20) Supplementary End Semester Examinations –August 2022
Programming with C++

Time: 3Hrs

Max Marks: 60

Attempt all the questions. All parts of the question must be answered in one place only. In Q. No.1 to 5 answer either Part A or Part B only.

Q.No	Question	Marks	CO	BL
Q.1(A)	Differentiate Object Oriented Programming and Procedure Oriented Programming.	12M	1	3
	OR			
Q.1(B)	Write a C++ program to implement recursion and non-recursion function in finding the factorial value.	12M	1	2
Q.2(A)	Explain explicit Constructors and multiple Constructors with suitable example?	12M	2	2
	OR			
Q.2(B)	Explain about call by value and call by reference with program.	12M	2	2
Q.3(A)	Write a C++ program to add two complex numbers using binary operator overloading.	12M	3	2
	OR			
Q.3(B)	Illustrate multiple and multi-level inheritance with suitable example?	12M	3	3
Q.4(A)	Write a C++ program to create a template T for a class named pair having two data members of type T which are inputted by a constructor and a member function get-max () return the greatest of two numbers to main.	12M	4	3
	OR			
Q.4(B)	Write a Program to implement virtual function for calculating the EB bill of various consumers.	12M	4	3
Q.5(A)	Explain the Exception handling mechanism with example?	12M	5	2
	OR			
Q.5(B)	Write a C++ program to read the class object of student info such as name, age, sex, height and weight from the keyboard and to store them on a specified file using read () and write () functions. Again the same file is opened for reading and displaying the contents of the file on the screen.	12M	5	3

*** END***

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE
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MCAI Year I Semester (R20) Supplementary End Semester Examinations –August 2022
Computer Organization and Architecture

Time: 3Hrs   Max Marks: 60

Attempt all the questions. All parts of the question must be answered in one place only. **In Q.no 1 to 5 answer either A or B only**

Q.No.	Question	Marks	CO	BL
Q.1(A)	Write a neat diagram and describe the functional units of a computer. Give few examples for I/O devices	12M	1	3
	OR			
Q.1(B)	Explain about Instruction and Instruction Sequencing?	12M	1	2
Q.2(A)	Explain about the parts of mother board along with various CPU's?	12M	2	2
	OR			
Q.2(B)	What is an addressing mode? Explain any five types of addressing modes with example?	12M	2	2
Q.3(A)	Explain the basic concepts of pipelining and compare it with sequence processing with a neat diagram?	12M	3	2
	OR			
Q.3(B)	Explain instruction pipelining?	12M	3	2
Q.4(A)	Discuss any six ways of improving the cache performance?	12M	4	2
	OR			
Q.4(B)	What is virtual memory? How it is useful in memory storage? Portray?	12M	4	2
Q.5(A)	Write a detailed note on Synchronous and Asynchronous Buses?	12M	5	2
	OR			
Q.5(B)	Explain the structure of general-purpose Multiprocessors?	12M	5	2

*** END***

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE
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MCA I Year I Semester (R20) Supplementary End Semester Examinations –August 2022
OPERATING SYSTEMS

Time: 3Hrs   Max Marks: 60

> Attempt all the questions. All parts of the question must be answered in one place only.
> **In Q.no 1 to 5 answer either A or B only**

Q.No.	Question	Marks	CO	BL
Q.1(I)	What is operating system? Explain the Operating-System Services in details.	12M	1	1
	OR			
Q.1(II)	Consider the following data with burst time given in milliseconds: process Burst time Priority p1 7 3 p2 1 1 p3 2 3 p4 3 4 p5 5 2 The process has arrived in the order p1, p2, p3, p4, p5 all at time 0. a. Draw Gantt charts for the execution of these processes using FCFS, SJF, a non-preemptive priority and RR (quantum=1) scheduling. b. What is the turnaround time and waiting time of each process for each of the scheduling algorithm.	12M	1	3
Q.2(I)	i. What is critical section? What requirement should be satisfied for a solution to the critical section problem?	8M	2	2
	ii. Explain the readers/ writer's problem in detail	4M	2	2
	OR			
Q.2(II)	What is deadlock? Explain the Bankers algorithm for deadlock Avoidance with example?	12M	2	2
Q.3(I)	Explain the concept of virtual memory and demand paging?	12M	3	2
	OR			
Q.3(II)	Explain various disk scheduling algorithms?	12M	3	2

Q.4(I)	Explain the following in UNIX:
	    i. Grep command
	    ii. Vi Editor
		12M	4	2

	OR			
Q.4(II)	What is AWK? Explain the fields and records in AWK?	12M	4	2
Q.5(I)	What is shell? Explain different types of Shell with example?	6M	5	2
	OR			
Q.5(II)	Explain shell programming control structure with example?	12M	5	2

*** END***

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MCA I Year I Semester (R20) Supplementary End Semester Examinations –August 2022

Object Oriented Software Engineering

Time: 3Hrs

Max Marks: 60

Attempt all the questions. All parts of the question must be answered in one place only.
In Q.no 1 to 5 answer either A or B only

Q.No.	Question	Marks	CO	BL
Q.1(A)	What is Object Orientation and explain Object Oriented Methodologies?	12M	1	1
	OR			
Q.1(B)	Explain Object Oriented Software Life Cycle Models?	12M	1	2
Q.2(A)	Explain Software Requirements Elicitation process?	12M	2	2
	OR			
Q.2(B)	a) Discuss Requirements Change Management in detail?	6M	2	2
	b) Differentiate Structured Analysis and Object Oriented Analysis?	6M	2	2
Q.3(A)	Draw Class diagram, Sequence diagram, Use case diagram for ATM System?	12M	3	3
	OR			
Q.3(B)	Explain in detail about Architectural Design & Interface Design?	12M	3	2
Q.4(A)	Explain Software implementation tools and techniques in detail?	12M	4	2
	OR			
Q.4(B)	a) Discuss Software quality models briefly?	6M	4	2
	b) Discuss about Software Quality and Metrics?	6M	4	2
Q.5(A)	Explain Black box testing and White box testing in detail?	12M	5	2
	OR			
Q.5(B)	a) Discuss various Challenges of software maintenance?	6M	5	2
	b) Discuss Object Oriented Testing and Class testing?	6M	5	2

*** END***

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE
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MCA I Year I Semester (R20) Supplementary End Semester Examinations –August 2022
COMPUTER NETWORKS

Time: 3Hrs   Max Marks: 60

Attempt all the questions. All parts of the question must be answered in one place only.
In Q. No.1 to 5 answer either Part A or Part B only.

Q.No	Question	Marks	CO	BL
Q.1(A)	Explain the ISO/OSI reference model with a neat diagram?	12M	1	2
	OR			
Q.1(B)	Explain in detail about guided medium transmission in physical layer?	12M	1	2
Q.2(A)	Explain Sliding Window Protocol with their advantages and disadvantages?	12M	2	2
	OR			
Q.2(B)	Explain HDLC protocol in detail?	12M	2	2
Q.3(A)	Explain in detail about IPv4 classful and classless addressing?	12M	3	3
	OR			
Q.3(B)	Explain the ICMP message format and error reporting in detail?	12M	3	3
Q.4(A)	Explain in detail about Transmission Control Protocol?	12M	4	2
	OR			
Q.4(B)	Explain how Flow control is achieved in TCP?	12M	4	2
Q.5(A)	Discuss FTP in detail?	12M	5	2
	OR			
Q.5(B)	What is firewall? Explain the types of firewalls in detail?	12M	5	2

*** END***