Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18MATP114

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

MCA I Year II Semester (R18) Regular & Supplementary End Semester Examinations – Dec' 2020

(Regulations: R18)

PROBABILITY AND STATISTICS

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 B only

Q.1(A) A computer center has three printers A, B, and C, which print at different speeds. Programs are routed to the first available printer. The probability that a program is routed to printers A, B and C are 0.6, 0.3 and 0.1 respectively. Occasionally a printer will jam and destroy the printout. The probability that printers A, B and C will jam are 0.01, 0.05 and 0.04 respectively. Your program is destroyed when a printer jams. What is the probability that printer A is involved? Printer B involved? Printer C involved? 12M

OR

Q.1(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

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.

Q.2(A) For the following bivariate probability distribution, find (i) E(X), (ii) E(Y), (iii) E(XY) and(iii)Cov(X, Y) (iv) coefficienct of correlation. 12M

X\Y	0	1	2	3
0	0.840	0.030	0.020	0.010
1	0.060	0.010	0.008	0.002
2	0.010	0.045	0.032	0.013

OR

Q.2(B) The joint density for (X,Y) is given by $f(x,y) = xye^{-x}e^{-y} \quad x>0, y>0$ 12M

(i) Find the marginal densities for X and Y.
(ii) Cov(X,Y)
(iii) Are X and Y independent?
(iv) Find $p(X \le 1)$

Q.3(A) Define Binomial Distribution and its mean, variance? 12M

OR

Q.3(B) (i) Define Uniform distribution, find mean andvariance. 12M
(ii) Let X be a Gamma random variable with $\alpha = 3, \beta = 4$
i) What is the expression for the density for X?
ii) What is the Moment generating function for X?
iii) Find μ, σ^2, σ

Q.4(A) Explain the test of significance for difference of means. A sample of heights of 6400 English men has a mean of 67.85 inches and standard deviation 2.56 inches, while a sample of heights of 1600 Australians has a mean of 68.55 inches and S.D. of 2.52 inches. Do the data indicate that Australians are, on the average taller than Englishmen? 12M

OR

Q.4(B) Samples of two types of electric light bulbs were tested for length of life and following data were obtained: 12M

	Type I	Type II
Sample size	$n_1 = 8$	$n_2 = 7$
Sample mean	$\overline{x_1} = 1,234 hrs$	$\overline{x_2} = 1,036 hrs$
Sample S.D.	$s_1 = 36 hrs$	$s_2 = 40 hrs$

Is the difference in the means sufficient to warrant that type I is superior to type II regarding length of life at 5% l.o.s?

Q.5(A) Four doctors each test four treatments for a certain disease and observe the number of days such patient takes to recover. The results are as follows (recovery time in days): 12M

		Treatment			
		1	2	3	4
Doctor	A	10	14	19	20
	B	11	15	17	21
	C	9	12	16	19
	D	8	13	17	20

By shifting the origin to 15, discuss the difference between (i) doctors and (b) treatments.

OR

Q.5(B) Analyze the variance in the following Latin square of yields (in kgs) of paddy where A, B, C, D denote the different methods of cultivations. 12M

D122	A121	C123	B122
B124	C123	A122	D125
A120	B119	D120	C121
C122	D123	B121	A122

Shifting the origin to 120 from the given values for simplification of calculation, examine whether the different methods of cultivation have given significantly different yields.

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Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18MCAP103

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

MCA I Year II Semester (R18) Regular & Supplementary End Semester Examinations – Dec' 2020

(Regulations: R18)

PROGRAMMING IN 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 B only

Q.1(A)	i) Explain in detail about the basic data types in C language with examples	6M
	ii) Describe the Structure of a C Program.	6M
	OR	
Q.1(B)	i) What do you mean by Formatted Input? Explain in detail the prototype of 'scanf'' function in C including its argument list and return type.	6M
	ii) What is meant by type conversion? Why is necessary? Explain about implicit and explicit type conversion with examples.	6M
Q.2(A)	i) Illustrate the use of special control constructs goto, break, continue and return.	6M
	ii) Write a C Program to find the sum of first and last digit of the number	6M
	OR	
Q.2(B)	Write a program to generate the following series using while, do-while and for 1 2 1 3 2 1	12M
Q.3(A)	Write a C program for multiplication of two matrices.	12M
	OR	
Q.3(B)	i) Explain any three string handling functions with examples.	6M
	ii) Write a program to find the factorial of the given number using functions	6M
Q.4(A)	i) What is a pointer? Explain in detail about pointer arithmetic.	6M
	ii) Define array of pointers. Write one example program	6M
	OR	
Q.4(B)	Define Structures. Explain with an example how structure members are initialized and accessed	12M
Q.5(A)	i) Write a program to copy content of one file to another file.	6M
	ii) What is the need of fseek() function? Explain with example.	6M
	OR	
Q.5(B)	Explain the command line arguments with an example.	12M

***** END*****

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 18MCAP104

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

MCA I Year II Semester (R18) Regular & Supplementary End Semester Examinations – Dec' 2020

(Regulations: R18)

DATABASE MANAGEMENT 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 Part-A or B only

Q.1(A)	What are the Advantages of a DBMS?	6M
	Explain database system Vs. file system.	6M
	OR	
Q.1(B)	Explain Aggregation with the help of an example.	6M
	Explain Entity versus Relationship.	6M
Q.2(A)	Explain the various set operations in SQL with an example.	12M
	OR	
Q.2(B)	Explain the various types of integrity constraints.	12M
Q.3(A)	Give the problems caused by redundancy.	12M
	OR	
Q.3(B)	Describe the Lossless-join Decomposition.	12M
Q.4(A)	Explain about ACID properties of a transaction.	12M
	OR	
Q.4(B)	Write in detail about Concurrent Execution of Transactions.	12M
Q.5(A)	i) What is a cursor?	2M
	ii) Explain the cursors in PL/SQL with example.	8M
	OR	
Q.5(B)	Explain about No SQL.	12M

***** END*****

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 18MCAP105

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

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MCA I Year II Semester (R18) Regular & Supplementary End Semester Examinations – Dec' 2020

(Regulations: R18)

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 Part-A or B only

Q.1(A)	List and explain the different types of operating systems.	12M
	OR	
Q.1(B)	What is the main advantage for an operating system designer of using virtual machine architecture? What is the main advantage for a user? Discuss	12M
Q.2(A)	Discuss the various File handling utilities.	12M
	OR	
Q.2(B)	With the help of neat diagram, explain the UNIX Structure.	12M
Q.3(A)	Explain the different types of Shell with an example.	12M
	OR	
Q.3(B)	Compare and contrast the between Shell and bash.	12M
Q.4(A)	Define deadlock. Explain the necessary conditions for a deadlock to occur.	12M
	OR	
Q.4(B)	What is a semaphore? What are the various operations defined on it? Explain	12M
Q.5(A)	Explain different access methods to access information in files.	12M
	OR	
Q.5(B)	Suppose we have a disk with 200 tracks. The disk head starts at track 100 and moving in the direction of decreasing track number. For the following sequence of disk track requests 27, 129, 110, 186, 147, 41, 10, 64, 120, compute the average seek time for the following disk scheduling algorithms FIFO, SSTF, Scan, C-Scan Queue contains the following request in order at time 0, 27,129,110,186,147, 41, 20, 64, 120. Compute the average time to service a request for the disk head scheduling algorithm FCFS.	12M

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Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18MCAP106

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

MCA I Year II Semester (R18) Regular & Supplementary End Semester Examinations – Dec' 2020

(Regulations: R18)

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 Part-A or B only

Q.1(A)	Describe the framework of software development life cycle.	12
	OR	
Q.1(B)	Describe the approach of Dynamic Systems Development Method(DSDM)	12M
Q.2(A)	Draw an activity diagram for eliciting requirements.	12M
	OR	
Q.2(B)	i. Explain the structure of software requirements document. ii. Discuss how requirements are felicitated and validated in software project	12M
Q.3(A)	Discuss various steps involved in component based development.	12M
	OR	
Q.3(B)	"An Analysis Model is translated into a Design model". Discuss with examples	12M
Q.4(A)	i. Explain about validation testing methodology. ii. Compare the black box testing with white box testing.	6M 6M
	OR	
Q.4(B)	Suggest a few examples describing the issue of response time variability.	12M
Q.5(A)	Describe the issues to be considered in documentation testing.	12M
	OR	
Q.5(B)	What do understand by Risk? Explain briefly Risk management process framework with the help of suitable diagram.	12M

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