MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE
(UGC-AUTONOMOUS)
MCA II Year II Semester (R18) Supplementary End Semester Examinations – Mar' 2021
(Regulations: R18)
DATA STRUCTURES AND ALGORITHMS

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**

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Q.1(A)	i) Differentiate between single linked list and circular linked list	6M
	ii) What is hashing? How to do indexing and retrieving items using hashing explain with an example?	6M
	OR	
Q.1(B)	i) Discuss about the performance analysis of an algorithm	6M
	ii) Write the algorithm for evaluating a postfix expression using stack. Evaluate the following postfix notation 5 6 2 + * 8 4 / -	6M
Q.2(A)	Describe the pseudo code to rearrange the set of elements using selection sort technique. Give an example	12M
	OR	
Q.2(B)	Analyze the best, average and worst case time complexities of linear search with an example list of size n	12M
Q.3(A)	Construct an AVL tree with the following numbers:25,46,13,55,15,30,58,4,6. Insert 50, 10 and 40, delete 25, 13 and 30 and rebalance the tree if necessary in each case.	12M
	OR	
Q.3(B)	i) Define graph. Write the applications of graph	6M
	ii) Explain the insertion and deletion operations in B-trees by taking your own values.	6M
Q.4(A)	Explain about single source shortest path problem with example.	12M
	OR	
Q.4(B)	What is minimum spanning tree? Apply Prim's and Kruskal's on following tree and find the MST.	12M
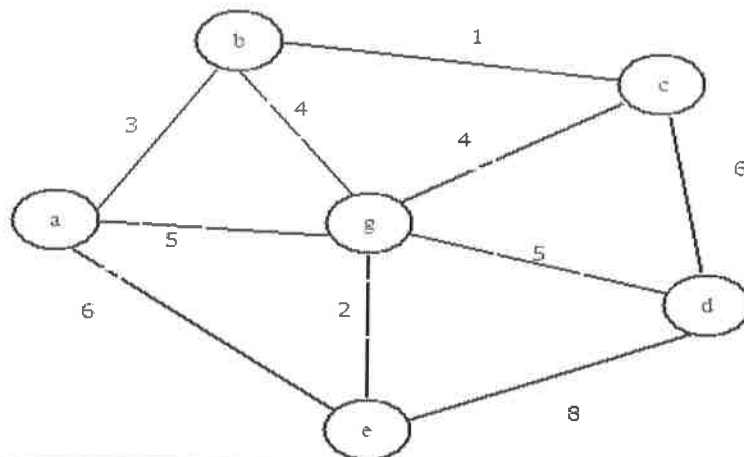
Q.5(A)	Explain Floyd's Warshall algorithm using Dynamic Programming with suitable example.	12M
	OR	
Q.5(B)	Explain the Graph Coloring problem using Backtracking with suitable example.	12M

*** END***

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CLOUD COMPUTING

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 about Degrees of Parallelism.(6M) ii. Explain the Layered architecture for web services and the grids.(6M)	12M
	OR	
Q.1(B)	i. Explain the design objectives of HPC and HTC.(6M) ii. Explain the use of a GPU along with a CPU for massively parallel execution in hundreds or thousands of processing cores.(6M)	12M
Q.2(A)	Cloud Computing Is Transforming Supply Chain Management. Explain in detail.	12M
	·OR	
Q.2(B)	What are the different types of cloud migration? Discuss	12M
Q.3(A)	With a neat diagram, explain the PaaS reference model.	12M
	OR	
Q.3(B)	i. Explain the advantages of virtualized data center over a classic data center. (6M) ii. Explain Basic concept of the vCUDA architecture. (6M)	12M
Q.4(A)	Write notes on Amazon Web Services	12M
	OR	
Q.4(B)	What are the different kinds of problems can be solved by Federation of Cloud?	12M
Q.5(A)	Explain the basic mechanisms for the implementation of resource management policies.	12M
	OR	
Q.5(B)	Explain the techniques theta are related to security, privacy, and availability requirements for developing a healthy and dependable cloud programming environment.	12M

*** END***

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MOBILE APPLICATION DEVELOPMENT USING ANDROID

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. What is meant by LogCat in android?	3M
	ii. Explain Logging Messaging concept in android.	9M
	OR	
Q.1(B)	Write a detailed note on the stack that contains the Android components.	12M
Q.2(A)	Explain in detail: Material design in android.	12M
	OR	
Q.2(B)	Create an android application to show list of phone numbers with name. Assume your own data.	12M
Q.3(A)	Illustrate the role of AsyncTask and AsyncTaskLoader in Android.	12M
	OR	
Q.3(B)	Discuss Broadcast receivers in android.	12M
Q.4(A)	Discuss the following:	
	i. Shared Preferences.	5M
	ii. Short notes on SQLite in android.	7M
	OR	
Q.4(B)	Develop an android application to store the details of the students in SQLite in android.	12M
Q.5(A)	Develop an android application to show the working methodology of	
	i. Motion Sensor.	6M
	ii. Position Sensor.	6M
	OR	
Q.5(B)	Discuss briefly: i. Live Wall Papers with example.	6M
	ii. Handlers with example.	6M

*** END***

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CRYPTOGRAPHY AND NETWORK SECURITY

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) Encrypt the message 'this is exercise' using the following ciphers. Ignore the spaces between the words while encrypting. — 12M
  i) Caesar cipher using the Key=5
  ii) Play fair using the key='Monarchy'

OR

Q.1(B) Diagrammatically illustrate the structure of AES and describe the steps in AES encryption process. — 12M

Q.2(A) Write Euler's Theorem and using Fermat's theorem, find 3^{201} mod 11. — 12M

OR

Q.2(B) Perform decryption and encryption using RSA algorithm with p=5, q=11, e=3, N=9. — 12M

Q.3(A) Discuss about birthday attacks and Digital signatures. — 12M

OR

Q.3(B) Illustrate the process of Elgamal Digital SignatureTechniques. — 12M

Q.4(A) Explain in detail about Kerberos dialogue. — 12M

OR

Q.4(B) Discuss the process of Secure Multipurpose Internet Mail Extensions for Email Security. — 12M

Q.5(A) Explain in detail about functioning of Secure electronic Transaction. — 12M

OR

Q.5(B) Write a short note on — 12M
i. Virus ii. Worms iii. Trozan Horse iv. Logic Bomb
*** END***