MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE
(UGC-AUTONOMOUS)
MCA II Year I Semester (R16) Supplementary End Semester Examinations – June 2018
(Regulations: R16)
DATA STRUCTURES THROUGH PYTHON

Time: 3Hrs   Max Marks: 50

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 basic modes in python.   4M
ii) What is multiple assignment statement? Explain various multiple assignment   1M+5M
statements.

OR

Q.1(B)   i) Explain the usage of break, continue and pass statements in control   6M
statements.
ii) Explain the functions with variable length arguments.   4M

Q.2(A)   i) What is function overloading? Write a simple python program to implement   1M+4M
function overloading.
ii) What is abstract data type? Explain with example.   1M+4M

OR

Q.2(B)   i) What is data structure? write classification of data structures   1M+3M
ii) What is function template? Explain suitable python code to implement   1M+5M
python code.

Q.3(A)   i) Write a python program to find the sum of two matrices.   5M
ii) What is regular expression? Explain with example.   1M+4M

OR

Q.3(B)   i) Describe different expression notations.   3M
ii) What are primitive operations of stack? Write algorithm and program   1M+6M
to implement the operations.

Q.4(A)   i) What is ADT of queue? Explain all operations in ADT of queue   1M+4M
ii) What is circular list? Explain it.   1M+4M

OR

Q.4(B)   What is doubly linked list? Explain insertion and deletion operations in doubly   2M+8M
linked list.

Q.5(A)   i) What is tree traversal? Explain different tree traversals.   1M+3M
ii) Write algorithm and python code to create binary search tree.   3M+3M

OR

Q.5(B)   i) What is searching? Explain different kinds of searching techniques.   1M+3M
ii) What is sorting? Write python code to implement merge sort.   1M+5M

*** END***

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COMPUTER NETWORKS

Time: 3Hrs   Max Marks: 50

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) Explain the principle difference s between connection-oriented communication and connectionless communication.   10M

OR

Q.1(B) Explain the following networks   10M
   i.   ARPANET
   ii. NSFNET

Q.2(A) Explain ATM AAL Layer Protocol   10M

OR

Q.2(B) With neat sketch explain Coaxial cable, Standards of coaxial cable and connectors of coaxial cables   10M

Q.3(A) What is CSMA with CD? What are the three different states of CSMA/CD can be in? Explain with neat diagram.   10M

OR

Q.3(B) What is the need for bridges? Explain the working of 802.x to 802.y bridges in detail   10M

Q.4(A) Explain in detail about broadcast and multicast routings   10M

OR

Q.4(B) i. Distinguish between a fully qualified domain name and a partially qualified domain name give relevant example.   10M
        ii. With a relevant example discuss how the domain space is divided.

Q.5(A) Write about IPV6 in detail. What are its new features and improvements?   10M

OR

Q.5(B) Explain the functioning of HTTP in detail.   10M

*** END***

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SOFTWARE ENGINEERING

Time: 3Hrs   Max Marks: 50

> 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 is Software Engineering? Explain the Layered Architecture of Software Engineering.	10M
	OR	
Q.1(B)	Explain any 3 process models.	10M
Q.2(A)	Write short notes on requirements modeling.	10M
	OR	
Q.2(B)	With an example, explain the project estimation.	10M
Q.3(A)	Define various Golden Rules.	10M
	OR	
Q.3(B)	Write about design patterns.	10M
Q.4(A)	What is testing? Explain the fundamental types of testing.	10M
	OR	
Q.4(B)	Define how to analyze the boundary values. Write about graph based testing.	10M
Q.5(A)	What is a Risk? How to manage the risk.	10M
	OR	
Q.5(B)	What is Reengineering? In detail explain the process of Reengineering.	10M

*** END***

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MCA II Year I Semester (R16) Supplementary End Semester Examinations – June 2018
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DESIGN AND ANALYSIS OF ALGORITHMS

Time: 3Hrs   Max Marks: 50

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)   Explain asymptotic notation in detail.   6M
   Write an algorithm for linear search and analyze the algorithm for its time complexity.   4M

OR

Q.1(B)   Write the recursive and non-recursive version of factorial function. Examine how   10M
         much time each function requires as 'n' become large.

Q.2(A)   Explain heap sort algorithm with suitable example and also discuss its time   10M
         complexity.

OR

Q.2(B)   Discuss about the algorithm and pseudo code to find the minimum spanning tree   10M
         using prim's algorithm. Find the minimum spanning tree for the graph shown below.
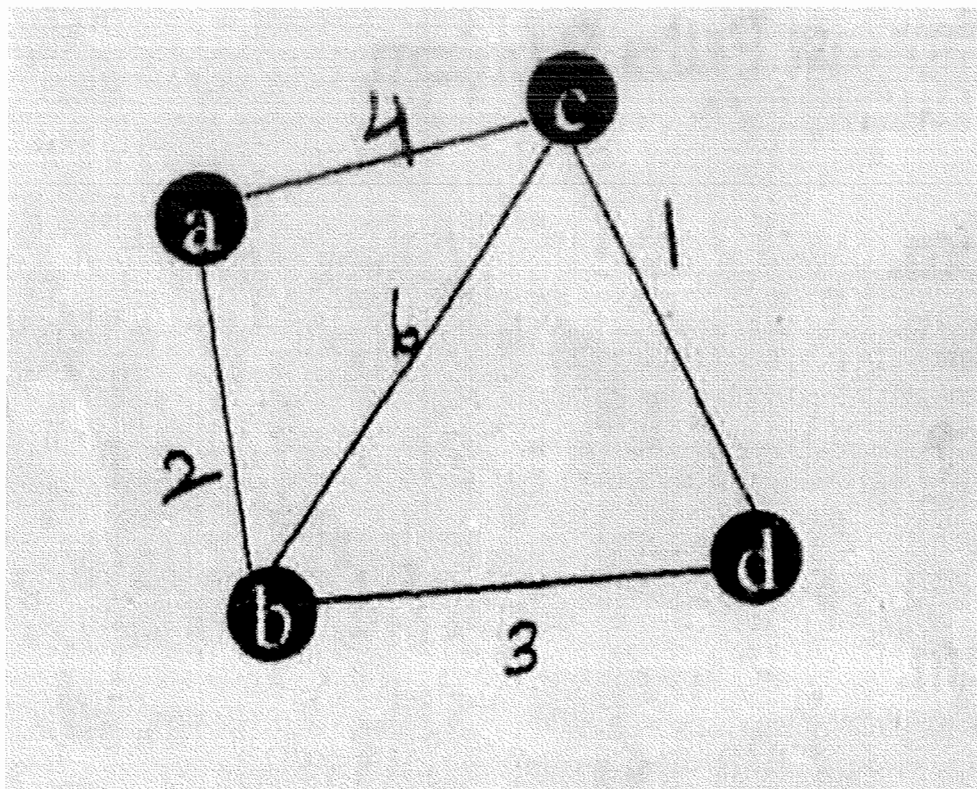
Q.3(A)   Write down and explain the algorithm to solve all pairs shortest path problem.   10M

OR

Q.3(B)   Explain how dynamic programming is applied to solve travelling salesperson problem. 10M

Q.4(A)	Write short notes on	10M
	i. Hamiltonian problem and explain with example.	
	ii. Graph coloring and explain with example.	

OR

| Q.4(B) | Using backtracking, find the optimal solution to a knapsack problem for the knapsack instance n=8, ,= 110, (p1,p2,...,p7) = (11,21,31,33,43,53,55,65) and (W1,W2,...,W7) = (1,11,21,33,43,53,55,65) | 10M |

| Q.5(A) | How to solve NP problem using Cliques decision problem? | 10M |

OR

| Q.5(B) | Define P, NP, NP Complete and NP hard. (5 M) | 10M |
| | State and Explain the Cook's theorem.(5 M) | |

*** END***

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 is double entry system of accounting? Explain the objectives and uses of double   10M
entry system of accounting.

OR

Q.1(B)   Write short notes on: 10M
   i)   Book-keeping versus Accounting
   ii) Classification of Accounts

Q.2(A)   Discuss the various types of subsidiary books in brief.   10M

OR

Q.2(B)   For the following transactions, you are required to pass necessary journal entries, post   10M

them into appropriate ledgers and also prepare trial balance.

Jan 1. Commenced business with a capital of Rs. 10000

,,   2. Bought Furniture for cash Rs. 3000

,,   6. Goods sold to D on credit Rs. 1500

,,   19. Cash deposited into bank Rs. 500

,,   20. Received interest Rs. 500

,,   30. Paid rent Rs. 500

,,   30. Paid salary to P Rs.1000

Q.3(A)   Define goodwill. Describe the various methods of goodwill valuation.   10M

OR

Q.3(B)   Distinguish between straight line method and written down value method of   10M
depreciation

Q.4(A) What is funds flow statement? Describe the steps in the preparation of funds flow   10M
         statement.

OR

Q.4(B) From the following Balance Sheet of X Ltd. Co as on 31st December 2005 and 2006.   10M
         You are required to prepare funds flow statement.

Liabilities	2005	2006	Assets	2005	2006
Share Capital	1,00,000	1,00,000	Goodwill	12,000	12,000
General Reserve	14,000	18,000	Buildings	40,000	36,000
P& L Account	16,000	13,000	Plant	374,000	36,000
Sundry Creditors	8,000	5,400	Investments	10,000	11,000
Bills Payable	1,200	800	Stock	30,000	23,000
Provision for Taxation	16,000	18,000	Debtors	18,000	19,000
Provision for Doubtful Debts	400	600	Bills Receivables	2,000	3,200
			Cash Balance	6,600	15,200
	1,55,600	1,55,800		1,55,600	1,55,800

Q.5(A) Discuss the various types of financial ratios with their significance.   10M

OR

Q.5(B) From the following Trading and Profit & Loss A/C of Rim Zim Limited for the year   10M
         ended 31st March 2012. Calculate i. Gross Profit Ratio ii. Net Profit Ratio, iii. Operating
         Ratio, iv. Operating Profit Ratio

Particulars	Rs.	Particulars	Rs.
To Opening Stock	5,00,000	By Sales	20,00,000
To Purchases	11,00,000	By Closing Stock	6,00,000
To Wages	3,00,000		
To Factory Overheads	2,00,000		
To Gross Profit	5,00,000		
	26,00,000		26,00,000
To Administration Expenses	75,000	By Gross Profit	5,00,000
To Selling & Distribution Exp.	50,000		
To Interest on Debenture	20,000		
To Depreciation	60,000		
To Loss on Sale of Motor Car	5,000		
To Net Profit	3,20,000		
	5,30,000		5,30,000

*** END***