MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

MCA (2Y) II Year I Semester (R16) Regular End Semester Examinations – Jan 2017

(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 various arithmetic and logical operations with example.	5M
	ii. Write a python program for relational and arithmetic operations.	5M
	OR	
Q.1(B)	i. Explain advantages of Python.	5M
	ii. Write a python program for conditional operations.	5M
Q.2(A)	i. Differentiate static and Dynamic Memory allocation.	5M
	ii. Explain in detail about ADT.	5M
	OR	
Q.2(B)	i. How to handle exceptions in generic programming? Explain in detail.	5M
	ii. Write a program for simple inheritance and multiple inheritances.	5M
Q.3(A)	i. Write a program to store 10 integers into a single dimensional array.	4M
	ii. Explain applications of stack with examples.	6M
	OR	
Q.3(B)	i. List out various types of arrays. Explain types of arrays in detail with example.	5M
	ii. Write a program for the operations of stack.	5M
Q.4(A)	i. Explain allocation and reallocation of memory.	5M
	ii. Write a program to create circular linked list.	5M
	OR	
Q.4(B)	i. Explain different types of linked list.	5M
	ii. Explain various operations of queue with applications.	5M
Q.5(A)	i. Explain Insertion sort with example.	6M
	ii. Write a program to implement sequential search.	4M
	OR	
Q.5(B)	i. List of various B- Tree operations and Explain its process with example.	5M
	ii. Explain the difference between Max Heap, Min Heap and Binary Search Tree	5M

*** END***

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MCA (2Y) I Year I Semester (R16) Regular End Semester Examinations – Jan 2017
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) i) What do you mean by data communication? Explain the different characteristics of data (4M+6M)
communication?
ii) With relevant examples differentiate between simplex, half duplex and full duplex
communication.

OR

Q.1(B) State the purpose of layering in networks. Explain different layers of OSI referential model (10M)
with their functionality.

Q.2(A) i) Define transmission medium. Explain the different transmission medium with their (6M+4M)
advantages and disadvantages.
ii) Briefly describe about the flow control in data link layer.

OR

Q.2(B) What is meant by multiplexing? Explain the different multiplexing techniques with neat 10M
diagram.

Q.3(A) i) What is Ethernet? What are the various kinds of Ethernet? Explain the Gigabit Ethernet. (6M+4M)
ii) Gives examples for so called High-speed LANs and describes them.

OR

Q.3(B) i) What is IPv6? Explain its advantages over IPv4. (5M+5M)
ii) What do you mean by Routing in network? Explain Unicast, Broadcast and Multicast
technique.

Q.4(A) i) What are the need of ICMP and IGMP? (6M+4M)
ii)Define and explain the functionality of Domain Name System.

OR

Q.4(B) i)What are the various components of E-Mail message? Discuss the advantages and (6M+4M)
disadvantages of E-mail.
ii) Explain HTTP with its strength and weakness.

Q.5(A) i) Define Cryptography? Explain its various components. (3M+7M)
ii) Explain with example the substitution technique and transposition technique.

OR

Q.5(B) i) Explain message confidentiality with Symmetric and Asymmetric key cryptography. (5M+5M)
ii) What is the importance of firewall? Explain various types of firewall.

*** 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)	List out various phases of unified process. Explain them in detail.	10M
	OR	
Q.1(B)	Write a short note on waterfall model and Incremental process models.	10M
Q.2(A)	What is an importance of architecture? Explain architecture styles.	10M
	OR	
Q.2(B)	What are the requirements models? How data modeling can be designed? Explain	10M
Q.3(A)	Discuss the different steps in user interface design.	10M
	OR	
Q.3(B)	Elaborate component level design pattern.	10M
Q.4(A)	Explain the categories of debugging approaches.	10M
	OR	
Q.4(B)	What are the strategic approaches followed to software testing? Explain in detail.	10M
Q.5(A)	Write a short note on	5M
	i. Reverse Engineering ii. software Risks	5M
	OR	
Q.5(B)	Explain integrating metrics within the software process.	10M

*** END***

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MANAGERIAL ECONOMICS

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 the role of managerial economist in the modern business world?	10M

OR

Q.1(B)	What are the characteristic features of Optimization techniques in economics?	10M

Q.2(A)	What are the expectations of Law of Demand? Explain the significance of Elasticity of Demand.	10M

OR

Q.2(B)	What is Supply Analysis? and discuss about the Law of Supply, Elasticity of Supply.	10M

Q.3(A)	Discuss about Production function with one/two variables & Cobb-Douglas Production Function?	10M

OR

Q.3(B)	Does Economies of scale- Innovations and global competitiveness gives us best result in development of Economy?	10M

Q.4(A)	What is Oligopoly market in perfect competition? and discuss about both the long run and short run.	10M

OR

Q.4(B)	What is Profit Management? Give some Measurement policies & Break-even analysis in controlling the risk.	10M

Q.5(A)	Discuss about Gross Domestic Product or Gross National Income.	10M

OR

Q.5(B)	What is Consumer Price Index and Employee Cost Index.	10M

*** END***

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FINANCIAL ACCOUNTING FOR MANAGERS

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)　Define accounting. Explain the objectives and importance of accounting.　10M

OR

Q.1(B)　Explain double entry system of book keeping, types of accounts and debit and credit rules.　10M

Q.2(A)　Explain the importance of financial statements and also describe the uses of different financial statements.　10M

OR

Q.2(B)　The following balances are obtained from Mr. Ajay for the year ending 31st December 2014. With the help of which prepare trading and profit & loss account and balance sheet.　10M

Particulars	Dr. Rs.	Cr. Rs.
Purchases and Sales	56,800	90,500
Drawings and Capital	10,000	1,05,000
Debtors and Creditors	26,000	11,000
Bills Receivables and Bills Payables	6,000	7,000
Cash	2,500	
Opening Stock	15,000	
Furniture	8,000	
Wages	6,800	
Salaries	26,800	
Rent	3,500	
Machinery	45,000	
Discount	3,600	
Factory Fuel	7,000	
Bank Overdraft		2,500
Reserve for Bad debts		1,000
Total	2,17,000	2,17,000

Adjustments: a) Closing Stock Rs. 20,000　b) Provide depreciation @ 10% on furniture and machinery　c) Rent still outstanding Rs. 1,000　d) Salaries payable Rs. 6,000.

| Q.3(A) | Explain various methods of inventory valuation. | 10M |

<div align="center">OR</div>

| Q.3(B) | XYZ Company purchased machine on 1st January, 2010 for Rs. 2,00,000 and spent Rs. 20,000 for its installation. The life of the machinery is 5 years and its scrap value is Rs. 40,000. Prepare the depreciation account for 5 years. | 10M |

| Q.4(A) | What are the differences between fund flow statement and cash flow statement. | 10M |

<div align="center">OR</div>

| Q.4(B) | The following are the profit & loss account and balance sheet | 10M |

<div align="center">Trading and Profit & Loss Account</div>

Particulars	Rs.	Particulars	Rs.
To Opening Stock	10,000	By Sales	1,00,000
To Purchases	55,000	By Closing Stock	15,000
To Gross Profit c/d	50,000		
	1,15,000		1,15,000
To Office Expenses	15,000	By Gross Profit	50,000
To Interest	3,000		
To Selling Expenses	12,000		
To Net Profit	20,000		
	50,000		50,000

<div align="center">Balance Sheet</div>

Liabilities	Rs.	Assets	Rs.
Capital	1,00,000	Furniture	20,000
Profit & Loss A/C	20,000	Land and Buildings	50,000
Creditors	25,000	Plant and Machinery	30,000
Bills Payables	15,000	Stock	15,000
		Debtors	15,000
		Bills Receivables	12,500
		Cash	17,500
	1,60,000		1,60,000

You are required to calculate: i) Gross Profit Ratio ii) Net Profit Ratio iii) Current Ratio iv) Ratio of current Assets to Total Assets v) Working Capital Turnover Ratio

| Q.5(A) | What do you understand by bank reconciliation statement? And also narrate the necessity for BRS. | 10M |

<div align="center">OR</div>

| Q.5(B) | Distinguish between manual accounting system and computerized accounting system | 10M |

<div align="center">*** END***</div>

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DESIGN & 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)	i. What is algorithm? Write the characteristics of algorithm.	4M+6M
	ii. Explain the complexities of linear search and binary search.	
	OR	
Q.1(B)	i. Explain the difference between depth first search & Breadth first search.	4M+6M
	ii. Explain quick sort technique with performance analysis	

Q.2(A)	i. Write are the three steps in Divide and conquer technique.	4M+7M
	ii. Explain the performance analysis of merge sort using divide and conquer.	
	OR	
Q.2(B)	i. What is knapsack problem?	2M+3M
	ii. What are the steps required to develop greedy method?	+5M
	iii. Solve the following knapsack problem using Greedy method N=3 , m=20 ,	
	$(p1,p2,p3) = (25, 24, 15)$ and $(w1, w2, w3) = (18, 15, 10)$.	

Q.3(A)	i. What is Dynamic programming? Write its elements.	4M+6M
	ii. Write algorithm of all pairs shortest path using dynamic programming.	
	OR	
Q.3(B)	i. Write the differences between dynamic programming and greedy methods.	4M+6M
	ii. Describe reliability design.	

Q.4(A)	i. What is reverse backtracking technique?	2M+2M
	ii. Define coloring problem.	+6M
	iii. Write m-coloring algorithm.	
	OR	
Q.4(B)	(a) What is branch and bound technique?	2M+8M
	(b) Solve the following Traveling salesperson problem using LCBB.	

$$\begin{pmatrix} \infty & 20 & 30 & 10 & 11 \\ 15 & \infty & 16 & 4 & 2 \\ 3 & 5 & \infty & 2 & 4 \\ 19 & 6 & 18 & \infty & 3 \\ 16 & 4 & 7 & 16 & \infty \end{pmatrix}$$

Q.5(A)	i. Explain the classes of NP-Hard and NP-Complete.	5M+5M
	ii. Explain Scheduling problems.	

Q.5(B) i. What is P problem? Give example.   3M+3M
        ii. What is NP-Hard problem? Give example.   +4M
        iii. Explain NP-Hard Code Generation problem.

*** END***