

Code : 1P2B26

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET
(AUTONOMOUS)

MCA II Semester Regular Examinations, June 2012

DATA STRUCTURES

(For students admitted in 2011-12)

Time: 3 hours

Max Marks: 60

Answer any FIVE of the following

All questions carry equal marks

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1. a) Define Data structure. Give the classification of data structures with examples. Compare them.
b) What are the operations that can be performed on Arrays.
2. Write a program to create a Singly linked list and perform the operations insertion, deletion and traversing.
3. a) What are the applications of stacks?
b) How stacks can be used for evaluation of expressions?
4. a) How Queue can be represented using linked list. Write a program to create queue and perform operations insertion and deletion on it.
b) What are the applications of queues?
5. a) What is partitioning element in quick sort? What is its significance?
b) How quick sort is different from other sorting algorithms.
c) Write a program for quick sort and illustrate it with the help of an example.
6. a) What are the problems with hashing? How collisions are resolved.
b) What is the difference between open and closed hashing?
7. a) What are the characteristics of binary search tree?
b) How binary tree can be represented using array and linked list.
c) Write program for inorder and preorder traversal of tree.
8. a) What are the differences between tree and graph?
b) What are the different ways of representing a graph?
c) What are the applications of graphs?

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Code : 1P2B21**ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET
(AUTONOMOUS)****MCA II Semester Regular Examinations, June 2012****COMPUTER ORGANIZATION****(For students admitted in 2011-12)****Time: 3 hours****Max Marks: 60**

*Answer any FIVE of the following
All questions carry equal marks*

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1. a) List and explain the steps which have to take to multiply two floating point numbers with an example.
b) With the help of flowchart and algorithm perform the following division using restoring procedure with dividend = 1010 and divisor = 0101.
2. a) Draw and explain the full adder circuit which performs the arithmetic sum of three inputs and also construct truth table for the arithmetic sum.
b) Design sequential circuit with specific example and demonstrate the state diagram, extension of the state table for binary counter.
3. a) Differentiate paging and segmentation using organization of concerned memories.
b) Explain how the logic address will be translated into physical address in paging.
4. a) Write the Zero, One, Two, Three address instructions for evaluating the following expression $X=(A+B)*(C+D)$.
b) Explain how the instruction will be retrieved from the memory using Relative addressing, Base Register Addressing, Indexed Addressing modes in different applications.
5. a) Describe the function of 8086 instruction queue. How does the queue speed up the processing?
b) Explain about the Address transfer and Flag transfer operations with an example in 8086.
6. Write an 8086 Assembler program to perform the addition of two matrices. The matrices are stored in the form of lists (Row wise). State the result of the addition in third list.
7. a) Differentiate Hardwired control unit and Micro programmed control unit.
b) Explain the process of Mapping from Instruction code to Microinstruction Address? How the address will be sequencing in Micro Programmed control unit?
8. a) Define Handshaking property. Explain how the disadvantage of strobe control method will be overcome using handshaking technique in Asynchronous Data transmission.
b) Explain any two possible modes of data transfer to and from peripherals.

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Code : 1P1201**ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET
(AUTONOMOUS)****MBA II Semester Regular Examinations, JUNE 2012****HUMAN RESOURCE MANAGEMENT****(For students admitted in 2011-12)****Time: 3 hours****Max Marks: 60**

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PART-A**4 X 12 = 48***Answer any FOUR of the following**All questions carry equal marks*

1. Explain recent changes in nature of HR function after a major recession in world economy.
2. Explain the process of selection in detail.
3. What do you mean by employee development? Differentiate between training and development.
4. Explain various careers stages.
5. Explain the following concepts.
 - a) Mentoring.
 - b) Coaching.
6. Explain various approaches to measure performance.
7. How can you gain competitive advantage through HR?

PART-B**12 Marks***Compulsory Question***CASE**

A joint venture between General Electric and a Japanese company, GE Fanuc is a manufacturer of factory automation and control products. Headquartered in Virginia with 1500 employees, the HR department primarily performed administrative support activities. But when Donald Borewhat, Jr., took over as senior Vice president of human resources, he and his staff began by restructuring and decentralizing the HR entity so that each function jobs area of the company has an HR manager assigned to it. The HR managers were expected to be key contributors to their areas by becoming knowledgeable about the business issues faced by their business functional units. Today, HR managers participate in developing business strategies and ensure that human resource dimensions are considered, For instance, the HR manager for manufacturing has HR responsibilities for 600 employees. In that role she contributes to workflow, production, scheduling, and other manufacturing decisions. It also means that she is more accessible to and has more credibility with manufacturing workers, most of whom are hourly workers.

Making the transition in HR management required going from seven to three levels of management, greatly expanding the use of cross functional work teams, and significantly increasing training. To ease employee and managerial anxieties about the changes, GE Fanuc

promised that no employees would lose their jobs. Managers and supervisors affected by the elimination of levels were offered promotions, transfers to other jobs in GE Fanuc, or early retirement buyouts. Additionally employees were promised profit sharing which has resulted in up to three weeks additional pay in profit sharing bonuses in some years.

The test of the change is in the results. GE Fanuc's revenue is up almost 18%. More than 40 work teams meet regularly to discuss work goals, track their performance against established measures and discuss problems and issues. Employee turnover is also extremely low in most areas.

Questions

- a. What possible problems do you see with this approach for HR management in other organizations?
- b. Compare this approach to HR management with the involvement of HR in operations in a current or previous job you have had.

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Code : 1P2B22**ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET
(AUTONOMOUS)****MCA II Semester Regular Examinations, June 2012****BUSINESS DATA PROCESSING****(For students admitted in 2011-12)****Time: 3 hours****Max Marks: 60***Answer any FIVE of the following**All questions carry equal marks**** * * * ***

1. Discuss about the ENVIRONMENT DIVISION in a COBOL program with suitable example.
2. a) Explain about various PICTURE clauses in COBOL with suitable examples.
b) What is the purpose of working storage section in COBOL, explain with example.
3. What is a CONDITION in COBOL language? Explain the different conditions with examples.
4. Write a COBOL program to implement STRING and UNSTRING concepts.
5. Explain the different types of PERFORM statements with syntax and examples.
6. What is MERGE verb? Write a simple COBOL file program to implement it.
7. Discuss the following
 - i) Indexed Disk file processing.
 - ii) Relative Disk file processing.
8. a) What is a SUBROUTINE in COBOL? Explain the process of calling it with example.
b) Write a short note on REPORT SECTION.

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Code : 1P2B23

**ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET
(AUTONOMOUS)**

**MCA II Semester Regular Examinations, June 2012
COMPUTER ORIENTED NUMERICAL METHODS**

(For students admitted in 2011-12)

Time: 3 hours

Max Marks: 60

*Answer any FIVE of the following
All questions carry equal marks*

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1. a) Convert the following numbers
 - i) 58 convert into binary form.
 - ii) 100 convert into octal form.
- b) Explain about errors.
2. a) Find a positive real root of an equation $x^3 - 4x + 9 = 0$ by bisection method after five iterations.
- b) Use the method of iteration to find the real root lying between 1 and 2 of the equation $x^3 - 3x + 1 = 0$.

3. a) Solve the following equations $x + y + z = 9, 2x - 3y + 4z = 13, 3x + 4y + 5z = 40$ by LU Decomposition method.
- b) Find the inverse of the matrix

$$A = \begin{bmatrix} 2 & 1 & 1 \\ 3 & 2 & 3 \\ 1 & 4 & 9 \end{bmatrix} \text{ by using Gauss-Jordan method.}$$

4. a) For the matrix find all Eigen values and Eigen vectors, verify that it is a diagonal matrix.

$$A = \begin{bmatrix} 8 & -6 & 2 \\ -6 & 7 & -4 \\ 2 & -4 & 3 \end{bmatrix}$$

- b) Solve the following system of equations $10x + 2y + z = 9, x + 10y - z = -22,$ and $-2x + 3y + 10z = 22$ using Gauss-Seidel iteration method performing in 3 iterations.

5. a) The following values of the function $f(x) = \sin x + \cos x$ are given

x	10^0	20^0	30^0
$f(x)$	1.1585	1.2817	1.3660

Construct the Quadratic interpolation polynomial that fits the data. Hence find $f(\pi/12)$. compare with the exact value

- b) A function $y = f(x)$ is given by the following table. Find $f(0.2)$ by a suitable formula.

x	0	1	2	3	4	5	6
$f(x)$	176	185	194	203	212	220	229

6. a) Use Lagrange's interpolation formula to find the value of y at $x=6$ from the following data

x	3	7	9	10
y	168	120	72	63

- b) Obtain the Cubic spline approximation for the function defined by the data

x	0	1	2	3
$f(x)$	1	2	33	244

With $M(0) = 0, M(3) = 0$. Hence find an estimate of $f(2.5)$

7. a) The following data for the function $f(x) = x^4$ given

x	0.4	0.6	0.8
$f(x)$	0.0256	0.1296	0.4096

Find $f'(0.8)$ and $f''(0.8)$ using quadratic interpolation. Compare with the exact solution. Obtain the bound on the truncation errors.

- b) Evaluate $\int_0^{\pi/2} \sin x \, dx$ by Simpson's one-third rule dividing the range into six equal parts.
8. a) Solve the following by Euler's modified method

$$\frac{dy}{dx} = x^2 - y, y(0) = 1 \text{ at } x = 0.1 \text{ and } 0.2 \text{ with } h = 0.1$$

- b) Using R-K method of Fourth order, solve $\frac{dy}{dx} = \frac{1}{2} (1 + x)y^2$ with $y(0)=1$ at $x=0.3$.

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Code : 1P2C24

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET
(AUTONOMOUS)

MCA II Semester Regular Examinations, June 2012

OPERATIONS RESEARCH

(For students admitted in 2011-12)

Time: 3 hours

Max Marks: 60

*Answer any FIVE of the following**All questions carry equal marks*

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1. a) What is operations research? Describe its characteristics and limitations.
b) Use simplex method to solve.

Minimize $z = x_1 - x_2 - 2x_3$

Subject to $3x_1 + x_2 + 3x_3 \leq 7$

$-x_1 + 2x_2 \geq -6$

$4x_1 + 3x_2 + 5x_3 \leq 10$

$x_1, x_2, x_3 \geq 0$

2. Apply the principle of duality to solve the LP problem.

Maximize $Z = 3x_1 - 2x_2$

Subject to $x_1 + x_2 \leq 5$

$x_1 \leq 4$

$1 \leq x_2 \leq 6$

$x_1, x_2 \geq 0$

3. Obtain IBFS by Vogel's approximation method for the following Transportation problem.

Source	Destination				Total
	D ₁	D ₂	D ₃	D ₄	
O ₁	1	2	1	4	30
O ₂	3	3	2	1	50
O ₃	4	2	5	9	20
Total	20	40	30	10	100

4. Venkatesh automobile works has six cars for repair. The repair consists of two step procedure namely Dent removing and Painting. The time estimates as follows.

Car Number	1	2	3	4	5	6
Time Estimate (Dent Removing)	16	10	11	13	8	18
Time estimate (Painting)	15	9	15	11	12	14

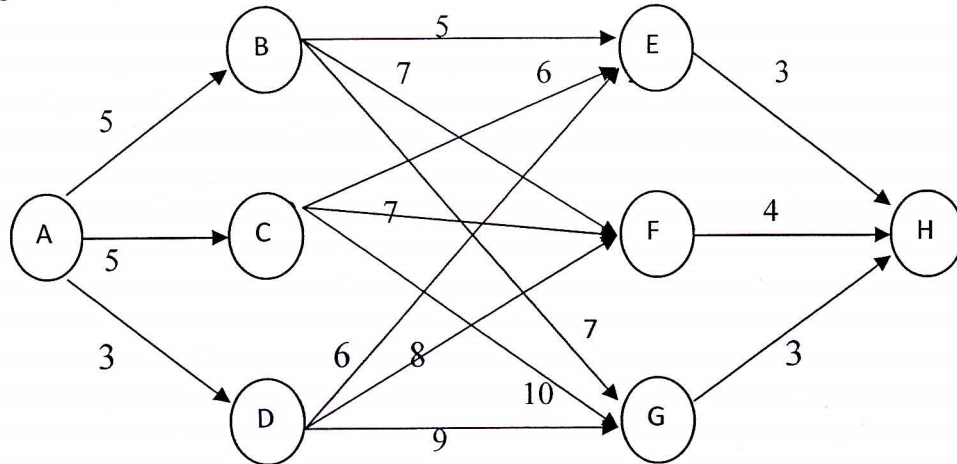
Find correct sequence of operations and prepare Gantt chart and time schedule chart so as to minimize the ideal time.

5. The initial price of an equipment is Rs 5000/- The running cost varies as shown below.

Year	1	2	3	4	5	6	7
Running Cost (Rs)	400	500	700	1000	1300	1700	2100

Taking a discount rate of 0.90, find out optimum replacement interval.

6. A sales manager is planning a business tour from Mumbai to Kolkata. He intends to cover one town from each of the company's different marketing zones on the route. The network shows the three intermediate stages and three possible choices of route at all but the last cities. The travel time between the two cities inclusive of the working time is given below the arrows between cities which intermediate cities should he visit to minimize the time required to get from A to H.



7. Solve the following game by using dominance principle.

		B			
		B ₁	B ₂	B ₃	B ₄
A	A ₁	-5	-2	0	7
	A ₂	5	-6	-4	8
	A ₃	4	0	2	-3

8. A Company uses 24000 units of a raw material which costs Rs 12.50 per unit. Placing each order costs Rs 22.50 and the carrying cost is 5.4% per year of the average inventory. Find the economic order quality (EOQ) and the total inventory cost which includes the material cost.

Code : 1P2A25**ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET
(AUTONOMOUS)****MCA II Semester Regular Examinations, June 2012****ORGANIZATION STRUCTURE AND PERSONAL MANAGEMENT****(For students admitted in 2011-12)****Time: 3 hours****Max Marks: 60***Answer any FIVE of the following**All questions carry equal marks**** * * * ***

1. a) Explain the concept of organization with its features.
b) What are different skills that managers should possess in order to be effective?
2. a) Why does organization need formal structure? Describe the essential features of a good organization structure.
b) Explain the merits and demerits of decentralization.
3. a) Explain the steps involved in decision making process.
b) What are the major features of programmed and non programmed decisions? How do they differ?
4. a) Explain about the basic functions of HR manager in an organization.
b) Explain the significance of personnel department in organization.
5. a) What is recruitment? Explain sources of recruitment.
b) Bring out clearly differences between recruitment and selection.
6. a) What are the objectives of training?
b) Explain the methods of performance appraisal.
7. a) What are different barriers in communication? How do you overcome these barriers?
b) Discuss about the significance and process of communication in an organization.
8. Write short notes on any three of the following.
 - a) Transactional Analysis.
 - b) Performance Management.
 - c) Explain the features of BPO.
 - d) Balanced Score Card.

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