

**Z 3501**

M.C.A. DEGREE EXAMINATION, JANUARY 2007.

First Semester

MC 1601 – COMPUTER ORGANIZATION

(Regulation 2005)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Using 2's compliment method perform  $(42)_{10} - (68)_{10}$ .
2. Reduce the Boolean expression  $((AB)' + A' + AB)'$ .
3. A 4 bit register is initialized with 1101 and it is shifted right with input as 101101. What is the content of register after each shift.
4. Show the block diagram of hardware that implements the following register transfer statement  $yT_2 : R_2 \leftarrow R_1, R_1 \leftarrow R_2$
5. Write an assembly language program to subtract 2 numbers.
6. Write the micro instructions needed for fetch instruction.
7. What is the difference between isolated I/O and memory mapped I/O?
8. Define baud rate.
9. A virtual memory of 64K and physical memory of 32K is available. Find the number of pages, page frames and their size.
10. Give an example for relative and register addressing.

PART B — (5 × 16 = 80 marks)

11. (a) Simplify using tabulation method

$$Y(w,x,y,z) = \sum m(1,2,3,5,9,12,14,15) + \sum d(4,8,11).$$

Or

- (b) Convert the decimal digits to the following binary codes : BCD, 2421, Excess-3 and Gray.

12. (a) (i) Design a binary adder subtracted circuit. (8)  
(ii) Design a BCD subtractor circuit using 9's compliment method. (8)

Or

- (b) (i) Write a note tri-state buffers and explain their use in bus structure. (6)  
(ii) Draw the logic diagram of a 2 X 4 line decoder with only NOR gates. (10)

13. (a) Explain in detail the 2 passes in an assembler.

Or

- (b) Explain in detail the instruction cycle.

14. (a) Discuss how asynchronous data transfer is done. Explain with an example.

Or

- (b) Describe about priority interrupts.

15. (a) Explain the operations that can be performed in a stack. Illustrate with an example.

Or

- (b) Explain in detail the memory management hardware.

**Z 3502**

M.C.A. DEGREE EXAMINATION, JANUARY 2007.

First Semester

MC 1602 — PROBLEM SOLVING AND PROGRAMMING

(Regulation 2005)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define an Algorithm and Program.
2. What are the factors used to analyze the efficiency of an algorithm?
3. What is Swapping? Give an example.
4. Write an algorithm for Factorial computation.
5. What is the purpose of Switch statement? How it is differ from an If statement?
6. List the difference between Continue and Break.
7. What is the difference between Structure and an Array?
8. What is Call by value? Give an example.
9. What is a pointer variable? Give an example.
10. What is the primary advantage of using a file?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain the problem solving aspects. (8)
- (ii) Discuss in detail Program Verification. (8)

Or

- (b) (i) Explain the steps involved in the analysis of an algorithm. (6)
- (ii) Compare Top Down and Bottom up Design approach in solving a problem. (10)

12. (a) (i) Explain Base conversion algorithm with an example. (8)  
(ii) Design an algorithm to count the number of digits of a given number. (8)

Or

- (b) (i) Explain the significance of Array Techniques. (6)  
(ii) Develop an algorithm to read two one dimensional arrays and merge them in to the third array. (10)
13. (a) Write a menu driven program which has the following options. (16)
- (i) Factorial of a given number.  
(ii) To find whether the given number is prime or not.  
(iii) To find odd or even.  
(iv) Exit.

Or

- (b) (i) Using conditional operator determine whether the character entered through the keyboard is a lowercase alphabet or not. (6)  
(ii) Discuss the looping statements with an example. (10)
14. (a) (i) Write a program to find the Binomial coefficient. Use Recursive function to find the factorial. (8)  
(ii) Briefly explain with an example the String handling functions. (8)

Or

- (b) Write a program to create structure called "cricket" with the data members player name, team name, batting average for 50 players. Read the array of structure and display the Teamwise list. (16)
15. (a) Write short notes on the following :
- (i) Dynamic memory allocation. (5)  
(ii) Linked Lists. (6)  
(iii) Preprocessors. (5)

Or

- (b) Write an interactive, file oriented C program that will maintain a list of names, addresses and telephone numbers in alphabetical order. Include a menu that will allow the user to select any of the following features. (16)
- (i) Add a record.
  - (ii) Modify an existing record.
  - (iii) Retrieve and display an entire record for a given name.
  - (iv) Exit.
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**Z 3503**

M.C.A. DEGREE EXAMINATION, JANUARY 2007.

First Semester

MC 1603 — BUSINESS PROCESSES

(Regulation 2005)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Name some applications of computer science which enable an organization to improve its performance.
2. What is Business Activity Monitoring (BAM)?
3. How will you define the term "organization"?
4. What is meant by formal organization?
5. What is meant by the term "Reengineering"?
6. Compare Intranet and Extranet.
7. What is an Information System?
8. What is forward engineering?
9. What is Electronic Data Interchange (EDI)?
10. What is Enterprise Application Integration (EAI)?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain the various organizational components that need to be managed. (8)
- (ii) Why do you think managers would like to be able to predict the behaviours of people in organizations? (8)

Or

- (b) (i) What are the three levels of management? Explain. (8)  
(ii) What will be the future trends and issues in management? (8)

12. (a) Define the term "Leadership". Describe leadership as an influence process using the three types of influence patterns. (3 + 13)

Or

- (b) Define the term "Organizational effectiveness". How would you assess the organizational effectiveness of a government organization? (3 + 13)

13. (a) What is Business Process Reengineering? How will you carryout BPR to an organization? Explain with an example. (2 + 9 + 5)

Or

- (b) (i) How does BPR different from other management techniques? (8)  
(ii) How BPR is connected to packaged software? (8)

14. (a) (i) What are the drawbacks of the traditional information systems? (8)  
(ii) Explain the various technologies that aid the BPR. (8)

Or

- (b) (i) What is the need for reengineering? Explain. (8)  
(ii) What are the activities involved when you apply BPR to managerial process and software process? (8)

15. (a) (i) Explain the various phases in ERP implementation. (10)  
(ii) What is Supply Chain Management (SCM)? List the various elements of SCM. (6)

Or

- (b) Define the following terms and give one example for each concept :  
E-Commerce, E-Business, CRM and Electronic Banking. (4 × 4 = 16)

**Z 3504**

M.C.A. DEGREE EXAMINATION, JANUARY 2007.

First Semester

MC 1604 — DATA STRUCTURES

(Regulation 2005)

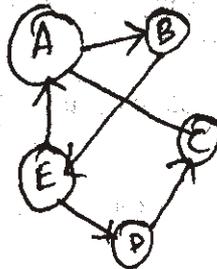
Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Write an algorithm to count the number of nodes in a singly linked list.
2. Mention any two similarities and dissimilarities between stack and queues.
3. Represent the following algebraic expression into binary tree form :  
$$A + (B - C) * (E + F) / G .$$
4. How to represent a binary tree in memory using an array? Mention the disadvantages of using an array to represent a binary tree.
5. Sort the following numbers using Radix sort :  
17, 220, 8, 45, 1845
6. What are the major differences between linear search and binary search procedures? Write their time complexity.
7. Define connected and weakly connected graph.
8. Represent the following graph using Linked list.



9. Define reference count method of automatic list management.

10. What do you mean by free list?

PART B — (5 × 16 = 80 marks)

11. (a) Write the functions to perform the following operations on a singly linked list.

- (i) Adding node at between any two nodes
- (ii) Deleting a node from any where
- (iii) Adding node at beginning and end
- (iv) Deleting a first and last node. (16)

Or

(b) (i) Explain about any two applications of stack in detail with suitable example. (10)

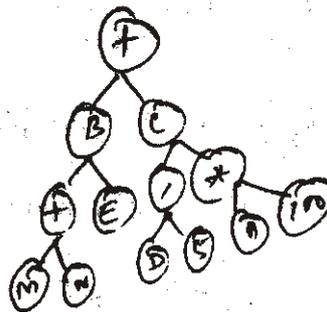
(ii) Write the functions to perform the insert and delete operations on queue. (6)

12. (a) (i) Discuss the various representations of a binary tree in memory with suitable example. (8)

(ii) What are the basic operations can be performed on a binary tree? Explain each of them in detail with suitable example. (8)

Or

(b) (i) Write the in-order, pre-order and post order traversal of a given Tree. (6)



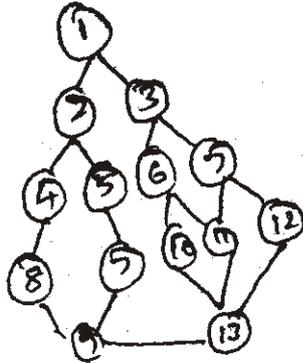
(ii) Write a recursive algorithm to find the post order traversal of a tree. (4)

(iii) Write briefly about Huffman Algorithm. (6)

13. (a) (i) Write an algorithm to perform exchange sort procedure on the given set of integers and discuss its time complexity. (10)
- (ii) Sort the following integers using heap sort procedure : (6)
- 17, 8, 1, 33, 10, 128, 7
- (17, 8, 1, 33, 10, 128, 7)

Or

- (b) (i) What is binary search tree? Explain it with suitable example. Write an algorithm to search an element in the binary search tree. (10)
- (ii) Explain about any two hashing functions in detail with example. (6)
14. (a) (i) Find the DFT and BFT of a given graph. (4)

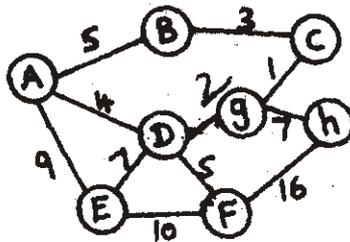


- (ii) Write the procedures to perform the BFS and DFS search of a graph. (8)
- (iii) Find the adjacency matrix and linked list representation of the following graph : (4)



Or

- (b) Find the shortest path between all pair of vertices using all pair shortest path algorithm for the following graph : (16)



15. (a) (i) Illustrate a general algorithm for marking phase with suitable example. (8)
- (ii) Discuss about general list and its operation and representations. (8)

Or

- (b) (i) What is need for compaction? Explain about compaction in detail with suitable example. (6)
- (ii) Explain in detail about automatic list management. (10)

**Z 3505**

M.C.A. DEGREE EXAMINATION, JANUARY 2007.

First Semester

MC 1605 — ACCOUNTING AND FINANCIAL MANAGEMENT

(Regulation 2005)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define Accounting.
2. What is funds flow statement?
3. What are the elements of cost?
4. What is breakeven point?
5. Define zero base budgeting.
6. What is master budget?
7. What are the goals of financial management?
8. What is weighted average cost of capital.
9. What is optimum capital structure?
10. What are the two concepts of working capital?

PART B — (5 × 16 = 80 marks)

11. (a) What are accounting ratios? Explain its uses and limitations.

Or

- (b) The following is the Trial Balance of Shree Ganesh on 30th June 2006.

Name of Account	Debit (Rs.)	Credit (Rs.)
Capital		1,86,000
Drawings	15,735	
Stock (1.7.2005)	17,280	
Sundry creditors		18,900

Name of Account	Debit.(Rs.)	Credit (Rs.)
Sundry debtors	43,500	
Machinery	60,000	
Patents	22,500	
Freehold Land	30,000	
Buildings	96,000	
Sales		2,96,340
Purchases	1,22,025	
Sales returns	2,040	
Purchases returns		1,500
Cash at bank	7,890	
Cash in hand	1,620	
Insurance	1,800	
General expenses	9,000	
Salaries	45,000	
Wages	25,440	
Factory fuel and Power	14,190	
Carriage on purchases	6,120	
Carriage on sales	9,600	
Rent		27,000
	<u>5,29,740</u>	<u>5,29,740</u>

The following adjustments are to be effected :

- (i) Stock on 30th June 2006 Rs. 20,400
- (ii) 5% on Sundry Debtors is to be written off as bad
- (iii) Salaries for the month of June 2006 amounting to Rs. 4,500 were unpaid
- (iv) Insurance include a premium of Rs. 510 on a policy expiring on December 31st 2006
- (v) Rent Rs. 3,000 is accrued but not received
- (vi) Depreciate Machinery @ 10% and Patents @ 20%.

You are required to prepare Trading and Profit and Loss Account and the Balance Sheet as on 30th June 2006.

12. (a) "A firm can avoid standard costing but, of course, at its own peril". Elucidate it and explain the advantages and limitations of standard costing.

Or

(b) The sales turnover and profit during two periods were as follows :

Period 1 Sales Rs. 20 lakhs Profit Rs. 2 lakhs

Period 2 Sales Rs. 30 lakhs Profit Rs. 4 lakhs

Calculate :

(i) P/V Ratio

(ii) Sales required to earn a profit of Rs. 5 lakhs ; and

(iii) Profit when sales are Rs. 10 lakhs. Also show the verification for your answer.

13. (a) Define Budgetary Control. Explain its uses and limitations.

Or

(b) The expenses for budgeted production of 10,000 units in a factory are furnished below :

	Per Unit (Rs.)
Materials	70
Labour	25
Variable overhead	20
Fixed overhead (Rs. 1,00,000)	10
Variable expenses (Direct)	5
Selling expenses (10% Fixed)	13
Distribution expenses (20% Fixed)	7
Administration expenses (Rs. 50,000)	5
Total cost per unit (to make and sell)	<u>155</u>

Prepare a budget for production of

(i) 8,000 units

(ii) 6,000 units and

(iii) Indicate cost per unit at both the levels.

Assume that administration expenses are fixed for all levels of production.

14. (a) What are the basic financial decisions? How do they involve risk-return trade off?

Or

- (b) A limited company is considering investing in a project requiring a capital outlay of Rs. 2,00,000. Forecast for annual income after depreciation but before tax is as follows :

Year	Rs.
1	1,00,000
2	1,00,000
3	80,000
4	80,000
5	40,000

Depreciation may be taken as 20% on original cost and taxation at 50% of net income.

You are required to evaluate the project according to each of the following methods :

- (i) Payback method
- (ii) Rate of return on original investment method
- (iii) NPV method taking cost of capital as 10%
- (iv) NPV index method.

Year :	1	2	3	4	5
PV factor @ 10%	.909	.826	.751	.683	.621

15. (a) Explain the various factors which affect the capital structure of a firm.

Or

- (b) Explain the various factors influencing the working capital requirements of a firm.