MET

INSTITUTE OF COMPUTER SCIENCE

UNIVERSITY QUESTION PAPERS (ICS)

EXAM PAPER MAY-2011

SEM-II

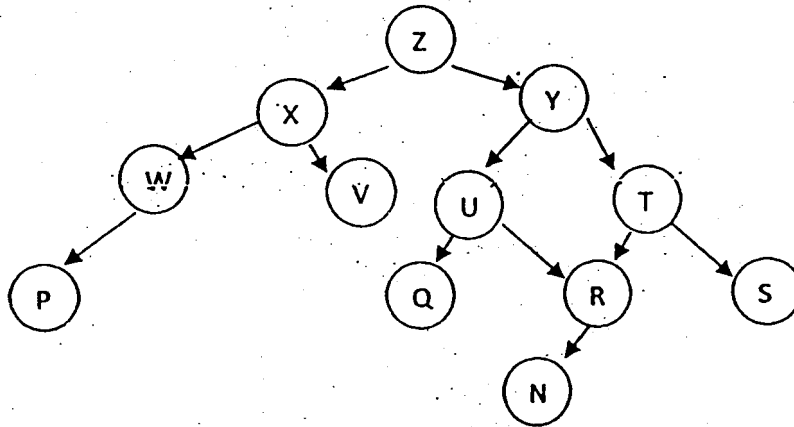| SR.NO	SUBJECT	REMARK
1	DATA STRUCTURES	✓
2	OPERATING SYSTEM	✓
3	FINANCIAL MANAGEMENT	✓
4	COMPUTER GRAPHICS	✓
5	PROBABILITY AND STATISTICS	✗
6	COMMUNICATION & SOFT SKILLS	✓

Q5   A.   What is analysis of algorithm? Discuss the concept of best, average and worst case of an   10
algorithm.

     B.   Define an expression tree. The following infix expression is given. Draw the expression tree   10
and find the prefix and the post fix expression.

       (A + B * (C/D) - E) * (F / (G + H − J)

Q6   A.   Define a minimum spanning tree. Write an Kruskal's algorithm to generate a minimum   10
spanning tree of a given graph.

     B.   Explain the preorder, postorder and inorder traversal of a tree with their algorithms. Give   10
the preorder, postorder and inorder listing of the nodes of the following tree

Q7   A.   What is a double linked list? For a doubly linked list write algorithms to   10
       i.   Append two lists together
       ii.   Delete an element from the list

     B.   Explain the interpolation search algorithm using following array of 10 elements to search 67   10
and write the algorithm. Also trace the steps

       23   67   74   81   93   101   104   125   245

P4-Exam.-May-11-158

Con. 3173-11.

(REVISED COURSE)

CD-1440

(3 Hours)

[Total Marks : 100

N.B. : (1). Q. no. 1 is compulsory.
   (2) Attempt any four out of remaining six Questions.
   (3) Assumptions made should be clearly stated
   (4) Answers to questions should be grouped and written together
   (5) Draw the diagrams whenever required.

Q1 (a). For the processes listed below the table, draw Gantt chart and calculate average waiting time and (12)
Average turnaround time using:-
   (i) FCFS (First come first serve)
   (ii) SJF (Shortest job first) in both conditions preemptive and non-preemptive
   (iii) Round-Robin (quantum=2)

Processes	Arrival Time(ms)	Burst Time(ms)
P1	0	5
P2	1	3
P3	1	4
P4	2	2

(b) Discuss the use and contents of PCB (Process control Block) in detail. (08)

Q2.(a) Suppose a disk drive has 300 cylinders, numbered 0 to 299. The driver is currently serving (12)
request at cylinder 110 and previous request was at cylinder 135. The queue of pending request in FIFO
order is:-
   86, 147, 212, 91, 177, 48, 209, 222, 175, 130
Starting from the current head position, what is the total distance in cylinders that the disk arm moves to
satisfy all pending request for each of the following disk scheduling algorithm?
   (i) SSTF   (ii) SCAN   (iii) C-SCAN

(b) What is OS? Explain the types of shells available and features of UNIX operating system. (08)

Q3.(a) What is Scheduler? Explain the primary objective of scheduling. How many types of scheduler exist
in an operating system? Explain it with the help of diagram. (10)
   (b) What are external and internal fragmentations? Discuss the technique to overcome fragmentations
with a suitable diagram. (10)

Q4 (a) Consider following snapshot of a system: - (12)

Processes	Allocation				Max				Available			
	R1	R2	R3	R4	R1	R2	R3	R4	R1	R2	R3	R4
P0	0	0	1	2	0	0	1	2	2	1	0	0
P1	2	0	0	0	2	7	5	0				
P2	0	0	3	4	6	6	5	6				
P3	2	3	5	4	4	3	5	6				
P4	0	3	3	2	0	6	5	2				

Using banker's algorithm answers the following:-
   (i)   What is the context of matrix need?
   (ii)   Is the system in safe state? Give the sequence.
   (iii) If a request from process P2 arrives for (0, 1, 0, 0) can the request be granted
   immediately?

[TURN OVER

Q4.(b) What is semaphore? Explain the difference between semaphore and monitor.   (

Q5.(a) What is fixed and dynamic partitioning? Explain in detail the technique used in virtual memory to overcome the problem of memory management.   (10)

     (b) Explain direct memory access (DMA) in detail with suitable example.   (10)

Q6.(a) What is deadlock? What are the necessary conditions for occurrence of deadlock also mention the methods of handling deadlock?   (10)

     (b) Why security is required? What types of problems one will face if there is a lack of security in the system? Explain how digital documents are secured using digital signature?   (10)

Q7. Write short notes on any four: -   (20)
     (a) Seek Time, Latency Time, Transfer Time in a Disk.
     (b) Multiprogramming, Multitasking, Multiprocessing.
     (c) Micro kernel and Monolithic kernel
     (d) Spooling
     (e) Context Switching.
     (f) Multi threading

Con. 2927-11.   **CD-1443**

(3 Hours)   [Total Marks : 100
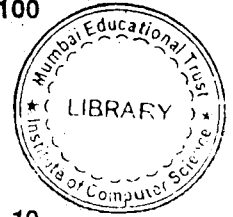
N.B. : (1) Question No. 1 is **compulsory.**
   (2) Attempt any **two** questions from Question Nos. 2 to 4.
   (3) Attempt any **two** questions from Question Nos. 5 to 7.
   (4) Answer to the questions should be **grouped** and written **together.**
   (5) **Figures** to the **right** indicates **full** marks assigned to the question.

1. (a) What is the need of fund flow statement for an orgainzation ?   10
   (b) From the following Trial Balance of Sunshine Traders, prepare Trading and Profit and   10
       Loss A/c and Balance Sheet.

Trial Balance as on 31/12/2010

Particulars	Debit Rs.	Credit Rs.
Capital		25,000
Loans		5,000
Sales		35,000
Creditors		9,000
Purchases Return		2,000
Dividends Received		3,000
Plant and Machinery	13,000	
Buildings	17,000	
Debtors	9,650	
Purchases	18,000	
Discount Allowed	1,200	
Wages	7,000	
Salaries	3,000	
Travelling Expenses	750	
Rent	200	
Insurance	300	
Commission Paid	100	
Cash on hand	100	
Bank	1,600	
Repairs	500	
Interest on Loan	600	
Opening Stock	6,000	
Total	**79,000**	**79,000**

Adjustments :—
   (i) Closing Stock as on December 31st, 2010, Rs. 8,000
   (ii) Depreciation on Plant and Machinery at 15% and 10% on Building
   (iii) Provision for doubtful debtors Rs. 500
   (iv) Insurance prepaid Rs.50
   (v) Outstanding Rent Rs. 100.

2. (a). What is an Account and explain different types of accounts with examples.   8
   (b) Journalise the following transactions in the journal of Shri. Ganesh for the month of   12
       August, 2010 :—

August :			
	1	Shri Ganesh invested in business	2,00,000
	2	Opened an account with the Bank of Baroda by depositing cash	1,00,000
	3	Purchased goods for cash	5,000
	4	Purchased Machinery for cash	8,000
	5	Cash purchases of goods	3,000
	6	Cash sales	9,000
	15	Withdrew cash for personal use	2,000
	16	Purchased goods from Preetam and Sons on credit	6,000
	25	Received cash on account from Ramanand	3,500
	26	Paid cash to Mangesh Bros.	2,500
	9	Paid Rent	1,250
	30	Received Commission	1,750

3. (a) What are the reasons for differences in Cash book balance and Pass book balance ?   8

[TURN OVER

(b) From the following particulars prepare a Cash Book with Cash Discount and Bank Columns.

2011
April : 1 Cash on hand 200/-
2 Bank overdraft 3,000/-
3 Issued a cheque in favor of Ramachandra for Rs. 2,500/- in full settlement of Rs. 2,600/-
5 Received a cheque from Somesh for Rs.3,250/- in full settlement of Rs.3,300/- and deposited the cheque into Bank
7 Received an advise from the bank stating that the bank has paid Rs. 250/- on account of Insurance Premium
9 Paid to petty cashier Rs. 100/-
11 Made cash sales Rs.3,500/- and cash purchase Rs. 900/-
15 Purchased Machinery for Rs.7,000/- the amount paid by cheque
19 Direct deposit by Zaveri 4,800/-
26 Received crossed cheque from Pritam for Rs. 2,000/- in full settlement of Rs. 2,200/-
28 Paid office expenses Rs. 300/-
29 Paid office Rent by cheque 350/-.

4. (a) Expain any five accounting principles. 10
(b) What is Double Entry System of Book Keeping ? Explain its advantages. 10

5. (a) (i) Calculate Stock Turnover Ratio from the following information :— 10
Opening Stock Rs. 30,000
Purchase Rs. 1,15,000
Closing Stock Rs. 20,000
(ii) Calculate Quick Ratio from the following Balance Sheet figures :—

Liabilities	Rs.	Assets	Rs.
Capital	2,20,000	Fixed Assets	2,00,000
Loan (Long Term)	50,000	Stock	50,000
Creditors	40,000	Debtors	50,000
Bills Payable	10,000	Bills Receivable	15,000
Provision for Tax	7,500	Cash and Bank Balance	15,000
Provision for Doubtful Debts	2,500		
	3,30,000		3,30,300

(b) Give format of Cost Sheet. 10

6. (a) Explain the various factors affecting working capital requirement. 10
(b) Explain the following in detail :— (i) Variable Cost (ii) Fixed Cost. 10

7. (a) From the following data prepare a cash budget for the three months from April to June :— 10

Month	Sales (Rs.)	Purchases (Rs.)	Wages (Rs.)
February	1,80,000	1,24,000	12,000
March	1,92,000	1,44,000	14,000
April	1,08,000	2,43,000	11,000
May	1,74,000	2,46,000	10,000
June	1,26,000	2,68,000	15,000

(i) All sales are on credit basis. 50% of the credit sales are realized in the month following the sales and the remaining sales in the second month following
(ii) Creditors are paid in the month following purchase.
(iii) Cash in bank on 1st April (estimated) Rs. 25,000/-.
(iv) There is no lag in the payment of wages. Payment is made in the same month in which they are incurred.
(b) Write short notes on :— 10
(i) Batch Costing
(ii) Contract Costing.

Con. 3579-11.   (REVISED COURSE)   CD-1446

(3 Hours)   [Total Marks : 100]

N.B. :- 1) Q1. is compulsory.
2) Attempt any four from Q2 to Q7.
3) Use of Non-programmable calculators is allowed.
4) Answers to sub-questions should be grouped together

1. A) Discuss any two algorithms for hidden surface removal.   (10)
   B) Compare and contrast B-Spline and Bezier curves.   (05)
   C) Explain various steps required to be performed to design an   (05)
      animation sequence.

2. A) What are projections? How are they useful? Explain different types   (10)
      of projections with examples.
   B) Deduce the Mid-point Ellipse Algorithm.   (10)

3. A) Apply the following 2D transformations to the given image.   (10)
      Calculate the transformed coordinates of the image .
      i) Translate by 3 units in X and 4 units in Y
      ii) Scale by 2 units in Y

      (20,20) ┌─────── (50,20)
      │   \
      │   \ (65,40)
      │   /
      (20,60) └─────── (50,60)
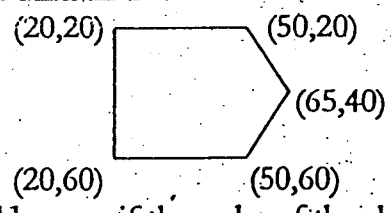
      What would happen if the order of the above transformations is
      reversed? Justify your answer.
   B) Explain different methods of character generation.   (10)

4. A) Rasterise a Line A(3,6) – B(13,16) using the Bresenham's Line   (10)
      drawing algorithm.
   B) Explain the Cohen-Sutherland algorithm for Line Clipping. Give   (10)
      Suitable examples.

5. A) Reduce the Triangle A(3,3), B(9,3), C(6,8) to half its size keeping the   (10)
      point B(9,3) fixed.
   B) Explain the construction and working of CRT's and DVST's.   (10)

6. A) Discuss various Colour models used in graphics system.   (10)
   B) Develop a 2D rotation matrix with respect to a arbitrary point.   (10)

7. Write short notes on any four of the following :   (20)
   A) Frame Buffer   B) Even-Odd Method
   C) Text Clipping   D) Viewing Pipeline
   E) Homogeneous Coordinates   F) Kinematics and Dynamics.

****

P4-Exam.-May-11-238
Con. 2928-11.

CD-1452

(3 Hours) [Total Marks : 100

1. Question No.1 is compulsory.
2. Answer any 4 Questions of the remaining 6 Questions.
3. Answers to the Questions should be grouped and written together.
4. Figures to the right indicate full Marks assigned to the Question.

Q1.A. Explain Teleconferencing.(10 Marks)

Q1.B. Draft a report to be submitted to your college Principal about organizing an Industrial Visit to I.T. companies in Maharashtra.(10 Marks)

Q2.A.What is the role of Paralanguage in Business Communication.(10 Marks)

Q2.B What are the 7 C's of Business Communication.(10 Marks)

Q3.A.What are the barriers to Communication.(10 Marks)

Q3.B. Explain the role of IPR and Patents in today's Business Organizations.(10 Marks)

Q4.A. Write a letter to the printer of Lab Journals complaining about the bad Quality of the journals printed this year.(10 Marks)

Q4.B. Explain the Global aspect of Business Communication.(10 Marks)

Q5 A. What is the importance of listening? Also explain the guidelines to be a good listener.(10 Marks)

Q5.B. Explain a Testimonial? Also tell how it is different from a Reference or Recommendation Letter. (10 Marks)

Q6. A. Draft a notice with agenda for a meeting of the Placement Council of the college called to plan the Placement Week to be organized in your college.(10 Marks)

Q6. B. Write the minutes of the above meeting →10 Marks

Q7.Write Short notes on (Any 4) :- (20 Marks)

1. Emotional Quotient
2. Team Work
3. Conflict Resolution
4. Grapevine
5. Time Management

4–Exam.–May–11–111

Con. 3079–11.

(REVISED COURSE)

CD–1436

(3 Hours)

[Total Marks : 100]

Note : **Question No. 1 is compulsory**
- Attempt **any four** from Q No. 2 to Q No. 7
- Figures to right indicate marks
- All questions carry equal marks
- Answers to sub questions should be answered together

Q1 A. Given the following set of numbers, implement heap sort on this array . Show the resulting   10
array after every pass

22 17 19 15 13 14 42 23 12 91

B. Explain binary tree as a data structure. Write algorithms to   10
   1. Insert an element in the binary tree
   2. Searching a given element in the binary search tree

Q2 A. Define a circular queue. Explain how a circular queue can be implemented using arrays.   10
Write algorithms to enqueue and dequeue an element to and from a circular queue.

B. What is hashing? Using the digit extraction (1,3,5) method & linear probing store the keys   10
shown below in an array with 19 elements. How many collisions occur? What is the density
of the list after the keys are inserted?

25668   14512   24578
22501   27867   13651
15934   21890   71211

Q3 A. Write an algorithm to sort elements using quick Sort. Sort the following elements using quick   10
sort
71 84 1 86 2 7 85 18 48 41 65 5

B. What is a graph? Explain the various methods of storing a graph. Write algorithms to   10

   1. Add a vertex
   2. Delete an edge

Q4 A. What is a height balanced tree? Write an algorithm to Rotate AVL tree right and illustrate   10
with a help of an example.

B. Define a B- tree. Build a B-tree of order 3 created by inserting the following data in sequence   10

79 33 69 75 53 86 96 91 48 55 83

[TURN OVER

Q5 A, What is analysis of algorithm? Discuss the concept of best, average and worst case of an algorithm. 10

B, Define an expression tree. The following infix expression is given. Draw the expression tree and find the prefix and the post fix expression. 10

(A + B * (C/D) - E) * (F / (G + H − J)

Q6 A, Define a minimum spanning tree. Write an Kruskal's algorithm to generate a minimum spanning tree of a given graph. 10

B, Explain the preorder, postorder and inorder traversal of a tree with their algorithms. Give the preorder, postorder and inorder listing of the nodes of the following tree 10
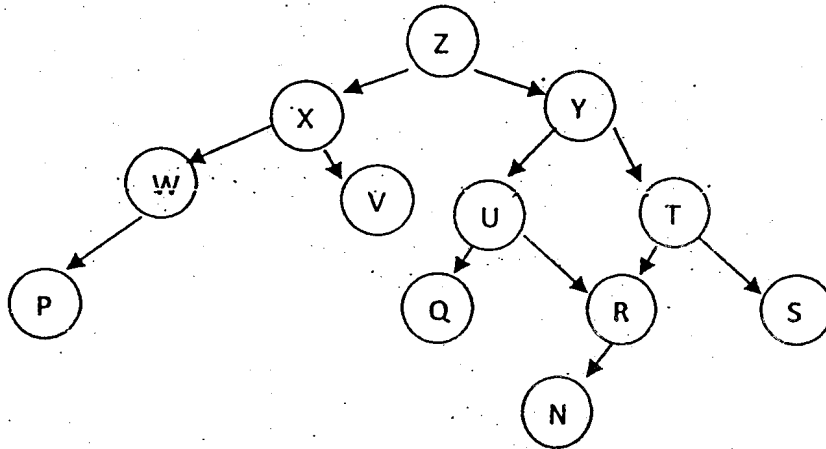
Q7 A, What is a double linked list? For a doubly linked list write algorithms to 10
   i.   Append two lists together
   ii.   Delete an element from the list

B, Explain the interpolation search algorithm using following array of 10 elements to search 67 and write the algorithm. Also trace the steps 10

   23   67   74   81   93   101   104   125   245