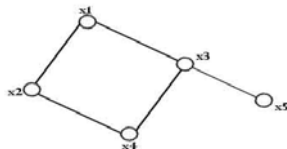


CDE-101 Discrete Mathematics ASSIGNMENT - I

1. (a) $S. T \neg(P \iff Q) \iff (P \vee Q) \wedge \neg(P \wedge Q)$
 $\iff (P \wedge \neg Q) \vee (\neg P \wedge Q)$

without using truth table

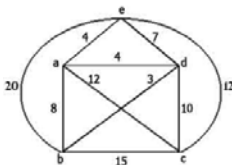
- (b) Determine whether the conclusion C is valid in the following premises without using truth table: H1: $\neg Q$, H2: $P \rightarrow Q$, C: $\neg P$
2. The following figure depicts hasse diagram of a partially ordered set (P, R) where $P = \{x_1, x_2, \dots, x_5\}$. Find which of the following are true: $x_1Rx_2, x_4Rx_1, x_3Rx_5, x_2Rx_5, x_1Rx_1 \& x_4Rx_5$. Find the least & greatest members in P if they exist. Also find the maximal & minimal elements of P. Find upper & lower bounds of $\{x_2, x_3, x_4\}, \{x_3, x_4, x_5\}$ & $\{x_1, x_2, x_3\}$. Also indicate the LUB & GLB of these subsets if they exist.



3. (a) If $f: A \rightarrow B$ & $g: B \rightarrow C$ are two onto functions, then the mapping $g \circ f: A \rightarrow C$ is also an onto function. Prove
- (b) Define primitive recursive function and show that $f(x) = x/2$ is primitive recursive, where $x/2$ is the integral part of $x/2$
4. (a) Simplify $(a' * b' * c) + (a * b' * c) + (a * b * c')$
- (b) In any Boolean algebra, $S.T (a + b)(a' + c) = ac + a'b = ac + a'b + bc$
5. Define Ring. Prove that $\langle Q, * \rangle$ where $*$ is binary operation defined by $a * b = ab + a + b$ is a group.
6. Compute inverse of each element in Z_7 using Fermats & Eulers theorem.
7. (a) Find the coefficient x^4y^3 & number of terms in the expansion of $(3x - 10y)^{11}$
- (b) Use column summation identity & $r = 1, 2$ & 3 to derive formula $1.2 + 2.3 + 3.4 + \dots + n.(n+1) = (n(n+1)(n+2))/3$
8. Find the number of integers between 1 to 1000 which are not divisible by 2, 4, 6 or 9
9. (a) S.T a plane connected graph with less than 30 edges has a vertex of degree ≤ 4
- (b) S.T if G is a simple planar graph with $|V| \geq 11$, then the complement of G is non-planar
10. (a) S.T if G is a polyhedral graph then there is a region of degree ≤ 5
- (b) Determine the height of binary tree whose largest level order index is $2^5 + 33$.

CDE-101 Discrete Mathematics ASSIGNMENT - II

1. (a) $P.T \neg(P \wedge Q) \rightarrow (\neg P \vee (\neg P \vee Q)) \iff (\neg P \vee Q)$
- (b) $P.T (P \vee Q) \wedge (\neg P \wedge (\neg P \wedge Q)) \iff (\neg P \wedge Q)$ without using truth table.
2. (a) Let R denote a relation on set of all ordered pairs of a positive integer such that $(x, y) R (u, v)$ iff $xv=yu$. S.T R is an equivalence relation.
- (b) Let $X = \{1, 5, 6, 7, 8\}$ & R be a relation on X defined by $R = \{(1, 5), (5, 6), (5, 7), (6, 7), (7, 8)\}$. Find transitive closure of R
3. (a) Solve the recurrence relation $a_n = 6a_{n-1} - 11a_{n-2} + 6a_{n-3}$ & $a_0=2, a_1=5$ & $a_2=15$
- (b) Obtain sum of products canonical form of the expression $(x_1 + x_2)' + (x_1' * x_3)$ in four variable x_1, x_2, x_3 & x_4 .
4. (a) Obtain simplified Boolean expression equivalent to $m_5 + m_7 + m_9 + m_{11} + m_{13}$ where m_j are minterms in variables x_1, x_2, x_3, x_4
- (b) Use K-maps to simplify $\sum (0, 2, 6, 8, 9, 7, 13, 15)$
5. (a) P.T 4th roots of unity forms an abelian group in the binary operation $*$
- (b) P.T a group G is abelian if $b^{-1}a^{-1} b a = e$ for every a, b belongs to G
6. Design a single error correcting code for $m=3$ & $n=7$
7. (a) In how many ways can a committee of 3 faculty members and two students be selected from 7 faculty members and 8 students
- (b) How many ways are there to distribute 12 different books among 15 people if no person is to receive more than one book
8. (a) How many integral solutions are there for $x_1 + x_2 + x_3 + x_4=36$ where $x_1 \geq 3, x_2 \leq 2, x_3 \leq 1$ & $x_4 \geq 4$
- (b) How many ways can be letters $\{5.a, 4.b, 1.c\}$ be arranged so that all letters of same kind are in a single block
9. Consider the following graph. Find BFS & DFS



Find Minimal Spanning tree. Find the Pre-order & post-order traversal for the resultant spanning tree

10. (a) S.T a simple connected graph with 7 vertices each of degree 4 is non-planar
 (b) Find $\chi(K_n)$ & $\chi(C_n)$

CDE -102 – MATHS AND STATISTICS

STATISTICS ASSIGNMENT (I)

Answer the following questions

1. a) write about ogives construction.
 b) Represent the following frequency distribution in the form of a histogram.

Class Intervals	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	7	12	16	24	15	6
2. a) Distinguish primary data and secondary data. How do you collect primary data.
 b) What are the data validation method – Explain.
3. a) Write about central tendency methods.
 b) Find Mean and Variance for the following frequency list.

X	:	1	2	3	4	5	6	7
Y	:	15	29	32	47	34	20	16
4. a) Give mathematical definition of Probability and Addition theorem of Probability.
 b) If two fair dies are rolled simultaneously, find the probability that
 i) Sum of the points on top face is 9.
 ii) Sum of the points on the top faces is at least 10.
5. a) What is conditional Probability? State Multiplication theorem of Probability and Baye's theorem ?
 b) Three machines A,B,C will produce 25%,35% and 40% of the bullets in a bullet manufacturing company. The Probabilities that these machines produce defective bullets are 1%, 2% and 1.5% respectively. A bullet is taken from a days production and found to be defective. What is the probability that it can be from machine B ?.
6. a) Define r.U and Mathematical expectation of a r.U. A discrete r.U. has the following probability distribution.

X	:	-2	-1	0	1	2	3
P(X)	:	0.1	a	0.2	2a	0.3	a

 Find i) The value of 'a',
 ii) its distribution function F(X),
 iii) Mean and variance of X.
 b) A continuous r.U.X has the following probability density function

$$F(X) = \begin{cases} 20e^{-20x} & ; X>0 \\ 0 & ; 0 \text{ otherwise} \end{cases}$$
 Find i) Mean of X, ii) $P(X \leq 1000)$, iii) $P(X>3000)$
7. a) What is regression state the properties of regression coefficients.
 b) Given below are the heights of fathers (X) and sons (Y), Find a regression line to predict the son's height given father's height.

Father Height(X)	:	60	61	62	62	63	64	65	67	
Son Height(Y)	:		62	63	60	63	67	67	64	66

 And hence find the correlation between them.
8. a) Define Normal distribution and state its properties.
 b) If X is distributed normally with mean 12 and standard deviation 4. Find i) $P(X \geq 20)$, ii) $P(X \leq 20)$, iii) $p(0 \leq X \leq 12)$
9. a) A can hire firm has two cars which its hires day by day to customers. The no of customers demand for a car from that firm on any day is distributed as Poisson variate with mean 1.5. Compute the probability that on a day i) neither can is given to customers, ii) some demand is refused.

- b) a manufacturer claims that only 10% of his products are defectives. To test his claim 15 units are inspected from the production it's claim will be accepted if out of 15 units no of defectives is at most 2. find the probability that the manufactures claim is accepted.
10. a) the means of two large samples of sizes 1000 and 2000 members are found to be 67.5 and 68.0 inches can the samples be regarded as drawn from the same population of standard deviation 2.5 inches ? test at 5% level of significance.
- b) ten scores of 10 candidates prior and after training are given below.
- | | | | | | | | | | | |
|-------|-----|----|----|----|----|----|----|----|----|----|
| Prior | :84 | 48 | 36 | 37 | 54 | 69 | 83 | 96 | 90 | 65 |
| After | :90 | 58 | 56 | 49 | 62 | 81 | 84 | 86 | 84 | 75 |
- Is the training effective? Test at 5% level of significance

Mathematics - Assignment (II)

1. (a) Prove by mathematical induction

$$1^2 + 3^2 + 5^2 + \dots + (2n - 1)^2 = \frac{n(4n^2 - 1)}{3} \text{ for all } n$$

(b) Solve $\log(3x - 2) + \log(5x - 2) = \log(10x - 3)$

2. (a) Find the cube root of $10 + 6\sqrt{3}$

(b) If α, β are the roots of $ax^2 + bx + c = 0$. The form the equation whose roots are $\alpha^2 + \beta^2, \alpha, \beta$.

3. (a) If $y = x - \frac{x^2}{2} + \frac{x^3}{3} - \frac{x^4}{4} + \dots$ Then Show that

$$x = y + \frac{y^2}{2!} + \frac{y^3}{3!} + \dots$$

(b) Find A-1 if $A = \begin{pmatrix} 3 & 4 & 5 \\ 2 & -1 & 8 \\ 5 & -2 & 7 \end{pmatrix}_{3 \times 3}$

4. (a) Solve by matrix inversion method

$$x + y + z = 8, \quad x - y + 2z = 6, \quad 3x + 5y - 7z = 14$$

(b) Show that $-2\vec{a} + 3\vec{b} + 5\vec{c}, -\vec{a} + 2\vec{b} + 3\vec{c}, 7\vec{a} - \vec{c}$ are collinear

5. (a) Find a unit vector perpendicular to each of $2\vec{i} + \vec{j} - \vec{k}$ and $3\vec{i} + 4\vec{j} - \vec{k}$

(b) Show that $\sin^4\theta + \sin^2\theta = 2 - 3\cos^2\theta + \cos^4\theta$

6. (a) In a ΔABC prove that

$$\sin 2A + \sin 2B + \sin 2C = 4 \sin A \sin B \sin C$$

(b) Prove that $\frac{1 + \cos 2\theta + \sin 2\theta}{1 + \cos 2\theta + \sin 2\theta} = \cot \theta$

7. (a) If $(x + iy)^{1/3} = a + ib$ Show that $\frac{x}{a} + \frac{y}{b} = 4(a^2 - b^2)$

(b) Find the area of the triangle formed by the line $y - 4x - 7 = 0$ with the Co-ordinate axes.

8. (a) Find the equation of the circle passing through the points (-1,2) (3,-2) and whose centre is on $x = 2y$.

(b) Find the equation of the parabola whose focus is (1,-1) and the directrix is $x + y + 7 = 0$

9. (a) Find the equation of the hyperbola whose foci $(\pm 5, 0)$ and eccentricity is $5/4$

(b) If $x = a[\cos t + \sin t], y = a[\sin t - t \cos t]$ find dy/dx .

10. (a) If $u = \tan^{-1} \left(\frac{x^3 - y^3}{x^3 + y^3} \right)$. Then show that $x \cdot u_x + y \cdot u_y = 0$

(b) Evaluate: $\int_0^{\pi} x \sin^7 x \cos^6 x dx$

- 1.Explain the accounting conventions
- 2.Give the nature of capital budgeting decisions. What is its significance for a firm?
- 3.How is cost of equity capital is determined under the CAPM ?
- 4.Define and differentiate Absorption Costing and Marginal Costing
- 5.Explain features of perfect competition. How is equilibrium output determined in case of a firm in the short run under perfect competition ? Discuss.
- 6.Write about the long run production function.
- 7.Prepare profit & loss Account from the following.

	Rs.
Gross Profit	2,56,250
Rent	6,500
Commission paid	3,250
Salaries	9,750
Taxes	9,750
Trade expenses	1,625
Bank Charges	1,950
Printing & Stationary	8,125
Packing charges	1,625
Carriage outward	6,500
Discount received	3,250
Discount allowed	2,112
Bad Debts	2,438
Depreciation on plant	4,875

- 8.Consider the following data of a company for the year 1998.

Sales	Rs 80,000
Fixed cost	Rs 15,000
Variable cost	Rs 30,000

Find the following :

- a) Contribution
 - b) Profit
 - c) BEP
 - d) M.S
- 9.Explain the scope and subject matter of managerial economics.
 - 10.Explain the law of Demand with the help of a diagram.

(MAE) Assignment-2

1. What do you mean by Accounts? Discuss briefly about the various accounting concepts.
2. What do you understand by ratio analysis? Discuss its objectives and limitations.
3. A company is contemplating investment in one of the two projects. Calculate the NPV of both the projects giving recommendation. Which project should be accepted.

Initial Outlay	Project A	Project B
	Rs	Rs.
Cash inflow after tax year ended	18,000	20,000
1	8,000	8,000
2	7,000	9,000
3	6,000	7,000
4	5,000	6,000

Required rate of return is 10% per annum

4. Prepare double column cash book of Ashok & Co from the following 1997

Dec 1	Bank debit balance	Rs. 15,000
Dec 5	Cash received from Srinivas	Rs. 1,250
Dec 8	Payment made to Ramesh	Rs. 1400
	Discount received	Rs. 25
Dec 15	Purchases	Rs. 5000
Dec 16	Salaries paid	Rs. 2,250
Dec 18	Wages paid	Rs. 150
Dec 22	Cash from Mahesh	Rs. 1000
Dec 24	Furniture purchases	Rs. 250
Dec 26	Received from Rahul	Rs. 1400
	Discount	Rs. 100
Dec 28	received from Rahul	Rs. 1230

Discount
Dec 30 offices expenses paid

Rs. 20
Rs. 100

5. Differentiate between the Cash flow statement and Funds flow statement.
6. Explain different types of costs.
7. Write a Short note on Working Capital.
8. Explain the law of Variable proportions.
9. What do you mean by Break-even analysis? Write about its merits and demerits.
10. Explain different types of budgeting.

Course No. 104 – CDE : Assignment – I

1. What is a computer? What are the different types of computers? Explain.
2. Explain about Input and Output devices.
- 3 Explain the Instruction Cycle with flowchart?
4. Explain the functions of the following instructions?
(i) CLA (ii) CMA (iii) SNA (iv) LDA (v) BUN (vi) SZA
5. What is addressing? What are the different addressing modes? Explain with examples.
6. What is an Instruction set? What are the different types of instructions?
7. What is memory? What are the different types of memory?
8. What is DMA? Explain.
9. What is an Operating System? What are the tasks performed by an O.S.
10. What is Data Base Management System? Explain its features and uses.

Course No. 104 – CDE : Assignment – 2

1. What are logic gates? Explain about different types of logic gates.
2. Prove the following:
(i) $A + A.B = A$ (ii) $A . (A + B) = A$
(iii) $(A + B)^1 . (A^1 + B^1)^1 = 0$
3. What is a CPU? What are the different functions performed by CPU?
4. What is a micro operation? What are the different micro operations?
5. Draw the block diagram of control Unit and explain.
6. Explain the different types of Instruction Formats?
7. Explain the different modes of transfer?
8. What is Cache memory? What are the different types of mapping?
9. Explain the features of Windows 98 and Windows NT.
10. What is Teleconferencing? What are the different uses of teleconferencing?

CDE – 105 - Programming Data Structures - Assignment – I

1. Write an algorithm and draw a flowchart for printing all EVEN numbers from 2 to 500.
2. (a) Discuss about various Data Types of C++ in detail.
(b) Write a program to ADD 2 matrices.
3. Write a complete C++ program to implement all operations on a Linked STACK.
4. Discuss about recursive functions, Inline Functions, and Default Arguments? Give examples.
5. Define polymorphism. Write a program to define a Base class "Animal" & define the derived classes "Cat", "Dog" and "Cow" and implement polymorphism for eat() and Cry() functions.
6. Define Trees? What are Binary trees. Write a program to implement preorder, post-order and in-order traversal's of a Binary tree.
7. Discuss about templates, with an example program to implement Queues using Arrays.

8. Discuss about :

(i) Pointers	(ii) Address operation
(iii) Abstract Base Class	(iv) Inheritance
(v) Dynamic Arrays	(vi) Virtual functions
9. Discuss in detail about AVL trees with Insertion and deletion operations with examples.
10. Write a program to find the sum, difference, product and division of 2 rational numbers using classes. Use friend functions, member functions, operator overloading.

CDE – 105 - Programming Data Structures - Assignment – 2

1. (a) Explain about the Operators of C++ in detail
(b) Write an algorithm and draw a flow chart for finding the factorial of a given number.
2. Write a program to read 2 sets A, B and find $A \cap B$.
3. Write a program to implement all stack operations using Arrays.
4. (a) Discuss about call-by-value & call-by-reference with suitable examples.
(b) Explain about graphs & graph representations.
5. Define class. Write a program to find the sum of 2 Time Objects using class "Time".
6. Define constructors? Discuss the different types of constructors available in C++ with suitable examples.
7. What are Linked Lists? Write a program to implement single linked list, with all operations.
8. Write a program to define a class "MATRIX", include the operator overloading functions for operators '+', '*', '>>' & '<<' to add, multiply, read and display the matrices.
9. Discuss different types of Inheritance in C++ with examples for each.
10. Write short notes on templates. With an example explain about the function template.

CDE-106 – BUSINESS INFORMATION SYSTEMS – 1

1. Explain briefly about COBOL coding rules. write all divisions and their section in chronological order and
2. explain their usage in writing a program.
3. Explain level numbers. What is importance of 66, 77, 88 special level numbers with suitable examples.
4. Differentiate sequential file operations with indexed files with entries of environment and data division.
5. Write about data processing functions.
6. Discuss redefines and renames clause of COBOL.
7. Generate flow chart to solve problem generating multiplication table
8. Write organizational structure.
9. What is information system and explain the role of IS at various levels in MIS.
10. Explain the application of tactical accounting and financial information system.

CDE-106 – BUSINESS INFORMATION SYSTEMS – 2.

1. write about sort utility of Cobol with suitable example of a program
2. explain various threats of information system and its remedy
3. explain characteristics of ESS.
4. Explain DSS in MIS
5. Explain steps involved in SDLC
6. Write complete program in COBOL to create a sequential file to store data about a student.
7. Explain report writer feature with all entries.
8. Write characteristics of magnetic tapes.
9. Write the use OCCURS CLAUSE in COBOL.

**Note: Last date for submission of MCA I, II & III assignments :
30-05-2014**