[4866] - 101

M.C.A (Commerce Faculty) (Semester - I)
102 : SYSTEMS ORGANISATION AND MANAGEMENT
(2008 Pattern)

Time : 3 Hours]   *[Max. Marks : 80*

Instructions to the candidates:
   1)   All questions are compulsory.
   2)   Figures to the right indicate full marks.

Q1) Explain the following terms : (any four)   **[16]**

   a)   Planning

   b)   Span of control

   c)   Job enrichment

   d)   Technical Approach

   e)   Marketing Policies

   f)   E-Commerce

Q2) Answer the following : (any four)   **[16]**

   a)   What is Directing?

   b)   State and explain the principles of Organisation.

   c)   What is Motivational theories?

   d)   Explain various level of an organization.

   e)   State the use of Information system in Production and Operation
        Management.

   f)   Explain the role of Intranet in today's dynamic business.

Q3) Answer the following : (any four)   **[16]**

   a)   Give the importance of Management.

   b)   What do you mean by Formal and Informal Organization?

   c)   Explain the Software and Hardware Requirement for developing an
        efficient Information system.

   d)   Discuss the need of Information system in a Large Scale Organisation.

   e)   Explain concept of Supply Chain Management.

Q4) Answer the following : (any four)   **[16]**

    a)   Discuss the need of forecasting in planning.

    b)   Explain the principles of Organisation.

    c)   State and explain the basis control processes.

    d)   Explain the functions of Top Level Management.

    e)   What is the information required by a personnel manager about system?

Q5) Write short notes (any four):   **[16]**

    a)   SWOT analysis

    b)   Centralisation of Authority

    c)   Essentials of Good control system

    d)   Expert system

    e)   Decision Support Systems (DSS)

    f)   Enterprise Resource Planning (ERP)

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[4866] - 102

M.C.A. (Commerce Faculty) (Semester - I)
103 : PROGRAMMING FUNDAMENTALS
(C Programming)
(2008 Pattern)

Time : 3 Hours]   *[Max. Marks : 80*
Instructions to the candidates:
   1)   All questions are compulsory.
   2)   All questions carry equal marks.
   3)   Assume suitable data, if necessary.

Q1) Attempt any four: **[4 × 4 = 16]**

   a)   Write a short note on Preprocessor directives.

   b)   Explain memory representation of two dimensional arrays.

   c)   Differentiate between union and structure.

   d)   Define macro. Explain different macro substitution directives in brief.

   e)   List various types of operators and explain any one type in detail

Q2) Attempt any four: **[4 × 4 = 16]**

   a)   Write a 'C' program to calculate sum of first and last digit of a given number.

   b)   Write a 'C' program to convert given character into uppercase and vice versa.

   c)   Write a 'C' program to calculate the sum of first 'n' even numbers.

   d)   Write a 'C' program to find multiplication of two numbers without using '*' operator.

   e)   Write a 'C' program to accept string and count number of vowels from it.

Q3) Attempt any four: **[4 × 4 = 16]**

   a)   Differentiate between while and do-while statements.

   b)   Write a short note on : Dynamic Memory Allocation.

c) Explain nested structures in detail.

d) Write a short note on: Storage Classes.

e) Explain following standard library functions with suitable example:

    i)   strlen( )   ii)   strcpy( )

    iii)   strcat()   iv)   strcmp()

Q4) Trace the output (any four):   **[4 × 4 = 16]**

a)
```c
#include<stdio.h>
int main()
{
    printf(5+"Good Morning\n");
    return 0;
}
```

b)
```c
#include<stdio.h>
int rnain()
{
    printf("India", "China\n");
    return 0;
}
```

c)
```c
#include<stdio.h>
int main()
{
    char *names[] = { "Suresh", "Siva", "Sona", "Baiju", "Ritu"};
    int i;
    char *t;
    t = names[3];
    names[3] = names[4];
    names[4] = t;
    for(i=0; i<=4; i++)
    printf("%s,", names[i]);
    return 0;
}
```

d)
```c
#include<stdio .h>
int main()
{
static char s[25] = "The cocaine man";
int i=0;
char ch;
    ch = s[++i];
    printf("%c", ch);
    ch = s[i++];
    printf("%c", ch);
    ch = i++[s];
    printf("%c", ch);
    ch = ++i[s];
    printf("%c", ch);
    return 0;
}
```

e)
```c
#include<stdio.h>
int main()
{
    char strl[] = "Hello";
    char str2[10];
    char *t, * S;
    s = str 1;
    t = str2;
    while(*t=*s)
    *t++ = * s++;
    printf("%s\n", str2);
    return 0;
}
```

Q5) Attempt any four: **[4 × 4 = 16]**

    a)   Write a 'C' program to calculate sum of the elements of lower triangle of m × n matrix using dynamic memory allocation.

    b)   Write a 'C' program using command line arguments to search for a word in a file.

    c)   Write a 'C' program to create a structure employee having fields empid, ename, salary. Perform the operations like Accept the details of n employees from user, Display all, and search by empid.

    d)   Write a 'C' program to accept 10 numbers from user, store these numbers in an array and find all prime numbers from that array.

    e)   Write a 'C' program that compares two files and returns 0, if they are equal and 1 if not,

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M.C.A. (Part - I)(Commerce Faculty) (Semester - I)
STATISTICAL AND NUMERICAL METHODS
(2008 Pattern)

Time : 3 Hours]   *[Max. Marks : 80*
Instructions to the candidates:
   1)   *All questions are compulsory.*
   2)   *Figures to the right indicates full marks.*
   3)   *Use of statistical table and calculator is allowed.*
   4)   *Symbols have their usual meanings.*

Q1) Attempt any three of the following :   **[15]**

   a)   Find the root of the equation $x^4 + x^2 - 80 = 0$ between [2.8,3] using Bi-section method. Perform three iterations.

   b)   Use Newton - Raphson Method to find the root of the equation $x^3 - 5x + 1 = 0$

   c)   Show that $E(f(x)) = (1 + \Delta)$ fen)

   d)   Explain the procedure to find the root of the equation by Bi-section Method.

   e)   Define different difference operators. Also state relation between them.

Q2) Attempt any three of the following :   **[15]**

   a)   Find the value of Y at X = 1.45 given that

X	1	1.2	1.4	1.6	1.8	2
Y	0	– 0.112	– 0.016	0.336	0.992	2

   b)   Explain trapezoidal Rule and $\left(\frac{3}{8}\right)^{th}$ rule for Numerical Integration.

   c)   From the following table find the first and second order derivative at X = 1.5

X	0	0.5	1	1.5	2
Y	0.3989	0.3521	0.2420	0.1295	0.0540

   d)   Solve $\dfrac{dy}{dx} = x + y,$ given y(o) = 1, obtain the values of y(0.1) by picards methods.

e) Find the missing figures in the following data :

X	1	2	3	4	5	6	7	8
f(x)	1	8	27	?	125	?	343	512

Q3) Attempt any three of the following : **[15]**

a) Explain meaning of "Time series" With illustrations. Also discuss four components of Time series.

b) State different properties of Normal distribution.

c) Explain large sample test.

d) Let $X \to N$ $(3, 2^2)$, Find p[X < 5] and p(2< x < 8)

e) The following 2 X 2 contingency table.

	Smoker	Non-Smoker
Literate	83	57
Illiterate	45	68

Test wheather there is any relation between literacy and the smoking at 5% Level of significance.

Q4) Attempt any three of the following : **[15]**

a) Explain concept of Antoregressive model of first order.

b) A sample of 225 bricks has mean weight 2.12kg with standard deriation of 0.56kg. Test the hypothesis that the sample from a population with mean weight 2kg at 5% Level of significance.

c) Fit a straight Line for the following data :

year	2001	2002	2003	2004	2005	2006	2007
Sale	160	180	184	166	188	198	184

d) Estimate the value of $\int_{2}^{6} \frac{dx}{1+x}$ by using simpsons (y3)rd rule (take h = 1)

e) Suppose the sweets are sold in packages of fixed weight of the contents. The producer of the packages is intrested in testing that the weight of contents in a package is 1kg hence a random sample of 12 packages is drawn and their averageweight is found to be 0.9883 and the sample standard deviation is to be 0.02. Can he conclude about average weight of contents in the packets?

(Given t_{11}, 0.05 = 2.201)

Q5) Attempt any two of the following [20]

a) Given $\frac{dy}{dx}=x+y$ if x = 0, then y = 1. find y (0.1) and y(0.2) correct up to four decimal places using Runge - kutta second order and fourth order formula

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

Using Modified Ealers method find y(0.1), y(0.2) given that $\frac{dy}{dx}=x^2+y,$ y(0) = 1 determine y(0,2).

b) An IQ test was administered to 5 persons before and after they were trained. The results are given below.

Candidates	1	2	3	4	5
IQ before training	110	120	123	132	125
IQ after training	120	118	125	136	121

Test whether there is change in IQ before and after training programming (Use 5% Los)

c) Find 4-yearly centred moving averages for the following data :

year	2000	2001	2002	2003	2004	2005	2006
Sale	68	62	61	63	65	58	66

Year	2007	2008	2009	2010	2011
Sale	61	68	63	63	67

Also draw the original and average trend on the same graph paper.

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[4866] - 104

M.C.A. (Commerce Faculty) (Semester - I)
OPERATING SYSTEM

Time : 3 Hours]   *[Max. Marks : 80*

Instructions to the candidates:
   1)   *All questions are compulsory.*
   2)   *Neat diagrams must be drawn whenever neccessary.*

Q1) Attempt any four of the following.   **[4 × 4 = 16]**

   a)   What is Recovery from Deadlock? Explain strategies of it.

   b)   What are the functions performed by Device controller?

   c)   What is Free Space Management? Explain four methods of free space management.

   d)   Explain Time sharing system in detail.

   e)   Explain paging with diagram.

Q2) Attempt any four of the following.   **[4 × 4 = 16]**

   a)   What is process? List different states of process.

   b)   List & Explain Attributes of file.

   c)   Explain virtual memory in detail.

   d)   What are the sequence of actions taken in response to a page fault.

   e)   What is system program? List the components of system program. Explain any one in detail.

Q3) Attempt any four of the following.   **[4 × 4 = 16]**

   a)   Explain in brief "Tree structured Directory Method of file access.

   b)   Explain storage structure in detail.

   c)   Describe the Bounded Buffer problem which is a classic problem of synchronization. Show how semaphores could be used to solve the problem.

   d)   Define critical section. Explain two methods for solution of critical section problem.

e) Consider the following set of processes with the length of CPU Burst time given in milliseconds.

Process	Burst time	Arrival time
P_1	5	1
P_2	3	0
P_3	2	2
P_4	4	3
P_5	8	2

Illustrate the execution of these process using FCFS and pre - emptive SJF CPU scheduling algorithms. Calculate Average Turn around time.

Q4) Attempt any four of the following. **[4 × 4 = 16]**

a) Explain terms logical and physical address. How logical address is converted into physical address.

b) Explain PC Bus structure with diagram.

c) What is swapping? Explain swap in and swap out process.

d) Explain the following term.

   i)   Waiting time   ii)   Interrupt

   iii) Starvation   iv)   Page table

e) Consider the following page reference string :

   1, 2, 3, 4, 5, 3, 4, 1, 6, 7, 8, 7.

   How many page fault will occur for the following page replacement algorithm? Assume 3 frames.

   i)   optimal replacement   ii)   LRU replacement

Q5) Attempt any four of the following. **[4 × 4 = 16]**

a) Explain Linked Allocation Method with its advantages and disadvantages.

b) "Page size is always power of two" Comment & Justify.

c) Explain Locality Model.

d) 'Round-Robin' algorithm is non-pre-emptive comment & Justify.

e) Consider the following snapshot of system. A system has 5 processes through P_0 to P_4 & 4 resources type through A, B, C, D.

Allocation				
	A	B	C	D
P_0	0	0	1	2
P_1	1	1	0	0
P_2	1	3	5	4
P_3	0	6	3	2
P_4	1	0	1	4

Max				
	A	B	C	D
P_0	0	0	1	2
P_1	1	7	5	0
P_2	2	3	5	6
P_3	0	6	5	2
P_4	1	6	5	6

Available			
A	B	C	D
1	4	2	0

Answer the following Questions using Banker's algorithm.

i) What is the content of matrix need?

ii) If the request from process P_1 arrives for 0, 4, 2, 0 can it be granted immediately?

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M.C.A. (Commerce Faculty) (Semester - I)
106 : SOFTWARE ENGINEERING

Time : 3 Hours] *[Max. Marks : 80*

Instructions to the candidates:
1) *All questions are compulsory.*
2) *Figures to the right indicate full marks.*
3) *Draw diagrams wherever necessary.*

Q1) Solve the following case study

"Shree Ball pens" is a manufacturing company of various varieties of ball pens. The company has decided to computerize their purchase order system. Following procedure is followed in the company.

After receiving the purchase requisition from store department, enquiries are made to various supliers. The supliers send quotations to the company. All quotations are analyzed and final selection of supliers is made and accordingly purchase orders to respective supliers are sent The supliers send invoice along with the raw material. The requirements of the company are as follows :

Maintain suplier, Raw material, quotation, purchase order database.

-   Generate Quotation analysis Report.

-   Generate purchase order, pending order details.

-   Generate various M/s Reports. such as item - wise, supplier wise Reports.

a)   Draw context Level Diagram   **[4]**

b)   Draw ER   **[6]**

c)   Draw First Level DFD   **[6]**

Q2) Answer the following (any four)   **[4 × 4 = 16]**

a)   What are the advantages of decision table over decision tree?

b)   Explain types of system in details.

c)   Explain the factors of maintenance in details.

d)   Differentiate between testing and debugging.

e)   Explain different steps of implemention of system.

Q3) Answer the following (any four)   [4 × 4 = 16]

a) Explain Reverse and Re-Engineering in details.

b) What is system analyst? Explain its role in SDLC.

c) What is normalization? Explain its forms with an example.

d) Differentiate bet^n structured and unstructured interview.

e) Differentiate bet^n logical and physical DFD.

Q4) Answer the following (any four)   [4 × 4 = 16]

a) Differentiate bet^n SDLC and waterfall model.

b) Explain feasibility study in details.

c) What is quality? How you will decide the quality of product?

d) Explain the relationship between analysis and quality of S/W.

e) Differentiate bet^n white Box and Black box testing.

Q5) Write short notes on the following (any four)   [4 × 4 = 16]

a) Parallel implementation of S/W

b) Analysis of E-R Diagram

c) Capability maturity model

d) 4GL

e) Test Data generators

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[4866] - 201

M.C.A. (Commerce) (Semester - II)
202 : RELATIONAL DATABASE MANAGEMENT SYSTEM

Time : 3 Hours]   *[Max. Marks : 80*

Instructions to the candidates:
1) *All questions are compulsory.*
2) *All questions carry equal marks.*
3) *Figures to the right indicate full marks.*

Q1) Attempt all   **[8 × 2 = 16]**

   a) What is data model? State its different categories.

   b) Define :

      i) Relation

      ii) Attribute

   c) What is syntax of grant command?

   d) What is difference bet^n Single valued and multivalued attributes?

   e) What is precedence graph?

   f) What is deadlock?

   g) What is checkpoint?

   h) What is conflict serializability?

Q2) Attempt (any four)   **[4 × 4 = 16]**

   a) Which are different users of DBMS?

   b) Explain following operations with example.

      i) Division

      ii) Union

   c) What is Referential Integrity? Explain with example in detail.

   d) Which are Armstrong's Axioms?

   e) Explain specialization with example.

Q3) Attempt any four   [4 × 4 = 16]

    a)   What is concurrency? Explain concurrent execution of transactions with example.

    b)   Write a note on Time-stamp ordering protocol.

    c)   What is defered database? Explain in detail.

    d)   Explain different types of storage structures.

    e)   What is database recovery? which are fields of log records.

Q4) Attempt the following.   [10 + 6 = 16]

    a)   Draw the ERD for the following scenario Identify Entities & Relationships.   [1 × 10 = 10]

        Now a days there are many multiplex theaters opened in Pune city. These multiplex theaters can show 3 to 6 movies at a time. Theater self decide which movie has to be shown to people for longer times. Movie is of 2 types: universal and adults. Adult's movie cannot allow to age below 18 persons.

        Many theaters have AC and doubly digital sound quality system. The ticket of movie is along with taxes or tax-free.

    b)   Attempt all   [2 × 3 = 6]

        i)   What is Authorization?

        ii) What is binary relationship? Explain with example.

Q5) Attempt the following.   [10 + 6 = 16]

    a)   Consider the following schema   [5 × 2 = 10]

        Company (Cid, Cname, Cproduct, state)

        Branch (bno, city, cid)

        Company and Branch are related with one to many relationship.

        Solve the following query using SQL.

        i)   List the product names of company 'Micro tech'

        ii) Count number of branches of company 'lenovo'.

        iii) Delete all the companies of 'Maharashtra' state.

Solve the following queries using relational algebra.
  i)   List all the companies of product 'Keyboard'.
  ii) List all the branches along with city of company 'HCL'.

b) Attempt all   [2 × 3 = 6]
  i)   Consider the following non-serial schedule. Is this schedule is
       serializable to serial schedule (T_1, T_2, T_3) using precedence graph.

T_1	T_2	T_3
R(A)		
A = A + 10		
W(A)		
	R(C)	
R(B)		
B = B – 10		
W(B)		
	R(B)	
	B = B + C	
	W(B)	
		R(B)
	R(A)	
	A = A – C	
	W(A)	
		R(C)
		B = B + 50
		W(B)
		C = C + B
		W(C)

  ii) Consider the following 2 transactions

T_1	T_2
R(X)	R(Y)
X = X – 30	Y = Y + 20
W(X)	W(Y)
R(Y)	R(Z)
Y = Y + 100	Z = Z + 50
W(Y)	W(Z)

Give a non-serial schedule that is serializable.

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[4866] - 201   3

M.C.A. Commerce (Semester - II)
COST ACCOUNTING AND COST CONTROL TECHNIQUES

Time : 3 Hours] *[Max. Marks : 80*
Instructions to the candidates:
    1)   *Figures to the right indicate marks.*
    2)   *All questions carry equal marks.*
    3)   *Use of calculator is allowed.*

Q1) a)   What do you understand by the term 'Elements of cost'? Explain in detail with suitable examples. **[8]**

    b)   State Limitations of Financial Accounting. **[8]**

Q2) Write short notes. (any four) **[16]**
    a)   Classification of overheads.
    b)   Cost unit
    c)   Operating costing
    d)   Process Loss.
    e)   Variable cost
    f)   Advantages of Job costing.

Q3) From the following particulars relating to M/S Ambani Bros, Bombay. You are required to prepare cost sheet, for the year ended 31st March 2013. **[16]**

	Rs.
Cost of Direct Material Consumed	2,00,000
Sales	4,00,000
Direct wages	1,00,000
Office Indirect Material	5,000
Direct Expenses	40,000
Postage and Telegrams	2,000
Factory Rent and Insurance	5,000
Chargeable expenses	2,000
Carriage outward	2,500

Interest on loan	2,150
Printing and stationery	500
Factory Indirect Wages	3,000
Selling on cost	4,000
Sales man's salary	4,000
Factory Indirect Material	1,000
Royalties	8,000
General Works overhead	2,000
Bad debts written off	1,000

Calculate the percentage of profit earned to sales.

Q4) Prepare cash Budget for 3 months ; January, February and March from the following particulars. **[16]**

Month	Credit sales Rs.	Purchases Rs.	Wages Rs.
November - 2012	1,00,000	80,000	5,000
December - 2012	90,000	70,000	6,000
January - 2013	1,10,000	1,00,000	4,500
February - 2013	60,000	1,25,000	5,500
March - 2013	80,000	1,30,000	7,000

Additional information :

1) 40% of the credit sales will be realised in the month following the sales and the remaining 60% in the second month following.

2) Creditors will be paid in the month following the purchases.

3) Interest of Rs. 5,000 will have to be paid in the month of February.

4) Income-Tax of Rs. 15,000 will have to be paid in the month of March.

5) Wages are to be paid in the same month.

6) The opening cash Balance as on 1-1-2013 was Rs. 20,000

You are given the following data for the year 2012 of a company.

Particulars	Rs.	%
Variable cost	6,00,000	60
Fixed Cost	3,00,000	30
Net Profit	1,00,000	10
Sales	10,00,000	100

You are required to calculate the following

    i)   P/V ratio

    ii)   Break - Even Point

    iii) Margin of safety

    vi) Sales if profit is Rs. 1,20,000.

Q5) A product passes through three processes A,B and C. 10,000 units were issued to process A in the beginning at a cost of Rs. 10 per unit. Prepare process Accounts assuming that there was no opening or closing stock. The following information is available (working note is part of solution) **[16]**

Particulars	Process A Rs.	Process B Rs.	Process C Rs.
Material (sundry)	10,000	15,000	5,000
Wages	50,000	80,000	65,000
Direct Expenses	15,300	18,100	30,828
Scrap	3%	5%	8%
Value of Scrap per unit	2.50	5.00	8.50
Actual output	9,500 units	9,100 units	8,100 units

OR

The following balances have been extended from the books of Shivam Construction, Borivali on 31st March 2013.

	Rs
Contract price	6,00,000
Plant & Machinery on 1/4/2012	30,000
Material	1,70,600
Labour charges	1,48,750

Engineer's Fees	6,330
Outstanding wages	5,380
Uncertified work	12,000
Overhead expenses	8,240
Material returned to stores	1,600
Material on hand at site	3,700
Plant & Machinery at site on 31/3/2013	22,000
Value of work certified	3,90,000
Cash received	3,51,000

Prepare Contract Account for the year ended 31st March 2013, showing separately the profit that may be taken to the credit of profit and loss A/c.

(Working notes is part of solution)

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M.C.A. (Commerce Faculty) (Semester - II)
204 : ACCOUNTING FOR MANAGEMENT
(2008 Pattern) (Compulsory Paper)

Time : 3 Hours]   *[Max. Marks : 80*

Instructions to the candidates:
 1) *All questions are compulsory.*
 2) *All questions carry equal marks.*

Q1) Define Management Accounting. How does it defer from other branches of accounting?

<center>OR</center>

What is Financial Statement Analysis? Explain the utility of Financial Statement Analysis to various parties interested in business.

Q2) Balance Sheet of NS Co. Ltd. as on 31.03.2013

LIABILITIES	AMOUNT	ASSETS	AMOUNT
Share Capital	20,00,000	Land & Building	12,00,000
Reserves & Surplus	5,80,000	Machinery	15,00,000
Debentures	10,00,000	Investments	80,000
S. Creditors	4,00,000	Stock	8,00,000
Bills Payable	2,00,000	S. Debtors	4,50,000
Unpaid Dividend	20,000	Cash & Bank	1,70,000
	42,00,000		42,00,000

Other Information :

Sales Rs. 40,00,000/-, Gross Profit Rs. 16,00,000/-, Opening Stock Rs. 4,00,000/-

Calculate :

 a) Current Ratio

 b) Liquid Ratio

 c) Inventory Turnover Ratio

 d) Average Collection Period

 e) Proprietary Ratio

What do you mean by budget and budgetary control? State advantages and limitations of budgetary control

Q3) Balance Sheets of Dee Cee Limited

Liabilities	31-03-2012	31-03-2013	Assets	31-03-2012	31-03-2013
Share Capital	10,00,000	11,00,000	Goodwill	2,70,000	2,00,000
General Reserve	3,50,000	3,00,000	Fixed Assets	11,70,000	16,90,000
Profit & Loss A/c	80,000	70,000	Investments	2,00,000	1,50,000
10% Debentures	6,00,000	8,00,000	Stock	4,50,000	3,90,000
S. Creditors	3,10,000	2,90,000	S. Debtors	4,70,000	4,30,000
Provision for Taxation.	2,10,000	2,40,000	Cash and Bank	90,000	60,000
Proposed Dividend	1,00,000	1,20,000			
	26,50,000	29,20,000		26,50,000	29,20,000

The following information is also available.

a) Investments were sold during the year at a loss of 20% on cost.

b) An item of Fixed Assets having cost of Rs. 70,000/-, depreciation provided for Rs. 66,000/-, had to be discarded during the year without any scrap value.

c) The increase in Share Capital was because of issue of bonus shares out of balance of General Reserve.

d) Depreciation provided during the year amounting to Rs. 1,80,000/-

e) Taxes paid during the year amounted to Rs. 2,00,000/-

You are required to prepare Schedule of Changes in Working Capital and a Fund Flow Statement with working noted.

OR

Giving reasons, classify the following into cash flows from-

a) Operating Activities

b) Investing Activities

c) Financing Activities

    i)   Cash sales of goods in trade.

    ii)   Cash payment of salaries and wages to employees.

    iii) Payment of dividend.

    iv) Cash proceeds from issuing shares at premium.

    v)   Cash payment to acquire a fixed asset.

    vi) Repayment of long term loan.

    vii) Payment of income tax.

    viii) Cash advances and loans made to third party.

Q4) B Tell Limited provides following cost data.

TotalSales	Rs. 8,00,000/-
Variable Costs	Rs. 4,00,000
Fixed Costs	Rs.2,00,000
Total Units Sold	2,00,000

Calculate,

a) Contribution per unit

b) P/V Ration

c) BEP - Sales and Units

d) Units to be sold to earn a profit of Rs. 2.80,000/-

e) Profit when sales are Rs. 12,00,000

OR

Indra Limited is currently operating at 50% capacity and produces 10,000 units at a cost of Rs. 200/- per unit, the details of which are as follows-

Raw Material Rs. 100/- per unit.

Wages Rs. 30/- per unit.

Factory Overheads Rs. 30/- per unit (40% Fixed).

Administration Overheads Rs. 20/- per unit (50% Variable).

Selling price Rs. 200/- per unit.

Prepare Flexible Budget and find out profits at 50%, 60% and 80% capacity if,

   a)   At 60% capacity, the Material cost per unit increased by 2% with decrease in selling price at 2%

   b)   At 80% capacity, the Material cost per unit increased by 5% with decrease in selling price at 5%

Q5) Write Short Notes (any two)

   a)   Limitations of Ratio Analysis.
   b)   Scope of Management Accounting.
   c)   Break Even Analysis
   d)   Common Sized Statement

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[4866] - 204

M.C.A. (Commerce Faculty) (Semester - II)
205 : NETWORKING OPERATIONS
(2008 Pattern)

Time : 3 Hours]　　　　　　　　　　　　　　　　　　*[Max. Marks : 80*
Instructions to the candidates:
　　1)　*All questions are compulsory.*
　　2)　*Figures to the right indicate full marks.*

Q1) Answer the following (any four)　　　　　　　　**[4 × 4 = 16]**

　　a)　What is computer network? Write goals of computer network.

　　b)　Explain star and mesh topology.

　　c)　Explain SAP terminology.

　　d)　Explain unguided transmission media.

　　e)　Write note on router.

Q2) Answer the following (any four)　　　　　　　　**[4 × 4 = 16]**

　　a)　Compare synchronous and asynchronous communication types.

　　b)　Write note on protocol hierarchy.

　　c)　Explain propogation methods.

　　d)　Explain passive and active hubs.

　　e)　Write functions of NIC.

Q3) Answer the following (any four)　　　　　　　　**[4 × 4 = 16]**

　　a)　Write note on search engines.

　　b)　Explain network security devices.

　　c)　Explain Bluetooth in details.

　　d)　Write note on connectors of transmission media.

　　e)　Write protocols of computer network.

Q4) Answer the following (any four)   [**4 × 4 = 16**]

    a)   Explain modes of communication.

    b)   Write functions of network layer.

    c)   Write note on scatternet.

    d)   Explain source routing bridges and Transparent bridges.

    e)   Write note on web server.

Q5) Answer the following.   [**2 × 8 = 16**]

    a)   Explain ISO-OSI model in detail.

    b)   Write note on any two

        i)   Infrared

        ii)   IEEE 802.5 frame format

        iii)   Mac sublayer

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[4866] - 205

M.C.A. (Commerce Faculty) (Semester - II)
206 : OBJECT ORIENTED PROGRAMMING

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

1) *All questions are compulsory.*

2) *Figures to the right indicate full marks.*

3) *All questions carry equal marks.*

4) *Assume suitable data if necessary.*

Q1) Attempt any four :

[4 × 4 = 16]

a) Why Java is more secure language than other programming language?

b) "Destructor does not take any argument in C++". Justify (T/F).

c) Describe typical structure of C++ programming.

d) Explain the features of object oriented programming using JAVA.

e) Explain the difference between function overloading and overriding.

Q2) Attempt any four :

[4 × 4 = 16]

a) What is constructor? Explain with example parameterized and overloaded constructor.

b) What is friend function ? What are their implications on information hiding ?

c) Explain how allocation and deallocation of memory is handled using Java.

d) Give difference between Static and Final keyword.

e) Explain inline function with its limitation.

Q3) Attempt any four:

[4 × 4 = 16]

a) Write similarities of Abstract class and interface in java.

b) Write a note on Type casting.

c) Explain the need of scope resolution operator.

d) Explain primitive data types in java.

e) Explain operator overloading with unary operators.

Q4) Attempt any four: **[4 × 4 = 16]**

a) Write a C++ program to accept the item no, name, qty, rate, for five items using array of objects. Calculate amt. and total bill and display the output.

b) Write a program to declare a class book having data members as title and author. Accept this data for five books and display this accepted data.

c) Write a Java program which throws a user defined exception when user inputs the string "Hello".

d) Create a super class Student (rno, name, class) and a sub class Marks (ml, m2, m3). Write a program in java which will calculate total marks and percentage of 3 students.

e) Write a java program which creates an interface IterFl having 2 methods add () and sub( ). Create a class which overloads the given methods for addition and subtraction of two numbers respectively.

Q5) a) Trace output (Consider there is no syntax error in given code) **[2 ×4 = 8]**

i)

```
public class Test
{
static void nPrint(String msg,int n)
{while(n>0){
            System .out.println(msg);
            n--;}
}
public static void main(String a[])
{
            Test t=new Test();
            t.nPrint("A Message",2);
}
}
```

What will be the output, when executed? Explain Why?

ii)
```
#include <iostream.h>
#include <math.h>
main()
{
    cout.precision(3);
    cout << sqrt(4) << "\n";
    cout.precision(2);
    cout << 2.3456 <<"\n";
    cout <<3.50012 <<"\n";
    cout.width(5);
    cout<< 123;
    cout.width(3);
    cout << 45;
}//end of main
```
What value is printed out, when executed? Explain Why?

b) Attempt any two : **[2 × 4 = 8]**

i) Write a program in Java to create an abstract class volume. Derive two classes Cylinder and Cone. Calculate volume of both.

ii) Write a C++ program to calculate simple interest amount. Use default value for rate.

iii) Write a java program which accepts a number and checks whether it is palindrome or not.

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M.C.A. (Commerce Faculty) (Semester - III)
301 : ADVANCED OPERATING SYSTEMS
(2008 Pattern)

Time : 3 Hours]   *[Max. Marks : 80*

Instructions to the candidates:
  1) *All questions are compulsory.*
  2) *All questions carry equal marks.*

Q1) Attempt the following (any four)   **[4 × 4 = 16]**

  a)   Explain preemptive and non-preemptive multitasking.

  b)   Write short note on Hungarian notation.

  c)   Explain Mapping modes in detail.

  d)   List all the Client_area mouse messages, also write which message is most important of all client and non-client area mouse message.

  e)   Explain features of Unix operating System.

Q2) State true or false and justify your answer (any four)   **[4 × 4 = 16]**

  a)   An Invalid rectangle is the area on the screen which is not part of any Window.

  b)   WM_TIMER is a low Priority message.

  c)   Predefined control send WM_NOTIFY message while common controls send WM_COMMAND message to their Parents.

  d)   Functionality of Child Window can be modified.

  e)   WM_PAINT message is generated only when window is resized.

Q3) Answer the following (any eight)   **[8 × 2 = 16]**

  a)   What is Handle?

  b)   Define Caret.

  c)   Enlist Scrollbar messages.

d) Give Syntax of Message Box API?

e) In which circumstances Kernel do Context Switch?

f) Define Pages and Page Table.

g) Enlist typical Interrupt levels.

h) Define GDI.

i) How to execute and create Shell Program?

j) What is Callback function?

Q4) Attempt the following. (any four) [4 × 4 = 16]

a) Create an application that displays a message box asking for confirmation before exiting from the application.

b) Display seven days of week (Sunday .... Saturday) in client area on separate lines.

c) Write shell script to determine entered number is perfect or not.

d) Write a Window's procedure that displays "Best of Luck" in center of client area. Resize the window and accordingly position the string in the new centre of the client area of window.

e) Explain decision control statement of Shell.

Q5) Attempt the following. (any four) [4 × 4 = 16]

a) Write any four Linux/Unix commands.

b) Explain Unix architecture with diagram.

c) What are the cases of reading and writing pipes.

d) Write deadlock scenario for Linux system call and explain it.

e) Explain algorithm for Sleep and Wake-up.

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[4866] - 302

M.C.A. (Commerce) (Semester - III)
303 : ENTERPRISE RESOURCE PLANNING AND MANAGEMENT

Time : 3 Hours]   *[Max. Marks : 80*

Instructions to the candidates:

  1) *Solve any five questions.*
  2) *All questions carry equal marks.*
  3) *Give illustrations, draw diagrams whenever necessary.*

Q1) Explain the term Enterprise. Discuss the role of enterprise.

Q2) What is Consultant? Describe the role of Consultant for ERP.

Q3) What is Data warehousing? Explain its structure.

Q4) Define ERP. Explain the advantages of ERP.

Q5) Write short notes :

  i)   People soft
  ii)   QAD
  iii) SAP R/3 modules
  iv)   Baan company

Q6) What is EIA? Explain two flavours of EIA.

Q7) Explain in detail different phases of BPR. (Business Process Re-Engineering).

Q8) Explain the term EDI. Describe EDI standards and EDI Components in brief.

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[4866] - 303

M.C.A. (Commerce) (Semester - III)
304 : BUSINESS STRATEGIES
(2008 Pattern)

Time : 3 Hours]   *[Max. Marks : 80*

Instructions to the candidates:
    1)   *All questions are compulsory.*
    2)   *Figures to the right indicate full marks.*

Q1) Answer the following questions : (Any Four)   **[16]**
    a)   What do you mean by Business strategies?
    b)   What do you mean by Internal environment Analysis?
    c)   Explain the process of Strategic decision making.
    d)   Define 'Mission'. State the essentials of Mission Statement.
    e)   State the Advantages of strategic planning.
    f)   Explain the need of Personnel strategies.

Q2) Answer the following questions : (Any four)   **[16]**
    a)   State and explain the concept of corporate level strategy.
    b)   State the objectives of production policies.
    c)   "SWOT as a technique of environment analysis" Discuss.
    d)   Describe the issues involved in Mergers.
    e)   Explain the concept of Value chain Analysis.
    f)   What are the criteria on the basis of which evaluation of strategic Alternatives can be done?

Q3) Answer the following questions : (Any four)   **[16]**
    a)   Explain the natural environment of business.
    b)   Explain the concept of competitive advantage.
    c)   Describe the process of strategic control.
    d)   Discuss the role & importance of Marketing strategies.
    e)   What do you mean by Functional Strategies?
    f)   Write a short note on Growth strategy.

Q4) Answer the following questions : (Any two)   **[16]**

     a)   Describe in detail the benefits and limitations of Environmental Analysis.

     b)   What do you mean by strategic choice? Explain the factors influencing Strategic Choice.

     c)   Write a detailed note on the scope and importance of Strategic Management.

Q5) Write short notes : (Any four)   **[16]**

     a)   Political Environment

     b)   Sources of information for environmental scanning

     c)   Principles of good Strategy

     d)   Recruitment policies

     e)   Role of Strategists

     f)   Reasons for failure of strategic implementation

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[4866]-304

M.C.A. (Commerce Faculty) (Semester- III)
305:CYBER LAW AND ETHICS

Time : 3 Hours]   **[Maximum Marks : 80**

Instructions to the candidates:

1)   *All questions are compulsory.*
2)   *Figures to the right indicate full marks.*

Q1) Attempt any four of the following: **[4×4=16]**

a)   What are the key factors of cyber stalking?

b)   Explain legal recognition of electronic records & Digital signature.

c)   What is mathematical Basis of RSA? Explain with example.

d)   List some multifaceted issues of E-commerce.

e)   What are the real problems in the virtual world?

Q2) Attempt any four of the following: **[4×4=16]**

a)   Explain Intellectual property in cyberspace.

b)   Explain logic Bomb in detail.

c)   Explain the section 29 access to computer and data.

d)   Explain different techniques used to identify the parties.

e)   Give brief description about www and email.

Q3) Attempt any four of the following   **[4×4=16]**

a)   What are the series of activities involved in online Harassment?

b)   Explain with example Asymmetric cryptosystem for Authentication.

c)   List the duties of subscriber.

d)   List some Indian scheme of offences and punishment with its section.

e)   Explain with diagram triple DES with 3 keys.

P.T.O.

Q4) Attempt any four of the following [4×4=16]

    a)   Is Hacking a cyber crime? Justify.

    b)   What is Jurisdiction? Explain.

    c)   What are the applications of mirror Image rules?

    d)   Write a note on user datagram protocol attack.

    e)   List the 3 primary ways in which cyber stalking is conducted? Explain any one in detail.

Q5) Attempt any four of the following. [4×4=16]

    a)   Explain communications Act of 1996, section 23.

    b)   Explain Attribution and Aknowledgement of electronic Records.

    c)   What is proprietary algorithm? Explain.

    d)   What is computer virus? Write down the different types of viruses.

    e)   Explain Trojan Harse Programme.

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[4866]-305

M.C.A. (Commerce) (Semester- III)
306:FINANCIAL AND INVESTMENT ANALYSIS

Time : 3 Hours]   *[Maximum Marks : 80*
Instructions to the candidates:
   1)   All questions are compulsory and carry equal marks.

Q1) What is Mutual Fund? List out in brief the RBI guidelines on Mutual Fund.

OR

What do you understand by 'Derivative Trading'? Explain the various categories of derivative trading.

Q2) What is 'Technical Analysis'? Explain the various tools of Technical Analysis.

OR

What is Primary and Secondary market? Explain the important regulations relating to the Primary Market.

Q3) What do you understand by Portfolio Investment Performance? Explain the various components of Portfolio Investment Performance.

OR

What is 'Industry Analysis'? Explain the various factors in Industry Analysis.

Q4) What is MARKOWITZ Model? Explain the assumptions and parameters of Markowitz diversification.

OR

What is 'Company Analysis'? Explain in detail how company analysis is made.

Q5) Write detailed notes on any two of the following:

a) B.S.C.

b) Charting tools

c) Risk adjustment and performance measurement

d) Stock selection and market timing

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[4866]-401

M.C.A. (Commerce Faculty) (Semester- IV)
401: ADVANCED DATABASE MANAGEMENT SYSTEM

Time :3 Hours] *[Maximum Marks : 80*

Instructions to the candidates:
1) *All Questions are compulsory.*
2) *All Questions carry equal marks.*
3) *Figure to the right indicate full marks.*

Q1) Write a note on. (Any four) **[4×4=16]**

a) Multimedia Databases

b) SOAP

c) HITS Algorithm

d) KDD

e) Vertical fragmentation

Q2) Attempt any four **[4×4=16]**

a) What are applications of Spatial Data?

b) What are responsibilities of transaction manager and transaction co-ordinator.

c) Write a note on partitioned Join

d) Differenciate RDBMS vs ORDBMS.

e) Explain R-Trees with example.

Q3) Attempt any four **[4×4=16]**

a) What is Data Mart? What are advantages and disadvantages of Data Mart?

b) Differentiate OLAP vs OTLP.

c) What is use of vector space model?

d) Explain Replication, its advantages and disadvantages.

e) Discuss characteristics of object oriented database.

Q4) Attempt any four [4×4=16]

a) Write a note on Data Warehouse.

b) Define

    i) lexicon

    ii) Term frequency

    iii) Precision

    iv) Re coll.

c) What is XML DTD?

d) Why there is need of parallel database system? Differentiate between shared disk and shared memory architecture.

e) Write a note on single lock manager approach in distributed database system.

Q5) Attempt any four [4×4=16]

a) Define:

    i) Region

    ii) Region Data

    iii) GIS

    iv) Point data

b) Write a note on object

c) What is fragmentation? Discuss it's advantages and disadvantages.

d) Consider the following Relational schema Emp (Eno. Ename. Title)

Poy (Title, Sal)

Let P_1: Sal<50000 & P_2 : Sal >50000

be 2 predicates. Perform Horizontal

fragmentation of pay relation.

e) Consider the following relational schema Account (Ano, Aname, Bname, Balance) Perform verfical fragmntation of account relation accourding to requirements of site A & site B

   i) Site A want information of Ano, Aname, Bname

   ii) Site B want information of Bname & Balance

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[4866]-402

M.C.A. (Com.) (Semester- IV)
402 : DATA CENTRE TECHNOLOGY

Time : 3 Hours]   *[Maximum Marks : 80*

Instructions to the candidates:
 1) *All questions are compulsory.*
 2) *Figures to the right indicate full marks.*
 3) *Give illustrations wherever necessary.*

Q1) Answer the following (Any Four)   **[4×4=16]**

 a) Explain the following key terms

    i) Mean Time Between Failures (MTBF)

    ii) Mean Time To Repair (MTTR)

 b) Explain briefly the following Cluster Components

    i) Local Disk

    ii) Public or Service Network

 c) "In theory, you can get more than enough money for constructing a data center, but in practice, this rarely happens". Comment.

 d) Write a short note on

    i) In-band Monitoring

    ii) Out-band Monitoring

 e) Write a short note on TPC Benchmark.

Q2) Answer the following (Any Four)   **[4×4=16]**

 a) Write a note on Points of Distribution.

 b) Explain briefly the modular cabling design.

 c) Write a short note on LINPACK Benchmark

P.T.O.

d) Explain in brief Symmetric Two-Node Clusters

e) Write a short note on Internet Access Components.

Q3) Answer the following (Any Four) **[4×4=16]**

a) Sony Travels is a full-service travel agency that must keep all its data online. It also provides travel- and vacation-related services to several other agencies. It has recently acquired Castro Services, another long-established travel agency. Sony Travels wants to provide independent travel agents with the ability to use Sony's reservation system remotely for a certain fee.

Study the above data centre case study and give the suitable requirements and solution for the above.

b) State the causes of planned and unplanned Downtime.

c) Explain briefly the following terms

i) UPS

ii) Generators

d) Explain briefly the data centre prerequisites.

e) Differentiate between cold and dry AC System.

Q4) Answer the following (Any Four) **[4×4=16]**

a) Explain in brief the following advantages of Load Balancing:

i) Performance

ii) Cost Saving

b) Explain briefly HVAC systems.

c) What do you understand by ISP Network Infrastructure.

d) Define system administration. State best practices for system administration.

e) What is Cluster? Explain.

Q5) Answer the following (Any Four) [4×4=16]

   a)   Explain briefly the common automation tools.

   b)   What are the various phases of capacity planning for servers.

   c)   What do you understand by network operations centre.

   d)   Explain briefly the best practices that one must follow to ease configuration and Maintenance of network infrastructure.

   e)   Identify the important aspects of system performance.

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[4866]-403

M.C.A. (Commerce Faculty) (Semester- IV)
403 : WEB ENABLING SYSTEM AND BUSINESS APPLICATIONS
(2008 Pattern)

Time : 3 Hours]   *[Maximum Marks : 80*

Instructions to the candidates:
1) *All questions are compulsory.*
2) *Figures to the right indicate full marks.*
3) *All questions carry equal marks.*
4) *Assume suitable data if necessary.*

Q1) Attempt any four: **[4×4=16]**

   a) How many development roles are involved in J2EE application?

   b) Explain following with suitable example

      i) Statement

      ii) PreparedStatement

   c) Can HTML be a web development component? Explain.

   d) Write a note on "need of design pattern"

   e) Explain different e-business components

   f) Explain Client Server Technology.

Q2) Attempt any four   **[4×4=16]**

   a) What APIs are available for developing a J2EE application?

   b) Explain various e-business models used in e-business application design.

   c) Write a note on "Application servers".

   d) Explain any two JDBC drivers.

   e) What is the role of XML in E-business?

Q3) Attempt any four   [4×4=16]

    a)   Does XML have a place on server? Explain

    b)   Explain how session tracking is achieved in JSP?

    c)   Explain how command pattern is used in database connection pool.

    d)   What are the advantages of e-business over traditional business

    e)   Explain J2 EE architecture.

Q4) Attempt any four   [4×4=16]

    a)   "Is J2EE application only a web-based?"Justify.

    b)   Explain how XML is implemented?

    c)   List and explain JDBC Components.

    d)   Explain the importance of templates in web-development.

    e)   Explain use of tag libraries,

Q5) Attempt any four   [4×4=16]

    a)   Write a JDBC Program to display all the student records whose name begins with "A'

    b)   Write HTML page to accept two strings and display the common characters from the string using JSP.

    c)   Write a program using jsp to calculate factorial of a given number.

    d)   Create a XML Document that stores information of Movies.

    e)   Write a program using servlet which accepts the rollno from user and displays the record from database.

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[4866]-404

M.C.A. (Commerce Faculty) (Semester- IV)
405: CLIENT/SERVER TECHNOLOGY

Time : 3 Hours] *[Max.Marks : 80*

Instructions to the candidates:
1) *All questions are compulsory.*
2) *All questions carry equal marks.*
3) *Draw suitable diagram if necessary.*

Q1) Answer the following (Any Four) [4×4=16]

a) Explain the characteristics of clinet/server system.

b) What is pipe? Explain different types of pipe.

c) Define ASP? State how ASP differ from HTML.

d) Write a short note on 3-tier Architecture with example.

e) Explain different types of variables in a Javascript.

Q2) Answer the following (Any Four) [4×4=16]

a) Write a short note on Global. asa file in ASP.

b) Explain Thin client & Thin server with example.

c) Explain onfocus, on Blur, & onchange Event in Javascript.

d) Explain Life cycle of ASP.

e) What is Group ware server? Explain with example.

Q3) Answer the following (Any Four) [4×4=16]

a) Write a Javascript to accept two numbers. Display them in textbores find GCD of given no. s & print in third textbox

b)   Write a prog. Using ASP script to display the following triangle

         1

      2   2

    3   3   3

  4   4   4   4

5   5   5   5   5

c)   Write a Javascript to print perfect number between 1 to 50.

d)   Write a ASP program which accept name on first page and surname on second page. Display the result on third page using session tracking.

e)   Write a Javascript to sort n elements in array.

Q4) Answer the following (Any Four)   **[4×4=16]**

a)   What is Building Block? Explain the different building block with example.

b)   Explain client / server for tiny shop and Department.

c)   What are the Advantages & disadvantanges of LAN & WAN.

d)   Explain History, Navigator, Window & Location object in Javascript.

e)   What is Hub? Explain the types of Hub.

Q5) Answer the following (Any Four)   **[4×4=16]**

a)   How to connect to a database using the connection object?

b)   What is difference between Alert Box, confirm box & prompt box.

c)   Write a short note on RPC.

d)   What is session in ASP? When does a session start and end.

e)   What is connection pooling? Explain with Example.

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[4866]-405

M.C.A. (Commerce Faculty) (Semester- IV)
406: KNOWLEDGE MANAGEMENT FOR BUSINESS
(2008 Pattern)

Time : 3 Hours]   *[Maximum Marks : 80*

Instructions to the candidates:

    1)   *All questions are compulsory.*

    2)   *Figures to the right indicate full marks.*

    3)   *All questions carry equal marks.*

    4)   *Assume suitable data if necessary.*

Q1) Attempt any four   **[4×4=16]**

    a)   List the steps in Knowledge Management implementation.

    b)   Explain Artificial Intelligence.

    c)   Discuss the major task performed by knowledge engineers

    d)   What is a demon? What is its role in frame?

    e)   Define backward chaining and contrast it with forward chaining.

Q2) Attempt any four   **[4×4=16]**

    a)   Explain why it is important to capture and manage knowledge

    b)   List the major benefits of intelligent computer aided instruction.

    c)   Give four reasons why knowledge acquisition is difficult?

    d)   List the major knowledge representation methods

    e)   Give the advantages of case based reasoning.

Q3) Attempt any four   **[4×4=16]**

    a)   Lain Knowledge Management Activities

    b)   List and define the major components of ES.

    c)   Why knowledge acquisition is often considered the most difficult step in knowledge engineering?

d) List two advantages and two limitations of semantic networks.

e) Describe the general process of dealing with uncertainty

Q4) Write short notes any four   **[4×4=16]**

    a) Structure of Expert System.

    b) Inference tree

    c) Role of CKO

    d) Rapid Prototyping

    e) Feasibility Study

Q5) Attempt any two: **[2×8=16]**

    a) Explain different task used to develop k based in phase IV.

    b) Explain AI Development Strategy.

    c) Explain ten different Strategies for Knowledge Management Implementation

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[4866]-501
M.C.A. (Commerce) (Semester- V)
501: CONTENT MANAGEMENT SYSTEM

Time :3 Hours]   *[Maximum Marks : 80*
Instructions to the candidates:
  1) *All questions are compulsory.*
  2) *Draw the diagrams & screenshots wherever necessary.*

Q1) Attempt <u>any four</u> of the following   **[4×4=16]**

  a)   Explain content organization starts with purpose. Also explain which activities it involves.

  b)   Write the types of structure? Explain any one type.

  c)   Explain-cm is distributing Business Value.

  d)   How to gauge complescity by no.of publications.

  e)   What is Administration system? Explain the ways in which it is effective in CMS.

Q2) Attempt <u>any four</u> of the following   **[4×4=16]**

  a)   What is CMS? Explain-CM is collection, Management and Publishing.

  b)   What is publication system? Explain other publications.

  c)   What is difference between Monolythic vs mix-&-match functionality.

  d)   What are the principles of moodles.

  e)   What is content, context and meaning. Explain.

Q3) Attempt <u>any four</u> of the following   **[4×4=16]**

  a)   Explain web-cms.

  b)   Explain 'Authoring' from collection system.

c)   How to gauge the complescity by amount of content.

d)   What is data? Explain-content is not data.

e)   Explain Rendering format.

Q4) Attempt <u>any four</u> of the following   **[4×4=16]**

a)   What is mean by static website? Explain with diagram.

b)   What are publishing templates.

c)   Write any four teaching do's and four teaching don'ts of moodle.

d)   Explain formatting by method.

e)   Content is information plus data-Explain.

Q5) Write the steps for the following in Joomla.(any four)   **[4×4=16]**

a)   Create a website for a computer hardware and Delete an article showing information of floppy disk.

b)   Create a website for car showroom and add meta tag to it.

c)   Create a new user as an editor so that he can create a NEWS article and also Edit extsting news for news paper times of India.

d)   Create a website for books of all subjects such that it shows Navigation to computer books.

e)   Create a website for different hospitals in Pune and Add the information of new hospital to it.

[4866]-502
M.C.A. (Commerce) (Semester- V)
502 : DISTRIBUTED DATABASE SYSTEM

Time : 3 Hours]   *[Maximum Marks : 80*

Instructions to the candidates:
  1) *All questions are compulsory.*
  2) *Figures to the right indicate full marks.*
  3) *Draw the neat diagrams if necessary.*

Q1) Write a note on (any four)   **[4×4=16]**

  a)   Mixed fragmentation.

  b)   2-phase commit protocol.

  c)   Performance tunning of database

  d)   TP - Monitor components

  e)   E-commerce.

Q2) Attempt any four   **[4×4=16]**

  a)   Explain

      i)   global-read protocol

      ii)   local-read protocol

  b)   Explain R-trees

  c)   What is triangulation? Explain with example

  d)   List different types of deadlock detections. Explain any one of them.

  e)   Explain basic time stamp mechanism.

Q3) Attempt any four   [4×4=16]

    a)   What are different alternatives for allocation of catalogs?

    b)   Differentiate top-down and bottom-up approach of design of distributed database.

    c)   What is transaction? What are goals of transaction management?

    d)   What is query optimization? What are objectives of query optimization?

    e)   Define:-

        i)   Join graph

        ii)   Partitioned Join graph

        iii)   Simple Join graph

        iv)   Minterm predicate

Q4) Attempt any four   [4×4=16]

    a)   Explain parametric queries with suitable example.

    b)   What is multimedia data? Which are different formats of multimedia data.

    c)   Define the terms

        i)   Digital certificate

        ii)   Person-in the middle attack

        iii)   Secure electronic transaction

        iv)   Work flow

    d)   How recovery of distributed transactions are achieved

    e)   Write a note on transaction serializability.

Q5) Attempt any four   [4×4=16]

    a)   Consider the following schema

        Machine (Mno, Mname, Mtype, Cost)

        Part (Pno, Pname, Pdesc, Mno)

Divide the part relation using horizontal fragmentation consider the given predicates.

$P_1 : \sigma \, Pno < 4$

$P_2 : \sigma \, Pno \geq 4$ and $\sigma \, Pno \leq 10$

$P_3 : \sigma \, Pno > 10$

Using fragments of part relation do derived Horizontal fragmentation of machine relation.

b) Consider the following schema

Emp (<u>Eno</u>, Ename, City, deptname)

Proj (<u>Pno</u>, Pname, Status)

Emp-Proj (Eno, Pno)

Convert the following query into optimized operator tree .

Select Ename, Pname, Status

from Emp, Proj, Emp-Proj

where Proj.Pno=Emp-Proj. Pno

and Emp. Eno = Emp-Proj. Eno

and City = "Pune"

and status = "Completed"

and deptname = "Computer"

c) Consider the following schema

Doctor (<u>Dno</u>, Dname, City)

Doctor relation is divided into 3 fragments as

Doctor1 = SLcity = "Pune"

Doctor2 = SLcity = "Mumbai"

Doctor3 = SLcity = "Delhi"

Convert the given query into global operator tree and reduced operator tree.

 Select Dno, Dname from Doctor

Where city = "Mumbai"

d) Consider the given scenario where, There are 3 sites in the network. Transactions T_1 & T_2 are executing at site1. Transactions T_3 & T_4 are executing at site2. Transactions T_5 & T_6 are executing at site3. Transaction T_1 is waiting for T_2. Transaction T_3 is waiting for T_4 and Transaction T_5 is waiting for T_6. Draw the local & global wait - for - graph.
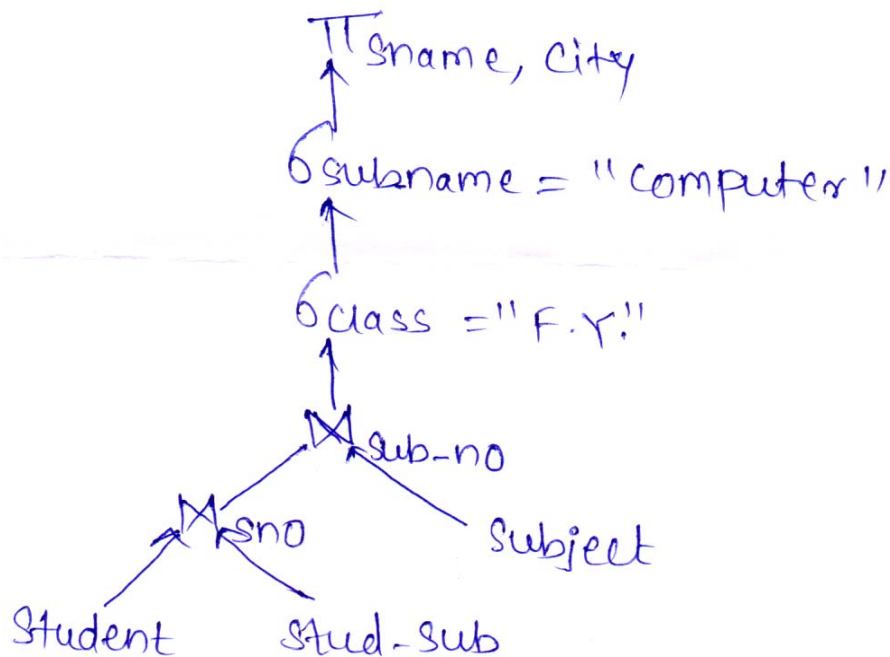
e) Consider the following schema

Student (Sno, Sname, City, Class)

Subject (Sub-no, Sub-name)

Stud-sub (Sno, Sub-no, Marks)

Convert the given operator tree into optimized operator tree.

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[4866]-503

M.C.A. (Commerce Faculty) (Semester- V)
E-COMMERCE PRACTICES AND TECHNOLOGIES
(2008 Pattern)

Time : 3 Hours]   *[Maximum Marks : 80*

Instructions to the candidates:
1) *All questions are compulsory.*
2) *All questions carry equal marks.*

Q1) Attempt any four of the following: **[4×4=16]**

a) What is E-Commerce? Explain need to study E-Commerce.

b) Explain B2C Business model in detail

c) Define Personalization. Give the difference between Personalizaton and customization.

d) Explain EBPP Business Model in detail.

e) Explain security threats in E-Commerce environment.

Q2) Attempt any four of the following: **[4×4=16]**

a) Explain credit card fraud

b) Write notes on

   i) Digital Wallet

   ii) Digital Envelopes

c) Write a note on H/W for an E-Commerce website

d) Explain online auction? Discuss different types of auctions with example

e) Explain tools for Interactivity and active contents.

Q3) Attempt any four of the following: [4×4=16]

   a) Write system analysis and designing of an E-Commerce web site.

   b) Write a note on M-Commerce

   c) Compare traditional and online payment systems.

   d) Write a note on Hacking.

   e) What is secret key cryptography?

Q4) Attempt any four of the following: [4×4=16]

   a) Write difference between spoofing and sniffing.

   b) Write a note on:

     i) Smart Card

     ii) Credit Card

   c) Explain value proposition in Business model.

   d) Explain advantages and disadvantages of aution

   e) Explain digital signature.

Q5) Attempt any two of the following: [2×8=16]

   a) What strategies Pay Pal should pursue in order to maintain its growth over next five years?

   b) How can P2P file- sharing networks make money if they do not sell music?

   c) Why do people older than 21 tend to use legitimate downloading sites where as younger people tend to use illegal sites?

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[4866]-504

M.C.A. (Commerce Faculty) (Semester- V)
504:DATA WAREHOUSING AND DATA MINING

Time :3 Hours]   *[Maximum Marks : 80*
Instructions to the candidates:
1) *All Questions are compulsory.*
2) *Figures to the right indicate full marks.*
3) *Neat diagram must be drawn wherever necessary.*

Q1) Attempt any four of the following.   **[4×4=16]**
- a) Differentiate between OLAP and OLTP.
- b) What is B.I.? Explain its purpose.
- c) Explain snowflake schema with diagram.
- d) What are the social implication of Data Mining.
- e) Write a note on Backup and Recovery in Data warehouse.

Q2) Attempt any four of the following.   **[4×4=16]**
- a) Describe major task of data pre-processing.
- b) Describe different types of server.
- c) Explain Hardware Architecture of Data warehouse.
- d) What are the different data types used in cluster analysis.
- e) What is web usage mining.

Q3) Attempt any two of the following   **[2×8=16]**
- a) Solve the following example of single level Association Rule, with minimum support as 2.

Transaction ID	Items.
T1	C,B,H
T2	B,F,S
T3	A,F,G
T4	C,B,H
T5	B,F,G
T6	B,E,O

- b) Explain KDD Process & Draw a diagram.
- c) Describe Partitioning methods of clustering.

Q4) Attempt <u>any Two</u> of the following.   **[2×8=16]**

   a)   Explain different data mining functionality.
   b)   Explain Outlier Analysis & types of outlier analysis.
   c)   Solve the following example using this data classify the following tuple.
        t=<age: 'youth', incom= 'low' student = 'No'. Credit ratiy = fair>

RID	age	Income	Student	Creditrating	Buys-Computer
1	Youth	High	No	Fair	No
2	Youth	High	No	Excellent	No
3	Middle	High	No	Fair	Yes
4	Senior	Medium	No	Fair	Yes
5	Senior	Low	Yes	Fair	Yes
6	Senior	Low	Yes	Excellent	No
7	Middle	Low	Yes	Excellent	Yes
8	Youth	Medium	No	Fair	No
9	Youth	Low	Yes	Fair	Yes
10	Senior	High	Yes	Fair	Yes
11	Youth	Low	No	Excellent	Yes
12	Middle	Medium	Yes	Fair	No

Q5) Write a note on any four of the following   **[4×4=16]**

   a)   Cost of Data Mart.
   b)   Aggregation of Data.
   c)   Linear Regression
   d)   Prediction
   e)   Multidimensional cube.

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[4866]-505

M.C.A. (Commerce Faculty) (Semester-V)
506 : OPERATIONS RESEARCH

Time :3 Hours] *[Maximum Marks : 80*

Instructions to the candidates:
1) *All questions are compulsory.*
2) *Figures to the right indicates full marks.*
3) *Give illustrations wherever necessary.*
4) *Use of calculator is allowed.*

Q1) Attempt any four of the following: [16]

a) Explain the following terms:
   i) Surplus variables
   ii) Basic solution
   iii) Degenerate Basic Feasible Solution.
   iv) Alternate solution

b) What is general linear programming problem? Write in mathematical form?

c) Show that the following L.P.P. has unbounded solution

$\text{Max.} Z = 3x_1 + x_2 + 5x_3 + 6x_4$

Subject to

$2x_1 + 6x_2 - 5x_3 + 7x_4 \geq -5$

$3x_1 - 4x_2 + 5x_3 + x_4 \leq 10$

$8x_1 - x_2 - 2x_3 + 3x_4 \leq 20$

$x_1, x_2, x_3, x_4 \geq 0$

d) Solve the following L.P.P. by graphical method.

Maximize $Z = 5x_1 + 4x_2$

Subject to the constraints:

$x_1 + x_2 \leq 4$

$3x_1 + 8x_2 \leq 24$

$10x_1 + 7x_2 \leq 35$

$x_1, x_2 \geq 0$

e) Obtain initial basic feasible solution of the following transportation problem by Matrix Minima Method.

To → From ↓	D_1	D_2	D_3	D_4	Supply
O_1	5	2	4	3	22
O_2	4	8	1	6	15
O_3	4	6	7	5	8
Demand	7	12	17	9	

Also find the corresponding transportation cost.

f) Discuss the various steps involved in the application of PERT and CPM.

Q2) Attempt any four of the following: **[16]**

a) Write the standard form of the L.P.P.

Minimize $Z = x_1 + 3x_2 + 2x_3$

Subject to

$$2x_1 - x_2 + 4x_3 \leq 17$$
$$-4x_1 + 5x_2 \qquad \leq 12$$
$$-x_1 + 5x_2 + 8x_3 \geq -25$$
$$x_1, \; x_2, \; x_3 \; \geq 0$$

b) Define
   i)   Network
   ii) Predecessor Activity

c) Write the dual of the following L.P.P.

Maximize $Z = 7x_1 + 3x_2 - x_3$

Subject to

$$3x_1 - 3x_2 + 5x_3 \leq 4$$
$$2x_1 - 6x_2 \qquad \leq 6$$
$$4x_1 - x_3 \qquad \geq 5$$
$$x_1, \; x_2, \; x_3 \; \geq 0$$

d) Find initial basic feasible solution of the following T.P. by North West Corner method

Origin↓ / Destination →	D_1	D_2	D_3	D_4	Capacity
A	3	4	6	3	30
B	3	5	7	10	50
C	2	6	5	7	70
Demand	22	41	44	43	

Aslo find the corresponding transportation cost.

e) Solve the following game by dominance principle

Player B

Player A		I	II	III	IV	V
	A	3	5	4	9	6
	B	5	6	3	7	8
	C	8	7	9	8	7
	D	4	4	8	5	3

f) Solve the following assignment problem for minimization

Machines

Jobs		A	B	C	D	E
	I	1	2	3	0	1
	II	2	1	2	5	7
	III	8	9	10	1	2
	IV	3	4	5	1	2

Q3) Attempt any four of the following : [16]

a) Define the following terms with reference to Transportation problems.
   i) Balanced Transportation Problem
   ii) Feasible Solution
   iii) Optimal Solution
   iv) Dummy Source

b) A company sells two different products A and B. The company makes a profit of Rs. 30 and Rs. 40 per unit on the products A and B respectively. The two products are produced in a common production process and are sold in two different markets. The production process has a capacity of 35,000 man-hours. It takes two hours to produce one unit of A and 3 hours to produce one unit of B. The market has been surveyed and company feels that the maximum number of units of A that can be sold is 12,000 units and maximum of B is 8000 units. Assuming that the products can be sold in any circumstances, formulate the L.P.P.

c) Explain the following terms in PERT/CPM:
   i) Earliest time
   ii) Latest time
   iii) Total activity time
   iv) Critical path.

d) Convert the following transportation problem into linear programming problem

Origin ↓ Destination →	D_1	D_2	Supply
O_1	$\lfloor 7$	$\lfloor 11$	22
O_2	$\lfloor 8$	$\lfloor 12$	23
Demand	17	28	

e) Explain Vogel's approximation method for obtaining an initial basic feasible solution of a transportation problem.

f) Solve the following assignment problem for maximization

	A	B	C	D
I	12	15	17	14
II	20	18	21	20
III	15	16	20	18
IV	19	18	19	16

Q4) Attempt any two of the following :   **[16]**

a)   Solve the following L.P.P. by simplex method.

Max. $Z = 2x_1 + 3x_2 + 7x_3$

Subject to

$$3x_1 + 2x_2 + 4x_3 \leq 100$$
$$x_1 + 4x_2 + 2x_3 \leq 100$$
$$x_1 + x_2 + 3x_3 \leq 100$$
$$x_1, x_2, x_3 \geq 0$$

b)   Discuss the role of sensitivity analysis in linear programming. Under what circumstances is it needed and under what conditions do you think it is not necessary?

c)   For the following transportation problem, obtain the initial basic feasible solution by vogels Approximation method

From ↓ \ To →	D_1	D_2	D_3	D_4	Supply
O_1	23	27	16	18	30
O_2	12	17	20	51	40
O_3	22	28	12	32	53
Demand	22	35	25	41	

Also find the corresponding transportation cost.

Q5) Attempt any two of the following :   **[16]**

a)   i)   Listed in the table are the sequence of activities, together with their predecessors, is given as below:

Activity	Description	Predecessor Activity
A	Open work order	$\overline{A}$
B	Get material for X	A
C	Get material for Y	A
D	Turn X on lathe	B
E	Turn Y on lath	B,C
F	Polish Y	E
G	Assemble X and Y	D,F
H	Pack	G

Draw a network diagram of activities for the project

ii) Define the following terms:
   a) Pure Strategy
   b) Mixed Strategy
   c) Saddle Point
   d) Fair game

b) What is goal programming? Clearly states its assumptions.

c) Solve the following 2×2 game by algebraic method.

Player B

		I	II
Player A	I	2	–1
	II	–1	0

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