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M.C.A. (Commerce Faculty) (Semester - I) Examination - 2012

**INFORMATION COMMUNICATION
TECHNOLOGIES IN BUSINESS**

Time : 3 Hours]

[Max. Marks : 80

Instruction :

All questions are compulsory.

Q.1) Solve any five :

[40]

- (a) Explain Cross Cultural Communication.
- (b) Explain Virtual Private Network.
- (c) Differentiate between LAN and WAN.
- (d) Explain Audio and Video Tools.
- (e) Discuss Formal and Informal Communication with suitable example.
- (f) What are the different Layouts of Business Letter ?

Q.2) Solve any two :

[20]

- (a) What is the difference between Audio and Video Tools and Tele-conferencing ?
- (b) Explain working of Floppy Disc and CD with neat suitable diagram.
- (c) "Internet is Powerful Communication Media." Explain.

Q.3) Short notes : (Any Four)

[20]

- (a) Communication Software
 - (b) E-mail
 - (c) Telnet
 - (d) Mobile Communication
 - (e) Internet
-

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M.C.A. (Commerce Faculty) (Semester - I) Examination - 2012

SYSTEMS ORGANISATION AND MANAGEMENT

Time : 3 Hours]

[Max. Marks : 80

Q.1) Explain the following terms : (Any Four) [16]

- (a) Job Enrichment
- (b) Planning
- (c) Decision-making
- (d) Leadership
- (e) Marketing Policies
- (f) System

Q.2) Answer the following : (Any Four) [16]

- (a) State and explain the Principles of Organisation.
- (b) Explain various Sources of Recruitment.
- (c) State the advantages of Transaction Processing System.
- (d) State the use of Information System in Production and Operation Management.
- (e) Explain the role of Intranet in today's dynamic business.

Q.3) Answer the following : (Any four) [16]

- (a) Explain the Software and Hardware Requirement for developing an efficient Information System.
- (b) Discuss the need of Information System in a Large Scale Organisation.
- (c) What do you mean by Strengths of Business Organisation ?
- (d) Explain Concept of Supply Chain Management.
- (e) Give the importance of Management.

Q.4) Answer the following : (Any four) [16]

- (a) Give the significance of Forecasting in Planning.
- (b) State and explain the features of Staffing.
- (c) Describe in detail “Maslow's Need Hierarchy Theory”.
- (d) Explain the functions of Top Level Management.
- (e) What is MIS ?

Q.5) Write short notes : (Any Four) [16]

- (a) Technical Approach of Information System
- (b) Vision
- (c) Essentials of Good Control System
- (d) Centralisation of Authority
- (e) Expert System
- (f) Enterprise Resource Planning

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M.C.A. (Commerce Faculty) (Semester - I) Examination - 2012

PROGRAMMING FUNDAMENTALS : 'C' PROGRAMMING

Time : 3 Hours]

[Max. Marks : 80

Instructions :

- (1) All questions are compulsory.
- (2) All questions carry equal marks.
- (3) Assume suitable data, if necessary.

Q.1) Attempt any four :

[4x4=16]

- (a) Distinguish between while and do-while loop.
- (b) Explain the Structure of C-program.
- (c) Define following :
 - (i) Shift Operator
 - (ii) Variables
 - (iii) Identifier
 - (iv) Keywords
- (d) Write a short note on Storage Classes.
- (e) Explain Memory Representation of Two-dimensional Array.

Q.2) Attempt any four :

[4x4=16]

- (a) Write a 'C' program to generate following pattern :

```
*
*  *
*  *  *
*  *  *  *
```

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P.T.O.

- (b) Write a 'C' program to convert a given uppercase character in lowercase and vice versa.
- (c) Write a 'C' program to display all even numbers between 1 to 50 by using function.
- (d) Write a 'C' program check whether given string is palindrome or not.
- (e) Write a 'C' program to accept a four digit number from user and make sum of digits of the entered number.

Q.3) Attempt any four : **[4x4=16]**

- (a) Describe following Parameter Passing Techniques :
 - (i) Call by Value
 - (ii) Call by Reference
- (b) Explain different data types in 'C'.
- (c) What is Array ? Explain in detail different types of Arrays.
- (d) Write a short note on Nested Structures.
- (e) Explain following file handling commands :
 - (i) fclose()
 - (ii) fseek()
 - (iii) fputc()
 - (iv) fscanf()

Q.4) Trace the output : (Any Four) **[4x4=16]**

```
(a) #include<stdio.h>
int main( )
{
    char str1[] = "Hello";
    char str2[] = "Hello";
    if(str1 == str2)
        printf("Equal\n");
    else
        printf("Unequal\n");
    return 0;
}
```

```
(b) #include<stdio.h>
#include <string.h>
int main( )
{
    char str1[] = "India\0\BIX\0";
    printf("%d\n", strlen(str));
    return 0;
}
```

```
(c) #define z x
#define y x
#define x y
    int x = 1;
    {
        int y = 2;
        {
            x = y + z;
        }
    }
```

What is x after each statement ?

```
(d) #include<stdio.h>
int main( )
{
    int i = 5, j;
    j = ++ i +++ i +++ i;
    printf("%d %d", i, j);
    return 0;
}
```

```
(e) #include<stdio.h>
int main()
{
    int x = 4, y, z;
    y = --x;
    z = x--;
    printf(“%d %d %d\n”, x, y, z);
    return 0;
}
```

Q.5) Attempt any four :

[4x4=16]

- (a) Write a ‘C’ program to accept m X n matrix and display matrix multiplication.
 - (b) Write a ‘C’ program to create doctor structure having field doc_no, doc_name, hos_name. Pass this entire structure to function and display the structure elements.
 - (c) Write a ‘C’ program to accept 10 numbers from user store these numbers in an array and find largest number from an array using pointer.
 - (d) Write a ‘C’ program to compare two strings without using standard library function using pointers.
 - (e) Write a program to copy the contents of one file into another file.
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M.C.A. (Commerce Faculty) (Semester - I) Examination - 2012
STATISTICAL AND NUMERICAL METHODS

Time : 3 Hours]

[Max. Marks : 80

Instructions :

- (1) *All questions are compulsory.*
- (2) *Figures to the right indicate full marks.*
- (3) *Use of calculator and statistical tables is allowed.*
- (4) *Symbols have their usual meanings.*

Q.1) Attempt any three of the following :

[15]

- (a) Use Newton Raphson's Methods to find roots of the equation $X^3 - 5X + 1 = 0$.
- (b) Using Bisection Methods find roots of the equation $X^5 + 5X + 1 = 0$ between $X = -1$ and $X = 0$
- (c) Evaluate $\sqrt{18}$ using Newton - Raphson Method.
- (d) State and explain Runge Kutta Second Order Formula.
- (e) Define different Difference Operators. Also state relation between them.

Q.2) Attempt any three of the following :

[15]

- (a) State Trapezoidal Rule, Simpson (3/8)th rule.
- (b) Using Simpson's (1/3rd) rule, calculate area bounded by the curve, X axis, $X = 0$ and $X = 4$. The curve is given by the points of the table given below :

X	0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Y	23	19	14	11	12.5	16	19	20	20

- (c) Using Newton's Forward Formula find the value of Y at X = 3, where the values of X and Y are as given below :

X	2	4	6	8	10
Y = f(x)	5	51	193	479	957

- (d) Estimate the missing term in the following table :

x	0	1	2	3	4
f(x)	1	3	9	?	81

- (e) Solve $\frac{dy}{dx} = 1 + y^2$ by Picard's Method using $y(0) = 0$.

Q.3) Attempt **any three** of the following : **[15]**

- Explain different Components of Time Series.
- State different properties of Normal Distribution.
- In a random sample of 800 persons from rural area 200 were illiterate, in a sample of 1000 persons from urban area 350 were illiterate. Test whether proportion of illiterate is same for both population at 5 % level of significance.
- A sample of 256 bricks has mean weight of 2.12 kg with standard deviation of 0.56 kg. Test the hypothesis that the sample comes from a population with mean weight of 2 kg at 5 % level of significance.
- Let $X \rightarrow N(3, 2^2)$, find $P(X > 5)$, $P(2 < X < 6)$.

Q.4) Attempt **any three** of the following : **[15]**

- Explain chi-square test of goodness of fit.
- Explain Concept of Autoregressive Model of First Order.
- The following 2x2 contingency table :

	Eye Colour in Son	
Eye Colour in Father	Not Light	Light
Not Light	23	15
Light	15	47

Test whether eye colour in son is associated with eye colour in father at 5% level of significance.

- (d) Let $X \rightarrow N(1, 2^2)$, $Y \rightarrow N(3, 3^2)$ be independent normal variables. Obtain mean and variance of Z where (i) $Z = X + Y$, (ii) $Z = 3X - 2Y$
- (e) Suppose the sweets are sold in packages of fixed weight of the contents. The producer of the packages is interested in testing that the average weight of contents in a packages is 1 kg hence a random sample of 12 packages is drawn and their average weight is found to be 0.9883. Can he conclude about the average weight of contents in the packets ? (given $t_{11,5\%} = 2.201$)

Q.5) Attempt the following :

[20]

- (a) Fit a straight line trend to the following data :

Year	1998	1999	2000	2001	2002
Production	12	20	28	32	50

Also obtain trend estimate for the year 2007.

OR

- (a) Compute 5 yearly moving average for the following data :

Year	1	2	3	4	5	6	7	8	9	10	11	12
Income	260	270	275	300	310	315	300	290	310	320	325	380

- (b) Construct the forward difference table for the following values of x and y :

X	0	5	10	15	20	25
Y=f(X)	6	10	13	17	23	31

OR

- (b) Find the first and second derivative of the function tabulated below at $X = 93$:

X	60	75	90	105	120
f(X)	28.2	38.2	43.2	40.9	37.7

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M.C.A. (Commerce Faculty) (Semester - I) Examination - 2012

OPERATING SYSTEMS

Time : 3 Hours]

[Max. Marks : 80

Instructions :

- (1) *All questions are compulsory.*
 - (2) *Neat diagrams must be drawn whenever necessary.*
-
-

Q.1) Attempt any four of the following : **[4x4=16]**

- (a) Draw a neat, labelled diagram of Process Control Block and explain it in detail.
- (b) List types of Non-contiguous Memory Allocation. Explain any one in detail.
- (c) Define Operating System. Explain Real Time Systems in detail.
- (d) What are the services supervised by kernel I/O Subsystem ?
- (e) Explain the functions of Multilevel Queue with diagram.

Q.2) Attempt any four of the following : **[4x4=16]**

- (a) What is System Call ? List all the System Call and explain any one in detail.
- (b) What is Semaphore ? What are different types of the Semaphores ? Explain any one in detail.
- (c) List and explain Operations on File.

- (d) What is Deadlock ? What are the necessary and sufficient condition for Deadlock Occur ? Explain in brief.
- (e) Explain 'Second Chance' Page Replacement Algorithm with example.

Q.3) Attempt any four of the following : [4x4=16]

- (a) Explain I/O Structure of Computer System in detail.
- (b) Explain the brief Direct Access Method of File Access.
- (c) Explain in detail Multiprogrammed Batch System.
- (d) Give a brief description for Application I/O Interface.
- (e) Consider the following page reference string :

7, 5, 4, 9, 4, 7, 8, 5, 2, 3, 4, 7, 9, 7, 4

How many page fault will occur for the following page replacement algorithm using 4 frames :

- (i) FIFO Replacement
- (ii) MFU Replacement

Q.4) Attempt any four of the following : [4x4=16]

- (a) Explain Concept of Context Switch in detail with diagram.
- (b) What is Reentrant Code ? How it is useful in paging ?
- (c) "Compaction is possible only if relocation is dynamic." Comment and Justify.
- (d) Write a note on Co-operating Processes.
- (e) Consider the following set of processes with the length of CPU Burst Time given in milliseconds :

Process	Burst Time	Arrival Time	Priority
A	5	0	4
B	4	2	2
C	2	2	6
D	4	4	.3

Here higher number indicates higher priority.

Draw Gantt Chart and illustrate the execution of these process using non-pre-emptive priority CPU Scheduling Algorithms and FCFS CPU Scheduling Algorithm.

Also calculate Average Waiting Time and Turn Around Time.

Q.5) Attempt the following : (Any Four)

[4x4=16]

- (a) What do you mean by Thrashing ?
- (b) Consider the following Snapshot of System. A System has 5 processes P_0 through P_4 and four resources types A, B, C, D :

Allocation					Max				
A	B	C	D		A	B	C	D	
P_0	0	0	1	2	P_0	0	0	1	2
P_1	1	0	0	0	P_1	1	7	5	0
P_2	1	3	5	4	P_2	2	3	5	6
P_3	0	6	3	2	P_3	0	6	5	2
P_4	0	0	1	4	P_4	0	6	5	6

Availabel

A	B	C	D
1	5	2	0

Answer the following questions using Banker's Algorithm :

- (i) What are the content of Matrix Need ?
- (ii) Is the system in a Safe States ?
- (iii) If a request from process P_1 arrives for (0, 4, 2, 0) can request be granted immediately ?
- (c) Explain Multiple Contiguous Variable Partition Allocation Method in detail.
- (d) Explain File Protection Concept in Detail.

(e) Explain the following terms :

- (i) Turnaround Time
 - (ii) Belady's Anomaly
 - (iii) Rollback
 - (iv) Race Condition
-

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M.C.A. (Commerce Faculty) (Semester - I) Examination - 2012

SOFTWARE ENGINEERING

Time : 3 Hours]

[Max. Marks : 80

Instructions :

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

Q.1) Solve the following case study :

“Ramchand College of Commerce” is an undergraduate college. The college receives sufficiently large number of application for admission to F. Y., S. Y. and T. Y. B.Com. classes. The college has decided to computerize its admission programme. The standard admission procedure requires adhering to the norms set by concerned government agencies, the university and the college administration. The procedure also involves disbursing admission forms at a cost, collecting duly completed forms, preparing merit lists and admitting the students as per norms, notifying student, collecting fees, preparing and submitting reports to the concerned authorities.

- (a) Draw Context Level DFD **[04]**
- (b) E. R. Diagram **[06]**
- (c) Draw First Level DFD **[06]**

Q.2) Answer the following : (Any Four) [4x4=16]

- (a) Income Tax Deduction is made in the month of March from the salary using the following rules. Prepare the decision table.
 - (i) If the total income is less than Rs. 22,000 then no tax is deducted.
 - (ii) If total income exceeds Rs. 22,000 but does not exceed Rs. 30,000 then the deduction is 20% of the amount which exceeds Rs, 22,000.
 - (iii) If the total income exceeds Rs. 30,000 but does not exceeds Rs. 50,000 then the deduction is Rs. 1,600 + 30% of the amount.
 - (iv) If the total income exceeds Rs. 50,000 then the tax is Rs. 7,600 + 40% of amount.
- (b) Design Input and output screen for the E-mail ID Form.
- (c) What is Maintenance ? Explain its types in details.
- (d) What is Testing ? What are the objectives of Testing ?
- (e) Explain Capability Maturity Model.

Q.3) Answer the following : (Any Four) [4x4=16]

- (a) What are the general rules for conducting an Interview ?
- (b) Explain Tuning and Optimization in details.
- (c) Explain Test Data Generators in details.
- (d) What is System ? Explain its characteristics in details.
- (e) Write a note on Prototyping Model.

Q.4) Answer the following : (Any Four) [4x4=16]

- (a) Explain SDLC in details.
- (b) What are the Fact Finding Techniques ? Explain any one in details.
- (c) Explain ISO Standard in details.
- (d) Explain Structure Chart with an example.
- (e) Write a note on Spiral Model.

Q.5) Write short notes : (Any Four)

[4x4=16]

- (a) Data Dictionary
 - (b) Structured English
 - (c) 4 GL
 - (d) Categories of System
 - (e) Implementation Strategies
-

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M.C.A. (Commerce Faculty) (Semester - II) Examination - 2012

**BUSINESS PROTOCOL AND CROSS-CULTURAL
COMMUNICATION SKILLS**

Time : 3 Hours]

[Max. Marks : 80

Instructions :

- (1) *All questions are compulsory.*
 - (2) *All questions carry equal marks.*
-
-

Q.1) Define the term 'Communication'. Explain in detail the objectives and functions of Communication. **[16]**

OR

Q.1) What do you mean by Cross-culture Communication ? Explain the need of Cross-culture Communication Studies. **[16]**

Q.2) What is Formal and Informal Communication ? State its advantages and limitations. **[16]**

OR

Q.2) What is Listening ? Explain its importance and principles of Good Listening. **[16]**

Q.3) Define the term 'Etiquette'. Explain the importance, scope and basic principles of Business Etiquettes. **[16]**

OR

Q.3) Explain the importance and role of Business Protocol in Organisation. **[16]**

Q.4) Explain the importance of Body Language in an Organisation. [16]

OR

Q.4) Explain various Intercultural factors which effect in Communicational Aspect. [16]

Q.5) Write short notes : (**Any Two**) [16]

- (a) Process of Communication
 - (b) Report Writing and its procedure
 - (c) International Etiquette
 - (d) Understanding Culture
-

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[4270]-262

M.C.A. (Commerce Faculty) (Semester - II) Examination - 2012

RELATIONAL DATABASE MANAGEMENT SYSTEM

Time : 3 Hours]

[Max. Marks : 80

Instructions :

- (1) *All questions are compulsory.*
- (2) *Figures to the right indicate full marks.*
- (3) *All questions carry equal marks.*

Q.1) Attempt all :

[8x2=16]

- (a) List any two disadvantages of File System.
- (b) What is Unique Constraint ?
- (c) What is Project Operation ?
- (d) What is difference between Simple and Composite Attribute ?
- (e) What is Precedence Graph ?
- (f) Define :
 - (i) Candidate Key
 - (ii) Super Key
- (g) Which are two types of Locks ?
- (h) Which are Fields of Log ?

Q.2) Attempt any four : **[4x4=16]**

- (a) What is Multivalued Dependency ? Explain with example.
- (b) Differentiate between Specialization and Generalization.
- (c) Which are different Users of DBMS ?
- (d) Write a note on Dynamic SQL.
- (e) Write a notes on :
 - (i) Division Operation
 - (ii) Set-Difference Operation

Q.3) Attempt any four : **[4x4=16]**

- (a) What is Transaction ? Explain ACID Properties of Transaction.
- (b) Write a note on Graph Based Protocol.
- (c) Explain different types of Storage Structures.
- (d) What is Deadlock ? How it is detected ?
- (e) How Recovery of Transaction is done ?

Q.4) Attempt the following : **[10+6]**

(a) Attempt the following : **[10]**

A travel agency maintains various taxis. The list of drivers and their license number is also, maintained by them. For every taxis a log books records details about damage / accidents that might have taken place along with the data and the drivers name and other details.

Draw ERD for the above scenario.

Identify Entities and Relationships.

(b) Attempt **any two** : **[2x3=6]**

- (i) What is Data Model ? Explain different Categories of Data Model.
- (ii) What is Functional Dependency ? Explain with example.
- (iii) Define : (1) Entity, (2) Attribute, (3) Relation with example.

Q.5) Attempt the following :

[10+6=16]

(a) Attempt the following :

[10x1=10]

Consider the following schema :

Student(Sno, Sname, City, Class)

Subject(Sub_no, Sub_name)

Stud_Sub(Sno, Sub_no, Marks)

Solve the following queries using SQL :

- (i) Update the marks of students 40 who have scored marks 39.
- (ii) Count the number of students studying in 'T.Y.' having marks between 60 to 70.
- (iii) Display studentwise subject details.

Solve the following queries using Relational Algebra :

- (i) Display student numbers in class 'F.Y.'
- (ii) Display name of subject having subject number 10.

(b) Attempt **any two** :

[3x2=06]

- (i) What is Strong Entity ? Explain with example.
- (ii) Give one non-serializable schedule for the following :

T₁	T₂	T₃
R(A)	R(C)	R(B)
A = A + 10	R(B)	R(C)
W(A)	B = B + C	B = B + 50
R(B)	W(B)	W(B)
B = B - 10	R(A)	C = C + B
W(B)	A = A - C	W(C)
	W(A)	

- (ii) Check that whether the following schedule is serializable or not :

T₁

T₂

R(x)

x = x - 5

R(x)

x = x + 5

W(x)

R(y)

W(x)

y = y + 10

W(y)

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M.C.A. (Commerce Faculty) (Semester - II) Examination - 2012

COST ACCOUNTING AND COST CONTROL TECHNIQUES

Time : 3 Hours]

[Max. Marks : 80

Instructions :

- (1) *All questions carry equal marks.*
- (2) *Figures to the right indicate full marks.*

Q.1) (A) State the limitations of Financial Accounting. Bring out the difference between Cost Accounting and Financial Accounting. [08]

(B) Explain the meaning and features of Process Costing. [08]

Q.2) Write short notes : (Any Four) [16]

- (a) Job Costing
- (b) Classification of Overheads
- (c) Operating Costing
- (d) Elements of Cost
- (e) Cost Center

Q.3) From the following particulars, prepare the : [16]

- (a) Cost Sheet - showing necessary details.

(b) A Statement - showing profit earned.

Raw Material Purchased	Rs. 15,000
Opening Stock of Raw Material	Rs. 4,000
Closing Stock of Raw Material	Rs. 5,000
Direct Labour Cost	Rs. 9,000
Machine Hours Worked	900 hours
Machine Hour Rate	Rs. 5
Carriage Inward	Rs. 1,000
Administrative Overheads	20% on Works Cost
Selling Overheads	50 paise per unit sold
Units produced	17,100
Opening Stock of Finished Goods	2,000 units @ Rs. 1.50 per unit
Units sold	16,000 units
Selling Price per unit	Rs. 4

Q.4) From the following information, prepare Process Account and Normal Loss Account :

[16]

Input of Raw Material	1,000 unit @ Rs. 6 per unit
Direct Material	Rs. 5,200
Direct Wages	Rs. 4,000
Production Overheads	100% of Direct Wages
Actual Output transferred to Process II	950 units
Normal Loss	5%
Value of Scrap per unit	Rs. 4

OR

Q.4) Mr. Shah undertook a Contract No. 500 for Rs. 5,00,000 on 1st July, 2011. On 31st March, 2012 when the accounts were closed, the following information was available :

	Rs.
Materials issued to Site	55,000
Direct Expenses paid	6,000
Site Office Cost	10,000
Depreciation of Plant	15,000
Wages paid	18,000
Direct Expenses Pre-paid at the end	1,000
General Overheads 25% of Wages	—
Cost of Sub-contract	15,000
Wages accrued at the end	2,000
Materials at Site at the end	5,000
Cost of Work uncertified	20,000

Cash received Rs. 2,00,000 being 80% of work certified.

Prepare Contract Account for the above period. [16]

Q.5) Prepare Cash Budget for the period April, 2011 to June, 2011 from the following details : [16]

(1) Estimated Sales, Purchases and Expenses are as follows :

Particulars	January Rs.	February Rs.	March Rs.	April Rs.	May Rs.	June Rs.
Sales	2,00,000	4,00,000	6,00,000	8,00,000	10,00,000	12,00,000
Purchases	1,52,000	3,06,000	4,60,000	6,08,000	7,56,000	9,04,000
Wages	24,000	30,000	36,000	48,000	60,000	72,000
Administ- rative Exp.	30,000	40,000	50,000	60,000	70,000	80,000
Selling and Distribution Ovrheads	30,000	50,000	70,000	90,000	1,10,000	1,00,000

- (2) Cash Sales are 20% of Total Sales.
- (3) 50% of Credit Sales are collected within one month and the balance in two months.
- (4) Cash Purchases are 25% of Total Purchases.
- (5) 50% of Credit Purchases are paid within one month and the balance in two months.
- (6) Commission on Sales - 10%
- (7) Time Lag in Payment of Wages one month.
- (8) Administration Expenses of each month include Depreciation Amounting to Rs. 10,000.
- (9) Cash Balance at the end of March was Rs. 40,000.
- (10) 36,000 Equity Shares were issued on 1st April at Rs. 10 each.

OR

Q.5) From the following information calculate : **[16]**

- (a) Material Cost Variance
- (b) Material Price Variance
- (c) Material Usage Variance
- (d) Labour Rate Variance
- (e) Labour Efficiency Variance

For the unit of product A, standard data is :

Material - 5 kg at Rs. 40 per kg Rs. 200
Labour - 40 Hrs. @ Re. 1.00 per hour Rs. 40
Actual Data - Actual Production 100 units
Material Used - 490 kg. @ Rs. 52 each Rs. 20,580
Labour Spent - 3,960 Hrs. @ 1.10 per hour Rs. 4,356

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Total No. of Questions : 5]

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[4270]-264

M.C.A. (Commerce Faculty) (Semester - II) Examination - 2012

ACCOUNTING FOR MANAGEMENT

Time : 3 Hours]

[Max. Marks : 80

Instructions :

- (1) *All questions are compulsory.*
- (2) *All questions carry equal marks.*
- (3) *Use of calculator is allowed.*

Q.1) Define Concept Management Accounting. Explain the objectives and functions of Management Accounting.

OR

Q.1) What is Financial Statement Analysis ? State various tools of Financial Statement Analysis.

Q.2) Following are Summarised Trading Account and Profit and Loss Account for the year ended 31st March, 2012 and Balance Sheet as on that date of VMS Limited :

**Trading Account and Profit and Loss Account
for the year ended 31st March, 2012**

Particulars	Amt. (Rs.)	Particulars	Amt. (Rs.)
To Opening Stock	90,000	By Sales	9,00,000
To Purchases	5,60,000	By Closing Stock	90,000
To Wages	2,14,000		
To Gross Profit c/d	1,26,000		
Total Rs.	9,90,000	Total Rs.	9,90,000

Particulars	Amt. (Rs.)	Particulars	Amt. (Rs.)
To Salaries	16,000	By Gross Profit b/d	1,26,000
To Electricity	10,000		
To Miscellaneous Expenses	10,000		
To Depreciation	30,000		
To Net Profit	60,000		
Total Rs.	1,26,000	Total Rs.	1,26,000

Balance Sheet

As on 31st March, 2012

Liabilities	Amt. (Rs.)	Assets	Amt. (Rs.)
Equity Share Capital	1,80,000	Fixed Assets 5,40,000	
Reserves and Surplus	1,20,000	Less : Depreciation <u>1,50,000</u>	3,90,000
Secured Loans	2,10,000	Stock	90,000
Creditors	90,000	Debtors	1,05,000
		Cash	1,5000
Total Rs.	6,00,000	Total Rs.	6,00,000

You are required to calculate :

- (a) Current Ratio
- (b) Liquid Ratio
- (c) Debt-Equity Ratio
- (d) Proprietary Ratio
- (e) Gross Profit Ratio
- (f) Net Profit Ratio
- (g) Return on Capital Employed

OR

Q.2) What is Ratio Analysis ? Explain any four types of Ratio Analysis.

Q.3) The Summarised Balance Sheet of University Limited, Pune as on 31st March, 2011 and 31st March, 2012, are as follows :

Liabilities	2011 (Rs.)	2012 (Rs.)	Assets	2011 (Rs.)	2012 (Rs.)
Share Capital	12,00,000	15,00,000	Buildings	8,00,000	7,60,000
14% Debentures	6,00,000	4,00,000	Machinery	5,00,000	7,20,000
Profit and Loss A/c	1,00,000	1,50,000	Investments (Short-Term)	3,00,000	4,50,000
General Reserve	3,00,000	3,50,000	Inventories	4,00,000	4,70,000
Creditors	4,90,000	5,60,000	Debtors	6,70,000	5,30,000
Proposed Dividends	1,20,000	1,80,000	Cash at Bank	2,20,000	3,30,000
Provision for Taxation	1,00,000	1,30,000	Prepaid Expenses	20,000	10,000
Total Rs.	29,10,000	32,70,000	Total Rs.	29,10,000	32,70,000

Additional Information :

- Debentures were redeemed at a premium of 10%.
- Taxes paid during the year amounted to Rs. 40,000.
- A machined which appeared at a written down value of Rs. 80,000 was sold for Rs. 1,30,000 and new machines worth Rs. 3,60,000 were acquired during the year.

Prepare a statement of sources and applications of funds, showing changes in the working capital.

OR

Q.3) What is Cash Flow Statement ? Explain the utilities and limitations of Cash Flow Statement.

Q.4) The following figures relating to the performance of a company of the years I and II are available. Assuming that (i) the ratio of variable costs to sales and (ii) the fixed costs are the same for both the years, ascertain :

- the Profit-Volume Ratio
- the Amount of the Fixed Costs

- (c) the Break-even Point
 (d) the Budgeted Profit for the year III, if the Budgeted Sales for that year are Rs. 1,00,00,000.

Year	Sales	Cost
I	70,00,000	58,00,000
II	90,00,000	66,00,000

OR

Q.4) The Expenses Budgeted for Production of 10,000 units in a factory are furnished below :

Particulars	Amt. Rs. (Per Unit)
Materials	70
Labour	25
Variable Overheads	20
Fixed Overheads (Rs. 1,00,000)	10
Variable Expenses (Direct)	5
Selling Expenses (10% Fixed)	13
Distribution Expenses (20% Fixed)	7
Administrative Expenses (Rs. 50,000)	5
Total	155

Prepare a budget for the production of 8,000 units and 6,000 units. Assume that Administration Expenses are rigid for all levels of production.

Q.5) Write short notes : (Any Two)

- (a) Qualities of Management Accountant
 (b) Analytical Balance Sheet
 (c) Break-even Analysis
 (d) Master Budget

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Total No. of Questions : 5]

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M.C.A. (Commerce Faculty) (Semester - II) Examination - 2012

NETWORKING OPERATIONS

Time : 3 Hours]

[Max. Marks : 80

Q.1) Answer the following : (Any Four) [4x4=16]

- (a) Explain Spanning Tree Bridges.
- (b) What are the different Propagation Methods ?
- (c) Explain Wireless Transmission.
- (d) Write a note on Fibre-optics Cable.
- (e) Explain Peer Entities.

Q.2) Answer the following : (Any Four) [4x4=16]

- (a) What are the different types of Networks ?
- (b) Explain Connection-oriented and Connection-less Services.
- (c) Explain Simplex, Half-duplex and Full-duplex Modes of communications.
- (d) What's Piconet and Scatternet ?
- (e) Explain SAP.

Q.3) Answer the following : (Any Four) [4x4=16]

- (a) Why Standards are required ? What are its types ?
- (b) What are the Design Issues of the Layer ?
- (c) Explain the Frame Format of IP Datagram.
- (d) Write a note on www.
- (e) What's Protocol ? What are the Key Elements of Protocol ?

Q.4) Answer the following : (Any Four)

[4x4=16]

- (a) Explain Serial and Parallel Transmission.
- (b) What is a Topology ? What are its types ?
- (c) Explain the detail Functionality of Data Link Layer of ISO-OSI Model.
- (d) Compare Server-based and Peer-to-peer LANs.
- (e) Explain Concept of Intranet and Extranet.

Q.5) Answer the following :

[8x2=16]

- (a) Define :
 - (i) Peer Entity
 - (ii) Protocol Stack
 - (iii) Layer 'n' Protocol
 - (iv) Network Architecture
- (b) Explain the need of Network Security Devices. Explain Firewall and Proxy-server.

[08]

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Total No. of Questions : 5]

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M.C.A. (Commerce Faculty) (Semester - II) Examination - 2012

OBJECT ORIENTED PROGRAMMING

Time : 3 Hours]

[Max. Marks : 80

Instructions :

- (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.

Q.1) Attempt any four :

[4x4=16]

- (a) What is In-line Function ? Explain with example.
- (b) What is OOP ? Explain its features.
- (c) How Java handles Polymorphism ? Explain.
- (d) "Java is Platform Independent." Justify.
- (e) What is Array ? How Array is used in C++ ?

Q.2) Attempt any four :

[4x4=16]

- (a) Define Typecasting ? How it is used in C++ ?
- (b) What is Interface ? How it is implemented in Java ?
- (c) Define Destructor. How C++ handles Destructor ? Explain with example.
- (d) Explain difference between C and C++.
- (e) Explain the different Data Types supported by Java.

Q.3) Attempt any four :

[4x4=16]

- (a) How Memory Allocated and Deallocated for an object in Java ?
- (b) What is Late Binding and Early Binding ? How it is achieved in Java ?
- (c) What is difference between Parameterized Constructor and Copy Constructor ?
- (d) Explain Operator Overloading with types.
- (e) What is the purpose of following operator ?
 - (i) :
 - (ii) ::

Q.4) Attempt any four :

[4x4=16]

- (a) Write a C++ program to check whether given number is armstrong or not.
- (b) Create a Class Time which contains hours, minutes, seconds. Write a C++ program using Operator Overloading == to check whether given two times are same or not.
- (c) Write a C++ program which calculates maximum of three numbers using functions Overloading.
- (d) Write a Java program to read line of integers. Display each integer and also display sum of all integers.
- (e) Write a Java program to print following pattern :

```
      *
     *  *
    *  *  *
   *  *  *  *
```

Q.5) (A) Trace the output : (Assume there is not syntax error) : **[4x2=08]**

(a) `#include <iostream.h>`

`#include <conio.h>`

`void main()`

`{`

`clrscr();`

`int a = 1, b = 0, c = 2, d = 0;`

`if (! a - || b && c || d)`

`cout << "TRUE";`

`else`

`cout << "FALSE";`

`getch();`

`}`

(b) `Class TryCatch`

`{`

`public static void main(sting args[])`

`{`

`try`

`{`

`double x = 0.0;`

`throw (new exception ("Throw n"));`

`return;`

`}`

`catch (Exception e)`

`{`

`system.out. print\n("Exception caught" +e);`

`return;`

`}`

`finally`

`{`

`system. out.print\n("finally");`

`}`

`}`

`}`

(B) Attempt **any two** :

[4x2=08]

- (a) Write a C++ program to compare any two given strings using In-line Functions.
 - (b) Write a C++ program to calculate the Total Amount due for a customer after 'n' years. The interest rate provided by bank is 10% and is always calculated on the Principal Amount. The customer has the privilege of deciding the number of years for which the amount has to be deposited.
 - (c) Write a Java program to accept two integer values from Command Line Argument and calculate Power of Integer.
-

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Total No. of Questions : 5]

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[4270]-361

M.C.A. (Commerce Faculty) (Semester - III) Examination - 2012

ADVANCED OPERATING SYSTEM

Time : 3 Hours]

[Max. Marks : 80

Instructions :

- (1) *All questions are compulsory.*
 - (2) *All questions carry equal marks.*
-
-

Q.1) Attempt any four of the following :

[4x4=16]

- (a) Explain various methods to get a handle to Device Context.
- (b) List all Client Area Mouse Messages. Also write which Messages are most important of All Client and Non-client Area Mouse Messages ?
- (c) Explain different Scroll Bar Message with notification codes in Win 32 SDK.
- (d) Explain difference between DOS and Windows Program.
- (e) Explain Unix Architecture in detail.

Q.2) State true or false and justify your answer : (Any Four)

[4x4=16]

- (a) Window is Multiuser and Multitasking System.
- (b) Message Processing is the basic concept behind windows ability to run several applications at the same time.
- (c) The 'edit' control provides built in cut, copy, paste functionality.
- (d) SDK provides a comprehensive set of tools for building menus and modifying them as the program runs.
- (e) WM_TIMER is a Low Priority Message.

[4270]-361

1

P.T.O.

Q.3) Answer the following : (Any Eight)

[4x4=16]

- (a) What is Call Back Function ?
- (b) What is Software Development Kit (SDK) ?
- (c) Give any two GDI Primitives.
- (d) Define a View Port.
- (e) What is Input Focus ?
- (f) Explain PeekMessage()
- (g) What is DIB ?
- (h) Give any two advantages of Buffer Cache.
- (i) Define the term signal in unix o.s.
- (j) What are Metafiles ?

Q.4) Answer the following : (Any Four)

[4x4=16]

- (a) Write a Window Procedure for Chessboard.
- (b) Display Static Text on the Client Area and by using key 'Home' and 'End' to move the caret to start of the text and end of the text.
- (c) Write a Window Procedure to Scroll String 'Hello' in Client Area by using Timer Method.
- (d) Write a shell script to determine whether year is leap or not.
- (e) Write a shell script to display list of all files in current directory.

Q.5) Attempt any four of the following :

[4x4=16]

- (a) What is Process Creation ? Explain Algorithm Fork.
- (b) Describe Allocation of Disk Blocks.
- (c) Explain structure of Buffer Header and Buffer Pool.
- (d) What is the difference between Interrupts and Exceptions ?
- (e) What is Shell Programming ? Explain types of Shell.

Seat No.	
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Total No. of Questions : 5]

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[4270]-362

M.C.A. (Commerce Faculty) (Semester - III) Examination - 2012

HARDWARE CONFIGURATION AND SOLUTIONS

Time : 3 Hours]

[Max. Marks : 80

Instructions :

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

Q.1) Answer the following : (Any Four)

[4x4=16]

- (a) Explain the use of Software Diagnostic Packages.
- (b) Explain the use of Logical Link Control and Media Access Control Sublayer.
- (c) What is the use of Store and Forward Switch ?
- (d) Discuss the Structure of EPROM Chip.
- (e) Explain Back Pressure and Choke Packet Mechanism.

Q.2) Answer the following : (Any Four)

[4x4=16]

- (a) Explain the working of Inkjet Printer.
- (b) What is the use of Hardware Loopback as Network Troubleshooting Tool ?
- (c) Write steps to create User Account in Window OS.
- (d) Write a note on Troubleshooting.
- (e) What is the use of Router ? Explain why Static Routing Table is only used in Small Internet ?

[4270]-362

1

P.T.O.

Q.3) Answer the following : (Any Four) [4x4=16]

- (a) Discuss Common Networking Problems.
- (b) Explain working of Optical Mouse.
- (c) Explain the use of STP Cable with its different type.
- (d) What are the advantages of Fast Ethernet over Standard Ethernet ?
- (e) Explain different types of Ports.

Q.4) Answer the following : (Any Four) [4x4=16]

- (a) Explain the types of Crimping Tools.
- (b) Discuss Physical Layer Issues.
- (c) What are the advantages and disadvantages of Active Matrix Display ?
- (d) Explain the types of Connectors.
- (e) Explain Access Method used by Standard Ethernet.

Q.5) Write short notes : (Any Four) [4x4=16]

- (a) CPU
 - (b) Crossover Cable
 - (c) DVD
 - (d) Gateways
 - (e) SDRAM
-

Seat No.	
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Total No. of Questions : 8]

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[4270]-363

M.C.A. (Commerce Faculty) (Semester - III) Examination - 2012

ENTERPRISE RESOURCE PLANNING AND MANAGEMENT

Time : 3 Hours]

[Max. Marks : 80

Instructions :

- (1) Answer any *five* questions.
 - (2) All questions carry equal marks.
 - (3) Neat diagrams must be drawn wherever necessary.
-
-

Q.1) What is Data Warehousing ? Explain in detail the structure and uses of Data Warehouse.

Q.2) What is Enterprise Resource Planning ? Explain the problems in implementation of Enterprise Resource Planning.

Q.3) Write short notes :

- (a) Benefits of ERP
- (b) Supply Change Management
- (c) Future of ERP
- (d) Business Modelling

Q.4) Explain the role of Vendors in ERP.

Q.5) What is EIA ? Explain the Products of EIA.

Q.6) Write short notes :

- (a) Oracle
- (b) SAP
- (C) EDI Components
- (d) EDI Administration

Q.7) Explain in detail the different phases of Business Process Re-engineering (BRP).

Q.8) What is EDI ? Explain the uses, evolution and benefits of EDI.

Seat No.	
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Total No. of Questions : 5]

[Total No. of Printed Pages : 2

[4270]-364

M.C.A. (Commerce Faculty) (Semester - III) Examination - 2012

BUSINESS STRATEGIES

Time : 3 Hours]

[Max. Marks : 80

Instructions :

- (1) *All questions are compulsory.*
 - (2) *All questions carry equal marks.*
 - (3) *Black figures to the right indicate full marks.*
-
-

Q.1) Answer the following : (Any Four) [16]

- (a) What do you mean by Strategic Management ?
- (b) Discuss the role of Competition in Business Environment.
- (c) Explain the Process of Strategy Formulation.
- (d) State and explain any two reasons for Diversification.
- (e) Explain the term 'Environmental Scanning'.

Q.2) Answer the following. (Any Four) [16]

- (a) Explain the Components of Economic Environment.
- (b) Discuss the factors affecting Human Resource Policies.
- (c) Write a note on 'Value Chain Analysis'.
- (d) Give the characteristics of Strategic Decisions.
- (e) Distinguish between Strategic Planning and Tactical Planning.

Q.3) Answer any two of the following : [16]

- (a) What do you mean by Mergers and Acquisitions ? Explain the reasons for Mergers and Acquisitions.
- (b) Discuss various Functional Level Strategies.
- (c) Describe the role of General Manager in Strategic Management.

Q.4) Answer the following : (Any four) [16]

- (a) Distinguish between Short Run and Long Run Objectives.
- (b) Explain the Process of Strategic Control.
- (c) Explain the different Classes of Decisions in an Organisation.
- (d) State the Environmental Barriers affecting Strategic Change.
- (e) Explain Concept of Retrenchment Strategies.

Q.5) Write short notes : (Any Four) [16]

- (a) Pitfalls in Mergers and Acquisitions
 - (b) SWOT Analysis
 - (c) Issues in Strategy Implementation
 - (d) Elements of Marketing
 - (e) Organisational Appraisal
 - (f) Business and Strategy
-

Seat No.	
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Total No. of Questions : 5]

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[4270]-365

M.C.A. (Commerce Faculty) (Semester - III) Examination - 2012

CYBER LAW AND ETHICS

Time : 3 Hours]

[Max. Marks : 80

Instruction :

All questions are compulsory.

Q.1) Attempt any four of the following :

[4x4=16]

- (a) Explain ICMP Attack in brief.
- (b) Give some limitations of Symmetric Crypto System.
- (c) What are key challenges of Cyber Crimes ?
- (d) Give a brief description of Bulletin Board System.
- (e) Write down functions of Controller.

Q.2) Attempt any four of the following :

[4x4=16]

- (a) Explain Concept of Elliptic Curve Digital Signature.
- (b) Explain Concept of Cyber Contract.
- (c) List and explain types of Victims of Stalking.
- (d) Write down mistake in E-commerce.
- (e) Define Insurance. Give its advantages.

Q.3) Attempt **any four** of the following : **[4x4=16]**

- (a) Explain the Section 16 Security Procedure.
- (b) Explain the Section 27 and 28 Power to Delegate and Power to Investigate Contraventions.
- (c) Explain details Skipjack.
- (d) Explain Internal Crime with example.
- (e) Give some preventive measure for not to be Stalked.

Q.4) Attempt **any four** of the following : **[4x4=16]**

- (a) Explain Battle of Forms and list the steps of govern the contract in case of Battle of Forms.
- (b) Give brief description about E-mail and www.
- (c) Explain Dichotomy of Offer and Invitation of Treat, with example.
- (d) Explain Direct and Indirect Harassment.
- (e) Explain DSA Algorithm.

Q.5) Attempt **any four** of the following : **[4x4=16]**

- (a) Explain Virus in details.
- (b) Give the Rules of Renewal of Licence.
- (c) Explain Trojan Horse Programme.
- (d) Explain Communications Act of 1996, Section 23.
- (e) List some multifaceted issues of E-commerce.

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Total No. of Questions : 5]

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[4270]-366

M.C.A. (Commerce Faculty) (Semester - III) Examination - 2012

FINANCIAL AND INVESTMENT ANALYSIS

Time : 3 Hours]

[Max. Marks : 80

Instruction :

All questions are compulsory and carry equal marks.

Q.1) What is Mutual Fund ? Explain the importance of Mutual Fund as an Investment Opportunity for Small Investors in Comparison with Equity Shares and Bonds.

OR

Q.1) Explain in brief the Regulations of Primary Market and Secondary Market.

Q.2) What is 'Technical Analysis' ? Explain various tools of Technical Analysis.

OR

Q.2) What is 'Diversification' ? Explain various methods of Effecting Diversification.

Q.3) What do you understand by Portfolio Investment Performance ? Explain various components of Portfolio Investment Performance.

OR

Q.3) What is 'Company Analysis' ? Explain its importance and limitations in Investments Decisions.

Q.4) What is MARKOWITZ Model ? Explain the assumptions and parameters of Markowitz Diversification.

OR

Q.4) What is 'Industry Analysis' ? Explain various factors in Industry Analysis.

Q.5) Write detailed notes on **any two** of the following :

- (a) O.T.C.E.I.
- (b) Market Indicators
- (c) Risk Adjustment and Performance Measurement

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Total No. of Questions : 5]

[Total No. of Printed Pages : 2

[4270]-461

M.C.A. (Commerce Faculty) (Semester - IV) Examination - 2012

ADVANCED DATABASE MANAGEMENT SYSTEM

Time : 3 Hours]

[Max. Marks : 80

Instructions :

- (1) All questions are compulsory.
- (2) Figures to the right indicate full marks.
- (3) All questions carry equal marks.

Q.1) Write notes : (Any Four)

[4x4=16]

- (a) Range Partitioning Sort
- (b) Extented E-R Model
- (c) Path Expression
- (d) OLTP
- (e) Multimedia Databases

Q.2) Attempt any four :

[4x4=16]

- (a) Define :
 - (i) Recall
 - (ii) Web Search Precision
 - (iii) Posting Files
 - (iv) Authority Page
- (b) What is Parallel Database System ? Discuss issues regarding it.
- (c) Explain Collaborating Server System in detail.
- (d) What is Data Fragmentation ? Give advantages and disadvantages.
- (e) What is Skew ? How it is handled ?

Q.3) Attempt any four : **[4x4=16]**

- (a) Explain Signature File in detail.
- (b) What is Semistructured Data ? How it is represented ?
- (c) What is Data Warehouse ? Explain in detail.
- (d) What is use of Vector Space Model ?
- (e) What is XML ? For which purpose it is used ?

Q.4) Attempt any four : **[4x4=16]**

- (a) What is Majority-based Protocol ? Explain in detail.
- (b) Compare Remote Backup and Replication Interms of Availability.
- (c) Differentiate RDBMS and ORDBMS.
- (d) Write a note on R-tree.
- (e) What is DSS ? Which are components of DSS ?

Q.5) Attempt any four : **[4x4=16]**

- (a) Consider the following schema :
Patient (PNUM, NAME, TREATMENT)
Consider given predicates :
 P_1 : TREATMENT = "Operation"
 P_2 : TREATMENT = "Normal"
 P_3 : TREATMENT = "Intensive"
Divide the given relation using Horizontal Fragmentation.
- (b) Perform a Vertical Fragmentation of the Department relation given below :
Department (Dno, Dname, HOD, Location)
according to following criteria :
 - (i) Site A requires information about Department No, Name
 - (ii) Site B requires information about Department No, HOD and Location
- (c) Which are difficult Paralled Database System Architectures ?
- (d) What are characteristics of Object Oriented Concepts.
- (e) Write a note on Grid Files.

Seat No.	
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Total No. of Questions : 5]

[Total No. of Printed Pages : 2

[4270]-462

M.C.A. (Commerce Faculty) (Semester - IV) Examination - 2012

DATA CENTRE TECHNOLOGIES

Time : 3 Hours]

[Max. Marks : 80

Instructions :

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

Q.1) Solve any four :

[16]

- (a) Explain the following key terms :
 - (i) Mean Time Between Failures (MTBF)
 - (ii) Mean Time To Repair (MTTR)
- (b) "The functional requirement of a Data Centre is to provide a safe and secure place for Servers, Storage and Networking Equipment." Comment.
- (c) Explain in brief Many to One Failover Model.
- (d) What do you understand by Capacity Planning ?
- (e) What do you understand by In-Band and Out-Band Monitoring ?

Q.2 Solve any four :

[16]

- (a) Explain briefly the Commercial Cluster Management Software
- (b) Explain briefly the causes of Downtime.
- (c) Explain briefly any four characteristics of an Outstanding Data Centre Design.
- (d) Explain briefly Physical and Logical Security of Data Centre.
- (e) What is the ISP Network Infrastructure ?

Q.3) Solve any four : [16]

- (a) What is a Benchmark ? Explain in detail.
- (b) Explain the term Internet Access.
- (c) State the objectives of HVAC Systems.
- (d) Explain in brief Symmetric Two-Node Clusters.
- (e) Explain briefly Distribution of Power in a Data Centre.

Q.4) Solve any four : [16]

- (a) Explain briefly the following terms :
 - (i) Generators
 - (ii) Power Conditioning
- (b) Explain the term Points of Distribution.
- (c) Explain briefly Data Centre Prerequisites.
- (d) What do you understand Network Operations Centre ?
- (e) State the Causes of Planned and Unplanned Downtime.

Q.5) Write short notes on the following : (Any Four) [16]

- (a) Load Balancing
 - (b) Shared Disk
 - (c) SPEC Benchmark
 - (d) TPC Benchmark
 - (e) Failover Cluster
-

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M.C.A. (Commerce Faculty) (Semester - IV) Examination - 2012

WEB ENABLING SYSTEMS AND BUSINESS APPLICATIONS

Time : 3 Hours]

[Max. Marks : 80

Instructions :

- (1) All questions are compulsory.*
- (2) Figures to the right indicate full marks.*
- (3) All questions carry equal marks.*
- (4) Consider suitable data if necessary.*

Q.1) Attempt any four :

[4x4=16]

- (a) Discuss fundamental Parts of an E-business Application.
- (b) Explain JZEE Architecture.
- (c) How Database Connection is achieved in Java ?
- (d) Write steps for developing Web-based Application using Servlet.
- (e) What is JSP ? Explain features of JSP.

Q.2) Attempt any four :

[4X4=16]

- (a) What is XML ? How XML is used in Web-based Application ?
- (b) What is Custom Action ?
- (c) Explain Mediator Pattern. How it is used in Security Issues ?
- (d) How XML is supporting data persistence property ?
- (e) What is Bean ? What are the advantages of Bean ?

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P.T.O.

Q.3) Attempt any four : **[4x4=16]**

- (a) What is Design Pattern ? How it is used in E-business ?
- (b) “Can XML is used as a data Storage element” Justify.
- (c) How Session Tracking is achieved in Java using Servlet ?
- (d) Explain current limitations of XML.
- (e) Explain JDBC Architecture.

Q.4) Attempt any four : **[4x4=16]**

- (a) Why Adapters are used for XML in Business System ?
- (b) Explain Command Pattern.
- (c) Write steps for creating a Java Bean Application.
- (d) Explain doGet() and doPost() Method.
- (e) Explain various E-business Component.

Q.5) Attempt any four : **[4x4=16]**

- (a) Create a JSP Page which inserts the current date and time in web page.
- (b) Write a JDBC program to update student whose city is ‘Pune’ update it to ‘Mumbai.’
- (c) Create a XML File that stores information about five actor and five movies.
- (d) Write a program in Java using Servlet which accept user login information (ie UserID, Password) and check whether entered user is valid or not valid.
- (e) Write a program in Java using JSP which accept two integer numbers from user and display the result.

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Total No. of Questions : 5]

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[4270]-464

M.C.A. (Commerce Faculty) (Semester - IV) Examination - 2012

BUSINESS AND PROFESSIONAL SKILLS

Time : 3 Hours]

[Max. Marks : 80

Instruction :

All questions are compulsory.

Q.1) Answer the following : (Any Four) [16]

- (a) Define Strategy. Analyze the definition in short.
- (b) How does the Cultural Factor influence Human Behaviour ?
- (c) Explain Concept of Business Skills.
- (d) What do you mean by Communication ? State the elements of Communication.
- (e) Differentiate between Verbal and Non-verbal Communication.

Q.2) Answer the following : (Any Four) [16]

- (a) What do you mean by 'Sensitivity' ? Give its importance in handling Business Operations.
- (b) State and explain the various issues involved in Culture Building of an Organisation.
- (c) Describe the characteristics of Good Public Speaking.
- (d) State and explain the Elements of Excellence.
- (e) What do you mean by Assessment of an Organisations Culture ?

Q.3) Answer the following : (Any Four) [16]

- (a) What is Business Culture ? Explain Authoritarian Culture with an example.
- (b) Explain the Process of Creativity.
- (c) What do you mean by 'Versatile Manager' ?
- (d) State and explain the factors to be considered while formulating a Strategy.
- (e) What qualities are essential to become a Successful Executive ?

Q.4) Answer the following : (Any Two) [16]

- (a) What is Listening ? Explain the barriers in the Listening Process.
- (b) Discuss the different type of Interview giving its advantages and disadvantages.
- (c) What do you mean by Strategic Planning ? Explain the advantages and disadvantages of Strategic Planning.

Q.5) Write short notes : (Any Four) [16]

- (a) Strategy and Customers
 - (b) Body Language
 - (c) Evaluation of Strategy
 - (d) Business Crisis
 - (e) Strategic Thinking
-

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Total No. of Questions : 5]

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[4270]-465

M.C.A. (Commerce Faculty) (Semester - IV) Examination - 2012

CLIENT / SERVER TECHNOLOGY

Time : 3 Hours]

[Max. Marks : 80

Instructions :

- (1) All questions are compulsory.
- (2) All questions carry equal marks.
- (3) Draw the suitable diagram if necessary.

Q.1) Answer the following : (Any Four)

[4x4=16]

- (a) What do you mean by Integrated Client/Server Tools ?
- (b) Write a short note on Request · QueryString and Request · Form.
- (c) Define Function. How do you define a function with example in JavaScript.
- (d) Explain Transport Stacks Middleware.
- (e) Explain n-tier Architecture with example.

Q.2) Answer the following : (Any Four)

[4x4=16]

- (a) What do you mean by Switches and Gateway ?
- (b) Write a short note on LockType.
- (c) Explain Component Model.
- (d) How does Internet Peer to Peer Work.
- (e) Explain Protocol MatchMaker with example.

Q.3) Answer the following : (Any Four) [4x4=16]

- (a) Write a JavaScript program to check number entered is an Armstrong number or not.
- (b) Write a ASP program to insert the data in Doctor (dno, dname, address) Table. Display the record in the Doctor Table.
- (c) Write a JavaScript program to create a Login Form and validate it.
- (d) Write a program using ASP to display the following output :
1
2 3
4 5 6
7 8 9 10
- (e) Write a JavaScript to Print Factorial of a given number using Recursive Function.

Q.4) Answer the following : (Any Four) [4x4=16]

- (a) Write a short note on Synchronous and Asynchronous Communication.
- (b) Explain the Client/Server for Intergalactic Enterprises.
- (c) Explain Stack Sandwich.
- (d) What is difference between Hub and Router ?
- (e) What is Array ? Explain Array Object Method in ASP.

Q.5) Answer the following : (Any Four) [4x4=16]

- (a) Explain Message Queuing (MSMQ) Technology.
- (b) What is Join () in JavaScript ? Explain with example.
- (c) What is difference between POST and GET Method ?
- (d) Write a short note on Virtual Circuit.
- (e) Explain benefits of LAN and WAN.

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Total No. of Questions : 5]

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[4270]-466

M.C.A. (Commerce Faculty) (Semester - IV) Examination - 2012

KNOWLEDGE MANAGEMENT FOR BUSINESS

Time : 3 Hours]

[Max. Marks : 80

Instructions :

- (1) All questions are compulsory.
- (2) Draw suitable diagrams wherever necessary.

Q.1) Attempt any four of the following : [4x4=16]

- (a) Explain what do you mean by Knowledge Repository ? Describe its basic types.
- (b) Explain Development Activity of Expert System construction.
- (c) Describe the Process of Knowledge Engineering.
- (d) Explain Script as a Knowledge Representation Scheme.
- (e) Describe the Methods of Representing Uncertainty.

Q.2) Attempt any four of the following : [4x4=16]

- (a) List the Requirements for ES Development to be successful.
- (b) List the different skills required by a Knowledge Engineer.
- (c) Explain how does Repertory Grid Analysis Works.
- (d) What is a Production Rule ? Give an example.
- (e) Explain Model-based Reasoning.

Q.3) Write short notes : (Any Four) [4x4=16]

- (a) Organisational Culture
- (b) Protocol Analysis
- (c) Feasibility Study
- (d) Knowledge Acquisition and Internet
- (e) Semantic Network

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P.T.O.

Q.4) Attempt any four of the following : [4x4=16]

- (a) Differentiate between Conventional System and Expert System.
- (b) Explain difference between Rule-based Reasoning and Case-based Reasoning.
- (c) Describe the Manual Methods used to Elicit Knowledge from Experts.
- (d) What is Why Question ? What is a typical computer reply to this type of question in Explanation.
- (e) What is the significance of Problem Definition and need assessment, in project initialisation ?

Q.5) Attempt any two of the following : [8x2=16]

- (a) Explain Forward Chaining with example.
 - (b) Explain Consultation Environment of Expert System.
 - (c) Explain ten different Strategies for Knowledge Management Implementation.
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Total No. of Questions : 5]

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[4270]-561

M.C.A. (Commerce Faculty) (Semester - V) Examination - 2012

CONTENT MANAGEMENT SYSTEM

Time : 3 Hours]

[Max. Marks : 80

Instruction :

- (1) *All questions are compulsory.*
- (2) *Draw the diagrams and screenshots wherever necessary.*

Q.1) Attempt any four of the following :

[4x4=16]

- (a) Explain - Content is not Data.
- (b) How the Workflow System of the Management System affects all three parts of the CMS.
- (c) What are the rules for creating Context ?
- (d) What are the 5 myths about teaching with Moodle ?
- (e) CM is combination of Content - Related Disciplines. Explain.

Q.2) Attempt any four of the following :

[4x4=16]

- (a) What are the steps included in Collection System ? Explain 'Authoring' from it with diagram.
- (b) When you need a CMS ? Explain how to gauge the complexity by the No. of Publications that you intend to create.
- (c) Explain - Content is Information put to use.
- (d) What is Structure ? Explain - Structure is important.
- (e) Explain Dynamic Website with diagram.

Q.3) Attempt **any four** of the following : **[4x4=16]**

- (a) Explain any 4 teaching Do's and Don'ts of Moodle.
- (b) What is CMS ? Which are the limitations of CMS ?
- (c) Explain 'Control and Configuration Files' of the Management System.
- (d) How to gauge the complexity by the amount of contribution ?
- (e) What are the Categories of Formatting ? Explain Formatting by Method.

Q.4) Attempt **any four** of the following : **[4x4=16]**

- (a) What is Web CMS ? Explain with diagram.
- (b) What is Functionality ? What are the three characteristics of Functionality.
- (c) What is mean by Content, Context and Meaning ?
- (d) Explain five principles of Moodle.
- (e) What is Publishing System ? Explain Publishing Services.

Q.5) Write the steps for the following : **(Any Four)** **[4x4=16]**

- (a) Create a Website and add a new article to your website using Joomla.
- (b) Explain Meta Tag with its use and how to add meta tag in the article of Joomla.
- (c) Create a website and edit the prices of product in the article of Joomla.
- (d) How to create a new template in Joomla / cms - Made - simple ?
- (e) How to set Page Permissions in Joomla ?

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Total No. of Questions : 5]

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[4270]-562

M.C.A. (Commerce Faculty) (Semester - V) Examination - 2012

DISTRIBUTED DATABASE SYSTEM

Time : 3 Hours]

[Max. Marks : 80

Instruction :

- (1) All questions are compulsory.
- (2) Figures to the right indicate full marks.
- (3) Draw neat diagrams if necessary.

Q.1) Write notes : (Any Four)

[4x4=16]

- (a) Reference Architecture for Distributed Database
- (b) Horizontal Fragmentation
- (c) Spatial Databases
- (d) Distributed Transactions
- (e) TP-Monitor

Q.2) Attempt any four :

[4x4=16]

- (a) Explain features of Distributed versus Centralized Database.
- (b) Explain Two Phase Commit Protocol in detail.
- (c) What are Distributed Database Access Primitives ?
- (d) What are Performance Benchmarks ?
- (e) Explain architectural aspects of Distributed Transaction.

Q.3) Attempt any four : **[4x4=16]**

- (a) Explain Transaction Workflows.
- (b) Explain types of Data Fragmentation.
- (c) What are objectives of Design of Data Distribution ?
- (d) Explain Query Operator Tree with suitable example.
- (e) Explain Equivalence Transformations for Relational Algebra.

Q.4) Attempt any four : **[4x4=16]**

- (a) Explain Mobile Database.
- (b) Define the terms :
 - (i) Serializability
 - (ii) Time Stamp
 - (iii) Local Wait for Graph
 - (iv) False Deadlocks
- (c) Explain Distribution Transparency.
- (d) Compare Performance of Semi Joins over Natural Joins.
- (e) Explain Optimization of Join Queries.

Q.5) Attempt any four : **[4x4=16]**

- (a) Consider the following schema :

Pay(Title, Sal)

EMP(ENO, Ename, Title)

Devide EMP relation using horrizontal fragmentation using given predicates.

$$P_1 = \text{Sal} > 30,000$$

$$P_2 = \text{Sal} < 30,000$$

Using the fragments explain whether the fragmentation is complete.

(b) Consider the following schema :

EMP(Eno, Ename, Title)

ASG(Eno, Pno, resp, dur)

PROJ(Pno, Pname, loc)

Convert the following query into optimised tree :

Select Ename from EMP, ASG, PROJ

Where EMP · ENO = ASG · ENO and

PROJ · Pno = ASG · Pno and Pname = 'Cad/Cam' and

resp = 'Senior Engineer'

(c) Consider the following schema :

Wholesaler(Wno, Wname)

Product(Pno, Pname)

W-P(Wno, Pno)

Wholesaler relation is divided into 3 fragments using following predicates :

$W_1 = \{Wno \leq 3\}$

$W_2 = \{Wno > 3 \text{ and } Wno \leq 6\}$

$W_3 = \{Wno > 6\}$

Convert the given query into reduced operator tree.

Select pname from Wholesaler, Product, W-P

Where Wholesaler · Wno = W-P · Wno and Product · Pno = W - P · Pno and Wno = 5

(d) Consider transactions t_1 and t_2 are getting executed on site1 and transactions t_3 and t_4 are getting executed at site2.

Transaction t_1 is waiting for t_3

Transaction t_2 is waiting for t_4

Transaction t_3 is waiting for t_4

Draw local and global wait for graph and detect whether any deadlock in the system.

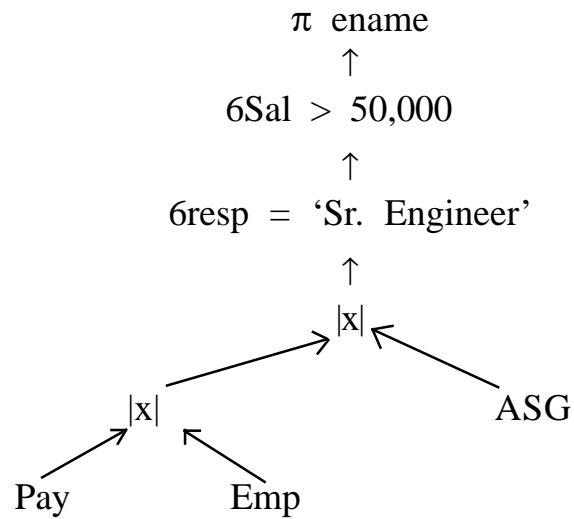
(e) Consider the following schema :

Pay(Title, Sal)

EMP(Eno, Ename, Title)

ASG(Eno, resp, dur)

Convert the following operator tree into optimized operator tree :



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[4270]-563

M.C.A. (Commerce Faculty) (Semester - V) Examination - 2012

E-COMMERCE PRACTICES AND TECHNOLOGIES

Time : 3 Hours]

[Max. Marks : 80

Instructions :

- (1) *All questions are compulsory.*
- (2) *All questions carry equal marks.*

Q.1) Attempt any four of the following :

[4x4=16]

- (a) Define E-commerce and give the difference between E-commerce and E-business.
- (b) Explain B2C Business Model in detail.
- (c) Define Personalization and explain need of Personalization in detail.
- (d) List and briefly explain three of the benefits of Auction Markets.
- (e) How does Spoofing Threaten a Website's Operations ?

Q.2) Attempt any four of the following :

[4x4=16]

- (a) How are the three types of EBPP Systems both alike and different from each other ?
- (b) Explain in detail working of Public Key Encryption. How does the addition of digital signature change the process ?
- (c) Explain Merchant - Server Software Packages.
- (d) Explain types of Auctions with example.
- (e) Explain tools for Interactivity and Active Content.

Q.3) Attempt **any four** of the following : **[4x4=16]**

- (a) Explain Prices of Website Building.
- (b) Write a notes on :
 - (i) P2P E-commerce
 - (ii) M-commerce
- (c) Explain On-line Credit Card Transaction in detail.
- (d) Write a notes on :
 - (i) Ptistring
 - (ii) Cybervandalism
- (e) Explain the ways of Protecting Internet Communications.

Q.4) Attempt **any four** of the following : **[4x4=16]**

- (a) Write a note on Distributed Denial of Service (ddoS).
- (b) Explain Digital Accumulating Balance Payment Systems.
- (c) Write a notes on :
 - (i) E-Distributor
 - (ii) B2B Service Provider
- (d) Explain the characteristics of E-commerce Portals.
- (e) Explain the limitations to Encryption Solutions.

Q.5) Attempt **any two** of the following : **[2x8=16]**

- (a) Discuss Paytaral is the largest Peer-to-peer Payment Service.
- (b) How can P2P file - showing networks make money if they do not sell music ?
- (c) What strategies would you recommend that Paytaral pursue in order to maintain its growth over next five years ?

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Total No. of Questions : 5]

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[4270]-564

M.C.A. (Commerce Faculty) (Semester - V) Examination - 2012

DATA WAREHOUSING AND DATA MINING

Time : 3 Hours]

[Max. Marks : 80

Instructions :

- (1) *All questions are compulsory.*
- (2) *Figures to the right indicate full marks.*
- (3) *Neat diagram must be drawn wherever necessary.*

Q.1) Attempt any four of the following :

[4x4=16]

- (a) What are the characteristics of Data Warehousing ?
- (b) Why do we need of Business Intelligence ?
- (c) Write a note on Data Mart.
- (d) What is Service Level Agreement ? What are the type of Application used in SLA System ?
- (e) Difference between OLAP and DWH.

Q.2) Attempt any four of the following :

[4x4=16]

- (a) Discuss the classification of Data Mining System.
- (b) What is Integration and Transformation of Data Preprocessing ?
- (c) Write a Taxonomy of Web Mining ?
- (d) What is Cluster Analysis ?
- (e) What are the Primitives of Data Mining ?

[4270]-564

1

P.T.O.

Q.3) Attempt **any two** of the following : **[2x8=16]**

- (a) Discuss the Partitioning Method using in Clustering.
- (b) Write down the KDD Process.
- (c) Following is Example of Multilevel Association Rule. Solve the Example with given Min Support.

For Level 1 Min Supp = 3

Level 2 Min Supp = 2

Level 3 Min Supp = 2

Tid	Items
T ₁	{111, 121, 211, 221}
T ₂	{111, 211, 222, 323}
T ₃	{112, 122, 221, 411}
T ₄	{111, 121}
T ₅	{111, 122, 211, 221, 413}

Q.4) Attempt **any two** of the following : **[2x8=16]**

- (a) Solve the Example. In the following table there are 3 classes as Short, Medium and Tall using this data, classify new tuple.

Classify t = <Adam, M, 1.95m>

Data for Height Classification

Name	Gender	Height	Output
Kristina	F	1.6m	Short
Jim	M	2m	Tall
Maggie	F	1.9m	Medium
Martha	F	1.88m	Medium
Stephanie	F	1.7m	Short
Bob	M	1.85m	Medium
Kathy	F	1.6m	Short
Dave	M	1.7m	Short
Worth	M	1.2m	Tall
Steven	M	2.1m	Tall
Debbie	F	1.8m	Medium
Todd	M	1.95m	Medium
Kim	F	1.9m	Medium
Amy	F	1.8m	Medium
Wynette	F	1.75m	Medium

(b) Define Data Warehouse Architecture. Draw suitable diagram for each Data Warehouse Manager.

(c) What do you mean by Generalization in Temporal Mining ?

Q.5) Write short notes : (Any Four)

[4x4=16]

(a) Data Aggregation

(b) Data Mart

(c) Machine Learning

(d) STAR Schema

(e) On-line Data Storage

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[4270]-565

M.C.A. (Commerce Faculty) (Semester - V) Examination - 2012

MULTIMEDIA AND BUSINESS ADMINISTRATION

Time : 3 Hours]

[Max. Marks : 80

Instructions :

- (1) *All questions are compulsory.*
- (2) *Figures to the right indicate full marks.*
- (3) *All questions carry equal marks.*

Q.1) Attempt any four of the following :

[4x4=16]

- (a) Explain CMYK Colour Model.
- (b) Explain different forms of Virtual Reality.
- (c) Discuss how Benefits Costs are controlled and evaluated ?
- (d) Explain Bedaux Plan with proper example.
- (e) What are the Impediments of Effective Training ?

Q.2) Attempt any four of the following :

[4x4=16]

- (a) Explain different strategic choices required to Design Orientation programme.
- (b) Explain Synchronization in MHEG System.
- (c) Explain issues that should be considered while representing the essential characteristics of the Information.
- (d) What are the role of Utility of SGML DTD ?
- (e) What are ICC Profile Files ? What functions do they serve ?

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1

P.T.O.

Q.3) Attempt any four of the following : **[4x4=16]**

- (a) Explain the Carrier Development Initiatives.
- (b) What are the disadvantages of Incentive Payments ?
- (c) Explain Synchronization Reference Model.
- (d) What are technical issues that should be addressed for Designing Interchange Architecture ?
- (e) Explain Colour Management Module.

Q.4) Attempt any four of the following : **[4x4=16]**

- (a) Explain different steps of Training and Development Programme.
- (b) What are the feature of Incentive Payments in Indian Industries ?
- (c) What do you understand by Placement ? What are the problems occur while Placement Process ?
- (d) Explain why benefits and services are provided to employees ?
- (e) Explain various requirements of Pointer Synchronization.

Q.5) Write short notes : (Any Four) **[4x4=16]**

- (a) ISIS Interface Standard
 - (b) VRML
 - (c) On-the-Job Training
 - (d) Presentation Design Knowledge
 - (e) Intra-object Synchronization
-

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Total No. of Questions : 5]

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[4270]-566

M.C.A. (Commerce Faculty) (Semester - V) Examination - 2012

OPERATIONS RESEARCH

Time : 3 Hours]

[Max. Marks : 80

Instructions :

- (1) All questions are compulsory.
- (2) Figures to the right indicate full marks.
- (3) Use of statistical tables and calculator is allowed.
- (5) Symbols have their usual meanings.

Q.1) Attempt any four of the following :

[16]

(a) Solve the following game using Dominance Rule :

Player B

$$\text{Player A} \begin{bmatrix} 0 & -2 & 7 \\ 2 & 5 & 6 \\ 3 & 3 & 8 \end{bmatrix}$$

(b) Explain the following variables with an example :

- (i) Slack Variable
- (ii) Surplus Variable
- (iii) Artificial Variable

(c) Define :

- (i) activity
- (ii) arc
- (iii) node
- (iv) network

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P.T.O.

(d) Solve graphically the following L.P.P. :

Maximize

$$Z = 4X_1 + 8X_2$$

Subject to the constraints :

$$20X_1 + 50X_2 \leq 700$$

$$X_1 + X_2 \leq 20$$

$$X_1, X_2 > 0$$

(e) Why we say that A.P. is a special case T.P. ?

(f) Obtain Initial Basic Feasible Solution using Least Cost Method for following Transportation Problem :

Markets → Sources ↓	D ₁	D ₂	D ₃	D ₄	Supply
O ₁	30	25	40	20	100
O ₂	29	26	35	40	250
O ₃	31	33	37	30	150
Demand	90	160	200	50	500

Also find the Corresponding Transportation Cost.

Q.2) Attempt **any four** of the following :

[16]

(a) Discuss applications of Operations Research in Management.

(b) Explain the following with reference to L.P.P. :

(i) Entering Variable

(ii) Leaving Variable

(iii) Pivot Element

(c) On a stud farm, horses are feed with two types of foods, food X and food Y, food X contains 36 units of nutrient A, 3 units of nutrient B and 20 units of nutrient C. Food Y contains 6, 12 and 10 units of nutrient A, B and C respectively. A horse requires a minimum of 108, 36 and 100 units of nutrients A, B and C respectively to keep itself alert and healthy. Food X cost Rs. 20 per unit while food Y costs Rs. 40 per unit. Formulate the Linear Programming Problem to minimize the total cost for keeping the horses alert and healthy.

- (d) Solve the following minimization assignment problem of assigning 4 programmer to 4 application programs, where estimated times in minutes required by them to develop programs is given :

Programmers → Programs ↓	I	II	III	IV
A	10	12	11	16
B	8	6	5	7
C	11	10	8	12
D	7	7	6	9

- (e) Explain rules for AOA Network Construction.
- (f) Obtain Initial Basic Feasible Solution using North-West Corner Method for following Transportation Problem :

Markets → Factory ↓	D ₁	D ₂	D ₃	D ₄	Supply
O ₁	19	30	50	10	7
O ₂	70	30	40	60	9
O ₃	40	8	70	20	18
Demand	5	8	7	14	34

Also find the Corresponding Transportation Cost.

Q.3) Attempt **any three** of the following :

[16]

- (a) Explain Phases of Project Management.
- (b) Consider the following game :

Player B

$$\text{Player A} \begin{bmatrix} 1 & 3 & 2 & 7 & 4 \\ 3 & 4 & 1 & 5 & 6 \\ 6 & 5 & 7 & 6 & 5 \\ 2 & 0 & 6 & 3 & 1 \end{bmatrix}$$

Obtain Saddle Point. Also state Optimal Strategy for player A and player B.

- (c) Obtain Initial Basic Feasible Solution using Vogel's Approximation Method for following Transportation Problem :

Markets → Sources ↓	D ₁	D ₂	D ₃	Supply
O ₁	40	70	90	300
O ₂	12	80	30	400
O ₃	60	90	45	200
Demand	300	300	300	900

Also find the Corresponding Transportation Cost.

- (d) Write the dual problem of the following L.P.P. :

$$\text{Minimize } Z = 7X_1 + 3X_2 + 8X_3$$

Subjected to constraints :

$$8X_1 + 2X_2 + X_3 \geq 3$$

$$3X_1 + 6X_2 + 4X_3 \geq 4$$

$$4X_1 + X_2 + 5X_3 \geq 1$$

$$X_1 + 5X_2 + 2X_3 \geq 7$$

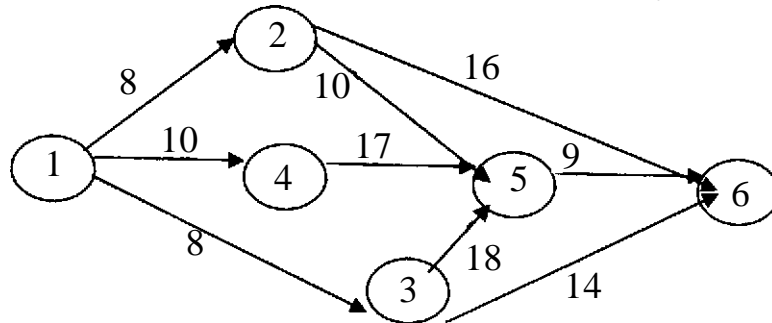
$$X_1, X_2, X_3 \geq 0$$

- (e) Explain nature of changes in the parameters in Sensitivity Analysis.
- (f) What do you mean by Unbalanced Transportation Problem (T.P.) ? How will you convert maximization T.P. to minimization T.P. ?

Q.4) Attempt any two of the following : [16]

- (a) (i) Discuss the Simplex Method where it indicate existence of :
- (1) Multiple Optimal Solution
 - (2) Unbounded Solution
- (ii) Explain advantages of Dual Simplex Method.

- (b) For the following network do all the calculations for Forward and Backward Pass Method. Also identify the critical path :



- (c) Test whether the solution given in the following transportation matrix is optimal ? If not, find Optimal Solution. Also find Corresponding Transportation Cost :

*	D ₁	D ₂	D ₃	D ₄	Supply
O ₁	19	30	50	10	7
O ₂	70	30	70	60	9
O ₃	40	8	70	20	18
Demand	5	8	7	14	34

Q.5) Attempt **any two** of the following :

[16]

- (a) (i) Define Float. Explain different types of it.
 (ii) Explain Multi-objective Optimization.
- (b) Maximize $Z = 35X_1 + 50X_2$
 Subject to : $4X_1 + 6X_2 \leq 120$
 $X_1 + X_2 \leq 20$
 $2X_1 + 3X_2 \leq 40$

The Optimal Solution for the following L.P.P. with slack variables s_1 , s_2 and s_3 is as given below :

		c _j	35	-50	0	0	0
B.V.	Cost	Value	X ₁	X ₂	s ₁	s ₂	s ₃
s ₁	0	40	0	0	1	0	-2
X ₁	35	20	1	0	0	3	-1
X ₂	50	0	0	1	0	-2	1
Z =	750	Z _j -c _j	0	0	0	5	15

If the RHS of the constraints are changed from 120, 20, 40 to 75, 75 and 50 respectively. Find the New Optimal Solution.

(c) A project has the following activities and other characteristics :

Activity	Time Estimates		
	t_o	t_p	t_m
1-2	2	10	5
1-3	8	12	10
2-4	6	15	12
3-4	3	10	7
3-5	4	12	8
4-5	7	14	10
5-6	5	13	8
3-6	4	10	7

Draw the project network and calculate variance and expected time for each activity.
