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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) (A) Define Networking with its components and types. **[10]**

(B) Explain Communication with its process. **[10]**

OR

Q.1) (A) “Audio - Video tools make Communication easy and more interactive.” Comment. **[10]**

(B) Explain Virtual Private Network. **[10]**

Q.2) (A) Explain Mechanism of Internal and External Communication. **[10]**

(B) Explain scope of Business Report Writing. **[10]**

OR

Q.2) (A) Give difference between LAN and WAN. **[10]**

(B) Explain need and importance of Information Technology in Business. **[10]**

Q.3) (A) Explain various Layouts of Business Letter. **[10]**

(B) Differentiate between Television and Radio Transmission. **[10]**

OR

Q.3) (A) What is Formal and Informal Communication ? Explain with suitable example. **[10]**

(B) Explain Oral Communication and its effective technique. **[10]**

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Q.4) Write short notes : (Any Four)

[20]

- (a) Communication Software
 - (b) Cross-cultural Communication
 - (c) Telnet
 - (d) Components of LAN
 - (e) Evolution of IT
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[4170]-162

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

SYSTEMS ORGANISATION AND MANAGEMENT

Time : 3 Hours]

[Max. Marks : 80

Instructions :

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

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

- (a) Management
- (b) Planning
- (c) Forecasting
- (d) Information
- (e) Staffing
- (f) Internet

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

- (a) Distinguish between Data and Information.
- (b) State features of Line and Staff Organisation.
- (c) Explain Process of Planning.
- (d) What do you mean by Customer Relationship Management ?
- (e) Give essentials of Good Control System.

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

- (a) State and explain elements of Management Information System.
- (b) Determine information requirements for a Marketing Manager.
- (c) Give advantages of E-Commerce.
- (d) Describe features of Decision Support System.
- (e) Explain importance of Management.

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

- (a) Distinguish between Formal and Informal Organisation.
- (b) Describe Maslow's Need Hierarchy Theory.
- (c) State Sources of Recruitment.
- (d) Explain role of Information System in the Development of a Business Organisation.
- (e) Discuss growing importance of Enterprise Resource Planning in Manufacturing Sector.

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

- (a) Use of SWOT Analysis
- (b) Types of Information Systems
- (c) Process of Communication
- (d) Job Rotation
- (e) Levels of Management
- (f) Hardware and Software requirements for efficient Information Centre

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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) Write a short note on User Defined Data Types.
- (b) Explain Increment and Decrement Operators with example.
- (c) Describe any four sections from the Structure of ‘C’ Program.
- (d) What is Header File ? Explain use of stdio.h and string.h.
- (e) What is the difference between while and do...while loop ?

Q.2) Attempt any four :

[4x4=16]

- (a) Write a ‘C’ program to calculate x^y by using User Defined Function.
- (b) Write a ‘C’ program to accept n different numbers and display sum of all +ve and –ve numbers.
- (c) Write a ‘C’ program to calculate sum of Fibonacci Series up to a given terms.
- (d) Write a ‘C’ program to calculate sum of digits till it reduces to a single digit using recursion.
- (e) Write a ‘C’ program to check whether inputted character is digit or alphabet.

Q.3) Attempt any four :

[4x4=16]

- (a) Explain Scope of Variable in 'C'.
- (b) What is Array ? How to initialize and access elements of an Array ?
- (c) What is Pointer ? What is the use of Pointer ?
- (d) Explain strcmp() and strcat() functions with proper syntax.
- (e) Write a note on Union.

Q.4) Trace output : (Any Four)

[4x4=16]

- (a)

```
#include<stdio.h>
int main()
{
    extern int a;
    printf("%d\n", a);
    return 0;
}
int a = 20;
```
- (b)

```
#include<stdio.h>
int main()
{
    char ch;
    if ((ch == printf(" ")))
        printf("it matters");
    else
        printf("if doesn't matters\n");
    return 0;
}
```
- (c)

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

- (d) `#include<stdio.h>`
`int main()`
`{`
`int a = 500, b = 100, c = 300;`
`if(!a> = 400)`
`b = 300;`
`c = 200;`
`printf("b = %d c = %d \n", b, c);`
`return 0;`
`}`
- (e) `#include<stdio.h>`
`int main()`
`{`
`int fun(int);`
`int i = fun(10);`
`printf("%d\n", --i);`
`return 0;`
`}`
`int fun (int i)`
`{`
`return (i++);`
`}`

Q.5) Attempt any four :

[4x4=16]

- (a) Write a 'C' program to create student structure having fields roll_no, stud_name, mark1, mark2, mark3. Calculate total and average of marks and arrange records in descending order of marks.
- (b) Write a 'C' program using Command Line Arguments to search for a word in a file and replace it with the specific word.
- (c) Write a 'C' program to calculate sum of elements of a $m \times n$ matrix.
- (d) Write a 'C' program to calculate sum of the elements of lower triangle of a $m \times n$ matrix by using Dynamic Memory Allocation.
- (e) Write a 'C' program to read a file and display its contents along with line number before each line.

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

NUMERICAL AND STATISTICAL 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 table is allowed.
- (4) Symbols and abbreviations have their usual meanings.

Q.1) Attempt any three of the following :

[3x5=15]

- (a) Decide Interval and find root of the equation $x^5 + 5x + 1 = 0$ using Bisection Method.
- (b) Use Newton-Raphson's Method to find a root of $x^3 - 2x - 5 = 0$.
- (c) Show that :
 - (i) $E\nabla \equiv \nabla E \equiv \nabla$
 - (ii) $(1 + \Delta)(1 - \nabla) \equiv 1$
- (d) From the following data, find number of students who obtained less than 55 marks :

Marks	30-40	40-50	50-60	60-70	70-80
No. of Students	31	42	51	35	31

- (e) The value of X and Y are given as below :

X	5	6	9	11
Y	12	13	14	16

Find value of Y at $X = 10$.

Q.2) Attempt any three of the following :

[3x5=15]

- (a) Find $\frac{df}{dx}$ and $\frac{d^2f}{dx^2}$ at $x = 1.5$ from the following table :

x	1.5	2.0	2.5	3.0	3.5	4.0
f(x)	3.375	7.000	13.625	24.000	38.875	59.000

- (b) Evaluate $\int_4^{5.2} \log_e x dx$ by Simpson's $\frac{3}{8}$ th Rule.

(Given that $\log_e x = \log_{10} x \times (2.3026)$)

- (c) Explain Simpson's $\frac{1}{3}$ rd Rule for Numerical Integration.

- (d) Find missing figures in the following table :

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

- (e) Using Euler's Method, solve $\frac{dy}{dx} = y^2 + 1$, given $y(0) = 0$. Obtain $y(0.05)$, $y(0.1)$ and $y(0.15)$. Take $h = 0.05$.

Q.3) Attempt any three of the following :

[3x5=15]

- (a) Explain meaning of 'Time Series' with illustrations. Also discuss four components of Time Series.
- (b) Explain the following terms used in the testing of Hypothesis :
- Type I Error
 - Level Of Significance (L.O.S.)
 - Critical Region
- (c) Explain chi-square test of goodness of fit.
- (d) Define normal distribution with Mean m and Variance σ^2 . Further state any three properties of normal distribution.
- (e) Marks obtained by student in an examination follow normal distribution, 44% of the students obtained marks below 55 and 6% of the students obtained marks above 80. Find Mean and Variance marks obtained by student.

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

[3x5=15]

- (a) Explain procedure of paired t-test.
- (b) A certain factory runs in two shifts. A sample of 1,000 items selected from production of day shift, gave 52 defective items. However, a sample of 700 items selected from production of night shift revealed 45 defective items. Can we conclude that production of defective items in the day and night shift is the same. Use 5% l.o.s.
- (c) The following time series shows sales in '000 Rs. of a particular product :

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009
Sales	110	140	144	158	166	172	180	182	185

Fit a linear trend equation by the method of least square. Hence estimate sales in the year 2010.

- (d) A monthly balance in the Bank Account of Credit Card-holders is assumed to be normal distributed with Mean Rs. 5,000 and S.D. Rs. 1,000. Find proportion of Credit Card-holders with balance.
- (i) Over Rs. 6,500
- (ii) Between Rs. 4,000 and Rs. 6,000
- (e) In a locality 1,000 persons were randomly selected and asked for their educational achievements. The results are given below :

Education Gender	Primary School	High School	College
Male	100	150	250
Female	250	100	150

Test whether education depends on the gender. Use 1% l.o.s.

- Q.5) (A)** Solve equation $\frac{dy}{dx} = x - y$, when $x = 0$, $y = 1$ by Picard's Method. Find approximate value of y when $x = 0.1$, 0.2 and 0.3 .

[10]

OR

(A) Given that $\frac{dy}{dx} = x + y$, if $x = 0$ then $y = 1$. Find $y(0.1)$ and $y(0.2)$ correct upto four decimal places by using Runge-Kutta Second Order and Fourth Order Formula. [10]

(B) Two manufacturers 'A' and 'B' supply piston rods of specified diameters to a company. The company is interested in comparing variability of the diameters of the product of these two manufacturers. The measurements (in cms.) of the diameters of the rods drawn randomly from the rods supplied by 'A' and 'B' are as follows :'

Diameters of rods supplied by 'A' :

6.4, 6.8, 7.2, 6.6, 7.1, 7.0, 6.5, 7.1, 6.9.

Diameters of rods supplied by 'B' :

6.9, 6.5, 6.6, 7.4, 6.2, 6.8, 7.0, 7.3, 7.1.

Test whether variability in the diameters of rods supplied by manufacturers 'A' and 'B' are the same ? Use 2% l.o.s. [10]

OR

(B) Estimate trend using 10% smoothing constant for the following time series :

Year(t)	1	2	3	4	5	6	7	8	9	10
National Income (In Cores) Yt	26	32	34	36	38	35	31	24	23	24

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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 : [16]

- (a) Explain Terminology used in Operating System.
- (b) Differentiate between System Program and System Calls.
- (c) What is Scheduler ? Explain Middle-term Scheduler in details.
- (d) Explain Multilevel Feedback Queue.
- (e) State and explain conditions to be satisfied by a solution to the Critical Section Problem.

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

- (a) What is Deadlock Prevention ? Explain Deadlock Prevention Strategies.
- (b) Explain Demand Paging in details.
- (c) Explain Indexed Allocation with its advantages and disadvantages.
- (d) Explain Working of IO-Scheduler.
- (e) Explain different service provided by Operating System.

Q.3) Attempt any four of the following :

[16]

- (a) Differentiate between Multiprogramming and Batch-operating System.
- (b) State System Calls provided by Operating System for the Device and File Management.
- (c) Explain creation and termination of Processes.
- (d) What is Bounded Buffer Problem ? How Semaphore is used to solve this problem ?
- (e) Explain different Methods for Recovery from a Deadlock.

Q.4) Attempt any four of the following :

[16]

- (a) Consider a System with five processes - P_0 through P_4 and three resources types A, B, C :

	Allocation			Max			Available		
	A	B	C	A	B	C	A	B	C
P_0	0	1	0	7	5	3	2	3	0
P_1	3	0	2	3	2	2			
P_2	3	0	2	9	0	2			
P_3	2	1	1	2	2	2			
P_4	0	0	2	4	3	3			

- (i) Find out contents of matrix need.
 - (ii) Suppose P_4 requests for (3, 3, 0), can it be granted ?
 - (iii) If P_0 requests for (0, 2, 0), can it be granted ?
- (b) Consider the following page reference string :
- 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 7, 0, 1
- How many page faults will occur for the following page replacement algorithm ?
- (i) Optimal Replacement
 - (ii) LRU Replacement

- (c) Explain 'Segmentation with Paging'.
- (d) Write a note on Acyclic Graph Directory.
- (e) Write a note on Memory Compaction.

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

[16]

- (a) Consider the following set of processes with the length of CPU Burst Time given in Milliseconds :

Process	Arrival Time	Burst Time
P ₁	1	5
P ₂	0	7
P ₃	3	3
P ₄	2	10

Illustrate execution of these processes using RR (with time quantum = 3 ms) & SJF Algorithms, also calculate average turn around time.

- (b) Explain Resource Allocation Graph Algorithm.
- (c) Write a note on Virtual Memory Concept.
- (d) Explain Single Level Directory Structure with its advantages and disadvantages.
- (e) Explain the following terms :
 - (i) Content Switch
 - (ii) Dispatcher
 - (iii) Binary Semaphore
 - (iv) Mutual Exclusion

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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 :

In a well reputed college, there is heavy rush during admission procedure. Management faces problems of giving admission to the student. If the system is manual, minimum 15 minutes will be required for the clerk to verify form, prepare fee receipt and collect cash from the student. Due to other students in the queue have to wait for long time, because of that management wants to minimise time required for admission procedure. For this purpose it is necessary to plan and adopt automated admission system for job of preparing merit list, fee receipt... etc. Due to automated system it is also possible to give timely admission status to the student and answer to all queries raised by student.

As student information is stored by this system, it is possible to use that data for preparing various certificates like Leaving Certificate, Transfer Certificate, Character Certificate etc.

- (a) Draw E-R Diagram for the above case [06]
- (b) Draw Context Level DFD [04]
- (c) Draw First Level DFD [06]

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

- (a) What is Data Dictionary ? List Data Elements.
- (b) Explain objective and principle of Testing.
- (c) Define Cohesion. Explain any two types of Cohesions.
- (d) What is Normalisation ? Explain its forms in brief.
- (e) Draw Decision Tree for issuing and receiving Books in the Library.

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

- (a) Define Quality. Explain Capability Maturity Model in detail.
- (b) Compare Alpha with Beta Testing.
- (c) What is Maintenance ? Explain its types.
- (d) Explain controlling factors of Maintenance.
- (e) Give some benefits of Prototyping.

Q.4) Write notes : (Any Four) [16]

- (a) 4 GL
- (b) ISO Standard
- (c) Spiral Model
- (d) Fact Finding Techniques
- (e) Tuning and Optimisation

Q.5) Differentiate between : (Any Four) [16]

- (a) S.D.L.C. and Waterfall Model
- (b) Reverse Engineering and Re-engineering
- (c) Open and Closed System
- (d) Structured and Unstructured Interview
- (e) TPS and DSS

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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) Explain Process of Communication. What are the Essentials of Good Communication ? [16]

OR

Q.1) Bring out the meaning and definition of Communication. What is the need of Cross-culture Communication in Globalised World ? [16]

Q.2) What are the different types of Communications ? What is the importance of Communication in Business ? [16]

OR

Q.2) What is Formal Communication ? What are the types of Formal Communications ? Bring out its advantages and disadvantages. [16]

Q.3) What are the Business Etiquettes ? Why is there a need for Business Etiquette in the changing business world. [16]

OR

Q.3) Explain role of Business Protocol. Bring out its meaning, scope and importance. [16]

Q.4) Why is it essential to know and learn different cultures in Business Dealings ? **[16]**

OR

Q.4) What are the Intercultural Factors which effect Communicational Aspect in the Business World ? **[16]**

Q.5) Write short notes : **(Any Two)** **[8x2=16]**

- (a) Need of International Communication in Business World.
 - (b) Changing Work Culture and Corporate Communication
 - (c) Group Discussion and Interviews as a Part of Business Communication
 - (d) Barriers of Communication
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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) Differential Physical and Logical Schema
- (b) Which are the different Aggregate Functions ?
- (c) Give Syntax of Grant Statement.
- (d) Which are built in data types in SQL ?
- (e) What is Closure of Attribute Set ?
- (f) Which are ACID Properties of Transaction ?
- (g) Define :
 - (i) Wait Die
 - (ii) Wait for Graph
- (h) What is Checkpoint ?

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

- (a) What are the major disadvantages of File System ?
- (b) What is Assertion ? Explain with example.
- (c) Explain the following operations in detail :
 - (i) Intersection
 - (ii) Cartesian Product
- (d) What is Functional Dependency ? Explain Multivalued Dependencies with example.
- (e) Which are different types of relationships between 2 Entities ?

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

- (a) Write a note on Deferred Database Modification.
- (b) Explain 2-phase Locking Protocol. List its versions.
- (c) Explain Concurrent Execution of Transaction with example.
- (d) What is Deadlock ? How it is handled ?
- (e) Write a note on Generalisation.

Q.4) Attempt the following : **[10+6=16]**

(a) Attempt the following : **[1x10=10]**

Suyog Book Centre is having many books. Books are of Medical, Engineering, Computer Science etc. Book Centre also has novels and magazines. Book Centre provides library facility to college students for one year. Book Centre returns 60% price to the students after one year. Book Centre is having 2 types of books : new Books as well as old Books. New Books have 15% discount and Old Books have 50% discount.

Identify all entities and relationships. Draw E-R diagram.

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

(i) Define :

- (1) Composite Attribute
- (2) Single Valued Attribute
- (3) Multivalued Attribute

(ii) What is the difference between Weak and Strong Entity ?
Explain with examples.

(iii) What is Unique Constraint ? Explain with example.

Q.5) Attempt the following : **[10+6=16]**

(a) Consider the following database : **[5x2=10]**

Machine (Mno, Mname, Mtype, Mcost)

Part (Mno, Pno, Pname, Pdesc)

Solve the following queries using SQL :

- (i) Display machinewise part details.
- (ii) Find name of machine having maximum cost.
- (iii) Increase cost of machine by 10% having name 'CNC Machine'.

Solve the following queries using Relational Algebra :

- (i) Display machine names whose cost is between 50,000 to 80,000.
- (ii) Display names of all machines having parts 'Wheel'.

(b) Attempt **any two** : **[2x3=06]**

(i) Consider the following set of transactions :

T_1	T_2	T_3
R(x)	R(z)	R(y)
$x = x + 10$	R(y)	R(z)
W(x)	$y = y + 2$	$y = y + 50$
R(y)	W(y)	W(y)
$y = y - 100$	R(x)	$z = z + y$
W(y)	$x = x + 15$	W(z)
	W(z)	

Give a Non-serial Schedule which is serialisable.

- (ii) State whether the following schedule is serialisable or not using precedence graph :

T_1	T_2	T_3
R(A)		R(C)
W(A)		R(B)
		W(B)
	R(C)	W(C)
R(B)		
W(B)		
	R(B)	
	W(B)	
	R(A)	
	W(A)	

- (iii) Consider two transactions :

T_1	T_2
R(A)	R(C)
$A = A - 50$	$C = C - 100$
W(A)	W(C)
R(A)	
R(B)	
$B = B + 50$	
W(B)	

Initially values of A, B and C are 1,000, 2,000 and 700 respectively. Consider T_1 and T_2 execute serially. Give state of the log and database corresponding to T_1 and T_2 .

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

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

- (a) State objectives of Cost Accounting.
- (b) Write advantages of Job Costing.
- (c) Define Overhead. Explain Concept of Under-absorption of Overheads.
- (d) Distinguish between Cost Accounting and Financial Accounting.
- (e) Explain Concept of Normal and Abnormal Loss.

Q.2) Prepare a Statement of Cost from the following information relating to Pune Traders for the year ended 31st March, 2011 : [16]

Particulars	Rs.
Cost of Direct Materials	2,00,000
Sales	4,00,000
Direct Wages	1,00,000
Office Indirect Materials	5,000
Cost of Special Patterns	40,000

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Postage and Telegram	2,000
Factory Rent and Insurance	5,000
Direct 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
Travelling Salesman's Salary	4,000
Factory Indirect Materials	1,000
Royalties	8,000
General Works Overheads	2,000
Bad-debts Written-off	1,000

Q.3) XYZ Builders, Nashik is engaged on two contracts viz A and B during the year 2010-2011 :

The following particulars are available on 31st March, 2011 in respect of contract 'A' :

	Rs.
Contract Price	6,00,000
Materials issued to Contract	1,60,000
Materials returned to Stores	4,000
Materials on Site (31st March, 2011)	22,000
Materials Transferred to Contract B	9,000
Direct Labour	1,40,000
Chargeable Expenses Outstanding	6,000
Wages Payable	2,000

Direct Expenses	60,000
Hire of Special Machinery	10,000
Administrative Overheads	25,000
Plant Installed at Site at Cost	75,000
Cost of Contract not yet Certified	23,000
Plant Installation Charges	5,000
Value of Work Certified	4,20,000
Value of Plant on 31-3-2011	65,000
Cash received from Contractee	3,78,000

You are required to prepare Contract A Account for the year ended 31st March, 2011.

[16]

OR

Q.3) The product of AISH Manufacturing Co. Ltd. passes through two processes viz A and B. It is ascertained that in each process 10% of the total weight is lost and 20% is scrap. The realisation from scrap amounts to Rs. 160 per ton and Rs. 400 per ton from process 'A' and process 'B' respectively. The cost figures relating to processes are as follows :

Particulars	Process 'A'	Process 'B'
Material Consumed	2,000 tons	140 tons
Cost of Materials per ton	Rs. 250	Rs. 400
Direct Wages	Rs. 36,000	Rs. 24,000
Direct Expenses	Rs. 11,000	Rs. 12,960

Prepare Process Account showing Cost per ton of output in each process.

[16]

- Q.4)** RCM Ltd., Koddaikanal wishes to prepare Cash Budget from January. Prepare Cash Budget for the first six months from the following revenue and expenses of 2010 :

[16]

Month	Sales	Materials	Wages	Overheads	
				Production	Selling/ Distribution
January	20,000	20,000	4,000	3,200	800
February	22,000	14,000	4,400	3,300	900
March	24,000	14,000	4,600	3,300	800
April	26,000	12,000	4,600	3,400	900
May	28,000	12,000	4,800	3,500	900
June	30,000	16,000	4,800	3,600	1,000

Cash Balance on 1st January, 2010 was Rs. 10,000. A new machine is to be installed at Rs. 30,000 on credit to be repaid by two equal instalments in March and April, 2010. Sales Commission @ 5% on total sales is to be paid within the month following actual sales. Rs. 10,000 being the amount of 2nd call may be received in March, 2010. Share Premium Rs. 2,000 is also receivable with 2nd call.

- Period of Credit allowed by Suppliers – 2 months
- Period of Credit allowed to Customers – 1 month
- Delay in Payment of Overheads – 1 month
- Delay in Payment of Wages – $\frac{1}{2}$ month

Assume Cash Sales to be 50% of Total Sales.

OR

- Q.4) (A)** The sales and profits during the last two years of Akbar Ltd. were as follows :

Year	Sales (Rs.)	Profits (Rs.)
2009-10	15,00,000	2,00,000
2010-11	17,00,000	2,50,000

Annual Fixed Cost is Rs. 1,75,000.

You are required to calculate :

- (a) P/V Ratio
- (b) BEP (Sales)
- (c) The profits made when sales are Rs. 25,00,000.
- (d) The sales required to earn a profit of Rs. 4,00,000. [08]

(B) For a particular unit of product, the standard data is given below :

	Amount
• Material – 5 kgs @ Rs. 40 per kg	200
• Labour – 40 hours @ Re. 1 per hour	40
	<u>240</u>

For actual production of 100 units the actual data is as follows :

• Material – 490 kgs @ Rs. 42 per kg	20,580
• Labour – 3,960 hours @ Rs. 1.10 per hour	4,356
	<u>24,936</u>

You are required to calculate :

- (a) Material Cost Variance
- (b) Material Price Variance
- (c) Labour Cost Variance
- (d) Labour Rate Variance [08]

Q.5) Write short notes on **any four** of the following : [16]

- (a) Break-even Point
- (b) Cost Unit and Cost Centre
- (c) Elements of Cost
- (d) Limitations of Budgetary Control
- (e) Advantages of Standard Costing

Seat No.	
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Total No. of Questions : 5]

[Total No. of Printed Pages : 4

[4170]-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 the term Management Accounting. Explain functions and duties of Management Accountant.

OR

Q.1) Explain various Tools of Analysis of Financial Statements.

Q.2) The following are the Balance Sheets of Vedant Limited as on 31st March, 2011 and 31st March, 2012 :

Balance Sheets

Liabilities	31-3-2011 (Rs.)	31-3-2012 (Rs.)
Share Capital	12,00,000	16,00,000
Debentures	4,00,000	6,00,000
Profit and Loss A/c.	2,50,000	5,00,000
Creditors	2,30,000	1,80,000
Provision for :		
(a) Bad and Doubtful Debts	12,000	6,000
(b) Depreciation on Land and Building	40,000	48,000
(c) Depreciation on Plant and Machinery	60,000	70,000
Total Rs.	21,92,000	30,04,000

Assets	31-3-2011 (Rs.)	31-3-2012 (Rs.)
Plant and Machinery at Cost	8,00,000	12,90,000
Land and Building at Cost	6,00,000	8,00,000
Stock	6,00,000	7,00,000
Bank	40,000	80,000
Preliminary Expenses	14,000	12,000
Debtors	1,38,000	1,22,000
Total Rs.	21,92,000	30,04,000

Additional Information :

- (1) During the year a part of the machinery costing Rs. 1,40,000 (accumulated depreciation thereon Rs. 4,000) was sold for Rs. 12,000.
- (2) Dividend of Rs. 1,00,000 was paid during the year.

Prepare :

- (a) Statement of changes in Working Capital for 2012
- (b) Funds Flow Statement for 2012
- (c) Give necessary detailed Working Notes.

Q.3) Prepare a Cash Budget for the three months ending 30th June, 2010, from the information given below :

Month	Sales (Rs.)	Materials (Rs.)	Wages (Rs.)	Overheads (Rs.)
February	14,000	9,600	3,000	1,700
March	15,000	9,000	3,000	1,900
April	16,000	9,200	3,200	2,000
May	17,000	10,000	3,600	2,200
June	18,000	10,400	4,000	2,300

(a) Credit terms are :

Sales and Debtors : 10% of sales are on cash, 50% of the credit sales are collected next month and the balance in the following month.

Creditors : Materials – 2 months

 Wages – 1/4 month

 Overheads – 1/4 month

(b) Cash and Bank Balance on 1st April, 2010 is expected to be Rs. 6,000.

(c) Other relevant informations are :

(i) Plant and Machinery will be installed in February, 2010 at a Cost of Rs. 96,000. The monthly instalment of Rs. 2,000 is payable from April onwards.

(ii) Dividend @ 5% on Preference Share Capital of Rs. 2,00,000 will be paid on 1st June, 2010.

(iii) Advance to be received for Sale of Vehicles Rs. 9,000 in June.

(iv) Dividends from investments amounting to Rs. 1,000 are expected to be received in June.

(v) Income Tax to be paid in June is Rs. 2,000.

Q.4) (A) Define the term Marginal Costing. Explain advantages of Marginal Costing.

(B) The following information is given :

Sales – Rs. 2,00,000

Variable Cost – Rs. 1,20,000

Fixed Cost – Rs. 30,000

Calculate :

(a) Break-even Point

(b) New Break-even Point, if Selling Price is reduced by 10%

(c) New Break-even Point, if Variable Cost increases by 10%

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

- (a) Advantages of Ratio Analysis
 - (b) Liquidity Ratios
 - (c) Profitability Ratios
 - (d) Uses of Fund Flow Statement
 - (e) Advantages of Marginal Costing
 - (f) Scope of Budget
-

Seat No.	
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Total No. of Questions : 5]

[Total No. of Printed Pages : 2

[4170]-265

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

NETWORKING OPERATIONS

Time : 3 Hours]

[Max. Marks : 80

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

- (a) Compare Switches and Bridges.
- (b) What are the types of LAN ?
- (c) Explain different Modes of Communication.
- (d) What is the need of Standards ? What are their types ?
- (e) What are the different Propagation Methods ?

Q.2) Write notes : (Any Four) [4x4=16]

- (a) Guided Media
- (b) IIS (Internet Information Server)
- (c) Format of IP Datagram
- (d) Communication Subnet
- (e) 2-Layer and 3-Layer Switches

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

- (a) Explain Bluetooth Architecture in detail.
- (b) What is Computer Network ? What are its applications ?
- (c) Explain Working of Transparent Bridges.
- (d) What are the Active and Passive Hubs ?
- (e) Explain Working of Search Engines.

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

- (a) Compare ISO-OSI and TCP/IP Protocol Suite.
- (b) Explain Ring and Bus Topology.
- (c) What is the requirement of Transport Layer in Communication ?
- (d) Comment on “Connection Oriented Networks are not reliable”.
- (e) Explain Working of Proxy Server.

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

- (a) Explain in detail TCP/IP Protocol Suite. [08]
- (b) Explain Architecture of IEEE 802.11. [08]

Seat No.	
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Total No. of Questions : 5]

[Total No. of Printed Pages : 4

[4170]-266

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) *Assume suitable data, it necessary.*

Q.1) Attempt any four :

[4x4=16]

- (a) What is Friend Function ? Explain with example.
- (b) Explain benefit of Object Oriented Programming.
- (c) What is Constructor ? How Constructor is used in Java ? Explain.
- (d) Write notes on the following keywords :
 - (i) Static
 - (ii) Final
- (e) Explain Array of Object with example using C⁺⁺.

Q.2) Attempt any four :

[4x4=16]

- (a) What is Inheritance ? Explain types with example (using C⁺⁺).
- (b) Explain why Java does not support Pointer and Multiple Inheritance.
- (c) What is Operator Overloading ? Explain Compile and Run Time Polymorphism (using C⁺⁺).
- (d) Explain difference between C⁺⁺ and Java.
- (e) Explain Structure of Java Program.

Q.3) Attempt any four :

[4x4=16]

- (a) What is Class ? Explain Syntax of Class in C++.
- (b) Explain Garbage Collection in Java.
- (c) What is Access Specifier ? Compare Public, Private and Protected.
- (d) What is application of scope resolution operator (::) in C++ ? Explain with example.
- (e) What is Array ? What are the different ways to initialize array ? (using Java)

Q.4) Attempt any four :

[4x4=16]

- (a) Write a C++ program to calculate factorial of a given number.
- (b) Write a C++ program to sort n elements in ascending order. Use any sorting technique. Function overloading is expected in this program.
- (c) Write a C++ program to find out power of integer of two different classes using Friend Function.
- (d) Write a program in Java to print the following output :
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
- (e) Write a Java program to accept string from the user and count frequency of each vowel in the given string.

Q.5) (A) Trace output (Assume there is no syntax error) :

[4x2=08]

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

`#include <conio.h>`

`void main();`

`{`

`clrscr();`

`int a = 6, b = 8, f;`

`float c = 3.5, d = 4.3, e;`

`a = e = (c > d) ? c : d;`

`cout << "a = " << a << "e =" << e;`

`getch();`

`}`

(b) `class test`

`{`

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

`{`

`int a, b;`

`a = 5;`

`b = 10;`

`if (a > 5)`

`if (b > 5)`

`{`

`system.out.print\n ("b is" +b);`

`}`

`else`

`system.out.print\n ("a is" +a);`

`}`

`}`

(B) Attempt **any two** :

[4x2=08]

- (a) Write a program using C⁺⁺ to overload binary % operator to calculate mod of the values contained in two different objects (without operator overloading).
 - (b) Write a C⁺⁺ program to calculate volume of a sphere using a parameterized constructor.
 - (c) Write a Java program to accept a number from the user. If number is zero, then throw user defined exception “Number is O”; otherwise check whether number is prime or not (use static keyword).
-

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Total No. of Questions : 5]

[Total No. of Printed Pages : 2

[4170]-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) Answer the following : (Any Four)

[16]

- (a) Differentiate between Pen and Brush.
- (b) Explain various methods to get a handle to device context.
- (c) Explain features of UNIX Operating System.
- (d) Explain different applications of Timer.
- (e) List different Mouse Messages generated in Client Area.

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

[16]

- (a) Windows is an Object. Justify.
- (b) System Menu of a Window cannot be modified.
- (c) Timer Messages are not asynchronous.
- (d) Common Window Controls generally send Win_Command Message.
- (e) Windows Scroll Bars and Scroll Bar Controls mean one and the same thing.

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

[16]

- (a) Define SDK.
- (b) What is Timer ?
- (c) What is GUI ?
- (d) What is Pipe ?
- (e) Define a View Port.
- (f) What is Callback Function ?
- (g) How to create and execute shell program ?
- (h) What are Keystrokes ?
- (i) How to set Mapping Mode ?
- (j) Give examples of Shell Scripts.

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

[16]

- (a) Write a Shell Script which would display a message on the screen as 'Terminal Locked' and wait for the user to hit a key. On receiving a key it should accept a password and then unlock terminal, if password matches.
- (b) Write a Shell Program to display whether given number is odd or even.
- (c) Display a push button at the centre of the client area and using up, down, left and right arrow keys, moves it accordingly.
- (d) Display 'Hello' Message at the point in client area where the right mouse button is pressed and erased when it is released.
- (e) Click on 4 places and draw Curve Line.

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

[16]

- (a) What are different features of Windows Operating System ?
- (b) What do you mean by Mounting and Unmounting File System ?
- (c) Explain Algorithm Sleep and Wake-up.
- (d) Explain WM_PAINT Message.
- (e) Write a short note on Virtual Keys.

Seat No.	
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Total No. of Questions : 5]

[Total No. of Printed Pages : 2

[4170]-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) Differentiate between Inkjet and Laser Printer.
- (b) Write a note on Printer Troubleshooting.
- (c) Explain Static and Dynamic Routing Table.
- (d) Explain any two Open-loop Congestion Mechanisms.
- (e) Explain different types of Keyboards.

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

[4x4=16]

- (a) Explain use of POST Card.
- (b) Write a note on Workstation.
- (c) Discuss use of BNC Connector.
- (d) Explain briefly advantages of EEPROM.
- (e) Explain advantages and disadvantages of Cut-through Switch.

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

- (a) What are the Networking Problems ? Explain how to trouble-shoot those problems ?
- (b) Differentiate between CD and DVD.
- (c) Explain briefly Internet Working Issues.
- (d) Discuss Concept of Colour Code.
- (e) What is Booting ? Explain Methods of Booting Process.

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

- (a) Explain structure of Fiber Optic Cable.
- (b) What is File Server ? Explain different components of File Server.
- (c) Explain Physical Layer Implementation defined by Standard Ethernet.
- (d) Explain working of Hard Disk.
- (e) Write different steps to install Linux OS.

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

- (a) Mechanical Mouse
 - (b) BIOS
 - (c) Passive Matrix
 - (d) Physical Layer Issues
 - (e) Device Driver
-

Seat No.	
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Total No. of Questions : 8]

[Total No. of Printed Pages : 2

[4170]-363

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

ENTERPRISE RESOURCE PLANNING AND MANAGEMENT

Time : 3 Hours]

[Max. Marks : 80

Instructions :

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

Q.1) What is ERP ? Explain in detail the benefits of ERP System.

Q.2) What is Data Mining ? What are the Technologies used in Data Mining ?

Q.3) Write short notes :

- (a) Oracle
- (b) QAD
- (c) SAP
- (d) IDOC

Q.4) Explain in detail the different phases of Business Process Re-engineering (BPR).

Q.5) What is EDI ? Stating in brief the evolution of EDI, explain its benefits.

Q.6) Explain role of Vendors for ERP.

Q.7) Explain :

- (a) EDI Standards
- (b) EDI Services
- (c) EDI Components
- (d) EDI Administration

Q.8) What is EIA ? Explain two flavours of EIA and Messaging.

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Total No. of Questions : 5]

[Total No. of Printed Pages : 2

[4170]-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.*
-
-

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

[16]

- (a) State and explain Concept of Strategy.
- (b) What do you mean by Environmental Analysis ?
- (c) State advantages of SWOT Analysis.
- (d) Define Mission. State advantages of Mission Statement.
- (e) What do you mean by Growth Strategy ?

Q.2) Answer any four of the following :

[16]

- (a) What are the Elements of Marketing ? Explain any two elements.
- (b) Describe Economic Environment of Business.
- (c) State importance of Decision-making.
- (d) Explain stages in Strategy Formulation.
- (e) Give meaning of Strategic Advantage Analysis.

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

- (a) What do you mean by Financial Policies ? Explain role and importance of Financial Policies with respect to Competition in Business.
- (b) What factors should be considered while determining a Strategy ?
- (c) Distinguish between Strategy Formulation and Strategy Implementation.

Q.4) Answer any four of the following : [16]

- (a) Explain Cost plus Strategy.
- (b) Explain Concept of Mergers and Acquisitions.
- (c) State importance of Objectives and Goals.
- (d) What are the Principles of Good Strategy ?
- (e) Explain qualities required for Strategist.

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

- (a) Marketing Strategies
 - (b) Techniques of Strategic Control
 - (c) Strengths of Business
 - (d) Issues in Strategy Implementation
 - (e) Strategic Evaluation
 - (f) Systematic Approach to Strategy Formulation
-

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Total No. of Questions : 5]

[Total No. of Printed Pages : 2

[4170]-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) Write a note on Attribution, Acknowledgment and Dispatch of Electronic Record.
- (b) Explain Triple DES with diagram.
- (c) Write a note on Data Integrity.
- (d) Describe advantages and disadvantages of Symmetric and Asymmetric Cryptosystem.
- (e) What is the idea behind man-in-the-middle attack ?

Q.2) Attempt any four of the following :

[4x4=16]

- (a) Explain Intellectual Property in Cyber Space.
- (b) Give advantages of Cyber Contracts.
- (c) List duties of Subscriber.
- (d) Define Protocol. Explain different Protocols used in www.
- (e) How Authentication is provided in Cyber Space ?

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

- (a) Write a short note on Hacking.
- (b) Explain ICMP and UDP Attack.
- (c) What are common entry points for Computer Viruses ?
- (d) Write a short note on Skipjack Algorithm.
- (e) What is On-line Harassment ?

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

- (a) What is E-commerce ? What are different activities of E-commerce ?
- (b) Explain Bulletin Board System.
- (c) Write a short note on RSA Algorithm.
- (d) List down the Mistakes in E-commerce.
- (e) If A wants to send a message securely to B, what would be the typical steps involved ?

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

- (a) Is Hacking a Cyber Crime ? Justify.
- (b) What are Potential Effects of Cyber Stalking ?
- (c) Write a short note on Cyber Crime in India.
- (d) Explain the term Encryption and Decryption with example.
- (e) What are the advantages and disadvantages of Public Key Encryption ?

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Total No. of Questions : 5]

[Total No. of Printed Pages : 2

[4170]-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 OTCEI ? Explain features, objectives and advantages of OTCEI.

OR

Q.1) Discuss in detail the Important Stock Market Regulations.

Q.2) What is 'Fundamental Analysis' ? Explain in detail 'Economic Analysis'.

OR

Q.2) What is Portfolio Analysis ? Explain in detail the Portfolio Markowitz Model.

Q.3) Describe meaning and importance of 'Technical Analysis'. Explain in brief various tools of 'Technical Analysis'.

OR

Q.3) What do you understand by 'Portfolio Performance, Measurement and Evaluation ? Explain Risk Adjustment and Performance Measures.

Q.4) What is 'Diversification' ? Explain its importance and limitations as a technique of Risk Reduction.

OR

Q.4) What is Investment Process ? Explain various stages in Investment Process.

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

- (a) Institutional Investors
 - (b) Company Analysis
 - (c) Risk and Return
-

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Total No. of Questions : 5]

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[4170]-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) SOAP
- (b) Graph Model
- (c) Object Oriented Database
- (d) KDD
- (e) Mobile Database

Q.2) Attempt any four :

[4x4=16]

- (a) Define :
 - (i) Boolean Query
 - (ii) Ranked Query
 - (iii) Term Frequency
 - (iv) Precision

- (b) Explain different Data Partitioning Techniques used in Parallel Database System.
- (c) Explain C/S Architecture in detail.
- (d) What is Data Replication ? Give advantages and disadvantages.
- (e) What is Query Optimisation ?

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

- (a) How to use Inverted Index ? Explain.
- (b) Explain HITS Algorithm in detail.
- (c) Explain Object Exchange Model.
- (d) What is XML DTD ? Explain.
- (e) Write a note on Data Mining.

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

- (a) What is Distributed Database System ? What are its desirable properties ?
- (b) Explain Abstract Model of Transaction System.
- (c) Differentiate OODBMS and ORDBMS.
- (d) What are the applications of Spatial Data ?
- (e) What is CRM ? What are the components of CRM Frameworks ?

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

- (a) Consider the following schema :

Dept (Dno, Dname, Location)

Consider given predicates :

P_1 : Dname = "HR"

P_2 : Dname = "Production"

P_3 : Dname = "Sales"

Divide given relation, using Horizontal Fragmentation.

- (b) Perform a Vertical Fragmentation of Account Relation given below :

Account (Ano, Cust_name, branch, bal)

According to following requirement :

- (i) Site A requires information about account number and branch name.
 - (ii) Site B requires information about account number, customer name and balance.
- (c) Explain in detail Inter-operation Parallelism.
- (d) Discuss Object Identity Vs Foreign Keys
- (e) Consider the following document and prepare a vector space model for it :

Docid	Document
1	Database Management System
2	Relational Database Management System
3	Advanced Database Management System
4	Distributed Database Management System
5	Object Oriented Concepts
6	Object Oriented Database System
7	Object Oriented Data Model

Seat No.	
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Total No. of Questions : 5]

[Total No. of Printed Pages : 2

[4170]-462

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

DATA CENTRE TECHNOLOGY

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) Write a short note on TPC Benchmark.
- (b) Explain briefly the best practices that one must follow to ease configuration and maintenance of Network Infrastructure.
- (c) Write short notes :
 - (i) In-band Monitoring
 - (ii) Out-band Monitoring
- (d) What do you understand by Network Operations Centre (NOC) ?
- (e) Explain briefly the following Cluster Components :
 - (i) Server
 - (ii) Shared Disk

Q.2 Answer the following : (Any Four)

[4x4=16]

- (a) Write a note on ISP WAN LINKS.
- (b) Explain briefly Power Distribution Units (PDU's).
- (c) Describe Commercial Cluster Management Software.
- (d) Explain briefly the Internet Access and its components.
- (e) Write a short note on SPEC Benchmark.

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

- (a) Kareena Designer Dresses Company has several Off-line Stores around the State. The owners have decided to establish an On-line presence to be able to allow anyone in the country to order dresses. They have acquired services from a software development firm to place their catalog On-line. They have rented a building in the State of India. Study this case and give proper requirements and solution for the above.
- (b) Write a short note on Power Conditioning.
- (c) Explain Cold-liquid Air-conditioning System.
- (d) Explain briefly Physical and Logical Security for Data Centre.
- (e) Explain characteristics of an Outstanding Design for Data Centre.

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

- (a) Define Server Administration. State best practices for System Administration.
- (b) “The Data Centre must also provide required power for a well controlled environment (with regard to temperature and relative humidity) and Network Connectivity to other devices within and outside the Data Centre.” Comment.
- (c) State objectives of HVAC Systems.
- (d) Explain the term Load Balancing and explain its advantages.
- (e) Explain Software and Hardware requirement for the Cluster Implementation.

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

- (a) Explain Guidelines for Planning a Data Centre.
- (b) What is Cluster ? Explain its types.
- (c) Write a short note on many-to-one failover model.
- (d) Explain phases for Capacity Planning.
- (e) Define Benchmark. State aspects of System Performance.

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Total No. of Questions : 5]

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[4170]-463

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) Consider suitable data if necessary.*

Q.1) Attempt any four :

[4x4=16]

- (a) Define Server. Explain different Server Technologies.
- (b) What is XML ? How XML acts as business objects Transporter between Applications.
- (c) List and explain JDBC Components.
- (d) Write advantages of JavaBean.
- (e) Explain various tags used in JSP.

Q.2 Attempt any four :

[4X4=16]

- (a) Write a note on Servlet Life Cycle.
- (b) What are different J2EE Technologies ?
- (c) What is E-business ? Explain various E-business Components.
- (d) What are the limitations of XML ?
- (e) Explain Client Server Technology.

[4170]-463

1

P.T.O.

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

- (a) What is JSP ? Explain its features.
- (b) Explain how JDBC is used while using Servlet ?
- (c) Explain Model View Controller (MVC) Architecture.
- (d) Explain how XML is used in Web Applications ?
- (e) Explain Factory Pattern.

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

- (a) What is Session ? Explain its use in Servlet.
- (b) Explain J2EE Multitier Architecture.
- (c) List steps for creating XML Document.
- (d) Explain Directives used in JSP.
- (e) Explain Command Pattern.

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

- (a) Write a JDBC Program to accept a Emp_id from user as a Command Line Argument and display its record.
 - (b) Write HTML page to accept name and age of a voter and check on servlet page whether he/she is eligible for voting or not.
 - (c) Write HTML page to accept number from user and display its multiplication table on next page using JSP.
 - (d) Create a XML Document that stores information of five doctors.
 - (e) Write a JDBC program to update student who got 40 marks. Update it to 50.
-

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Total No. of Questions : 5]

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[4170]-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) Explain Concept of Strategic Planning.
- (b) What is Culture ?
- (c) Explain importance of Culture Building while assessing an Organisation's Culture.
- (d) Write a note on Excellence.
- (e) What do you mean by Creative Insight ? Explain need of Creative Insight while selecting a Strategy.

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

- (a) Write a note on Organisation and its role in Culture Building.
- (b) Explain how Versatility is important while converting Threats into Opportunities ?
- (c) What are the Essential Qualities of a Versatile Executive ?
- (d) Explain how a Focused Executive helps to bring out change in the organisation ?
- (e) Define Patience. Explain importance of Patience in Lasting Excellence.

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

- (a) What do you mean by Creating Excellence ? Explain in short the Concept of Creativity.
- (b) Explain importance of Body Language in the Overall Development of Personality.
- (c) Explain how to match Strategy and Culture ?
- (d) Explain importance of Listening while conducting Meeting and Group Discussion.
- (e) State Essentials for Effective Communication ?

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

- (a) What are the necessary skills to achieve Excellence ?
- (b) What do you mean by Culture Awareness ? Give its importance.
- (c) Briefly discuss Strategy for Team Presentation.

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

- (a) Body Language
- (b) Listening Skills
- (c) Strategy Evaluation
- (d) Focused Executive
- (e) Business Skills

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Total No. of Questions : 5]

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[4170]-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 suitable diagram if necessary.*

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

[4x4=16]

- (a) Explain Internet, Intranet and Extranet with examples.
- (b) Explain 2-tier Architecture with example.
- (c) Write a short note on Personal Communication Services.
- (d) Explain any 2 popup boxes in JavaScript.
- (e) What is ASP ? How does ASP differ from HTML ?

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

[4x4=16]

- (a) Explain OnClick Event with example.
- (b) Explain LockType in ASP in Record Set.
- (c) Explain different Client / Server Tools.
- (d) Differentiate between MOM and RPC.
- (e) What do you mean by Repeaters and Hubs ?

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

[4x4=16]

- (a) Write a JavaScript to find Fibonacci Series for n terms (using recursive function).
- (b) Write a program using ASP Script to display the following, using GET Method :

Employee Information	
Emp. No.	<input style="width: 100%;" type="text"/>
Emp. Name	<input style="width: 100%;" type="text"/>
Address	<input style="width: 100%;" type="text"/>
Gender	<input type="radio"/> Male <input type="radio"/> Female
<input type="button" value="OK"/>	<input type="button" value="Cancel"/>

- (c) Write a JavaScript to accept two numbers. Display them in textboxes. Print addition of two numbers in the third textbox.
- (d) Write a program using ASP Script to display the following triangle :
1
2 2
3 3 3
4 4 4 4
5 5 5 5 5
- (e) Write a JavaScript to find Maximum and Minimum Element in an Array.

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

[4x4=16]

- (a) What is the difference between LAN and WAN ?
- (b) Explain Client / Server for Tiny Shops and Nomadic Tribes.
- (c) Explain Client / Server Model.
- (d) Explain Cookies in ASP with example.
- (e) Differentiate between Client / Server and Peer-to-peer Networks.

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

[4x4=16]

- (a) Define Function. How do you define a function in JavaScript ?
Explain with example.
 - (b) Explain Life Cycle of ASP.
 - (c) Write a short note on MOM.
 - (d) What is Bridge ? Explain types of Bridges.
 - (e) Explain Master/Slave Model with example.
-

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Total No. of Questions : 5]

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[4170]-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 Cyclic Model of Knowledge Management.
- (b) Describe Blackboard Component of Expert System.
- (c) Define Knowledge Acquisition and compare it with Knowledge Representation.
- (d) What do you mean by Uncertainty ? What are the situations in which information is irrelevant ?
- (e) "Knowledge Engineers are compared with System Analyst." Comment.

Q.2) Attempt any four of the following :

[4x4=16]

- (a) Describe reasons why does an Expert System fail ?
- (b) Discuss Project Initialization Task.
- (c) Compare Rule based with Case based Reasoning.
- (d) Compare Conventional System with Expert System.
- (e) Explain Semantic Network with example.

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

- (a) Inference Tree
- (b) Chief Knowledge Officer
- (c) Major Categories of Knowledge
- (d) Explanation
- (e) Knowledge Engineering Process

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

- (a) Explain Forward Chaining.
- (b) Explain difference between Data, Information and Knowledge.
- (c) Explain Process of Protocol Analysis.
- (d) Discuss difference between Shallow and Deep Knowledge
- (e) List different methods of representing Uncertainty.

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

- (a) Explain how does Expert System work ?
- (b) Explain ten different strategies for Knowledge Management Implementation.
- (c) Explain AI Development Strategy.

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[4170]-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 :

[4x4=16]

- (a) Explain Content is Information Plus Data.
- (b) What is Functionality ? What is the difference between Monolithic and Mix-and-Match Functionality.
- (c) "Content is Named Information." Explain.
- (d) Write the steps to add the New Article in Joomla.
- (e) What are the 5 myths about teaching with Moodle ?

Q.2) Attempt any four :

[4x4=16]

- (a) Explain Web CMS with diagram.
- (b) Explain Authoring Collection System with diagram.
- (c) How to Gauge the Complexity by the amount of Content ?
- (d) How to Categorize the Structure by type ?
- (e) Write the steps to create the new user and give permissions to the user in Joomla.

Q.3) Attempt any four :

[4x4=16]

- (a) Explain the Context Rules.
- (b) Explain Publishing Templates.
- (c) Explain CM is Distributing Business Value.
- (d) State Do's and Dont's of Moodle.
- (e) Write the steps to create a new template in CMS.

[4170]-561

1

P.T.O.

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

- (a) Explain CM is Collection, Management and Publishing.
- (b) Explain Repository in the Management System.
- (c) How to gauge the complexity by knowing the number of Publications ?
- (d) How to create the new style sheet in CMS ?
- (e) How the create the Hyperlink in Joomla ?

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

- (a) What is CMS ? What are the other Publications of CMS ?
 - (b) How to insert the image in the Article of Joomla ?
 - (c) What is Data, Information and Content ? Explain.
 - (d) How to Gauge the Complexity by Amount of Contribution ?
 - (e) Explain with diagram Full CMS.
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Total No. of Questions : 5]

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[4170]-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) Attempt any four :

[4x4=16]

- (a) What are Workflows ? Explain different types of Workflows.
- (b) What are Contents of Database Catalog ?
- (c) Explain Conservative Time Stamp based Protocol.
- (d) Write note on Spatial Queries.
- (e) Explain the following :
 - (i) Fragmentation Transparency
 - (ii) Replication Transparency
 - (iii) Location Transparency

Q.2) Attempt any four :

[4x4=16]

- (a) What are different Design Strategies in Distributed Database ?
- (b) Write note on Optimistic Transaction Management Protocol.
- (c) Write note on DBMS Performance Benchmarks.
- (d) Write note on Distributed Deadlock Detection.
- (e) Explain different Locking Protocols in Distributed Databases.

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

- (a) Explain different Architectures of TP Monitors.
- (b) Write note on Reference Architecture of Distributed Database.
- (c) What are equivalence rules in Query Transformation ?
- (d) What are objectives of Query Processing ?
- (e) Write note on Recovery Procedure in Centralized System.

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

- (a) Explain two Phase Commit Protocol in details.
- (b) Write features of Distributed Database over Centralized Database.
- (c) Write note on Architectural Aspects of Distributed Transaction.
- (d) Write note on Multimedia Database.
- (e) Explain different Geographic Datatypes.

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

- (a) Consider the following schema :

Doctor (DNUM, NAME, DEPT)

Consider given predicates :

$P_1 = \text{DEPT} = \text{'SURGERY'}$

$P_2 = \text{DEPT} = \text{'PEDIATRICS'}$

$P_3 = \text{DEPT} \neq \text{'SURGERY'}$ and $\text{DEPT} \neq \text{'PEDIATRICS'}$

Divide the given relation using horizontal fragmentation.

- (b) Consider the following schema :

EMP (ENO, ENAME, TITLE)

PAY (TITLE, SAL)

Convert the given query into relational algebraic query and operator tree.

Select ENO from EMP, PAY where

TITLE = 'MANAGER' and Sal < 50,000 and
EMP.TITLE = PAY.TITLE.

- (c) Consider the given situation where transactions T1 and T2 are executing at site 1. Transactions T3 and T4 are executing at site 2. Transaction T1 is waiting for T2. Transaction T3 is waiting for T4. Transaction T4 is waiting for T2 and transaction T1 is waiting for T3. Draw local and global wait for graphs.

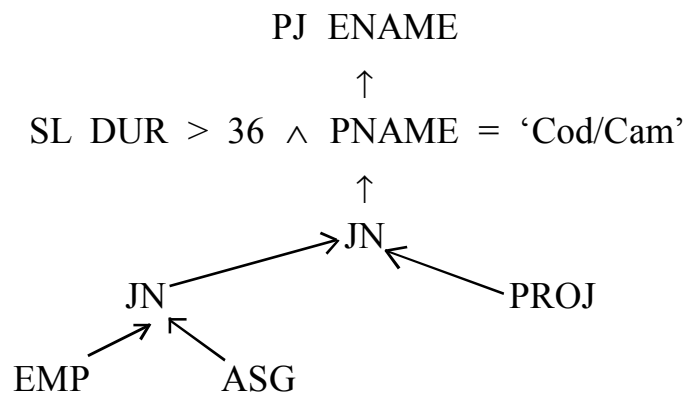
- (d) Consider the following schema :

EMP (ENO, ENAME)

PROJ (PNO, PNAME)

ASG (ENO, PNO, RESP, DUR)

Convert the given operator tree into optimized operator tree :



- (e) Consider the following schema :

PROJ (PNO, PNAME, BUDGET, LOCATION)

PROJ relation is divided into three fragments.

PROJ 1 = SL LOCATION = 'Pune' (PROJ)

PROJ 2 = SL LOCATION = 'Mumbai' (PROJ)

PROJ 3 = SL LOCATION = 'Delhi' (PROJ)

Consider the following query :

Select PNAME, BUDGET from PROJ

Where LOCATION = 'Pune'

Draw Global Operator Tree and Reduced Operator Tree for the given query.

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[4170]-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. Explain unique features of E-commerce.
- (b) Explain B2B Business Model in detail.
- (c) What is Personalisation ? Illustrate with an example.
- (d) Define Auction and Dynamic Pricing. Explain various forms of Dynamic Pricing.
- (e) Explain Dimensions of E-commerce Security.

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

- (a) Explain On-line Credit Card Transaction in detail.
- (b) Write notes :
 - (i) Digital Envelopes
 - (ii) Digital Certificates
- (c) What is Merchant - Server Software ? How it provides basic functionality needed for On-line Catalog, Shopping Cart and On-line Credit Card Processing ?
- (d) Explain benefits of Auctions.
- (e) Explain Horizontal and Vertical Scaling with advantages and drawbacks of each.

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

- (a) Write a note on Prices of Site Building.
- (b) Explain difference between E-commerce and E-business.
- (c) What is EBPP ? Explain EBPP Business Model in detail.
- (d) Define Hacking and Cyberundalism and explain the different types of Hackers.
- (e) Explain Symmetric Key Encryption and the limitations to Encryption Solutions.

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

- (a) Write a notes :
 - (i) Trojan Horse
 - (ii) Bots
- (b) Explain On-line Stored Value Payment System.
- (c) Explain Key Elements of Business Model.
- (d) Explain different types of Auction.
- (e) Explain Hash Function in detail.

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

- (a) What is the Value Proposition that Paypal Offers Consumers ?
How about Merchants ?
 - (b) Into which Category or Categories of E-commerce do P2P file-sharing networks fall ?
 - (c) What are some of the risks of using Paypal when compared to Credit Cards and Debit Cards ?
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Total No. of Questions : 5]

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[4170]-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 is Data Warehousing ? Explain Dimensional Modeling Schemes for Data Warehouse.
- (b) What is Data Marting and when is Data Marting Appropriate ?
- (c) What is RAID Technology ? Explain with example.
- (d) What is difference between OLTP and Data Warehouse ?
- (e) What is Business Intelligence ? What are the Free and Commercial Business Intelligence Products available in Market ?

Q.2) Attempt any four of the following :

[4x4=16]

- (a) Write down the classification of Data Mining System.
- (b) Write a major issues in Data Mining.
- (c) What are the Primitives of Data Mining ?
- (d) Write down the different types of Server ?
- (e) Explain use of Genetic Algorithm in Clestering ?

[4170]-564

1

P.T.O.

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

- (a) Differentiate Single Dimensional Boolean Association Rules and Multi-level Association Rules from Transaction Database.
- (b) Discuss the importance of Mean, Median Co-relation (statistical) in Data Mining.
- (c) Explain with an example Bayesian Classification.

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

- (a) Write down the Physical Layout of Data Warehouse.
- (b) Explain Star Schema with suitable example.
- (c) Write a short note on Data Warehouse Architecture with suitable diagram.

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

- (a) Temporal Mining
 - (b) Decision Tree
 - (c) OLAP
 - (d) Data Mining
 - (e) Knowledge Data Discovery
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Total No. of Questions : 5]

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[4170]-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) *All questions carry equal marks.*

Q.1) Attempt any four of the following :

[4x4=16]

- (a) Explain in detail Synchronization Reference Model.
- (b) What is a Colour Management System ? Why is it required ?
- (c) Explain the issues that should be considered while Designing a Presentation.
- (d) Explain why Incentive should provided to Indirect Workers.
- (e) Discuss Guidelines used to make benefits programme more effective.

Q.2) Attempt any four of the following :

[4x4=16]

- (a) Explain Job Instruction Training Method.
- (b) Explain Structure of SGML.
- (c) Explain Halsey Plan with proper example.
- (d) Discuss some of the important specification of Digital Images.
- (e) Write a note on Nation of Synchronization.

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

- (a) Explain Conceptual Architecture of a Multimedia Presentation System.
- (b) Explain in detail Intra-object Synchronization.
- (c) Explain different steps for Administration of Benefits and Services.
- (d) What do you understand by Placement ?
- (e) What are the basic steps for Image Processing ?

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

- (a) Explain RGB Colour Model.
- (b) What are the characteristics of a Document Interchange Model ?
- (c) Explain Orientation Process.
- (d) Explain Scope of Incentive Schemes.
- (e) Explain importance of Training and Development Process.

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

- (a) TWAIN Interface Standard
 - (b) MODE
 - (c) Composition Mob
 - (d) HyTime
 - (e) Distance Based Training
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[4170]-566

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

OPERATION RESEARCH

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.*
- (4) *Use of calculator is allowed.*

Q.I) Attempt any three of the following :

[15]

- (a) Define Operations Research and explain how it assists Manager in Decision-making.
- (b) A firm manufacturer two type of products A and B and sell them at a profit of Rs. 2 on product A and Rs. 3 on product B. Each product is processed on two machines G and H. Type A requires one minute of processing time on G and two minutes on H. Type B requires one minute on G and one minute on H. Machine H is available not more than 400 minute and while machine H is available only 600 minutes. Formulate the problem as L.P.P.

- (c) Solve graphically the following L.P.P. :

$$\text{Max. } Z = 9x + 13y$$

$$\text{Subject to } 2x + 3y \leq 18$$

$$2x + y \leq 10$$

$$x \geq 0, y \geq 0$$

(d) Solve the following L.P.P. by Simplex Method :

$$\text{Max. } Z = 2x + 5y$$

$$\text{Subject to } 2x + 4y \leq 8$$

$$3x + y \leq 6$$

$$x + y \leq 4$$

$$x \geq 0, y \geq 0$$

(e) Solve the following L.P.P. by Big M Method :

$$\text{Max. } Z = 60x + 96y$$

$$\text{Subject to } 2x + 4y \geq 40$$

$$3x + 3y \geq 35$$

$$x \geq 0, y \geq 0$$

Q.2) Attempt any three of the following :

[15]

(a) What is General L.P.P. ? Write any two applications of it.

(b) Obtain the dual of :

$$\text{Min. } Z = 4x_1 + 6x_2 + 3x_3$$

$$\text{Subject to } 3x_1 + 4x_2 + x_3 \geq 10$$

$$-2x_1 - 3x_2 + 2x_3 \leq -5$$

$$x_1 - 2x_2 - 3x_3 \leq -1$$

$$3x_1 + 2x_2 + 2x_3 \geq 5$$

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

(c) Obtain the Initial Basic Solution for following T.P. :

		Destination				
		D₁	D₂	D₃	D₄	
Origin	O₁	2	3	11	7	6
	O₂	1	0	8	1	1 Availability
	O₃	5	8	15	9	10
		7	5	3	2	
		Requirement				

(d) Solve the following game graphically :

		Player B			
		I	II	III	IV
Player A	I	2	2	3	-1
	II	4	3	2	6

(e) Write the role of Statistical Technique in PERT.

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

[15]

(a) Solve the following A.P. for Minimization :

	M_1	M_2	M_3	M_4
I_1	4	22	13	7
I_2	10	25	1	23
I_3	36	17	16	13
I_4	15	22	20	6

(b) Solve the following 2×2 game by Algebraic Method :

		Player B	
		I	II
Player A	I	2	-1
	II	-1	0

(c) Solve the following T.P. by Least Cost Method :

Factory	Warehouses				Supply
	W_1	W_2	W_3	W_4	
F_1	6	5	8	5	30
F_2	5	11	9	7	40
F_3	8	9	7	13	50
Demand	35	28	32	25	120

- (d) Discuss various steps involved in the applications of PERT and CPM.
- (e) Explain $m \times n$ pay off game problem as LPP (Minimization Case) :

$$A \begin{matrix} & \text{B} \\ \begin{bmatrix} 5 & 3 & 7 \\ 7 & 9 & 1 \\ 10 & 6 & 2 \end{bmatrix} \end{matrix}$$

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

[15]

- (a) Explain the following terms :
- (i) Two Person Zero Sum Game
 - (ii) Saddle Point
 - (iii) Fair Game
 - (iv) Mixed Strategy
- (b) What is basic difference between PERT and CPM ?
- (c) Solve the following A.P. for Minimum Cost :

$$\begin{matrix} & \text{I} & \text{II} & \text{III} & \text{IV} \\ \begin{matrix} \text{A} \\ \text{B} \\ \text{C} \\ \text{D} \end{matrix} & \begin{bmatrix} 2 & 3 & 4 & 5 \\ 4 & 5 & 6 & 7 \\ 7 & 8 & 9 & 8 \\ 3 & 5 & 8 & 4 \end{bmatrix} \end{matrix}$$

- (d) Determine the dual of following primal :

$$\text{Max. } Z = 7x_1 + 9x_2$$

$$\text{Subject to } x_1 + 2x_2 \leq 1$$

$$-x_1 + 3x_2 \leq 2$$

where x_1, x_2 are unrestricted.

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

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(a) A building construction project has the following time schedule :

Activity	Time in Months	Activity	Time in Months
1-2	2	3-7	5
1-3	2	4-6	3
1-4	1	5-8	1
2-5	4	6-9	5
3-6	8	7-8	4
		8-9	3

(i) Draw an arrow diagram for this project.

(ii) Find Critical Path and its duration.

(b) Obtain Initial Basic Feasible Solution of the following T.P. by Vogel's Approximation Method. Is this solution optimal ? If not, find optimal solution by MODI Method :

	Destination				Supply
Origin	1	4	6	3	6
	9	7	10	9	1
	4	5	11	7	10
	8	7	8	5	2
Demand	7	5	3	4	

(c) Solve the following LPP by Simplex Method :

$$\text{Max. } Z = 3x_1 + 2x_2 + 5x_3$$

$$\text{Subject to } x_1 + 2x_2 + x_3 \leq 430$$

$$3x_1 + 2x_3 \leq 460$$

$$x_1 + 4x_2 \leq 120$$

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