Total No. of Questions—**5**] [Total No. of Printed Pages—**2**

Seat No.	

[5161]-11

M.C.A. (Commerce Faculty) (First Semester)

EXAMINATION, 2017

102 : SYSTEMS ORGANISATION AND MANAGEMENT

(2013 PATTERN)

Time : Three Hours **Maximum Marks : 80**

N.B. **:—** (*i*) *All* questions are compulsory.

(*ii*) Figures to the right indicate full marks.

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

(1) Management

(2) Motivation

(3) Organisation

(4) Finanical Policies

(5) Enterprise Resource Planning

(6) Job Enlargement.

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

(1) Explain the role of internet in management of a business.

(2) State the advantages of Decision Support System.

(3) Distinguish between formal and informal organisation.

(4) Explain the process of Recruitment.

(5) Determine the information requirements of a Personnel Manager in a manufacturing industry.

P.T.O.

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

(1) Discuss the significance of management in an IT Sector.

(2) Explain the concept of Customer Relationship Management.

(3) State the various sources of Information.

(4) Discuss the latest developments taking place in Hardware and Software.

(5) What do you mean by Weakness of Business Organization ?

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

(1) State the advantages of management information system.

(2) Explain the functions of middle level management.

(3) Explain the steps in controlling.

(4) Explain the need forecasting in planning.

(5) Explain McGregor's theory *x* and *y*.

5. Write short notes on (any *four*) : [16]

(1) Supply Chain Management

(2) Expert System

(3) Unity of Command

(4) Types of Plans

(5) Mission Statement

(6) Behavioural Approach of Information System.

Total No. of Questions—**5**] [Total No. of Printed Pages—**5**

Seat No.	

[5161]-12

M.C.A. (Commerce Faculty) (First Semester)

EXAMINATION, 2017

103 : PROGRAMMING FUNDAMENTALS

('C' Programming)

(2008 PATTERN)

Time : Three Hours **Maximum Marks : 80**

N.B. **:—** (*i*) *All* questions are compulsory.

(*ii*) *All* questions carry equal marks.

(*iii*) Assume suitable data, if necessary.

1. Attempt any *four* : [4×4=16]

(*a*) Write a short note on User Defined Data Types in 'C'.

(*b*) What is switch() statement ? Explain use of it.

(*c*) Define :

(*i*) Variables

(*ii*) Comments.

(*d*) Explain use of increment & decrement operators with proper example.

(*e*) Explain scanf() & printf() functions with proper example.

P.T.O.

2. Attempt any *four* : [4×4=16]

(*a*) Write a 'C' program to display multiplication table of a given number.

(*b*) Write a 'C' program to accept a four digit number from user and sum the digits of the entered number.

(*c*) Write a 'C' program to check whether inputted character is digit or alphabet.

(*d*) Write a 'C' program to display all even numbers between 50 to 100 by using function.

(*e*) Write a 'C' program to print the following output using for loop :

```
1
2  2
3  3  3
4  4  4  4
5  5  5  5  5
```

3. Attempt any *four* : [4×4=16]

(*a*) Explain any *four* string functions with syntax.

(*b*) What is structure and what is use of structure in 'C' ?

(*c*) What is Array ? How to initialize and access elements of an Array ?

(*d*) Explain the following functions with suitable example :

(*i*) fgetc()

(*ii*) fseek().

(*e*) Describe the following types of macro-substitution directives :

(*i*) Simple macro-substitution

(*ii*) Argumented macro-substitution.

4. Trace output & justify (any *four*) : [4×4=16]

(*a*)
```
#include<stdio.h>
int main()
{
char ch='A',
printf("%d, %d, %d", sizeof(ch), sizeof('A'), sizeof(3.14f));
return0;
}
```

b)
```
#include<stdio.h>
int main()
{
FILE *fp1, *fp2;
fp1=fopen("file.c","w");
fp2=fopen("file.c","w");
fputc('ABC', fp1);
fputc('DEF', fp2);
fclose(fp1);
fclose(fp2);
return 0;
}
```

(*c*)
```
#include<stdio.h>
int main()
{
int a=500, b, c;
if(a >= 600)
b = 200;
c = 400;
printf("%d,%d,%d\n", a, b, c);
return 0;
}
```

(*d*)
```
#include<stdio.h>
int main()
{
int k=l;
printf("%d==1 is" "%s\n", k, k==1?"TRUE":"FALSE");
retum ();
}
```

(*e*)
```
#include<stdio.h>
#include<string.h>
int main()
{
printf("%d\n", strlen("3456"));
return ();
}
```

5. Attempt any *four* : [4×4=16]

(*a*) Write a 'C' program to create structure 'cust'. Accept cust details such as account_no., name , balance etc. Assume maximum 10 customers in bank. Write a function to print account_no. and name of the customer whose balance is above Rs. 15000. Write a 'C' program to read a file and display its contents along with line number before each line.

(*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 accept two $m \times n$ matrix & display matrix multiplication.

(*d*) Write a 'C' Program to accept a string from user, delete all vowels from that string and display the result.

(*e*) Write a 'C' program to accept two arrays from user and display union of them.

Total No. of Questions—**5**] [Total No. of Printed Pages—**5**

Seat No.	

[5161]-13

M.C.A. (Part I) (Commerce) (First Semester) EXAMINATION, 2017

STATISTICAL AND NUMERICAL METHODS

(2008 PATTERN)

Time : Three Hours **Maximum Marks : 80**

N.B. **:—** (*i*) *All* questions are compulsory.

(*ii*) Figures to the right indicate full marks.

(*iii*) Use of statistical tables and calculator is allowed.

(*iv*) Symbols have their usual meanings.

1. Attempt any *three* of the following : [3×5=15]

(*a*) Obtain the root of the equation $X^3 - 4x - 9 = 0$, correct up to four decimal points between (2, 4) by using bisection method.

(*b*) Use Newton-Raphson method to obtain a root in (–3, –2) of the equation $x^3 + 3x^2 - 3 = 0$, correct up to four decimal points.

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

(*d*) Define different Difference Operators. Also state relation between them.

(*e*) Explain Trapezoidal Rule and Simpsons (1/3)rd Rule for Numerical lntegration.

P.T.O.

2. Attempt any *three* of the following : [3×5=15]

(*a*) Find the value of y at $x = 1.45$, given that :

X	**Y = *f*(*x*)**
1	0.0
1.2	–0.112
1.4	–0.016
1.6	0.336
1.8	0.992
2	2

(*b*) From the following table, find first and second order derivative at $x = 1.5$:

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

(*c*) Explain general Quadrature formula for equidistant ordinates for numerical integration.

(*d*) Solve $\frac{dy}{dx} = x + y$ given that $y(0) = 1$. Obtain the values of $y(0.1)$ by Picard's methods.

(*e*) Explain the Bi-section method to obtain root of the equation.

3. Attempt any *three* of the following : [3×5=15]

(*a*) What is time series ? Explain Seasonal variation in detail.

(*b*) State any *five* properties of normal distribution.

(*c*) Ten individuals are chosen at random from normal population and the heights are found to be in inches 63, 63, 66, 67, 68, 69, 70, 70, 71 and 71. Test if sample belongs to the population whose mean height is 66 inches. (Given : $t_{0.05,\ 9} = 2.26$)

(*d*) The following data is collected on two characters :

	Smokers	**Non-smokers**
Literate	83	57
Illiterate	45	68

Is there is any relation between literacy and smoking ? (Given : $\chi^2_{1,\ 0.05} = 3.841$)

(*e*) Let $X \rightarrow N(3,\ 2^2)$, then find $P(X < 5)$ and $P(2 < X < 8.)$

4. Attempt any *three* of the following : [3×5=15]

(*a*) Explain large sample test in detail.

(*b*) Two samples of sizes 1000 and 2000 farms gave average yields of 2000 kg and 2050 kg respectively. The variance of wheat farms in the country may be taken as 100 kg. Examine whether two samples differ significantly in average yields.

(*c*) Fit a straight line by the method of least square to the following data :

X	**Y**
1	15
2	70
3	140
4	250
5	380

(*d*) Estimate the values of $\int_0^1 \frac{dx}{1+x}$ by Simpsons (1/3)rd and (3/8)th rule by taking $h = 1/6$.

(*e*) A random sample of 400 members has a mean 99. Can it reasonably regarded as a sample from a large population with mean 100 and standard deviation 8 at 5% level of significance ?

5. Attempt any *two* of the following : [2×10=20]

(*a*) Using Euler's modified method, solve $\frac{dy}{dx} = 1 - y$, $y(0) = 0$, in the range $0 \leq x \leq 3$, by taking $h = 0.1$.

Or

Given $\frac{dy}{dx} = x^2 - y$, $y(0) = 1$, find $y(0.1)$, $y(0.2)$ by using Runge-Kutta methods of :

(*i*) second order and

(*ii*) fourth order.

(*b*) Calculate three yearly moving averages for the following data. Also plot the trends and original trends on the same graph paper :

Year	**Sales**
1999	21
2000	22
2001	23
2002	25
2003	24
2004	22
2005	25
2006	26
2007	27
2008	26

(*c*) Memory capacity of 8 students was tested after and before training. State at 5 % level of significance whether the training was effective from the following scores :

Students	**Before Training**	**After Training**
1	49	52
2	53	55
3	51	52
4	52	53
5	47	50
6	50	54
7	52	54
8	53	53

(Given : $t_{7,\ 0.05} = 1.9$)

Total No. of Questions—**5**] [Total No. of Printed Pages—**4**

Seat No.	

[5161]-14

M.C.A. (Commerce) (First Semester) EXAMINATION, 2017

105 : OPERATING SYSTEMS

(2008 PATTERN)

Time : Three Hours **Maximum Marks : 80**

N.B. **:—** (*i*) *All* questions are compulsory.

(*ii*) Neat diagrams must be drawn wherever necessary.

(*iii*) Figures to the right indicate full marks.

1. Attempt the following questions (any *four*) : [16]

(*a*) State and explain the typical attributes of a file.

(*b*) Explain working of MVT and differentiate it with MFT.

(*c*) Explain the term 'selecting a victim' in the context of deadlock recovery.

(*d*) What is bounded buffer problem ? How semaphore is used to solve this problem ?

(*e*) Write a note on CPU/IO burst cycle.

2. Attempt the following questions (any *four*) : [16]

(*a*) Explain working of real time operating system.

(*b*) Explain storage structure of system.

(*c*) Explain message passing model of interprocess communication.

(*d*) Explain different types of scheduling queue.

P.T.O.

(*e*) Differentiate between multi-level queue and multi-level feedback queue.

3. Attempt the following questions (any *four*) : [16]

(*a*) Write a Bakery algorithm for *n*-processes.

(*b*) How paying and virtual memory can help during process creation ? State and explain the different techniques used to achieve this.

(*c*) Write a note on file protection.

(*d*) Explain working of paged memory allocation.

(*e*) What are the necessary conditions for a deadlock to occur ? State and explain.

4. Attempt the following questions (any *four*) : [16]

(*a*) Consider the following set of processes with the length of CPU burst time and arrival time given in milliseconds :

Process	**Burst time**	**Arrival time**
P_1	3	1
P_2	2	2
P_3	5	0

Illustrate the execution of these process using round robin CPU scheduling algorithms. Also calculate wait time and turn around time of each process and calculate average waiting time and average turn around time for above situation. Consider time quantum is 1.

(*b*) Consider the following page reference string :

5, 0, 6, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 6, 2.

How many page fault would occurred for the following page replacement algorithm ? Assume there are 3 frames and initially they are empty ?

(*i*) FIFO

(*ii*) Optimal.

(*c*) Explain the basic file operations.

(*d*) Write a note on internal and external fragmentation.

(*e*) Explain different methods used for deadlock recovery.

5. Attempt the following questions (any *four*) : [16]

(*a*) Consider the following snapshot of system. A, B, C & D are the resources types :

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

(*i*) What is the content of need array ?

(*ii*) If the system is in safe state give the safe sequence.

(*iii*) If the request from process P_1 arrives for 0, 4, 2, 0 can it be granted immediately.

(*b*) Explain the uses of system program.

(*c*) Differentiate between multiprogramming and multiprocessing.

(*d*) Explain Single Level Directory structure with its advantages and disadvantages.

(*e*) Define the following terms :

(*i*) Ready queue

(*ii*) Process

(*iii*) Starvation

(*iv*) Caching.

Total No. of Questions—**5**] [Total No. of Printed Pages—**3**

Seat No.	

[5161]-15

M.C.A. (Commerce Faculty) (First Semester)

EXAMINATION, 2017

SOFTWARE ENGINEERING

(2008 PATTERN)

Time : Three Hours **Maximum Marks : 80**

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) Figures to the right indicate full marks.

(*iii*) Draw diagrams wherever necessary.

1. Solve the following case study : [16]

Workers in an engineering unit are paid incentive wages on the basis of additional output as compared to the norms. The daily expected output of each worker is recorded on a form by the departmental foreman based on requirements conveyed to him by the production control department and norms laid down by industrial engineering department. The actual daily output is recorded on the same form against the expected output which is signed by both the worker and the foreman. A copy of this report is forwarded to quality control who records "quantity accepted" against "quantity produced" column in the production report. This is then submitted to the time office clerk, who daily computes incentive amount payable based on a table and records it in register.

(*i*) Draw E-R diagram for the above case. [6]

(*ii*) Draw context level DFD and break it till first level. [6]

(*iii*) Design input and output screen for above system [4]

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

(*a*) What is System ? Explain its types.

(*b*) Explain structure chart with an example.

(*c*) Explain ISO standards in detail.

(*d*) Explain Implementation Strategies in detail.

(*e*) Draw a Decision table.

ABC Co. Ltd decides to give Diwali bonus to all employees for which the management has divided the employees into three categories namely Administrative Staff (AS), Office staff (OS), Workers (W) and considered the following rules :

(*i*) If the employee is permanent and in the as category the bounds amount is three months salary.

(*ii*) If the employee is permanent and in the OS category the bonus amount is two salaries,

(*iii*) If the employee is permanent and in the W category the bonus amount is one month's salary.

(*iv*) If the employee is temporary then half of the amount is given to them as per the permanent employee's bonus amount.

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

(*a*) Explain Tuning and Optimization in detail.

(*b*) What is fact finding technique ? Explain any *two* in details.

(*c*) What is system maintenance ? Explain its types in detail.

(*d*) Explain process specification method in detail.

(*e*) Explain 4GL in detail.

4. Write short notes on (any *four*) : [16]

(*a*) Comment on : "System Analyst acts like a bridge between customer and software development team".

(*b*) Distinguish between :

1. Open and Closed system
2. ES and EIS.

(*c*) What is analyst ? Explain its role.

(*d*) Explain the controlling Factors of Maintenance.

(*e*) What is CMM ? List out any *three* CMM Levels.

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

(*a*) Compare alpha with Beta testing.

(*b*) Why feasibility study is needed ? Explain its types.

(*c*) Explain Test Data Generators in detail.

(*d*) Explain SDLC with spiral model.

(*e*) Reverse engineering and Re-engineering.

Total No. of Questions—**5**] [Total No. of Printed Pages—**4**

Seat No.	

[5161]-21

M.C.A. (Commerce) (Second Semester)

EXAMINATION, 2017

202 : RELATIONAL DATABASE MANAGEMENT SYSTEM

(2008 PATTERN)

Time : Three Hours **Maximum Marks : 80**

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) Figures to the right indicate full marks.

(*iii*) *All* questions carry equal marks.

1. Attempt *all* : [8×2=16]

(*a*) What is a schedule ? Give example.

(*b*) What is timestamp ? Which are *two* types of timestamp ?

(*c*) Define :

(*i*) Instance

(*ii*) Schema

(*d*) List versions of 2-phase locking protocol.

(*e*) Give syntax of grant command.

(*f*) What is E-R diagram ? What does it represent ?

(*g*) What is derive attribute ?

(*h*) Which are different states of transaction ?

2. Attempt any *four* : [4×4=16]

(*a*) Write a note on Aggregation.

(*b*) Explain the following operations :

(*i*) Outer join

(*ii*) Union.

P.T.O.

(*c*) Which are different functions of DBA ?

(*d*) Explain the following with example :

(*i*) Unique constraints

(*ii*) Check constraints

(*e*) What is BNF ? Which are Armstrong's axioms ?

3. Attempt any *four* : [4×4=16]

(*a*) Write a note on validation-based protocol.

(*b*) What is concurrent execution of transaction ? Explain with example.

(*c*) Write a note on log based recovery.

(*d*) Which are different types of failures that can be occur in a system ?

(*e*) Define :

(*i*) Precedence graph

(*ii*) Wait-Die

(*iii*) Wait-for-graph

(*iv*) Wound-wait

4. Attempt the following : [10+6]

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

A movie studio wishes to institute a database to manage their files of movie actors and directors. The following facts are relevant.

(*i*) Each actor has appeared in many movies.

(*ii*) Each director has directed many movies.

(*iii*) Each movie has one director and one or more actors.

(*e*) Each actor and director may have several addresses.

Draw ERD for above scenario.

Identify Entities and Relationships.

(*b*) Attempt any *two* : [2×3=6]

(*i*) What are 2-tier and 3-tier database architecture ?

(*ii*) Which are Armstrong's axioms ?

(*iii*) Define :

(*a*) Strong entity set

(*b*) Ternay Relationship

(*c*) Relation

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

(*a*) Attempt the following [10×1=10]

Consider the following schema

Customer (cno, cname, city) [2×5=10]

Car (Carno, carmodel, color, price, cno)

Solve the following queries using SQL :

(*i*) Display the car details having maximum price

(*ii*) Count the number of cars belong to "Mr. Patil"

(*iii*) List customerwise car model

Solve the following queries using relational algebra.

(*i*) List car model & color of car belong to "Mr. Jadhav."

(*ii*) List customer names from Pune city.

(*b*) Attempt any *two* : [3×2=6]

(*i*) Give one non-serializable schedule for the following :

T_1	T_2
R (*x*)	R (*x*)
x = *x* + 100	*x* = *x* – 100
w (*x*)	*w* (*x*)
R (*y*)	R (*y*)
R (*z*)	*y* = *y* – 200
y = *y* + 200	*w* (*y*)
w (*y*)	
z = *z* + 300	
w (*z*)	

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

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

(*iii*) What is Normalization ? Give advantages and disadvantages.

Total No. of Questions—**5**] [Total No. of Printed Pages—**6**

Seat No.	

[5161]-22

M.C.A. (Commerce Faculty) (Second Semester)

EXAMINATION, 2017

COST ACCOUNTING AND COST CONTROL TECHNIQUES

(2008 PATTERN)

Time : Three Hours **Maximum Marks : 80**

***N.B.* :—** (*i*) Figures to the right indicate full marks.

(*ii*) *All* questions carry equal marks.

(*iii*) Use of electronic pocket calculator is allowed.

1. (*a*) What do you mean by Cost Accounting ? State the difference between Cost Accounting and Financial Accounting. [8]

(*b*) Explain in detail the classification of overheads. [8]

2. Write short notes on (any *four*) : [16]

(*a*) Elements of Cost

(*b*) Normal and Abnormal Loss

(*c*) Features of Job Costing

(*d*) Under Absorption of Overheads

(*e*) Break-even point

(*f*) Cost Unit.

P.T.O.

3. The following particulars have been extracted from the books of M/s Yuva Ltd. Nashik as on 31st March, 2010 :

Particulars	**Amount** (Rs.)
Stock of Material (1-4-2009)	47,000
Stock of Material (31-3-2010)	45,000
Material Purchased	2,08,000
Drawing office salaries	9,600
Salesman salary	14,000
Direct expenses	8,200
Carriage outward	5,100
Donation to Relief Fund	4,300
Sales	4,87,000
Bad debts	4,700
Repairs to plant	8,600
Rent, Rates, Taxes (Factory 3/4, Office 1/4)	4,000
Travelling Expenses (Factory 3/4, Office 1/4, Selling 1/2)	11,500
Production Wages	1,45,000
Depreciation (Machinery)	9,100
Depreciation (Office Furniture)	600
Directors' Fees	6,000
Gas and Water (Factory)	1,000
Gas and Water (Office)	5,000
Manager's Salary	18,000

The manager devotes 50% of his time in factory and rest of his time in the office.

Prepare a cost sheet showing different elements of cost. [16]

4. Moon Chemical Industries provides the following information from their records. For making 10 kg of GEMCO the standard material required is :

Material	**Quantity in kg**	**Rate per kg** (Rs.)
A	8 kg	Rs. 6.00
B	4 kg	Rs. 4.00

During April 2010, 1000 kg of GEMCO were prdouced.

The actual consumption of material is as under :

Material	**Quantity in kg**	**Rate per kg** (Rs.)
A	750 kg	Rs. 7
B	500 kg	Rs. 5

Calculate :

(*i*) Material Cost Variance

(*ii*) Material Price Variance

(*iii*) Material Usage Variance.

Or

Vidya Construction Ltd. Chennai, undertook a contract of Rs. 16,00,000 for constuction of Shopping Mall on 1st April, 2009.

The following information is taken up from the contract ledger as on 31-3-2010.

Material directly issued from stores	2,60,000
Materials purchased	1,40,000
Scrap materials sold	16,000
Materials transferred to other contract	20,000
Materials in hand on site	22,000
Materials return to stores	12,000
Direct Wages paid	1,70,000
Direct charges	90,000
Overhead charged to contract	80,000
Sub-contract cost	18,000
Cost of additional work	6,800
Outstanding direct expenses	3,200
Plant purchased and issued directly (1-4-2009)	1,60,000
Depreciation on Plant (Annual)	16,000
Plant transferred on 1-4-2009 to other contract	80,000
Cash received (90% of work certified)	7,20,000

Uncertified work being 8% of credit work.

You are required to prepare :

(*i*) Contract Account

(*ii*) Contractee's Account. [16]

5. A company to have Rs. 37,500 cash in hand on 1st April, 2009. You are required to prepare cash budget for the period April 9, June 9 :

	February	**March**	**April**	**May**	**June**
Sales	75,000	84,000	90,000	1,20,000	1,35,000
Purchases	45,000	48,000	52,500	60,000	60,000
Wages	3,000	9,750	10,500	13,500	14,250
Factory Exp.	7,500	8,250	9,000	11,250	14,000
Office Exp.	6,000	6,000	6,000	6,000	7,000
Selling Exp.	4,500	4,500	5,250	6,570	7,000

Additional Information :

(*a*) Period of credit allowed by supplier is 2 months.

(*b*) 20% of sales are for cash.

(*c*) 1 month credit is allowed for credit sales.

(*d*) Delay in payment of all expenses 1 month.

(*e*) Income tax of Rs. 57,500 is due, to be paid in June, 2009.

(*f*) The company to pay dividend and bonus of Rs. 15,000 and Rs. 22,500 respectively in the month of April, 2009.

(*g*) Plant has been ordered to be received and paid in May, 09. It will cost 20,000. [16]

Or

You are given the following data for the year 2010 of M/s XYZ Co. Ltd :

	Rs.
Fixed Cost	12,00,000
Variable Cost	24,00,000
Sales	40,00,000
Net Profit	4,00,000

Calculate :

(*i*) P/V Ratio

(*ii*) Break-even point

(*iii*) Profit when sales are Rs. 48,00,000

(*iv*) Sales to earn a profit of Rs. 8,00,000.

Total No. of Questions—**5**] [Total No. of Printed Pages—**5**

Seat No.	

[5161]-23

M.C.A. (Commerce) (II Sem.) EXAMINATION, 2017
ACCOUNTING FOR MANAGEMENT
(2008 PATTERN)

Time : Three Hours **Maximum Marks : 80**

N.B. **:—** (*i*) *All* questions are compulsory.
(*ii*) Figures to the right indicate full marks.
(*iii*) Use of calculator is allowed.

1. What do you mean by analysis of financial statement ? Explain the various techniques used for financial statement analysis. [16]

Or

Define management accounting. State and explain scope and functions of management accounting.

2. Following information of A Ltd is available on 31st March, 2017 : [16]

Current ratio	2.5
Liquid ratio	1.5
Working capital	Rs. 9,00,000
Gross profit ratio	25%
Stock turnover ratio	6 times
Debtors velocity	2 months
Fixed assets turnover ratio (Cost of goods sold)	10/3
Reserves to share capital	0.2

Prepare balance sheet as on 31st March, 2017 with as many details as possible.

P.T.O.

Or

What do you mean by break-even analysis ? State the assumptions of such analysis. What are the drawbacks of such analysis. [16]

3. Prepare a cash budget for the three months ending 30th June 2017 from the information given below : [16]

Months	**Sales** (in Rs.)	**Material** (in Rs.)	**Wages** (in Rs.)	**Overheads** (in Rs.)
February	2,80,000	1,92,000	60,000	34,000
March	3,00,000	1,80,000	60,000	38,000
April	3,20,000	1,84,000	64,000	40,000
May	3,40,000	2,00,000	72,000	44,000
June	3,60,000	2,08,000	80,000	46,000

Additional Information :

(*i*) 10% sales are on cash basis. 50% of the credit sales are collected next month and the balance in the following month.

(*ii*) Creditors for materials are paid at 2 months, whereas wages and overheads are paid on the first day of next month.

(*iii*) Cash and Bank Balance on 1st April, 2017 is expected to be Rs. 1,20,000.

(*iv*) Plant and machinery will be installed in February 2017 at a cost of Rs. 19,20,000. The monthly instalment of Rs. 40,000 is payable from April onwards.

(*v*) Dividend @ 5% on preference share capital of Rs. 10,00,000 will be paid on 1st June. 2017.

(*vi*) Interest on investment is to received in June, 2017 amounting to Rs. 20,000.

(*vii*) Income tax (advance) to be paid in June amounted to Rs. 20,000.

Or

The sales and profit during two years were as follows : [16]

Year	**Sales** (Rs.)	**Profit** (Rs.)
2016	6,00,000	1,00,000
2017	6,80,000	1,24,000

You are required to calculate :

(*a*) The P/V ratio

(*b*) Fixed costs

(*c*) The break-even point

(*d*) The sales required to earn a profit of Rs. 2,50,000

(*e*) The profit made when sales are Rs. 12,50,000

(*f*) Margin of safety at profit of Rs. 1,50,000

(*g*) Variable cost of two years.

4. What do you mean by cash flow statement ? Explain its advantages. How does a cash flow statement differs from a funds flow statement ? [16]

Or

Balance sheets of Raj Ltd as on 31st March, 2016 and 31st March, 2017 : [16]

Liabilities	31-3-2016	31-3-2017	Assets	31-3-2016	31-3-2017
Equtiy Share Capital	2,00,000	3,00,000	Goodwill	50,000	40,000
6% Prf. Share Capital	1,00,000	50,000	Building	1,00,000	75,000
General Reserve	20,000	30,000	Plant & Machinery	90,000	1,91,000
Profit & Loss A/c	18,000	52,000	Investments	10,000	35,000
S. Creditors	25,000	47,000	Stock	85,000	78,000
Bills payable	10,000	6,000	S. Debtors	60,000	90,000
Outstanding Exp.	8,000	6,000	Bills Receivable	15,000	18,000
Proposed Dividends	28,000	39,000	Cash & Bank	17,000	28,000
Provision for Tax	28,000	32,000	Preliminary Expenses	10,000	7,000
	4,37,000	5,62,000		4,37,000	5,62,000

Additional information :

(*i*) A plant was sold for Rs. 12,000 (W.D.V. Rs. 15,000).

(*ii*) Taxes paid during the year Rs. 26,000

(*iii*) Rs. 18,000 was charged as depreciation on plant and machinery and Rs. 25,000 on land and building.

(*iv*) An interim dividend or Rs. 10,000 has been paid during the year.

(*v*) 6% prf. shares were redeemed at 10% premium.

Prepare funds flow statement with necessary workings.

5. Write short notes on (any *two*) : [16]

(*i*) Advantages of marginal costing

(*ii*) Profitability ratios

(*iii*) Limitations of management accounting

(*iv*) Budget committee.

Total No. of Questions—**5**] [Total No. of Printed Pages—**3**

Seat No.	

[5161]-24

M.C.A. (Commerce Faculty) (Second Semester)

EXAMINATION, 2017

205 : NETWORKING OPERATIONS

(2008 PATTERN)

Time : Three Hours **Maximum Marks : 80**

***N.B.* :—** (*i*) *All* questions are compulsory.

(*ii*) Figures to the right indicate full marks.

(*iii*) *All* questions carry equal marks.

1. Attempt the following (any *four*) : [16]

(1) Differentiate between connectionless and connection oriented types of services.

(2) Explain serial and parallel transmissions.

(3) Explain the working of WAN.

(4) What is ISP ? Explain how to connect ISP with internet.

(5) What is bluetooth ? Explain with its architecture.

2. Write short notes on (any *four*) : [16]

(1) WWW

(2) Peer-to-peer LANS

P.T.O.

(3) Radio waves

(4) Modes of communication

(5) Micro waves.

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

(1) What are the different issues that are to be considered while designing the layers ?

(2) Write a note on Gateways.

(3) What is Topology ? Explain with different types of topology.

(4) Explain the frame format of IEEE 802.3.

(5) Explain network structure with suitable diagram.

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

(1) Explain in brief functions of NIC.

(2) Explain spanning tree bridges.

(3) Write a note on SAP.

(4) Explain synchronous and asynchronous types of tansmission.

(5) Write a short note on Guide Media.

5. Answer the following (any *one*) : [16]

(1) (*i*) Explain layered architecture of the ISO-OSI reference model. [8]

(*ii*) Explain physical structure of fiber optic cable. [4]

(*iii*) Compare Ring topology and Bus topology. [4]

Or

(2) (*a*) Define the terms : [8]

(*i*) Coaxial cable

(*ii*) Peer-Entities

(*iii*) Computer Network

(*iv*) Internet.

(*b*) Explain IEEE 802.11 architecture (Wireless LANS). [8]

Total No. of Questions—**5**] [Total No. of Printed Pages—**3**

Seat No.	

[5161]-31

MCA (Commerce Faculty) (Third Semester) EXAMINATION, 2017

301 : ADVANCED OPERATING SYSTEM

(2008 PATTERN)

Time : Three Hours **Maximum Marks : 80**

N.B. **:—** (*i*) *All* questions are compulsory.

(*ii*) *All* questions carry equal marks.

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

(*a*) Explain client and non-client area mouse messages.

(*b*) Differentiate between Bitmap files and Meta files.

(*c*) Explain different scroll bar messages with notification codes in win 32 SDK.

(*d*) What are different methods to get a handle to device context ?

(*e*) Describe UNIX architecture.

2. State true *or* false and justify your answer (any *four*) : [16]

(*a*) Functionality of child window control can be modified.

(*b*) Predefined controls send WM_COMMAND Message while common controls send WM_NOTIFY Message to their parents.

(*c*) Timer messages are not asynchronous.

(*d*) Window supports graphical user interface.

(*e*) Window is a multiuser and multitasking system.

P.T.O.

3. Answer the following (any *eight*) : [16]

(*a*) Define caret. State its function.

(*b*) What is pipe ? Write its syntax.

(*c*) Give any *two* advantages of Buffer Cache.

(*d*) What are keystrokes ?

(*e*) State functions of kernel.

(*f*) Define viewport.

(*g*) What are virtual keys ?

(*h*) Define keyboard accelerators.

(*i*) What is hot spot ?

(*j*) What is role played by post_quit_message( ).

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

(*a*) Write a shell script to display whether given number is prime or not ?

(*b*) Write a shell script to display list of all files in current directory.

(*c*) Display a "Welcome" message at the point in client area where the right mouse button is pressed and erased when it is released.

(*d*) Display push button at the center of client area using up, down, left and right arrow keys. Move it accordingly.

(*e*) Write window procedure to display a static text on screen. By pressing "HOME" and "END" key the cursor can be move to the beginning and end of text.

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

(*a*) Explain algorithm sleep and wake-up.

(*b*) What is shell programming ? Explain types of shell.

(*c*) Explain different system calls for file system. Give syntax.

(*d*) Describe mounting and unmounting file system.

(*e*) Explain structure of Buffer Header and Buffer Pool.

Total No. of Questions—**8**] [Total No. of Printed Pages—**2**

Seat No.	

[5161]-32

M.C.A. (Commerce) (Third Semester) EXAMINATION, 2017

303 : ENTERPRISE RESOURCE PLANNING AND MANAGEMENT

(2008 PATTERN)

Time : Three Hours **Maximum Marks : 80**

N.B. **:—** (*i*) Solve any *five* questions.

(*ii*) *All* questions carry equal marks.

(*iii*) Give illustrations, draw diagram wherever necessary.

1. Discuss various reasons for growth of ERP and any *four* advantages of ERP. [16]

2. What do you mean by Data Mining ? Explain advantages and technologies used in Data Mining. [16]

3. Explain various phases of BPR with suitable diagram. [16]

4. Define the term Vendor. Describe its responsibilities for ERP. [16]

5. Describe the connection between ERP, Internet and WWW. [16]

6. Explain in detail EDI uses, EDI components and services provided by EDI. [16]

P.T.O.

7. Explain the following terms : [16]

(1) Role of Enterprise

(2) OLAP

(3) ERP and E-commerce

(4) Integrated Data Model.

8. Write short notes on : [16]

(1) SAP Architecture

(2) Oracle

(3) People Soft

(4) IDOC Application.

Total No. of Questions—**5**] [Total No. of Printed Pages—**2**

Seat No.	

[5161]-35

M.C.A. (Third Semester) EXAMINATION, 2017
FINANCIAL AND INVESTMENT ANALYSIS (306)
(2008 PATTERN)

Time : Three Hours **Maximum Marks : 80**

N.B. :—*All* questions are compulsory and carry equal marks.

1. What is OTCEI ? Explain the features, objectives and advantages of OTCEI.

Or

What is Financial and Investment Analysis ? Explain the various quantitative and qualitative factors which are to be considered in financial analysis.

2. Explain the meaning and importance of 'Fundamental Analysis in investment analysis.

Or

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

3. As a 'Portfolio Manager' explain the various techniques of risk reduction

Or

What is 'Diversification' ? Explain the various methods of effecting diversification.

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

P.T.O.

Or

What is Investment Process ? Explain the various stages in Investment Process.

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

(*a*) O.T.C.E.I.

(*b*) Risk and Return

(*c*) Market Indicators

(*d*) Industry Analysis.

Total No. of Questions—**5**] [Total No. of Printed Pages—**3**

Seat No.	

[5161]-41

M.C.A. (Commerce) (Fourth Semester) EXAMINATION, 2017

CS-401 : ADVANCED DATABASE MANAGEMENT SYSTEM

(2008 PATTERN)

Time : Three Hours **Maximum Marks : 80**

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) *All* questions carry equal mark.

(*iii*) Figures to the right indicated full mark.

1. Write notes on (any *four*) : [4×4=16]

(*a*) OLAP

(*b*) Client/Server Architecture

(*c*) Object Identity

(*d*) Grid Files

(*e*) Majority Based Approach.

2. Attempt any *four* : [4×4=16]

(*a*) What is Semi-structured data ? How is it represented ?

(*b*) Compare Remote Backup and Replication in terms of availability.

(*c*) What is difference between thin and thick client ?

(*d*) Differentiate between ORDBMS and OODBMS.

(*e*) What is distributed databases ? What are advantages and disadvantages ?

P.T.O.

3. Attempt any *four* : [4×4=16]

(*a*) What do you mean by Extended E-R model ? Explain with suitable example.

(*b*) Write a note on Object Exchange Model.

(*c*) Explain Parallel Database Architecture.

(*d*) Write a note on KDD.

(*e*) What is data partitioning ? Which are data partitioning techniques ?

4. Attempt any *four* : [4×4=16]

(*a*) How to use Inverted Index ?

(*b*) Explain Spatial Data in detail.

(*c*) What is DSS ? State benefits of DSS.

(*d*) Write a note on OLTP.

(*e*) Define :

(*i*) I/O Parallelism

(*ii*) Interquery Parallelism

(*iii*) Intraquery Parallelism

(*iv*) Cache-Coherency Problem.

5. Attempt any *four* : [4×4=16]

(*a*) What is Query Optimization ?

(*b*) What is Vector Space Model ?

(*c*) Define :

(*i*) Posting File

(*ii*) Term Frequency

(*iii*) Boolean Query

(*iv*) Ranked Query

(*d*) Consider the following schema :

Game(Gno, Gname, no-of-players, Coach_name)

Perform horizontal fragmentation of Book relation using the following predicates

PI : SL Gname = "Cricket"

P2 : SL Gname = "Hockey"

P3 : SL Gname = "Football"

(*e*) Perform Vertical fragmentation of Book relation given below

Book(Bno, Bname, Price, Pubname)

According to the following requirements :

(*i*) Site 1 requires information about Bno, Bname

(*ii*) Site 2 requires information about Price, Pubname.

Total No. of Questions—**5**] [Total No. of Printed Pages—**3**

Seat No.	

[5161]-42

MCA (Commerce) (IV Semester)

EXAMINATION, 2017

DATA CENTRE TECHNOLOGY

(2008 PATTERN)

Time : Three Hours **Maximum Marks : 80**

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) Figures to the right indicate full marks.

(*iii*) Give illustrations wherever necessary.

1. Answer the following (Any *four*) : [4×4=16]

(1) Explain the following key terms

(*a*) Mean time between failures (MTBF)

(*b*) Mean time to repair (MTTR).

(2) Explain briefly the following Cluster Components :

(*a*) Local Disk

(*b*) Public or Service Network

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

(4) Write short notes on :

(*a*) Inband Monitoring

(*b*) Outband Monitoring

(5) Write a short note on TPC Benchmark.

P.T.O.

2. Answer the following (any *Four*) : [4×4=16]

(1) Write a note on Points of Distribution.

(2) Explain briefly the modular cabling design.

(3) Write a short note on LINPACK Benchmark

(4) Explain in brief Symmetric Two-Node Clusters

(5) Write a short note on Internet Access Components.

3. Answer the following (any *four*) : [4×4=16]

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

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

(2) State the causes of planned and unplanned Downtime.

(3) Explain briefly the following terms :

(*a*) UPS

(*b*) Generators

(4) Explain briefly the data centre prerequisites.

(5) Differentiate between cold and dry AC System.

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

(1) Explain in brief the following advantages of Load Balancing :

(*a*) Performance

(*b*) Cost Saving

(2) Explain briefly HVAC systems.

(3) What do you understand by ISP Network Infrastructure ?

(4) Define system administration. State best practices for system administration.

(5) What is Cluster ? Explain.

5. Answer the following (any *four*) : [4×4=16]

(1) Explain briefly the common automation tools.

(2) What are the various phases of capacity planning for servers ?

(3) What do you understand by network operations centre ?

(4) Explain briefly the best practices that one must follow to ease configuration and maintenance of network infrastructure.

(5) Identify the important aspects of system performance.

Total No. of Questions—**5**] [Total No. of Printed Pages—**3**

Seat No.	

[5161]-43

M.C.A. (Commerce Faculty) (Fourth Semester)

EXAMINATION, 2017

403 : WEB ENABLING SYSTEMS AND BUSINESS APPLICATION

(2008 PATTERN)

Time : Three Hours **Maximum Marks : 80**

N.B. **:—** (*i*) *All* questions are compulsory.

(*ii*) Figures to the right indicate full marks.

(*iii*) *All* questions carry equal marks.

(*iv*) Consider suitable data, if necessary.

1. Attempt any *four* : [4×4=16]

(1) Explain model view controller (MCV) architecture.

(2) Differentiate between 2-tier and *n*-tier architecture.

(3) Write the steps for creating a servlet.

(4) How is JDBC used for dynamic data ?

(5) What are the components of e-business ?

2. Attempt any *four* : [4×4=16]

(1) Write a note on servlet life-cycle.

(2) Explain the advantages of Java Bean.

(3) Explain various tags used in JSP.

P.T.O.

(4) How wrapper existing applications is useful in XML business system ?

(5) Explain client server technology.

3. Attempt any *four* : [4×4=16]

(1) What is factory pattern ? How is it used in database connection ?

(2) Write a note on JDBC architecture.

(3) Explain, what do you mean by bean ? Give its coding conventions.

(4) Explain J2EE multitier architecture.

(5) What is XML ? How is it used in Business Systems ?

4. Attempt any *four* : [4×4=16]

(1) Write a note on jar and manifest files.

(2) How do you differentiate servlet from JSP ?

(3) What is the difference between connection and statement ?

(4) What is Serlvet ? Explain cookie using servlet.

(5) Explain any *two* technologies supported by J2EE.

5. Attempt any *four* : [4×4=16]

(1) Write a Java program which displays course detail (cno, cname, price) information using JDBC.

(2) Write a program in Java using servlet which displays how many tims a user has visited a page.

(3) Write a program in Java using JSP which calculates factorical of a given no.

(4) Create a XML file that stores the information of five students.

(5) Wrte a program in Java using JSP which takes mobile information from user and displays that mobile information on next page.

Total No. of Questions—**5**] [Total No. of Printed Pages—**3**

Seat No.	

[5161]-44

M.C.A. (Commerce) (Fourth Semester)

EXAMINATION, 2017

405 : CLIENT/SERVER TECHNOLOGY

(2008 PATTERN)

Time : Three Hours **Maximum Marks : 80**

N.B. **:—** (*i*) *All* questions are compulsory.

(*ii*) *All* questions carry equal marks.

(*iii*) Assume suitable diagram, if necessary.

1. Answer the following (any *four*) : [4×4=16]

(1) Differentiate between client-side and server-side scripting.

(2) Write a short note on server-to-server middle ware.

(3) Explain connection pooling.

(4) Explain Internet and Extranet with an example.

(5) Write a short note on Window object.

2. Answer the following (any *four*) : [4×4=16]

(1) Explain ASP session object.

(2) Explain string object in JavaScript.

(3) What is difference between bridges and routers ?

(4) Explain how RPC works.

(5) What is pipe and platform ?

P.T.O.

3. Answer the following (any *four*) : [4×4=16]

(1) Write a ASP program to display student marksheet in table format, who are having percentage more than 70%.

(2) Write a JavaScript program to check given number is prime or not.

(3) Write a program using ASP Script to display the following triangle.

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

(4) Write a JavaScript program to calculate the sum of digits of a given no.

(5) Write a ASP prog. to accept first name from the user. On the second page accept surname. On the third page display first and surname using session.

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

(1) Write a short note on IIS.

(2) What is Server Building Block ? Explain with example.

(3) Explain *n*-tier architecture.

(4) Write a short note on Navigator object.

(5) Explain exception handling in JavaScript.

5. Answer the following (any *four*) : [4×4=16]

(1) Write a short note on Document Object Model in JavaScript.

(2) Explain push and pop methods of array with an example.

(3) Differentiate between MOM and RPC.

(4) Write a short note on Socket.

(5) What are the advantages and disadvantages of ASP.

Total No. of Questions—**5**] [Total No. of Printed Pages—**2**

Seat No.	

[5161]-51

M.C.A. (Comm.) (Fifth Semester)

EXAMINATION, 2017

501 : CONTENT MANAGEMENT SYSTEM

(2008 PATTERN)

Time : Three Hours **Maximum Marks : 80**

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) Draw the diagrams and screen shots wherever necessary.

1. Attempt any *four* of the following : [4×4=16]

(*a*) What are the rules for creating context ?

(*b*) Explain 'Authoring' of collection system with diagram.

(*c*) Content is Not data – Explain.

(*d*) Explain *five* myths about teaching with moodle

(*e*) CM is Distributing Business Value – Explain.

2. Attempt any *four* of the following : [4×4=16]

(*a*) Explain 'Acquiring' from the collection system with diagram.

(*b*) When do you need a CMS ? How to gauge the complexity by the amount of content.

(*c*) Explain – Content is information put to use.

(*d*) What is meant by format ? What are the types of format ?

(*e*) Explain Dynamic website with diagram.

P.T.O.

3. Attempt any *four* of the following : [4×4=16]

(*a*) Explain Teaching Do's & Don'ts of moodle.

(*b*) What is administration system of management system ?

(*c*) What is CMS ? Which are the limitations of CMS ?

(*d*) How to gauge the complexity by the amount of change ?

(*e*) What are the categories of formatting ? Explain formatting by method.

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

(*a*) What are the types of computer infrastructure ? Explain static web site.

(*b*) What is functionality ? What are the *three* characteristics of functionality.

(*c*) Content is named information-Explain.

(*d*) Explain *five* principles of moodle.

(*e*) What is publishing system ? Explain publishing services.

5. Write the steps for the following (any *four*) : [4×4=16]

(*a*) How to delete an article from website and conform that it is deleted in Joomla.

(*b*) Explain Meta tag with its use. How to add meta tag in the article of Joomla ?

(*c*) Insert hyperlink in the article of Joomla.

(*d*) How to apply in-built template to the page in Joomla/cms-made-simple.

(*e*) How to set page permissions in Joomla.

Total No. of Questions—**5**] [Total No. of Printed Pages—**4**

Seat No.	

[5161]-52

M.C.A. (Commerce) (Fifth Semester)

EXAMINATION, 2017

502 : DISTRIBUTED DATABASE APPLICATIONS

(2008 PATTERN)

Time : Three Hours **Maximum Marks : 80**

N.B. :— (*i*) Attempt *All* questions.

(*ii*) Figures to the right indicate full marks.

1. Write notes on (any *four*) : [4×4=16]

(*a*) Performance Tunning

(*b*) Market places

(*c*) Transactional Workflows

(*d*) Content of Catalog

(*e*) Basic Timestamp Mechanism

2. Attempt any *four* : [4×4=16]

(*a*) Explain terms :

(*i*) Local read protocol

(*ii*) Global read-write protocol

(*b*) What is DDBMS ? What are advantages and disadvantages ?

(*c*) How is recovery of distributed transaction achieved ?

(*d*) Write a note on parametric queries.

(*e*) Write a note on distributed deadlock prevention ?

P.T.O.

3. Attempt any *four* : [4×4=16]

(*a*) What is behaviour of the 2 pc protocol in case of site failures and lost messages ?

(*b*) Define :

(*i*) Digital certificate

(*ii*) Person-in-the middle attacks.

(*c*) What is fragmentation ? What are advantages and disadvantages ?

(*d*) What is query optimization ? Which are problems in query optimization ?

(*e*) What is multimedia database ? Which are different multimedia data formats ?

4. Attempt any *four* : [4×4=16]

(*a*) Write a note on Bottom-up approach of distributed database design.

(*b*) What are different alternatives for allocation of catalogs ?

(*c*) Explain different objects which represent geometric information.

(*d*) Explain different communication structures of commit protocol.

(*e*) What is serializability ? Explain with example.

5. Attempt any *four* : [4×4=16]

(*a*) Transaction T_1 & T_2 are executing at site 1. Transaction T_3 & T_4 are executing at site 2. Transaction T_5 & T_6 are executing at site 3. Transaction T_1 is waiting for Transaction T_3. Transaction T_3 is waiting for Transaction T_4. Transaction T_4 is waiting for transaction T_6. Transaction T_6 is waiting for transaction

T_5. Transaction T_5 is waiting for Transaction T_2. Transaction T_2 is waiting for transaction T_1. Draw LWFG & DWFG. Detect Deadlock.

(*b*) Consider the relation

Project (pno, pname, sdate, budget, status)

Perform Horizontal Fragmentation of Project relation using the following predicates.

P_1 : σ Budget < 50,000 and σ status = "Incomplete"

P_2 : σ Budget ≥ 50,000 and σ Budget ≤ 10,00,000 and status = "Complete"

P_3 : σ Budget > 1,00,000

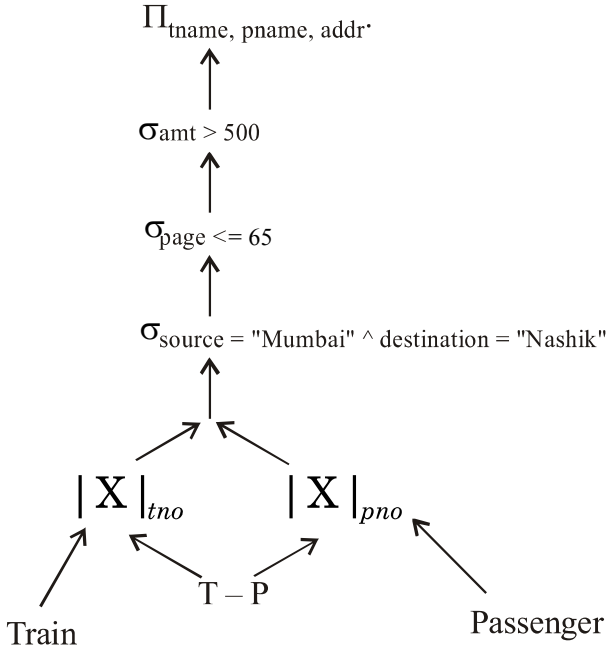
(*c*) Consider the following relations :

Train (tno, tname, dtime, atime, source, destination)

Passenger (pno, pname, addr, page, gender)

T–P (tno, pno, seatno, amt, bdate)

Convert the following simple operator tree into optimized operator tree.



(*d*) Consider the relation
Person (Pno, Pname, Byear, Income) is horizontally fragmented as :
Person 1 : $\sigma_{\text{income} < 15{,}000}$
Person 2 : $\sigma_{\text{income} \geq 15{,}000 \text{ and income} < 40{,}000}$
Person 3 : $\sigma_{\text{income} \geq 40{,}000}$
Reduce the following query
select * from person where income $\geq$ 30,000

(*e*) Consider the following relations

Supplier (Sid, Sname, addr)

Parts (Pid, Pname, Pdesc)

S – P (Sid, Pid, Cost)

Draw the optimized operator tree for the following query :

```
Select sname
from supplier, parts, S-P
Where supplier sid = S-P.Sid
and parts.pid = S-P.Pid
and addr = "Pune"
and Pname = "Mouse"
and cost > 200
```

Total No. of Questions—**5**] [Total No. of Printed Pages—**2**

Seat No.	

[5161]-53

M.C.A. (Commerce Faculty) (Fifth Semester)

EXAMINATION, 2017

503 : E-COMMERCE PRACTICES AND TECHNOLOGIES

(2008 PATTERN)

Time : Three Hours **Maximum Marks : 80**

N.B. **:—** (*i*) *All* questions are compulsory.

(*ii*) *All* questions carry equal marks.

1. Attempt any *four* of the following : [4×4=16]

(*a*) Define E-Commerce. Explain the need to study E-Commerce.

(*b*) Explain any *four* key elements of busincess model.

(*c*) Explain different personalization approahes.

(*d*) Explain for which products the auction market is suitable.

(*e*) Explain Credit Card fraud with example.

2. Attempt any *four* of the following : [4×4=16]

(*a*) Write a note on Public key Encryption.

(*b*) Write a note on "Malicious code".

(*c*) Explain Registration, Domain name and Prices of site building.

(*d*) Explain E-Commerce Portals.

(*e*) Explain the tools for website optimization.

P.T.O.

3. Attempt any *four* of the following : [4×4=16]

(*a*) Write notes on :

(*i*) Web-server s/w.

(*ii*) E-Commerce s/w.

(*b*) Explain C2C business model in detail.

(*c*) Write notes on :

(*i*) Digital wallets

(*ii*) Digital cash.

(*d*) Explain the concept of Distributed Denial of service.

(*e*) Write a note on "Digital Certificates".

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

(*a*) Write a note on Phishing an Identity theft.

(*b*) Compare traditional *Vs.* Electronic payment system.

(*c*) Explain M-Commerce business model with example.

(*d*) State and explain advantages of online auctions.

(*e*) What are the limitations of Encryption solution.

5. Attempt any *two* of the following : [4×4=16]

(*a*) Explain "Why" Pay-Pal remains ahead of "Peer-to-Peer" payment service.

(*b*) Into which do category/categries of e-commerce P2P file-sharing networks fall ?

(*c*) Why are cell-phone networks a threat to Pay-Pal's future growth ?

Total No. of Questions—**5**] [Total No. of Printed Pages—**2**

Seat No.	

[5161]-54

MCA (Commerce Faculty) (Fifth Semester) EXAMINATION, 2017

DATA WAREHOUSING AND DATA MINING

(2008 PATTERN)

Time : Three Hours **Maximum Marks : 80**

N.B. **:—** (*i*) *All* questions are compulsory.

(*ii*) Figures to the right indicate full marks.

(*iii*) Neat diagram must be drawn whenever necessary.

1. Attempt any *four* of the following : [4×4=16]

(*a*) What is data marting and when is data marting appropriate ?

(*b*) What is difference between OLTP and OLAP ?

(*c*) Why do we need of Business Intelligence ?

(*d*) What is Service Level Agreement ? What are the types of Application used in SLA system ?

(*e*) Difference between Data Warehouse and Data Mining.

2. Attempt any *four* of the following : [4×4=16]

(*a*) Write down the classification of Data Mining System.

(*b*) Write a major issues in Data Mining.

(*c*) What is Integration and Transformation of Data Preprocessing ?

(*d*) What is Cluster Analysis ?

(*e*) What is structured data and unstructured data ? Explain with example.

P.T.O.

3. Attempt any *two* of the following : [2×8=16]

(*a*) Discuss the importance of Mean, Median Correlation (statistical) in Data Mining.

(*b*) Explain star schema with example and diagram.

(*c*) Solve the following example with association rule.

Consider minimum support = 2

Tid	**Item Bought**
T_1	Bread, Jelly, Peanutbutter
T_2	Bread, Peanutbutter
T_3	Bread, Milk, Peanutbutter
T_4	Beer, Bread
T_5	Beer, Bread

4. Attempt any *two* of the following : [2×8=16]

(*a*) Write a short note on Data Warehouse Architecture with suitable diagram.

(*b*) What is knowledge base ? Explain any *five* data mining technique ?

(*c*) What do you mean by generalization in temporal mining ?

5. Write short notes on (any *four*) : [4×4=16]

(*a*) Data Aggregation

(*b*) Knowledge Data Discovery

(*c*) Decision Tree

(*d*) Hierarchical Clustering

(*e*) Data Integration.

Total No. of Questions—**5**] [Total No. of Printed Pages—**8**

Seat No.	

[5161]-55

M.C.A. (Commerce Faculty) (V Sem.) EXAMINATION, 2017

MATHEMATICS

506 : Operations Research

(2008 PATTERN)

Time : Three Hours **Maximum Marks : 80**

N.B. **:—** (*i*) *All* questions are compulsory.

(*ii*) Figures to the right indicate full marks.

(*iii*) Use of non-programmable calculator is allowed.

(*iv*) Symbol have their usual meanings.

1. Attempt any *four* of the following : [16]

(*a*) Explain the following terms :

(*i*) Slack Variable

(*ii*) Artificial Variable

(*iii*) Feasible Solution

(*iv*) Degenerate Solution.

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

P.T.O.

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

Maximize : $Z = x_1 + 2x_2 - 4x_3 + 7x_4$

Subject to : $2x_1 + 5x_2 - 3x_3 + x_4 \geq -5$

$x_1 - 2x_2 + 4x_3 + 3x_4 \leq 11$

$5x_1 - 3x_2 - x_3 + 2x_4 \leq 8$

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

(*d*) Solve the following L.P.P. by graphical method :

Max. : $Z = 2x_1 + 11x_2$

Subject to : $2x_1 + x_2 \leq 104$

$x_1 + 2x_2 \leq 76$

$x_1, x_2 \geq 0.$

(*e*) Obtain initial basic feasible solution of the following transportation problem by Matrix Minima method :

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

Also find the corresponding transportation cost.

(*f*) How does the PERT technique help a business manager in decision-making ?

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

(*a*) Define :

(*i*) Predecessor Activity

(*ii*) Network.

(*b*) Write the standard form of the L.P.P. :

Minimize : $Z = 2x_1 - 5x_2 + 3x_3$

Subject to : $3x_1 - x_2 + 3x_3 \leq 8$

$-2x_1 + 4x_2 \leq 13$

$-4x_1 + 3x_2 + 8x_3 \geq -20$

$x_1, x_2, x_3 \geq 0.$

(*c*) Solve the following game by dominance principle :

		Player B				
		I	**II**	**III**	**IV**	**V**
Player A	$\mathbf{A_1}$	5	7	6	11	8
	$\mathbf{A_2}$	7	8	5	9	10
	$\mathbf{A_3}$	10	9	11	10	9
	$\mathbf{A_4}$	6	6	10	7	5

(*d*) Obtain initial basic feasible solution of the following transportation problem by North West Corner Method :

To → / From ↓	W_1	W_2	W_3	W_4	Supply
F_1	30	25	40	20	100
F_2	23	26	35	40	250
F_3	31	33	37	30	150
Demand	90	160	200	50	

Also find the corresponding Transportation Cost.

(*e*) Write the dual of the following L.P.P. :

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

Subject to : $2x_1 + 3x_2 + x_3 \leq 19$

$2x_1 - x_2 - x_3 \leq 12$

$x_1 - 3x_2 - 3x_3 \leq 16$

$x_1, x_2, x_3 \geq 0.$

(*f*) Solve the following assignment problem for minimization :

Machines

Jobs	I	II	III	IV
A	42	35	28	21
B	30	25	20	15
C	30	25	20	15
D	24	20	16	12

3. Attempt any *four* of the following : [16]

(*a*) Convert the following transportation problem into linear programming problem :

Destination → / Origin ↓	D_1	D_2	Supply
O_1	10	13	19
O_2	3	11	26
Demand	16	29	

(*b*) Define the following terms with reference to transportation problems :

(*i*) Balanced Transportation Problem

(*ii*) Basic Feasible Solution

(*iii*) Non-degenerated Basic Feasible Solution

(*iv*) Dummy Destination.

(*c*) A firm can produce three types of clothes say A, B and C. The clothes are made of three colours of wools say, red, green and blue. One unit of cloth A needs 2 meters of red wool and 3 meters of blue wool; one unit of cloth B requires 3

meters of red wool, 2 meters of green and 2 meters of blue wool and one unit of cloth C requires 5 meters of green wool and 4 meters of blue wool. The firm has only a stock of 800 meters of red wool, 1000 meters of green wool and 1500 meters of blue wool. Suppose that the profit per unit of clothes A, B and C is Rs. 3, Rs. 4 and Rs. 5 respectively. Determine how the firm should use the available material, so as to maximize the income from the finished clothes.

(*d*) What is float ? What are the different types of floats ?

(*e*) Explain MODI method for obtaining an optimal solution of a transportation problem.

(*f*) Solve the following assignment problem for maximization :

	A	**B**	**C**	**D**
I	12	15	17	14
II	20	18	21	20
III	15	16	22	18
IV	19	18	19	16

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

(*a*) Solve the following L.P.P. by using Simplex method :

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

Subject to : $3x_1 - x_2 + 2x_3 \leq 7$

$-2x_1 + 4x_3 \leq 12$

$-4x_1 + 3x_2 + 8x_3 \leq 10$

$x_1, x_2, x_3 \geq 0.$

(*b*) Find initial basic feasible solution of the following transportation problem by Vogel's Approximation Method :

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

Also find the corresponding transportation cost.

(*c*) What do you understand by the term 'Sensitivity Analysis' ? Discuss the effect of variation of c_j, Variation of b_j and addition of a new constraint.

5. Attempt any *two* of the following : [16]

(*a*) Explain the differences and similarities between linear programming and goal programming.

(*b*) Solve the following 2 × 2 game by algebraic method :

Player B

		B_1	B_2
Player A	A_1	10	4
	A_2	7	8

(*c*) Define the following terms :

(*i*) Pure Strategy

(*ii*) Minimax

(*iii*) Saddle Point

(*iv*) Fair game.

Total No. of Questions—**4**] [Total No. of Printed Pages—**4**

Seat No.	

[5161]-102

M.C.A. (Commerce Faculty) (First Semester)

EXAMINATION, 2017

102 : PROGRAMMING IN 'C'

(2013 PATTERN)

Time : Three Hours **Maximum Marks : 50**

N.B. **:—** (*i*) *All* questions are compulsory.

(*ii*) Assume suitable data, if necessary.

1. Attempt any *seven* : [7×2=14]

(*a*) Define :

(*i*) variable

(*ii*) token.

(*b*) Define :

(*i*) getch()

(*ii*) getchar().

(*c*) List names of looping control structures.

(*d*) What is recursion ?

(*e*) What is 1-D array ? How are arrays initialized in 'C' ?

(*f*) What is union ?

(*g*) What is use of #define and #include directives ?

(*h*) How is file closed in 'C' ?

P.T.O.

2. Attempt any *three* : [3×4=12]

(*a*) Write a short note on precedence and associatively of operator.

(*b*) Write a note on decision-making structure.

(*c*) Write a short note on function in 'C'.

(*d*) What will be the output of the program ?

```
#include<stdio.h>
int i;
int fun();
int main()
{
  while(i)
  {
    fun(),
    main();
  }
  printf("Hello\n");
  return ();
}
int fun()
{
printf("Hi");
}
```

3. Attempt any *three* : [3×4=12]

(*a*) Write a 'C' program to calculate x * y by using user defined function.

(*b*) Write a 'C' program to check whether inputted character is digit or alphabet.

(*c*) Write a 'C' program which will read the content of one file and copy it to another file.

(*d*) What will be the content of 'file.c' after executing the following program ?

```
#include<stdio.h>
int main()
{
    FILE *fpl, *fp2;
    fp1=fopen("file.c","w");
    fp2=fopen("file"c","w");
    fputc('G',fp1);
    fputc('R',fp2);
    fclose(fp1);
    fclose(fp2);
    return 0;
}
```

4. Attempt any *three* : [3×4=12]

(*a*) What is array ? What are the types of arrays ? Explain them with suitable example.

(*b*) Write a note on 'structure'.

(*c*) What is file in 'C' ? What are the different file opening modes ?

(*d*) What will be the output of the program ?

```
#include<stdio.h>
int main()
{
    enum status {pass, fail, absent};
    enum status stud1, stud2, stud3;
    stud1 = pass;
    stud2 = absent,
    stud3 = fail;
    print("%d%d%d\n", stud1, stud2, stud3);
    return 0;
}
```

Total No. of Questions—**4**] [Total No. of Printed Pages—**5**

Seat No.	

[5161]-103

M.C.A. (Commerce) (Part I) (I Sem.) EXAMINATION, 2017

ELEMENTS OF STATISTICS

(2013 PATTERN)

Time : Three Hours **Maximum Marks : 50**

N.B. **:—** (*i*) *All* questions are compulsory.

(*ii*) Figures to the right indicate full marks.

(*iii*) Use of calculator is allowed.

(*iv*) Assume suitable data, if necessary.

1. Answer any *two* of the following : [14]

(*a*) Find mean, median and mode for the following frequency distribution : [7]

Marks	**No. of Students**
1—20	1
21—40	9
41—60	32
61—80	16
81—100	7

(*b*) Obtain correlation coefficient between sales (Y) and Number of sections (X) using the following data :

X	**Y**
77	35
54	58
27	60

P.T.O.

52	40
14	50
35	40
90	35
25	56
56	34
60	42

(*c*) The information about the sample drawn from two normal population is given by : [7]

Sample I	**Sample II**
20	32
19	42
18	35
24	34
25	38
16	27
26	33
27	
23	

Test whether two population have same variance at 10% level of significance. (Given : f table = 8.10)

2. Atempt any *two* of the following : [12]

(*a*) Explain the following terms : [6]

(*i*) Coefficient of variation

(*ii*) Critical region in testing of hypothesis

(*iii*) Probability mass function of binomial distribution.

(*b*) The two lines of regression are X – 4Y = 5 and X – 16Y = 64. Find : [6]

(*i*) Regression coefficient X on Y

(*ii*) Regression coefficient Y on X

(*iii*) Correlation coefficient

(*iv*) Estimate value of y when x is 5.

(*c*) A random variable X has the following probability distribution : [6]

X	**P(X = *x*)**
0	3K
1	6K
2	5K
3	4K
4	2K

Find :

(*i*) K

(*ii*) P(1 < X $\leq$ 3)

(*iii*) Mean of X.

3. Atempt any *three* of the following : [12]

(*a*) Write the procedure of large sampling test of testing of equality of means. [4]

(*b*) A film director claims that his films are equally liked by males and females. An opinion poll of 1000 viewers revealed the following results : [4]

Attributes	**Liked**	**Disliked**
Males	402	193
Females	245	160

Is the film directors claim supported by the data.

Given :

$\chi_1^2 = 3.81$, $\chi_2^2 = 5.99$, $\chi_3^2 = 7.81$ at 5% L.O.S.

(*c*) Compute quartile deviation and coefficient of quartile deviation for the following frequency distribution : [4]

Class	**Frequency**
35—40	18
40—45	22
45—50	26
50—55	36
55—60	23
60—65	19

(*d*) A group of 50 items have mean and standard deviation 61 and 8 respectively. Another group of 100 observations have mean and standard deviation 70 and 9 respectively. Find mean and standard deviation of the combined group. [4]

(*e*) A random sample of size $n_1 = 10$ from a normal population has standard deviation 8.56 and mean 32.3. A second random sample of size $n_2 = 10$ has standard deviation 10.09 and mean 44.1. Test the hypothesis that $\mu_1 = \mu_2$ agaisnt $\mu_1 \neq \mu_2$.
(Given : $t_{17} = 2.110$, $t_{18} = 2.101$, $t_{19} = 2.093$). [4]

4. Answer any *three* of the following : [12]

(*a*) Let X be a discrete random variable with p.m.f. : [4]

$$P(X = x) = \frac{1}{5} \qquad x = 1, 2, 3, 4, 5$$

$$= 0 \qquad \text{otherwise.}$$

Find :

E(X) and V(X).

(*b*) If X is a normal variate with mean 30 and SD 5. Find : [4]

(*i*) $P(26 \leq X \leq 40)$

(*ii*) $P(X \geq 45)$.

(*c*) Let X be a binomial random variable with parameters n and p : [4]

(*i*) If E(X) = 8.0 and Var(X) = 4.8. Find n and p.

(*ii*) If p = 0.4, E(X) = 2. Find n and Var(X).

(*d*) If X is Poisson variable such that P(X = 0) = 0.2. Find coefficient of variation of X. Also find P(X $\geq$ 2). [4]

(*e*) According to the norms established for a mechanical aptitude test, persons who are 18 years old should average 73.2 with standard deviation of 8.6. If 45 randomly selected persons of that age averaged 76.7, test the null hypothesis $\mu = 73.2$ against $\mu \neq 73.2$ at 1% level of significance. [4]

Total No. of Questions—**5**] [Total No. of Printed Pages—**3**

Seat No.	

[5161]-104

M.C.A. (Commerce) (First Semester) EXAMINATION, 2017

104 : FINANCIAL ACCOUNTING

(2013 PATTERN)

Time : Three Hours **Maximum Marks : 50**

N.B. **:—** (*i*) Question No. **1** is compulsory.

(*ii*) Solve any *three* questions from the remaining.

1. From the following Trial Balance of Bharat prepare Final Accounts as on 31st March, 2016 : [14]

Particulars	**Debit** Rs.	**Credit** Rs.
Bharat's capital		2,00,000
Land and buildings	87,000	
Plant and machinery	17,500	
Goodwill	20,000	
B's drawings	22,600	
Cash in hand	1,795	
Stock on 1st April 15	27,000	
Wages	10,000	
Purchases less returns	69,000	
Carriage inward	600	
Traveller's commission	6,000	
Insurance	2,000	
Motor car	3,000	
Carriage outward	1,400	

P.T.O.

Salesless returns		94,000
Salaries	15,000	
Bank charges	105	
Reserve for doubtful debts		1,500
Debtors	20,000	
Creditors		7,500
Total	3,03,000	3,03,000

Adjustments :

(*i*) On 31st March, 2016, the stock was valued at Rs. 46,000.

(*ii*) Insurance premium amounting to Rs. 800 is prepaid.

(*iii*) Outstanding salaries amounted to Rs. 1,000.

(*iv*) Depreciation to be provided on Plant and Machinery and Motor Car is 15% p.a.

2. Journalise the following transactions in the books of Mandar : [12]

1. Started Business with Capital of Rs. 50,000.
2. Open Bank A/c by depositing Rs.10,000.
3. Loan taken from Mr. Sunil Rs. 15,000.
4. Sold Goods to Vijay worth Rs. 65,000 on credit.
5. Purchased goods worth Rs. 50,000 from M/s ABC Co. on credit.
6. Received Rent Rs. 5,000 by cash from Mr. Anil.
7. Cash withdrawn for personal use by Mr. Mandar Rs.5,000
8. Paid Salaries Rs. 10,000 Wages Rs. 8,000 and Telephone Charges Rs. 1,000.

3. Sanjeevan Engg. Ltd purchased machinery on 1st April, 2012 for Rs. 5,00,000. They have decided to Company decided to charge depreciation by Straight Line Method. The life of the Machine is expected to be 5 years. However Company have sold this Machinery on 31st March 2016 for Rs. 1,50,000.

Prepare Machinery Account and Depreciation Account. [12]

4. Define Management Accounting. Distinguish between Financial Accounting and Management Accounting. [12]

5. Write short notes on the following (any *three*) : [12]

(*i*) Accounting Standards

(*ii*) Merits and Demerits of ERP (Enterprise Resource Planning)

(*iii*) Convention of Conservatism

(*iv*) Separate Entity Concept.

(*v*) Internal and External Users of Financial Accounting.

Total No. of Questions—**4**] [Total No. of Printed Pages—**2**

Seat No.	

[5161]-106

M.C.A. (Commerce) (First Semester) EXAMINATION, 2017

BUSINESS COMMUNICATION

(2013 PATTERN)

Time : Three Hours **Maximum Marks : 50**

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) Figures to the right indicate full marks.

1. Explain the various barriers to communication. [14]

Or

What is non-verbal communication ? Explain the forms of non-verbal communication. [14]

2. What is listening ? Explain the importance of effective listening. [14]

Or

Explain the layout of business letter. [14]

3. (*a*) Draft a solicited job application letter for the post of Software Engineer. [7]

Or

(*b*) (*i*) Fill in the blanks with suitable conjunction : [4]

(A) Alok was unhappy.....he had lost his job.

(B) Sunny wanted to buy a new bicycle.....he had no money.

(C) Amol was so hardworking..... he won the first position.

(D) I respect my neighbor.....she is very kind.

P.T.O.

(*ii*) Fill in the blanks with correct form of the verbs given in the brackets : [3]

(A) Ms. Dipika.....at the meeting yesterday. (speak)

(B) The earth.....round the sun. (go)

(C) When Kajol ..... the theatre, the movie had already begun. (reach)

(*c*) Draft a complaint letter to M/s. Home furniture, Pune for sending wrong item of home furniture. [7]

Or

(*d*) Explain the advantages and limitations of means of information technology for communication. [7]

4. Write short notes on (any *two*) : [8]

(*a*) Grapevine

(*b*) Social media

(*c*) Video conferencing

(*d*) Agenda.

Total No. of Questions—**4**] [Total No. of Printed Pages—**2**

Seat No.	

[5161]-201

M.C.A. (Commerce) (II Semester) EXAMINATION, 2017

CAC 201 : DATA STRUCTURE USING C

(2013 PATTERN)

Time : Three Hours **Maximum Marks : 50**

N.B. **:—** (*i*) Attempt *All* questions.
(*ii*) Neat diagrams must be drawn whenever necessary.
(*iii*) Figures to the right indicate full marks.

1. (*a*) Answer any *three* of the following : [12]
(*i*) Write C recursive function for post order traversal of tree.
(*ii*) Explain overflow handling.
(*iii*) Write a C function to add an element in queue statically.
(*iv*) Write an algorithm for insertion sort.

(*b*) Answer any *one* of the following : [2]
(*i*) Define balance factor
(*ii*) Complete binary tree.

2. Answer any *three* of the following : [12]
(*i*) Convert the following infix expression to postfix expression : Show the stack contents at each conversion :

A – D ^ P + Q * R – B.

(*ii*) Write C function to delete an in between node using singly link list.
(*iii*) Explain row major representation of an array with an example.
(*iv*) Sort the following numbers in descending order using selection sort :

200, 100, 50, 150, 40, 60.

P.T.O.

3. Answer any *three* of the following : [12]

(*i*) Write C function to insert a node at the end in circular link list.

(*ii*) Explain circular queue.

(*iii*) Construct AVL tree for the following data :

65, 50, 45, 68, 58, 52, 70, 40, 43, 35.

(*iv*) Write an algorithm for DFS traversal.

4. Answer any *three* of the following : [12]

(*i*) Explain adjacency matrix and adjacency list with examples.

(*ii*) Write C function to search an element using linear search.

(*iii*) Write C function to delete a node at the end using doubly circular link list.

(*iv*) Define :

(*a*) Space complexity

(*b*) Time complexity.

Total No. of Questions—**4**] [Total No. of Printed Pages—**3**

Seat No.	

[5161]-202

M.C.A. (Commerce Faculty) (Second Semester)

EXAMINATION, 2017

OOP's using C++

(2013 PATTERN)

Time : Three Hours **Maximum Marks : 50**

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) Figures to the right indicate full marks.

1. Attempt any *two* from the following. [2×7=14]

(*a*) Write a C++ program to accept records of '*n*' players and store it in an array. Consider class PLAYER with player_id, player_name, total_score as data members. Write member functions for :

(*i*) Accepting data of '*n*' players

(*ii*) Display data

(*iii*) Search player record with total score > 1000.

(*b*) Write a C++ program for swapping private data of two classes using friend function.

(*c*) Write a C++ program to swap the content of one text file into another.

P.T.O.

2. Attempt any *three* from the following : [3×4=12]

(*a*) What is the output of the following.

```
# include <iostream>
# include <locale>
        using namespace std;
        int main ()
{
        locale mylocale (" ");
        cout. imbue (mylocale);
        cout <<(double) 3.14159 << endl;
        return 0;
}
```

(*b*) What is the output of the following :

```
#       include <iostream>
        using namespace std;
        int main()
        {
        int i;
        char *arr[ ] = {"c", "c++", "Java", "VBA"}.
        char * (*ptr) [4] = & arr;
        cout << ++(* ptr) [2];
        return 0;
        }
```

(*c*) What is the output of the following :

```
#       include <iostream>
        using namespace std;
        int main( )
        {
          int a = 5, b = 10, c = 15;
          int *arr[ ] = {&a, &b, &c};
          cout << arr [1];
          return 0;
        }
```

(*d*) What is the output of the following ?

```
#     include <iostream>
      using namespace std;
      int main ()
{
      char arr[20];
      int i;
      For (i = 0; i < 10; i++)
      * (arr + i) = 65 + i;
      * (arr + i) = '10';
      cout << arr;
      return 0;
}
```

3. Attempt any *three* from the following. [3×4=12]

(*a*) What is an inheritance ? Explain multiple inheritance with suitable example.

(*b*) Explain static class members with suitable example.

(*c*) What is constructor ? Explain different types of constructor in brief.

(*d*) Differentiate between the static and dynamic polymorphism.

4. Write short notes on (any *three*) : [3×4=12]

(*a*) Access specifiers

(*b*) Virtual class

(*c*) 'New' operator

(*d*) Template class.

Total No. of Questions—**4**] [Total No. of Printed Pages—**3**

Seat No.	

[5161]-203

M.C.A. (Commerce Faculty) (Second Semester)

EXAMINATION, 2017

203 : ELEMENTS OF MATHEMATICS

(2013 PATTERN)

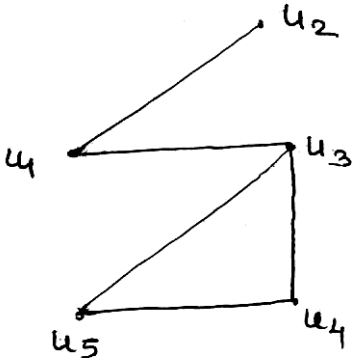
Time : Three Hours **Maximum Marks : 50**

N.B. :— (*i*) *All* questions are compulsory.

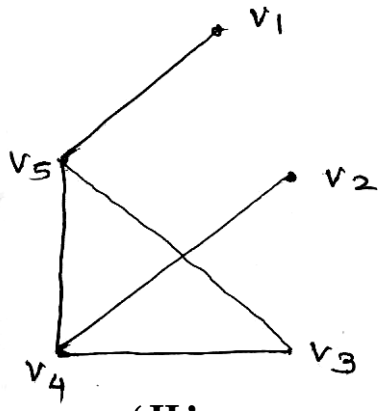
(*ii*) Figures to the right indicate full marks.

1. Attempt the following. (any *two*) : [7×2=14]

(*a*) Explain the concept of Isomorphism and verify that, Graph 'G' and Graph 'H' are Isomorphic or not.



'G'



'H'

(*b*) Find the inverse for the following matrix :

$$\begin{bmatrix} 3 & 3 & 4 \\ 2 & -3 & 4 \\ 0 & -1 & 1 \end{bmatrix}.$$

P.T.O.

(*c*) Let, A = {1, 2, 3, 4, 5, 6} and relation 'R' be the "Less than equal to" Relation defined on set A. Verify that, 'R' is partial ordering relation or not.

2. Attempt the following (any *three*) : [3×4=12]

(*a*) Define the following terms with suitable example :

(*i*) Lower triangular matrix

(*ii*) Scalar matrix

(*b*) If U = {x/x is a natural number less than 15} is a universal set. A = {1, 3, 4, 5, 9}, B = {3, 5, 7, 9, 12} Verify that, $(A \cup B)' = A' \cap B'$.

(*c*) Define and explain the following terms :

(*i*) Void Relation

(*ii*) Domain

(*d*) Define tautology and verify the following statement is tautology or not :

$(p \wedge \sim q) \vee (\sim p \wedge q)$.

3. Attempt the following (any *three*) : [4×3=12]

(*a*) Define and explain with suitable diagram.

(*i*) Directed Graph

(*ii*) Subgraph.

(*b*) Prove that, $\begin{vmatrix} b+c & a & a \\ b & c+a & b \\ c & c & a+b \end{vmatrix} = 4abc$.

(*c*) Define and explain the following terms :

(*i*) M-array tree

(*ii*) Height of tree.

(*d*) State which of the following are singleton or empty set ?

(*i*) B = {*y*/*y* is an even prime number greater than 2}

(*ii*) C = {*x*/*x* – 5 = 0}

4. Attempt the following (any *three*) : [3×4=12]

(*a*) Explain the term Equivalence class with suitable example.

(*b*) Examine the validity of the following argument :

$$\begin{array}{r} p \vee q \\ \sim q \\ \hline \therefore\ p \end{array}$$

(*c*) Draw complete Graph for :

(*i*) K_3

(*ii*) K_5

(*d*) Define and explain the following terms :

(*i*) Subtree

(*ii*) Ancestors.

Total No. of Questions—**4**] [Total No. of Printed Pages—**2**

Seat No.	

[5161]-204

M.C.A. (Commerce Faculty) (Second Semester)
EXAMINATION, 2017
204 : SYSTEM ANALYSIS AND DESIGN
(2013 PATTERN)

Time : Three Hours **Maximum Marks : 50**

N.B. **:—** (*i*) *All* questions are compulsory.
(*ii*) Figures to the right indicate full marks.

1. (*a*) A Wonder Fall Company is offering certain discount on the total amount of purchase. If the purchasing amount is more than 5,000 and the customer is making the payment with 5 days then company offers 5% discount on invoice. If the purchase amount is between 3,000 to 5,000 and the customer is making the payment within 5 days, then company offers 3% discount. If the amount is less than 3,000 and customer is making the payment within 5 days then no discount offered and customer has to pay full amount. If customer is not able to pay within 5 days, then no discount is given.
Draw Decision Tree and Decision Table. [6]

(*b*) In "Jeevan" Hospital, many doctors are working, personal informaion of doctors are maintained to get them fixed salary per month. The patients are admitted to the hospital into room. They are treated by various doctors. Sometimes patients perform certain pathological tests which are carried out into labs. Identify Entities, Relationship among Entities and Draw ERD. [8]

P.T.O.

2. Attempt the following (any *three*) : [12]

(1) What is agile process of software development.

(2) What do you mean by information ? Explain various categories of information.

(3) List out various McCall's quality factors.

(4) Advantages and disadvantages of waterfall model.

3. Attempt the following (any *three*) : [12]

(1) Explain various fact finding techniques.

(2) Design input form for Bank Account Opening.

(3) Elaborate the process of software testing in detail.

(4) Explain step-by-step process of implementation.

4. Write notes on (any *three*) : [12]

(1) Questionnaire

(2) Entity Relationship Diagram

(3) RAD Model

(4) Re-engineering.

Total No. of Questions—**4**] [Total No. of Printed Pages—**3**

Seat No.	

[5161]-205

M.C.A. (Commerce) (II Semester) EXAMINATION, 2017
DATABASE MANAGEMENT SYSTEM
(2013 PATTERN)

Time : Three Hours **Maximum Marks : 50**

N.B. **:—** (*i*) Neat diagrams must be drawn wherever necessary.
(*ii*) Figures to the right indicate full marks.
(*iii*) Assume suitable data, if necessary.
(*iv*) *All* questions are compulsory.

1. (*a*) Attempt any *three* : [3×2=6]
(*i*) List the file operations.
(*ii*) Write basic structure of SQL query with example.
(*iii*) What is referential integrity constraint ?
(*iv*) What is serializability ? List types of serializability.

(*b*) Design E-R diagram for a bank which records information about customer, their account and employees of the bank. A customer can have many accounts. There are two types of accounts, saving account and current account.
From a given case study list out entities, attributes, primary keys and relationships.
Draw an E-R diagram for the same. [8]

2. Answer any *three* : [3×4=12]
(*a*) Explaind decomposition using functional dependencies.
(*b*) Explain problems in concurrent execution of transaction.
(*c*) Write a note on multiple granularity.
(*d*) Explain log based recovery.

P.T.O.

3. (*a*) Consider the following relations and solve any *two* queries in relational algebra : [2×2=4]

Item (item_code, item_name, price)

Order (order_code, date, customer_name)

Item_order (item_code, order_code, quantity)

(*i*) Display names of all items whose order code '101'.

(*ii*) Find order details of customer Mr. Pawar.

(*iii*) List the name of items having price greater than 200.

(*b*) Consider the following relations and solve any *four* queries in SQL : [4×2=8]

Machine (m_no, m_name, m_type)

Part (P_no, P_name, P-desc) M_P (m_no, P_no)

(*i*) Create table query for machine by adding primary key constraint and machine name should not be null.

(*ii*) Add m_cost attribute in machine stable.

(*iii*) Increase the cost of machine by 20%.

(*iv*) Delete all machine having part name "wheel".

(*v*) List all machine whose cost is between 50,000 to 80,000.

4. Answer any *three* : [3×4=12]

(*a*) Define DBMS. Explain advantages of DBMS.

(*b*) Explain nested queries in SQL with example.

(*c*) Consider the following transaction. Give *two* non_serial schedules that are serializable :

T_1	T_2
Read (X);	Read (X);
X:= X – a;	X : = X + b;
Write (X);	Write (X);
Read (Y);	
Y: = Y + a;	
Write (Y);	

(*d*) The following is the list representing the sequence of events in an interleaved execution of set transactions T_1, T_2, T_3 and T_4 assuming two phase locking protocol.

Time	**Transaction**	**Code**
T_1	T_1	Lock (A, X)
T_2	T_2	Lock (C, S)
T_3	T_3	Lock (A, S)
T_4	T_4	Lock (C, S)
T_5	T_1	Lock (B, S)
T_6	T_2	Lock (C, X)
T_7	T_3	Lock (D, S)
T_8	T_4	Lock (D, X)

Construct a wait for graph according to above request. Is there deadlock at any instance ? Justify.

Total No. of Questions—**4**] [Total No. of Printed Pages—**2**

Seat No.	

[5161]-206

M.C.A. (Commerce) (II Sem.) EXAMINATION, 2017

HUMAN RESOURCE MANAGEMENT

(2013 PATTERN)

Time : Three Hours **Maximum Marks : 50**

N.B. **:—** (*i*) *All* questions are compulsory.

(*ii*) Attempt any *two* parts from each question.

(*iii*) Figures to the right indicate full marks.

1. (*a*) What is Human Resource Management ? Which challenges are faced by HRM ? [7]

(*b*) Define resource information system. Explain objective and process of Human Resource Planning. [7]

(*c*) Discuss the importance and objectives of Manpower of planning. [7]

2. (*a*) Which methods are used for selection of employees ? [6]

(*b*) Define resource development. Explain scope and importance of HRD. [6]

(*c*) Define resource information system. Explain objective and process of Human resource planning. [6]

3. (*a*) What is performance appraisal ? Explain concept and purpose of performance appraisal. [6]

P.T.O.

(*b*) What is recruitment ? What are the goal and sources of recruitment ? [6]

(*c*) Discuss international training and development issue. [6]

4. (*a*) What is job analysis ? Which steps are taken for job analysis ? [6]

(*b*) What is collective bargaining ? Explain in detail process of collective bargaining. [6]

(*c*) What is concept of union ? Which are reasons of joining union ? [6]

Total No. of Questions—**4**] [Total No. of Printed Pages—**3**

Seat No.	

[5161]-301

M.C.A. (Commerce Faculty) (III Sem.) EXAMINATION, 2017

301 : CORE JAVA

(2013 PATTERN)

Time : Three Hours **Maximum Marks : 50**

N.B. **:—** (*i*) *All* questions are compulsory.

(*ii*) *All* questions carry equal marks.

(*iii*) Assume suitable data if necessary.

1. Attempt any *seven* : [7×2=14]

(*a*) "Applet can run using main method." State true or false and justify.

(*b*) Which is the base class of all classes ?

(*c*) Write down structure of applet tag.

(*d*) What restrictions are placed on method overrriding ?

(*e*) What is the advantage of using an iterator ?

(*f*) What is the role of javaC and java in program execution ?

(*g*) Define vector.

(*h*) What is access scope of protected method ?

(*i*) What is the purpose of Border Layout ?

P.T.O.

2. Attempt any *three* : [3×4=12]

(*a*) Differnece between Analyst and Linked List.

(*b*) What is package ? Write down the steps creating user defined package with example.

(*c*) Write a java program to create a combobox which includes list of ice cream. Display selected name in the textbox using AWT/Swing.

(*d*) Write a java program to accept name from user. If the first character of the name is not in uppercase, then throw an exception "NameNotValidException".

3. Attempt any *three* : [3×4=12]

(*a*) Write a note on Garbage collection.

(*b*) Write a program to define an abstract class Round Shape with one data member radius and a constant PI. Declare abstract methods FindArea( ) and FindVolume( ). Define a subclass sphere and calculate the area and volume of a sphere object.

(*c*) Write a program in Java to read *n* strings in Array List and display collection in reverse order.

(*d*) Explain with example any *four* components of AWT.

4. Attempt any *three* : [3×4=12]

(*a*) Create a package vehicle, which will have two classes—two-wheeler and four-wheeler. Two-wheeler with method disp(CC, Price). Four-wheeler with method show (regno. reg. year). Display the details on screen.

(*b*) Explain the use of interface in Java.

(*c*) Write a simple Java program to display Fibonacci series.

(*d*) Explain any *four* string manipulation functions with syntax and example.

Total No. of Questions—**4**] [Total No. of Printed Pages—**2**

Seat No.	

[5161]-304

M.C.A. (Commerce) (III Sem.) EXAMINATION, 2017

305 : NETWORK OEPRATIONS

(2013 PATTERN)

Time : Three Hours **Maximum Marks : 50**

N.B. **:—** (*i*) *All* questions are compulsory

(*ii*) Figures to the right indicate full marks.

1. Solve the following questions :

(A) Attempt any *three* : [3×4=12]

(1) Write note on star topology.

(2) Explain briefly fiber optic cable.

(3) Differentiate between pure ALOHA and slotted ALOHA.

(4) Explain briefly connection oriented services.

(B) Attempt any *one* : [2×1=2]

(1) Write difference between TCP and UDP.

(2) Explain briefly infrared.

2. Attempt any *three* : [4×3=12]

(1) "VLANS create broadcast domains." Comment.

(2) What are the services Network Layer can provide to the transport layer ?

(3) What are the problems with 1-bit sliding window protocol ?

(4) What are the components of LAN ? Explain each *one* in short.

P.T.O.

3. Attempt any *three* : [3×4=12]

(1) Explain OSI reference model in short.

(2) Explain P-persist strategy. Why is it not feasible to implement ?

(3) The code 11110101101 was received. Using Hamming encoding algorithm, what is the original code sent ?

(4) Define distortion and Bandwidth.

4. Attempt any *three* : [3×4=12]

(1) How controlled access method differs than random access method ?

(2) Discuss different deisgn issues of layers.

(3) Given a 12 bit sequence 110111100101 and a divisor of 1001. Find the CRC.

(4) Explain serial transmission with types synchronous and asynchronous.

Total No. of Questions—**4**] [Total No. of Printed Pages—**3**

Seat No.	

[5161]-305

M.C.A. (Commerce Faculty) (Third Semester)

EXAMINATION, 2017

306 : OPERATING SYSTEMS

(2013 PATTERN)

Time : Three Hours **Maximum Marks : 50**

***N.B.* :—** (*i*) *All* questions are compulsory.

(*ii*) Neat diagram must be drawn wherever necessary.

1. Attempt the following (any *seven*) : [7×2=14]

(1) Define term real time system.

(2) What is dynamic linking ?

(3) Define short-term scheduler.

(4) What is function of dispatcher ?

(5) Define internal fragmentation.

(6) What are the process operations ?

(7) State types of operating systems.

(8) What is Indexed Allocation ?

2. Attempt the following (any *three*) : [3×4=12]

(1) Explain multiple contiguous memory management module.

(2) Calculate average turn-around time and average waiting for the following by using :

P.T.O.

Process	Burst time	Arrival time	Priority (Highest)
P_1	5	1	1
P_2	6	0	2
P_3	2	1	1
P_4	4	0	3

(*i*) Non-pre-emptive priority

(*ii*) Pre-emptive priority.

(3) Explain Dining philosopher problem.

(4) Explain Deadlock Avoidance method.

3. Attempt the following (any *three*) : [3×4=12]

(1) Explain CPU scheduling criteria used in scheduling algorithm.

(2) Write a note on Process Control Block (PCB).

(3) What is DMA ? When is it used ?

(4) Consider the following page reference string :

1, 2, 3, 4, 1, 2, 5, 1, 2, 3, 4, 5.

Assume there are 3 free frames. Find page fault by using :

(*i*) FIFO

(*ii*) LRU.

4. Attempt the following (any *three*) : [3×4=12]

(1) Explain semaphore with its types.

(2) Explain segmentation with paging.

(3) What are the system calls used for device manipulation ? Explain it.

(4) Consider the following snapshot of system. A system has 5 processes and 3 resources :

	Allocation		
	A	**B**	**C**
P_0	0	1	0
P_1	2	0	0
P_2	3	0	2
P_3	2	1	1
P_4	0	0	2

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

Available		
A	**B**	**C**
3	3	2

Answer the following questions using Banker's Algorithm :

(*i*) What are the contents of matrix need ?

(*ii*) Is the system in a safe mode ?

Total No. of Questions—**4**] [Total No. of Printed Pages—**2**

Seat No.	

[5161]-306

M.C.A (Commerce) (Third Semester) EXAMINATION, 2017

M-COMMERCE

(2013 PATTERN)

Time : Three Hours **Maximum Marks : 50**

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) Neat diagrams must be drawn wherever necessary.

1. Answer the following (any *two*) : [14]

(*a*) Explain any *three* Communication Technology in Mobile commerce.

(*b*) Explain coupons and loyalty cards applications with examples.

(*c*) Explain role of the Emerging wireless LAN'S and 3G/4G wireless network in mobile commerce services.

2. Answer the following (any *three*) : [12]

(*a*) Explain different players in M-Commerce.

(*b*) Explain Regional server concept in mobile environment.

(*c*) Explain content catching in mobile commerce services.

(*d*) Explain WML and SMS information exchange technology.

3. Answer the following (any *three*) : [12]

(*a*) Explain theory of pricing of mobile commerce.

(*b*) Explain mobile financial services with an example.

(*c*) Explain Database access in Mobile environment.

(*d*) Explain Mobile banking application with an example.

P.T.O.

4. Write short notes on (any *three*) : [12]

(*a*) Mobile Voucher

(*b*) GPRS

(*c*) Distribution to Handhold services

(*d*) Local Database concept.

Total No. of Questions—**7**] [Total No. of Printed Page—**1**

Seat No.	

[5161]-307

MCA (Commerce Faculty) Third Semester)

EXAMINATION, 2017

308 : MANAGEMENT INFORMATION SYSTEM

(2013 PATTERN)

Time : Three Hours **Maximum Marks : 50**

N.B. :— (*i*) Solve any *five* questions.

(*ii*) Figures to the right indicate full marks.

1. Explain impact of Information system on organization and business firm. [10]

2. What is Decision-Making ? Explain decision-making process. [10]

3. Define Information. Explain characteristics of quality Information. [10]

4. Explain system development model in detail. [10]

5. Differentiate between DOT and MIS. [10]

6. Explain in brief MIS development process model. [10]

7. Explain role of computer in MIS. [10]

Total No. of Questions—**4**] [Total No. of Printed Pages—**2**

Seat No.	

[5161]-401

M.C.A. (Commerce) (IV Semester) EXAMINATION, 2017

401 : ADVANCED JAVA

(2013 PATTERN)

Time : Three Hours **Maximum Marks : 50**

N.B. **:—** (*i*) *All* questions are compulsory.

(*ii*) Figures to the right indicate full marks.

1. Attempt any *seven* from the following : [7×2=14]

(*a*) What is Beans ?

(*b*) Write use of socket class.

(*c*) What is skeleton ?

(*d*) What is metadata ?

(*e*) What is thread synchronization ?

(*f*) Write different types of servlet.

(*g*) What is JSP tags ?

(*h*) Write functions to executive query.

2. Attempt any *three* from the following : [3×4=12]

(*a*) Explain interthread communication with suitable example.

(*b*) Explain RMI architecture with diagram.

(*c*) Write servlet program to display Hit count.

(*d*) Write JDBC program to insert record in employee table. (Assume table structure).

P.T.O.

3. Attempt any *three* from the following : [3×4=12]

(*a*) Explain cookie class with its four relevant methods.

(*b*) What is jar file ? Write steps to create jar file.

(*c*) Write JSP program to accept username and greet him as per servertime.

(*d*) Write JDBC program whose birthday are in current month.

4. Attempt any *three* from the following : [3×4=12]

(*a*) Explain JSP scriptlets with suitable example.

(*b*) Explain JDBC Driver in detail.

(*c*) Write file server program which will transfer requested file to client on port 6666 ?

(*d*) Create thread to display A to Z after every 3 seconds.

Total No. of Questions—**4**] [Total No. of Printed Pages—**2**

Seat No.	

[5161]-402

M.C.A. (Commerce Faculty) (Fourth Semester)

EXAMINATION, 2017

402 : VISUAL PROGRAMMING

(2013 Pattern)

Time : Three Hours **Maximum Marks : 50**

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) Figures to the right indicate full marks.

1. Attempt *all* of the following : [7×2=14]

(*a*) Explain queued and non-queued messages.

(*b*) Differentiate between DOS and Windows programs.

(*c*) Explain the structure of Windows program.

(*d*) Write a short note on PeekMessage ().

(*e*) Why are virtual keys used ?

(*f*) "Timer messages are not asynchronous." Comment.

(*g*) Write a short note on Caret.

2. Answer the following : (any *three*) : [3×4=12]

(*a*) What is GDI ? Classify the GDI function calls.

(*b*) Write a short note on event driven programming.

(*c*) Which are the different Windows resources ?

P.T.O.

(*d*) Write a SDK program to calculate GCD of two numbers using three textboxes and one OK button, two textboxes to accept two numbers and 3rd textbox for displaying result. [Note : Winmain not required].

3. Answer the following : (any *three*) [3×4=12]

(*a*) Differentiate between TextOut and DrawText( ).

(*b*) Explain the concept of valid and invalid rectangle.

(*c*) Write a SDK program to collect the coordinates from the client area when the left mouse button is pressed and join them when the left mouse button is released.

(*d*) Write a procedure to display two buttons '+' and '–'. The size of window should increase when '+' is pressed and should decrease when '–' is pressed. [Note: Winmain not required].

4. Answer the following : (any *three*) [3×4=12]

(*a*) What is mouse capturing ? Explain API functions.

(*b*) What are the contents of lParam and wParam in case of client mouse message ?

(*c*) What is device context ? Explain the various methods to get a handle to device context.

(*d*) Write a SDK program to display the number of left mouse button click and right mouse button click in the client area. [Note : Winmain not required].

Total No. of Questions—**4**] [Total No. of Printed Pages—**4**

Seat No.	

[5161]-403

M.C.A. (Commerce) (Fourth Semester) EXAMINATION, 2017

CS-403 : DISTRIBUTED DATABASE SYSTEM

(2013 PATTERN)

Time : Three Hours **Maximum Marks : 50**

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) Figures to the right indicate full marks.

1. Attempt any *seven* : [7×2=14]

(*a*) State the complicating factors in DDBMS.

(*b*) Define

(*i*) Simple Predicate

(*ii*) Minterm Predicate

(*c*) What is the complexity of the following relational algebra operations.

(*i*) Semijoin

(*ii*) Cartesian Product.

(*d*) What are the three characteristics on which the DDBMS architectural models are based ?

(*e*) Write 2sufficient conditions to ensure equivalence of 2schedules.

(*f*) Define :

(*i*) MTBF

(*ii*) MTTR.

P.T.O.

(*g*) What are the main reasons for the query getting rejected ?

(*h*) State the *three* components of a query optimizer.

2. Attempt any *three :* [3×4=12]

(*a*) Define Transparency. Explain Network Transparency in detail.

(*b*) Explain Client Server Architecture of DDBMS.

(*c*) Explain Correctness Rules of Fragmentation.

(*d*) Explain the Layers of Query Processing.

3. Attempt any *three* : [3×4=12]

(*a*) Explain Basic Timestamp Mechanism.

(*b*) Explain In-Place Update Recovery in detail.

(*c*) Explain Distributed 2PC communication structure with the help of diagram.

(*d*) Explain types of Transactions.

4. Attempt any *three* : [3×4=12]

(*a*) Consider the following relational schema

Emp(eno,ename,age,sex,dno)

Dept(dno,budget)

Dept relation is fragmented horizontally as,

dept1 = σ budget<20000(dept)

dept2 = σ budget>=20000(dept)

Emp relation is fragmented using Derived Horizontal Fragmentation as,

emp1 = emp × dept1

emp2 = emp × dept2

Transform the following query into a reduced query on fragments.

```
select ename
from emp,dept
where emp.sex = 'Male'
and age > 45
and budget > 20000
and emp.dno = dept.dno
```

Convert Operator to generic tree & then reduce it.

(*b*) Consider the following relational schema

PROJ (pno,pname,budget,location)

ASG (pno,eno,dur,resp)

Consider, set of simple predicates,

P = {budget<=500000,budget>500000}

Perform the horizontal fragmentation of PROJ based on set p. Using this fragmentation of PROJ, further perform derived horizontal fragmentation of ASG.

(*c*) Consider the following query.

```
select emp.ename
```

from emp,asg,proj

where emp.eno=asg.eno

and asg.pno=proj.pno

and pname='CAD/CAM'

Optimize the above query using Centralized INGRESS query optimization algorithm.

(*d*) Let Q = {ql, q2, a3, q4} be set of queries,

A = {A 1, A2, A3} be set of attributes, A3 is primary key and S = {S1, S2, S3} be the set of sits.

The Matrix (A), given below, describes the attribute usage values and Matrix (B) givesapplication access frequencies. Assume that refi (qk) = 1 for all qk and S_i. Construct the Attribute Affinity Matrix and Clustered Affinity Matrix.

Matrix(A)

	A1	A2	A3
q1	1	1	1
q2	1	0	0
q3	1	0	1
q4	0	1	1

Usage Matrix

Matrix(B)

	S1	S2	S3
q1	30	3	14
q2	10	12	11
q3	0	10	5
q4	5	10	5

Access Frequencies

Total No. of Questions—**8**] [Total No. of Printed Pages—**2**

Seat No.	

[5161]-404

M.C.A. (Commerce Faculty) (Fourth Semester)
EXAMINATION, 2017
404 : WEB TECHNOLOGIES
(2013 PATTERN)

Time : Three Hours **Maximum Marks : 50**

N.B. **:—** (*i*) Attempt any *five* questions.
(*ii*) Figures to the right indicate full marks.

1. Answer the following :
(*a*) Explain in detail XML writing elements and attributes. [5]
(*b*) Explain types of CSS. [5]

2. Answer the following :
(*a*) Explain DOM in detail. [5]
(*b*) Explain client side web scripting in VB Script. [5]

3. Answer the following :
(*a*) Explain PHP and web server architecture model. [5]
(*b*) Write a JavaScript to display Fibonacci Series. [5]

4. Answer the following :
(*a*) Write a HTML code to display the following : [5]

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S.Y. MCA About F.Y. MCA
T.Y. MCA

(*b*) Write a Vbscript code to display sum of digit of given number. [5]

P.T.O.

5. Answer the following :

(*a*) Explain XML with CSS. [5]

(*b*) Explain HTTP Protocol. [5]

6. Answer the following :

(*a*) Explain list in detail. [5]

(*b*) Write steps for installing PHP. [5]

7. Answer the following :

(*a*) Explain JavaScript looping structure. [5]

(*b*) Explain table in detail. [5]

8. Answer the following :

(*a*) Explain CSS classes in detail. [5]

(*b*) Explain WWW, W3C in detail. [5]

Total No. of Questions—**4**] [Total No. of Printed Pages—**2**

Seat No.	

[5161]-405

M.C.A. (Commerce) (IV Semester) EXAMINATION, 2017

406 : IT PROJECT MANAGEMENT

(2013 PATTERN)

Time : Three Hours **Maximum Marks : 50**

N.B. **:—** (*i*) *All* questions are compulsory.

(*ii*) Figures to the right indicate full marks.

1. Attempt the following (any *seven*) : [7×2=14]

(*a*) What are the triple constraints of projects ?

(*b*) Define scope statement of project.

(*c*) How to categorise IT project in response to problem ?

(*d*) What are the processes involved in Project Integration Management ?

(*e*) Define Schedule Performance Index (SPI).

(*f*) Which are the processes of Project Cost Management ?

(*g*) State the types of testing.

(*h*) Which are the categories of Risk ?

(*i*) What is orgnaizational planning ?

2. Attempt the following (any *three*) : [3×4=12]

(*a*) Explain process of change control of project.

(*b*) Discuss key components of project mangement framework.

(*c*) Write a note on top ten risk item tracking.

(*d*) Explain basic principles of cost management.

P.T.O.

3. Attempt the following (any *three*) : [3×4=12]

(*a*) What are the features of project plan execution process ?

(*b*) Write a note on project scope planning and scope statement.

(*c*) Explain cost categories related quality of project.

(*d*) What are the output of organizational planning ?

4. Attempt the following (any *three*) : [3×4=12]

(*a*) Write note on performance reporting.

(*b*) Explain risk identification.

(*c*) What is system implementation ? Explain it.

(*d*) Explain testing procedure.

Total No. of Questions—**4**] [Total No. of Printed Pages—**2**

Seat No.	

[5161]-406

M.C.A. (Commerce) (Fourth Semester) EXAMINATION, 2017

407 : CYBER LAW AND INFORMATION SECURITY

(2013 PATTERN)

Time : Three Hours **Maximum Marks : 50**

N.B. **:—** (*i*) *All* questions are compulsory.

(*ii*) Neat diagrams must be drawn wherever necessary.

(*iii*) Figures to the right indicate full marks.

1. Define and explain in brief of the following (any *seven*) : [7×2=14]

(*a*) Patents

(*b*) Digital Signature

(*c*) Copyright

(*d*) Steganography

(*e*) Firewalls

(*f*) Literary work

(*g*) Rotor Machines

(*h*) Trade marks.

2. Discuss the following (any *three*) : [3×4=12]

(*a*) Importance of Information Security.

P.T.O.

(*b*) Fundamentals of Cyber Law.

(*c*) Explain Caeser cipher technique.

(*d*) Explain electronic records.

3. Discuss the following (any *three*) : [3×4=12]

(*a*) Explain Transposition cipher.

(*b*) Explain secured electronic transaction.

(*c*) Explain SSL handshake protocol.

(*d*) Briefly explain public key cryptosystem.

4. Discuss the following (any *three*) : [3×4=12]

(*a*) Explain IP security Architecture.

(*b*) Explain characteristics of Information.

(*c*) Discuss Trusted System.

(*d*) Explain Brute Force search technique.

Total No. of Questions—**8**] [Total No. of Printed Pages—**3**

Seat No.	

[5161]-501

M.C.A. (Commerce) (Fifth Semester) EXAMINATION, 2017

501 : ADVANCED WEB PROGRAMMING

(2013 Pattern)

Time : Three Hours **Maximum Marks : 50**

N.B. :— (*i*) Attempt any **5** questions.

(*ii*) Figures to the right indicate full marks.

1. (*a*) Explain interfaces in C# with examples. [4]

(*b*) Define delegate. Explain syntax with example. [4]

(*c*) What are ref and out parameters in C# [2]

2. (*a*) What is Global.asax file in ASP.Net ? Explain its usage. [4]

(*b*) Explain the difference between Server.Transfer and Response. Redirect navigation technique. [4]

(*c*) Define namespaces in C#. Give syntax. [2]

3. (*a*) What is query string ? Explain with example. [4]

(*b*) Explain Application and session objects in ASP.Net with suitable example. [4]

(*c*) State the different types of validation control used in ASP.Net. [2]

P.T.O.

4. (*a*) Explain the components of ADO.Net. [4]

(*b*) Write a ASP.Net web application to display records of Employee (eno, ename, address, salary) table in Grid view control. [4]

(*c*) State the difference between Data Reader and Data Set. [2]

5. (*a*) Define web service. Explain the steps for consuming the web services. [4]

(*b*) Write a web application in ASP.Net using C# to accept the doctor information and on click on submit button, entered information should get displayed into next page. [4]

(*c*) What is SOAP ? [2]

6. (*a*) What is AJAX ? Explain AJAX security. [4]

(*b*) Write a web application in ASP.Net using C# to blink the text (using timer control). [4]

(*c*) What is JSON ? [2]

7. (*a*) Explain ASP.Net framework with suitable diagram. [5]

(*b*) Write a program in C# that overload '+' operator to add 2 vector (int *x*, int *y*, int *z*). Also write a method to display the result. [5]

8. (*a*) Explain properties in C# with suitable example. [5]

(*b*) List validation controls used in ASP.Net web applications. Explain any *two* in detail. [5]

Total No. of Questions—**8**] [Total No. of Printed Pages—**3**

Seat No.	

[5161]-502

MCA Commerce (Fifth Semester) EXAMINATION, 2017

DATA CENTER TECHNOLOGIES

(2013 PATTERN)

Time : Three Hours **Maximum Marks : 50**

N.B. :— (*i*) Out of **8** questions attempt any *five*.

(*ii*) Draw neat labelled diagram wherever necessary.

1. Attempt all :

(*a*) What are various causes of downtime within data centre ? [4]

(*b*) What is power distribution unit (PDUs) ? [4]

(*c*) What is data centre ? [2]

2. Attempt all :

(*a*) Explain the guidelines for planning a data center. [4]

(*b*) How to take care of Electrostatic discharge (ESD) ? [4]

(*c*) How do you estimate need for energy efficient HVAC system ? [2]

3. Attempt all :

(*a*) Explain, what is network Operations Centre (NOC) ? [4]

P.T.O.

(*b*) Explain the following : [4]

(*i*) Plenum

(*ii*) Aisles

(*c*) Explain briefly the Commercial Cluster Management Software. [2]

4. Attempt all :

(*a*) What are clusters ? Explain different types of clusters. [4]

(*b*) Enlist various availability choices and explain any *three* in detail. [4]

(*c*) What do you understand by out-band monitoring ? [2]

5. Attempt all :

(*a*) What is physical security within Data Center ? [4]

(*b*) Write short note on Private Heart Beat networks. [4]

(*c*) What is HVAC ? [2]

6. Attempt all :

(*a*) What are the different types of air-conditioning ? Explain any *one* in detail. [4]

(*b*) Explain briefly characteristics and role played by SNMP. [4]

(*c*) What is automation ? List the automation tools. [2]

7. Attempt all :

(*a*) Explain Designer Dresses case study and give the Data Center Design for it. [5]

(*b*) Explain the Many-to-One Failover Model. [5]

8. Attempt all :

(*a*) What is load balancing ? Explain different terms used in load balancing. [5]

(*b*) Give the best Practices for System Administration. [5]

Total No. of Questions—**4**] [Total No. of Printed Pages—**2**

Seat No.	

[5161]-503

M.C.A. (Commerce Faculty) (Fifth Semester)

EXAMINATION, 2017

503 : INFORMATION SYSTEM AUDIT

(2013 PATTERN)

Time : Three Hours **Maximum Marks : 50**

N.B. **:—** (*i*) *All* questions are compulsory.

(*ii*) Figures to the right indicate full marks.

1. Attempt any *seven* : [7×2=14]

(*i*) What is Governance ?

(*ii*) Define Operation manuals.

(*iii*) What are the Information System Control Techniques ?

(*iv*) What is cyber frauds ?

(*v*) Explain uses of BYOD (any *two*).

(*vi*) Define IS Audit.

(*vii*) What is back-up planning ?

(*viii*) Explain any *two* Auditors Role in SDLC.

(*ix*) What is key definition ?

(*x*) What is security standards ?

P.T.O.

2. Attempt any *three* of the following : [3×4=12]

(*a*) Explain COBIT %5 — A GEIT framework.

(*b*) What are the various types of business applications ? Explain in detail.

(*c*) Explain Disaster Recovery procedural plan in detail.

(*d*) What is need of Business Countinuity Management (BCM) ?

3. Attempt any *three* of the following : [3×4=12]

(*a*) Difference between Secure Electronic Records and Secure Electronic Signature.

(*b*) What is BCM process ? Explain with diagram.

(*c*) Explain in detail SDLC Model.

(*d*) Explain IT Act and its objectives.

4. Attempt any *three* of the following : [3×4=12]

(*a*) What is the need for protection of information system ?

(*b*) Explain Cloud computing and mobile computing.

(*c*) What is green IT ? Explain it.

(*d*) Explain system development methodology.

Total No. of Questions—**4**] [Total No. of Printed Pages—**2**

Seat No.	

[5161]-504

MCA (Commerce) (Fifth Semester) EXAMINATION, 2017

504 : CONTENT MANAGEMENT SYSTEM

(2013 PATTERN)

Time : Three Hours **Maximum Marks : 50**

N.B. **:—** (*i*) *All* questions are compulsory.

(*ii*) Figures to the right indicate full marks.

1. Answer the following : [14]

(1) What is rendering format ?

(2) What is data ?

(3) Define static website.

(4) List the other publications of publishing system.

(5) What is converting from collection system ?

(6) List the types of formatting.

(7) Define content management.

2. Answer the following (any *three*) : [12]

(1) Explain structure by type.

(2) What are the rules for creating context ?

(3) What is web publication ? Explain with diagram.

(4) What is content administration in Joomla ? Explain.

P.T.O.

3. Answer the following (any *three*) : [12]

(1) CM is collection, management and publishing. Explain.

(2) Content is information plus data. Explain.

(3) How to gauge the complexity by the size of contribution ?

(4) Write the steps to create the website in Joomla for mobile and delete the article for any old model of mobile.

4. Answer the following (any *three*) : [12]

(1) Explain full CMS with diagram.

(2) What are the components, modules and plugins in Joomla ?

(3) Explain Aggregating from collection system with diagram.

(4) Write the steps to create a website in Joomla for multiplex theatre and edit the movie names as they release.

Total No. of Questions—**4**] [Total No. of Printed Pages—**2**

Seat No.	

[5161]-505

M.C.A. (Commerce Faculty) (Fifth Semester)

EXAMINATION, 2017

506 : MOBILE COMMUNICATION

(2013 PATTERN)

Time : Three Hours **Maximum Marks : 50**

N.B. **:—** (*i*) *All* questions are compulsory.

(*ii*) Neat diagram must be drawn wherever necessary.

(*iii*) Figures to the right side indicate full marks.

1. Attempt any *seven* : [7×2=14]

(*a*) Define far terminal.

(*b*) List various problems related to reverse tunneling.

(*c*) Define Mobile Computing.

(*d*) What is Base Station ?

(*e*) Write any *two* disadvantages of I-TCP.

(*f*) Define cell breathing.

(*g*) Define activity manager.

(*h*) Define modulation.

2. Attempt any *three* : [3×4=12]

(*a*) Explain various mobile applications.

(*b*) Explain Snooping TCP and Indirect TCP.

(*c*) Explain architecture of Android.

(*d*) How is Localization achieved in GSM ?

P.T.O.

3. Attempt any *three* : [3×4=12]

(*a*) Explain difference between DSSS and FHSS. (Direct Sequence Spread Spectrum and Frequency Hopping Spread Spectrum).

(*b*) Explain IP packet delivery.

(*c*) What is basic purpose of DHCP ? Name the entities of DHCP.

(*d*) Explain HLR and VLR.

4. Attempt any *three* : [3×4=12]

(*a*) Explain mobile terminated call.

(*b*) Explain features of Android.

(*c*) Explain advantages of IPV6.

(*d*) Explain teleservices of GSM.

Total No. of Questions—**4**] [Total No. of Printed Pages—**2**

Seat No.	

[5161]-506

M.C.A. (Commerce) (V Sem.) EXAMINATION, 2017

507 : SYSTEM SIMULATION AND MODELING

(2013 PATTERN)

Time : Three Hours **Maximum Marks : 50**

***N.B.* :—** (*i*) *All* questions are compulsory.

(*ii*) Draw neat labelled diagram wherever necessary.

(*iii*) Figures to the right indicate full marks.

1. Attempt any *two* : [2×7=14]

(*a*) With illustrative examples explain output analysis of steady-state simulations.

(*b*) Explain the method of generating exponential variates using inverse transform technique.

(*c*) Define simulation. Explain application areas of simulation.

2. Attempt any *three* : [3×4=12]

(*a*) Explain Software Packages of simulation.

(*b*) Explain differences between open and closed system with example.

(*c*) Explain the acceptance rejection technique with example.

(*d*) Explain discrete distribution with example.

P.T.O.

3. Attempt any *three* : [3×4=12]

(*a*) Explain the characteristics of queuing system.

(*b*) Explain the measures of preformance of a simulation system.

(*c*) Explain any *two* steps involved in validation of simulation model.

(*d*) Define the term system, entity, attribute and activity. Give examples of above terms taking Automatic Teller Machine (ATM).

4. Attempt any *two* : [2×6=12]

(*a*) What are the typical input data required in the simulation of a queuing system ? Explain the *four* steps involved in input modeling.

(*b*) Explain the simulation of Healthcare System.

(*c*) Explain the simulation of Railroads.

Total No. of Questions—**5**] [Total No. of Printed Pages—**2**

Seat No.	

[5161]-507

M.C.A. (Commerce Faculty) (V Sem.) EXAMINATION, 2017

508 : BUSINESS AND PROFESSIONAL SKILLS

(2013 PATTERN)

Time : Three Hours **Maximum Marks : 50**

N.B. **:—** (*i*) *All* questions are compulsory.

(*ii*) Neat diagrams must be drawn wherever necessary.

(*iii*) Figures to the right indicate full marks.

1. Give *five* reasons for failure of meetings. [10]

Or

What do you mean by Culture Awareness ? Give its importance.

2. What are the necessary skills to achieve excellence ? [10]

Or

Explain importance of Body Language in the Overall Development of Personality.

3. Distinguish between verbal and non-verbal communication. [10]

Or

What is business letter ? Explain in detail layout of business letter.

P.T.O.

4. What is Listening ? Explain in detail types of listening. [10]

Or

Distinguish between Voice mail and Video conferencing.

5. Write tips for an effective presentation. [10]

Or

What is verbal communication ? Explain the methods of verbal communication.