

Total No. of Questions—5]

[Total No. of Printed Pages—3

Seat No.	
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[5261]-11

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

EXAMINATION, 2017

102 : SYSTEM ORGANISATION AND MANAGEMENT

(2008 PATTERN)

Time : Three Hours

Maximum Marks : 80

N.B. :— (i) Attempt *All* questions.

(ii) Figures to the right indicate full marks.

(iii) Use of electronic pocket calculator and steam table is allowed.

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

(a) Span of control

(b) Trait Theory

(c) Principles of Communications

(d) Delegation

(e) Good Control System

(f) Marketing Policies.

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

(a) Explain the concept of Job Enrichment and Job Enlargement.

P.T.O.

- (b) Define structure of Organisation and Principle of span of control.
- (c) Explain Abraham Maslow's Need Hierarchy Theory.
- (d) Explain Emergence of Digital Firm in the existing era of IT.
- (e) Explain how management is helpful in IT sector.

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

- (a) What are the tools of forecasting ? Explain with examples.
- (b) Illustrate the Rational Decision-making Process.
- (c) Explain MIS in detail.
- (d) Explain the role of effective Information System in Production and Operation Management.
- (e) State and explain various sources of information.

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

- (a) Explain the concepts of Authority, Responsibility and Power.
- (b) Explain the methods of Coordination and Controlling the Organisation Process.
- (c) State the similarities and differences of Information System and Customer Relation Management.
- (d) Explain the need of necessary information system for sales and marketing in organisation.

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

- (a) Campus Recruitment
- (b) Direct and Indirect Interview.
- (c) Essentials of Good Control System
- (d) Unity of command.
- (e) Goal setting.

Total No. of Questions—5]

[Total No. of Printed Pages—5

Seat No.	
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[5261]-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) Explain any *two* sections of 'C' program structure.

(b) Define :

(i) Keywords

(ii) Constant.

(c) List various types of operators used in 'C' and explain any *one* type in detail

(d) What is header file ? Explain any *two* header files with example.

(e) What are the differences between while and do...while loop?

P.T.O.

2. Attempt any *four* : [4×4=16]

- (a) Write a 'C' program to calculate the sum of first '*n*' even and odd numbers.
- (b) Write a 'C' program to accept *n* numbers and calculate the sum of odd numbers in it.
- (c) Write a 'C' program to calculate sum of Fibonacci series up to a given terms.
- (d) Write a 'C' program to calculate the area of Circle and Rectangle.
- (e) Write a 'C' program to generate the following pattern for *n* lines :

```
2
4    6
8    10    12
```

3. Attempt any *four* : [4×4=16]

- (a) Explain scope of Variable in 'C'.
- (b) What is array ? Explain different types of arrays.
- (c) Explain strcmp() and strcat() functions with proper syntax.
- (d) Explain structure within structure.
- (e) What is Pointer ? What is the use of Pointer ?

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

```
(a) #include<stdio.h>
    int main()
    {
        int i = 3;
        switch(i)
```

```

{
    case 1:
        printf("C++\n");
    case 2:
        printf("RDBMS \n");
    case 3 :
        printf("DBMS\n");
    default :
        printf("PHP\n");
}
return 0;
}

```

(b) `#include<stdio.h>`
`int main()`
`{`
`int a[5] = {100, 200, 300, 400, 500};`
`int i, j, m;`
`i = ++a[1];`
`j = a[1]++;`
`m = a[i++];`
`printf("%d, %d, %d", i, j, m);`
`return 0;`
`}`

(c) `#include<stdio.h>`
`int main()`
`{`
`char j = 10;`
`while(j<15)`

```

        {
        printf("%d", j);
        j= j+2;
        }
        printf("\n");
        return 0;
    }
(d) #include<stdio.h>
int main()
{
    int x = 10;
    float y = 10.0;
    if(x==y)
        printf("x and y are equal");
    else
        printf("x and y are not equal");
    return 0;
}
(e) #include<stdio.h>
int main()
{
    char str1[] = "University";
    char str2[] = "University";
    if(str1 == str2)
        printf("Equal\n");
    else
        printf("Unequal\n");
    return 0;
}

```

5. Attempt any *four* : [4×4=16]
- (a) Write a 'C' program to create student structure having field's roll_no, stud_name, mark1, mark2, mark3. Calculate total and average of marks and arrange records in ascending order of total.
 - (b) Write a 'C' program to calculate subtraction or elements of an $m \times n$ matrix.
 - (c) Write a 'C' program to encrypt the contents of one file into another file.
 - (d) Write a 'C' program to accept two strings as command line arguments and display concatenation of both the strings.
 - (e) Write a 'C' program to accept 'n' book names from user store these names into 2-D array. Accept the book name from user and search whether the book name is present in an array or not.

Total No. of Questions—5]

[Total No. of Printed Pages—4

Seat No.	
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[5261]-13

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

EXAMINATION, 2017

STATISTICAL AND NUMERICAL METHODS

(2008 PATTERN)

Time : 3 Hours

Maximum Marks : 80

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

(ii) Figures to the right indicate full marks.

(iii) Use of statistical table and calculator is allowed.

(iv) Symbols have their usual meaning.

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

(a) Show that the root of the equation $x^3 - 9x + 1 = 0$ lies between 2 and 3. Obtain the root by Bisection method.

(b) Use Newton Raphson method to obtain the value of $\frac{1}{\sqrt{12}}$

(c) Prove that $\Delta \log f(x) = \log \left\{ 1 + \frac{\Delta f(x)}{f(x)} \right\}$

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

x	1	2	3	4	5	6
$f(x)$	2	4	8	?	22	32

(e) Find the function whose first difference is :
 $6x^2 + 16x + 9$.

P.T.O.

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

- (a) State and prove Simpson's $\frac{3}{8}$ th rule for numerical integration.
- (b) From the following data, evaluate y at $x = 151$ using Newton's forward difference interpolation formula.

x	150	152	154	156
y	12.247	12.329	12.410	12.490

- (c) Find the first derivative of $f(x)$ at $x = 1.1$ from the following table :

x	1.0	1.2	1.4	1.6	1.8	2.0
y	0	0.1280	0.5440	1.2960	2.4320	4.0000

- (d) Evaluate $\int_{-2}^2 \frac{x}{5+2x} dx$, using Trapezoidal rule
- (e) Explain Runge-kutta second order method to find the solution of ordinary differential equation.

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

- (a) What do you mean by time series ? Explain the meaning and utility of time series.
- (b) State the probability density function (p.d.f.) of normal distribution with mean 'm' and variance σ^2 . Define standard normal variable state properties of normal distribution.
- (c) If $x \rightarrow N(3, 16)$ then solve
 $P(x \geq 7)$ $P(-11 < x \leq 11)$
- (d) Explain chi-square test of goodness of fit.

(e) From the following 2×2 contingency table.

	Cinegores	Non-Cinegores
Male	83	57
Female	45	68

Test whether there is any relation between gender and habit of cinema going at 5% level of significance.

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

(a) Define : Null Hypothesis, Alternative hypothesis level of significance.

(b) Fit a straight line for the following data :

Year	2001	2002	2003	2004	2005	2006	2007
Production	12	21	18	15	21	18	21

(c) Describe large sample test for testing equality of two population means when two independent random samples of size n_1 and n_2 drawn from two normal populations.

(d) Given that $\frac{dy}{dx} = 1 + y^2, y(0) = 0$ obtain $y(0.05), y(0.1)$ by Euler's method.

(e) Find an approximation to $\int_0^4 \sqrt{x} dx$ by Simpson's $\frac{1}{3}$ rd rule.

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

(a) Use the Runge-Kutta fourth order method to find the value of $y(0.5)$, $y(1)$ Given that $y(0) = 1$ and $\frac{dy}{dx} = \frac{y-x}{y+x}$.

(b) Find 4-yearly centered moving averages for the following data :

Year :	2001	2002	2003	2004	2005	2006	2007	2008
Sales :	48	57	50	48	57	60	66	60

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

(c) From the following data test at 5% level of significance that whether the training programme for the employees is effective.

I.Q. before training	90	84	88	100	93	84
I.Q. after training	100	90	93	110	97	93

Total No. of Questions—5]

[Total No. of Printed Pages—3

Seat No.	
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[5261]-14

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

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.

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

- (a) Explain multiprocessor system. Give its advantages.
- (b) What are overlays ? Explain concept of overlays with example.
- (c) Describe various types of system programs.
- (d) Explain resource allocation graph with example.
- (e) What is operating system ? Explain different services provided by operating system.

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

- (a) Explain MFT job scheduling.
- (b) Compare sequential and Direct access.
- (c) Explain the system calls used for file and device manipulation.
- (d) Write a note on application of I/O interface in detail.
- (e) Explain the critical section problem.

P.T.O.

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

(a) Assume the following jobs are to be executed with one processor :

Job	Burst time	Priority	Arrival time
1	5	2	0
2	2	4 (lowest)	3
3	1	3	3
4	3	1 (highest)	4

Give the turn around time for each job using :

- (i) Pre-emptive shortest job first algorithm.
 - (ii) Non pre-emptive priority algorithm.
- (b) State the types of scheduler and explain any *one* in detail.
- (c) What is semaphore ? Explain Binary semaphore and its implementation.
- (d) Write a note on prepaging.
- (e) Explain deadlock prevention techniques.

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

(a) Consider the following snapshot of the system :

	Allocation			Max			Available		
	A	B	C	A	B	C	A	B	C
P ₀	0	1	0	0	1	0	0	0	0
P ₁	2	0	0	4	0	2			
P ₂	3	0	3	3	0	0			
P ₃	2	1	1	3	1	1			
P ₄	0	0	2	0	0	4			

- (i) What are the contents of need array ?
- (ii) Is the system in safe state ?
- (iii) If P₄ makes additional request (0, 0, 1), can it be granted immediately ?

- (b) Consider the following reference string :
- 4, 3, 2, 1, 4, 3, 5, 4, 3, 2, 1, 5
- How many page faults occur for the following algorithms with 3 page frames.
- (i) FIFO
 - (ii) OPTIMAL
- (c) Compare FCFS and RR disk scheduling algorithms.
- (d) Explain Bounded Buffer Problem with example.
- (e) Write a note on Interrupts.
5. Attempt any *four* of the following : [16]
- (a) Define the following terms :
 - (i) Copy-on-write
 - (ii) Starvation
 - (iii) Context switch
 - (iv) Virtual memory.
 - (b) What is segmentation ? Give its advantages and disadvantages.
 - (c) “Demand paging is used to reduce the number of frames allocated to a process.” Comment and justify.
 - (d) Write a note on file attributes and file protection.
 - (e) Explain memory fragmentation in detail.

Total No. of Questions—5]

[Total No. of Printed Pages—3

Seat No.	
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[5261]-15

M.C.A. (Commerce) (First Semester) EXAMINATION, 2017
106 : SOFTWARE ENGINEERING
(2008 PATTERN)

Time : 3 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]

"Star Scooter Ltd." has issued an advertisement calling application for various posts. After receiving applications, scrutiny will be made and interview letters will be sent. Deserving candidates will be selected through interviews and will be appointed as regular employees.

Identify the entities.

1. Draw an E-R diagram

2. Draw data flow diagram (CLD and 1st Level DFD).

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

1. Draw a Decision tree :

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 :

P.T.O.

- (i) If the employee is permanent and in the AS category the bonus amount is three months salary.
- (ii) If the employee is permanent and in the OS category the bonus amount is two months 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.

- 2. What is System ? Explain different types of system.
- 3. Discuss Spiral model.
- 4. Explain testing objectives & principles.
- 5. Explain system implementation strategies.

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

- 1. Explain Decision table with an example.
- 2. Explain ISO standards.
- 3. Discuss normalization with its types.
- 4. Explain Interview and Questionnaire fact finding techniques.
- 5. Explain Input Design with example.

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

- 1. Explain the elements of system.
- 2. Explain 4GL in detail.
- 3. Differentiate between Reverse and Re-engineering.
- 4. Discuss any *four* software qualities.
- 5. Differentiate between logical and physical DFD.

5. Write notes on the following (any *four*) :

[16]

1. Data dictionary
2. Structure chart
3. Waterfall model
4. Capability maturity model
5. Testing Strategies.

Total No. of Questions—5]

[Total No. of Printed Pages—4

Seat No.	
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[5261]-21

**MCA (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 indicates full marks.
(iii) All questions carry equal marks.

1. Attempt *all* : [8×2=16]
- (a) List down the different data models.
 - (b) Define :
 - (i) Unique key
 - (ii) Primary key.
 - (c) Define attributes. List different types of attributes.
 - (d) What is transaction ? List properties of transaction.
 - (e) Define :
 - (i) Growing phase
 - (ii) Shrinking phase.
 - (f) List the statements used in DDL.
 - (g) Define view and explain its use.
 - (h) When to use dynamic SQL.
2. Attempt (any *four*) : [4×4=16]
- (a) Explain transaction states with the help of diagram.
 - (b) What is lossless Decomposition ? Explain with example.
 - (c) Explain Data Abstraction in detail.
 - (d) Write a note on immediate database modification.
 - (e) What is serializability ? Explain types of serializability.

P.T.O.

3. Attempt (*any four*) : [4×4=16]
- (a) List and explain aggregate function with example.
 - (b) What is Normalization ? Explain 1 NF and 2NF with example.
 - (c) What is Deadlock ? Also explain methods used to prevent deadlock.
 - (d) Which are the extended E-R features. Explain any *one* of them.
 - (e) Write a note on Timestamp based protocol.
4. Attempt the following : [10+6=16]
- (A) Attempt the following
- Navratna Hotel has many rooms. Rooms are classified as AC and non-AC. Hotel provides the discount to customers who visit the hotel more than once. Hotel also has food section and laundry section. This facility gives to customer as per customer's requirement. Every room of hotel has TV and telephone facility, which charge with the total cost of room. Identify all entities of relationship. Draw E-R diagram. [10]
- (B) Attempt (*any two*) : [2×3=6]
- (a) Explain project operation in detail.
 - (b) Define :
 - (i) Wait for graph
 - (ii) Precedence graph
 - (iii) Wound-wait.
 - (c) What is Not NULL constraint ? Explain with example.

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

(A) Consider the following database :

Doctor (dno, name, city)

Patient (opdno, pat-name, addr, disease)

Relationship between Patient and Doctor is many to many.

Create RDB in 3 NF and solve the following queries :

(1) Insert a row in doctor table.

(2) Display names of doctor who live in 'Pune' city.

(3) Add 'Discharge-date' column to patient table. Solve the following queries using Relational Algebra.

(4) Count number of patients who are treated by 'Dr. Deshpande'.

(5) Find names of patients suffering from 'Cancer'.

(B) Attempt (any *two*) : [2×3=6]

(a) State that whether the following schedule is serializable or not using precedence graph.

T1	T2	T3
R(A)		
W(A)		
	R(C)	
	R(B)	
		R(B)
R(B)		
W(B)		
		R(C)
		W(B)
		W(C)
	W(B)	
	R(A)	
	W(A)	

(b) Consider the following set of transactions :

T1	T2	T3
R(A)	R(C)	R(B)
A = A-50	R(B)	R(C)
W(A)	B=B+5	B=B+100
R(B)	W(B)	W(C)
B=B-100	R(A)	
W(B)	A=A+15	
	W(C)	

Give a non-serial schedule which is serializable.

(c) Consider two transactions :

T1	T2
R(x)	R(y)
x = x - 70	y = y + 10
W(x)	W(y)
R(y)	R(z)
y = y + 70	z = z - 5
W(y)	W(z)

Initially values of x , y and z are 100, 200 and 300 respectively. Consider T1 and T2 executes serially. Give the state of the log and database corresponding to T1 and T2.

Total No. of Questions—5]

[Total No. of Printed Pages—5

Seat No.	
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[5261]-22

MCA (Commerce) (Second Semester) EXAMINATION, 2017
203 : COST ACCOUNTING AND COST CONTROL TECHNIQUES
(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 is cost ? Explain the difference between Financial and Cost Accounting. [16]

Or

What is operating costing ? Explain the features and objectives of operating costing. [16]

2. Write short notes on (any *four*) : [16]
- (a) Cost centre
 - (b) Features of operating costing
 - (c) Key factor
 - (d) Reasons for under and over absorption of overheads
 - (e) Features of job costing
 - (f) Application of marginal costing.

3. The cost of sale of Product A is made up as follows : [16]
- | | |
|-----------------------------------|-----------|
| Materials used in manufacturing | Rs. 5,500 |
| Materials used in primary packing | Rs. 1,000 |

P.T.O.

Materials used in selling the product	Rs. 150
Materials used in the factory	Rs. 75
Materials used in the office	Rs. 125
Labour required in producing	Rs. 1000
Labour required for supervision at factory	Rs. 200
Direct expenses	Rs. 500
Indirect expenses-factory	Rs. 100
Office expenses	Rs. 125
Depreciation on office building	Rs. 75
Depreciation on factory building	Rs. 175
Selling expenses	Rs. 350
Freight on materials	Rs. 500
Advertising	Rs. 125

Assuming that all the products manufactured are sold, determine the selling price to obtain a profit of 25% on cost of sales ?

4. IRB Construction Limited, Pune is engaged on contract X during the year. The following particulars are obtained at the year-end : [16]

Particulars	Contract X
Date of commencement	01/04/2016
Contract price	Rs. 6,00,000
Materials delivered direct to site	Rs. 1,20,000
Materials issued from store	Rs. 40,000
Materials returned to store	Rs. 4,000
Materials at site on 31/03/2017	Rs. 22,000

Direct labour payments	Rs. 1,40,000
Direct expenses	Rs. 60,000
Architect's fees	Rs. 2,000
Establishment charges	Rs. 25,000
Plant installed at cost	Rs. 80,000
Value of plant on 31/03/2017	Rs. 65,000
Accrued wages on 31/03/2017	Rs. 10,000
Accrued expenses on 31/03/2017	Rs. 6,000
Cost of contract not yet certified	Rs. 23,000
Value of contract certified by architect	Rs. 4,20,000
Cash received from contractee	Rs. 3,78,000

You are required to show :

- (a) Contract X Account, and
- (b) Contractee Account.

Or

Product A is produced after three distinct processes. The following information is obtained from the accounts of a period : [16]

Particulars	Total Cost	Process-I	Process-II	Process-III
Direct materials	Rs. 2,200	Rs. 1,800	Rs. 300	Rs. 100
Direct wages	Rs. 400	Rs. 100	Rs. 200	Rs. 100
Direct expenses	Rs. 500	Rs. 300	Rs. 0	Rs. 200

Production overhead incurred is Rs. 800 and is recovered @ 200% of direct wages. Production during the period was 100 kg; there were no opening or closing stocks. Prepare process cost accounts assuming there is no process loss.

5. A newly started Zatpat Company wishes to prepare cash budget from January. Prepare a cash budget for the first six months from the following estimated revenue and expenses :

Month	Total sales	Materials	Wages	Overheads	
	Rs.	Rs.	Rs.	Production	Selling & distribution
				Rs.	Rs.
January	20,000	20,000	4,000	3,200	800
February	22,000	14,000	4,400	3,300	900
March	24,000	14,000	4,600	3,300	800
April	26,000	12,000	4,600	3,400	900
May	28,000	12,000	4,800	3,500	900
June	30,000	16,000	4,800	3,600	1,000

Cash balance on 1st January was Rs. 1,0000. A new machine is to be installed at Rs. 30,000 on credit, to be repaid by two equal installments in March and April.

Sales commission @ 5% on total sales is to be paid within the month following actual sales.

Rs. 10,000 being the amount of 2nd call may be received in March. Share premium amounting to Rs. 2,000 is also obtainable with 2nd call.

Period of credit allowed by suppliers	2 months
Period of credit allowed to customers	1 month
Delay in payment of overheads	1 month
Delay in payment of wages	½ month
Assume cash sales to be 50% of total sales.	[16]

Or

- (A) P Company producing a single article sells it at Rs. 10 each. The marginal cost of production is Rs. 6 each and fixed cost is Rs. 400. [8]

Calculate :

- (a) Contribution
- (b) P/V Ratio
- (c) Break-even-points in units
- (d) Break-even-points in rupees.

- (B) The standard material cost to produce a tonne of chemical X is : [8]

30 kg of material A at Rs. 10 per kg,

400 kg of material B at Rs. 5 per kg.

500 kg of material C at Rs. 6 per kg.

During the period, 100 tonnes of chemical X were produced from the usage of :

35 tonnes of material A at a cost of Rs. 9,000 per tonne.

42 tonnes of material B at a cost of Rs. 6,000 per tonne.

53 tonnes of material C at a cost of Rs. 7,000 per tonne.

Calculate :

- (a) Material Cost Variance
- (b) Material Price Variance
- (c) Material Usage Variance.

Total No. of Questions—5]

[Total No. of Printed Pages—4

Seat No.	
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[5261]-23

**M.C.A. (Commerce Faculty) (Semester-II) 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. Define budget and budgetary control. What are the merits and demerits of budgetary control ? [16]

Or

Explain the term “Management Accounting”. Distinguish between Management Accounting and other forms of Accounting. [16]

2. From the following particulars relating to SPU Industries Ltd., prepare a Balance sheet as on 31 March 2017 with as many details as possible. [16]

Current Ratio	2
Fixed Asset Turnover Ratio	2 times
Average collection period	2 months
Inventory Turnover Ratio	3 times
Gross Profit Ratio	25%
Fixed Assets to Current Assets	1 : 1
Share Capital to Reserve	4 : 1
Value of Fixed Assets	Rs. 15,00,000
Bank Overdraft	Rs. 50,000

Current Assets includes Stock, S. Debtors and Cash in hand whereas Current Liabilities includes S. Creditors and Bank Overdraft.

P.T.O.

Or

What do you mean by Cash Flow Statement ? Explain its advantages.
How does a Cash Flow Statement differ from a Funds Flow Statement ? [16]

3. The following information is provided by X Limited : [16]

Sales Rs. 25,00,000

Net Profit Rs. 2,50,000

Fixed Cost Rs. 3,75,000

Find out :

(1) P/V Ratio

(2) Sales to earn Profit of Rs. 3,75,000

(3) Break Even Sales

(4) Net Profit from Sales of Rs. 37,50,000

Or

ABC Company Ltd. has given the following particulars.

Months	Sales	Purchases	Wages	Overheads
	Rs.	Rs.	Rs.	Rs.
February 2017	2,00,000	1,02,000	38,000	19,000
March 2017	2,10,000	1,00,000	38,000	21,000
April 2017	2,30,000	98,000	40,000	23,000
May 2017	2,50,000	1,00,000	42,000	24,000
June 2017	3,00,000	1,08,000	45,000	25,000

(1) 10% sales are on Cash Basis. 50% of the Credit Sales are collected in next month and the balance in the following month.

(2) All purchases are on credit basis and paid after 2 months.

(3) Time lag in payment of Wages is 1/2 month whereas Overheads are paid in the same month.

- (4) Cash balance on 1st April, 2017 is expected to be Rs. 40,000/-.
- (5) A Dividend at 5% on Pre. Share Capital of Rs. 30,00,000/- will be paid on 1st June, 2017.
- (6) Advance to be received for the sale of Vehicle is Rs. 2,00,000 in June, 2017.
- (7) Income Tax (Advance) to be paid in June, 2017 Rs. 25,000.
- You are required to prepare a Cash Budget for the three months ending on 30th June, 2017. [16]

4. What do you mean by Ratio Analysis ? State the advantages and limitations of Ratio Analysis. [16]

Or

The Financial Position of Bharat Traders Limited as on 31st March 2016 and 31st March 2017 was as follows :

Balance Sheets of Bharat Traders Limited

Liabilities	31-3-2016	31-3-2017	Assets	31-3-2016	31-3-2017
8% Preference			Goodwill	2,00,000	1,60,000
Share Capital	2,00,000	80,000	Building	4,00,000	3,40,000
Equity Share					
Capital	7,00,000	9,00,000	Machinery	1,60,000	3,70,000
Reserve Fund	80,000	1,40,000	S. Debtors	3,00,000	5,00,000
Profit and Loss A/c	60,000	96,000	Stock	1,74,000	1,18,000
S. Crditors	1,10,000	1,66,000	Bills Receivable	50,000	36,000
Bills Payable	54,000	32,000	Cash & Bank	40,000	60,000
Porposed Dividend	70,000	90,000	Preliminary		
Provision for			Expenses	30,000	20,000
Taxation	80,000	1,00,000			
	<u>13,54,000</u>	<u>16,04,000</u>		<u>13,54,000</u>	<u>16,04,000</u>

Additional Information :

- (1) Interim Dividend of Rs. 45,000 has been paid during the year.
- (2) During the year Income Tax paid amounted to Rs. 70,000.
- (3) Company redeemed 8% preference shares of Rs. 1,20,000 @ 5% premium.
- (4) Depreciation charged on Building and Plant amounted to Rs. 60,000/- and Rs. 32,000 respectively.
- (5) A part of plant was sold for Rs. 40,000 (W.D.V. Rs. 50,000).

Prepare Statement showing changes in working capital and Funds Flow Statement for year ended 31st March, 2017 along with necessary working notes. [16]

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

- (1) Scope of Management Accounting
- (2) Break Even Analysis
- (3) Trend Analysis
- (4) Objectives of Financial Statement Analysis.

Total No. of Questions—5]

[Total No. of Printed Pages—2

Seat No.	
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[5261]-24

M.C.A. (Commerce Faculty) (Second Semester)
EXAMINATION, 2017
205 : NETWORKING OPERATIONS
(2008 PATTERN)

Time : Three Hours

Maximum Marks : 80

N.B. :— (i) Answer *all* questions.

(ii) *All* questions carry equal marks.

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

- (a) What are the types of Computer Networks ?
- (b) Explain with proper diagram Peer Entities.
- (c) What is the structure of Computer Network ?
- (d) What is WWW ?
- (e) Explain Token Ring ethernet NIC.

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

- (a) Active and Passive Hubs
- (b) Bluetooth
- (c) Internet Service Provider
- (d) Serial and Parallel transmission
- (e) Logical/IP address.

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

- (a) Compare connection-oriented and connectionless services.
- (b) Types of Topology.
- (c) Models of communication.
- (d) Network Architecture.
- (e) 3-layer switch.

P.T.O.

4. Answer the following (any *four*) : [16]
- (a) Explain the functions of Data Link Layer and Network Layers of ISO-OSI model.
 - (b) Explain different service primitives.
 - (c) What is standard ? What are its types ?
 - (d) Comment “IP is a best-effort delivery protocol”.
 - (e) What are the functions of NIC ?
5. Answer the following :
- (a) Explain wireless transmission in detail. [8]
 - (b) Explain different types of bridges. [8]

Total No. of Questions—5]

[Total No. of Printed Pages—5

Seat No.	
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[5261]-25

MCA (Commerce) (II Semester) EXAMINATION, 2017

206 : OBJECT ORIENTED PROGRAMMING

(2008 PATTERN)

Time : Three Hours

Maximum Marks : 80

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

(ii) Consider there is no syntax error in the given programs.

1. Attempt any four :

[4×4=16]

- (a) Write the difference between procedure oriented and object oriented programming
- (b) Explain control structure in C++.
- (c) Why is an array called as a derived data type ?
- (d) What do you mean by operator overloading ? Explain with its rules.
- (e) What is JVM ? Explain in detail.

2. Attempt any four :

[4×4=16]

- (a) What is friend function ? Explain with merits and demerits.
- (b) What does inheritance mean in C++ ? Explain its advantages.

P.T.O.

- (c) Explain the difference between static variable and instance variable.
- (d) Write a C++ program using operator overloading to find a factorial of a given number.
- (e) Explain the use of final keyword with example.

3. Attempt any *four* : [4×4=16]

- (a) Explain types of constructor with example.
- (b) Java does not support multiple inheritance. Comment and explain.
- (c) Describe the various forms of implementing interfaces with example.
- (d) Write short notes on :
 - (i) this
 - (ii) super
- (e) A superclass reference can refer to a sub-class object. Explain why it is important to relate with method overriding.

4. Attempt any *four* : [4×4=16]

- (a) Write a program in C++ to accept two numbers from user and add them by using objects as parameters.
- (b) Write a menu driven program in C++ which will perform all arithmetic operations (use inline function).
- (c) Write a Java program to accept 'n' strings from user and display the longest string.

- (d) Write a program in C++ to concatenate two strings using operator overloading +.
- (e) Write a program in Java to calculate average of 3 numbers and addition to 3 numbers using command line argument.

5. (a) (i) Trace the output : [2×4=8]

```
# include <iostream.h>
int top = 3;
class base
{
    protected :
        int top;
    Public :
        base( )
    {
        top = 2;
        cout<<endl<<top;
    }
};
class derived : public base
{
    Private :
        int top :
    Public :
        derived( ) : base( )
```

```

{
    top = 1;
    count<<endl<<top;
    cout<<endl<<base::top;
    cout<<endl<<::top;
}
};

{    Void main( )
    derived d1;
}

```

(ii) Class Recur

```

{
    Public static void main (string args[ ])
    {
        int Result = result (10);
        system . out . println ("Result =" + Result);
    }
Static int result (int m)
{
    if (m<=2)
        return m;
    else
        return m + result (m - 2);
}
}

```

(b) Answer any *two* :

[2×4=8]

- (i) Create an abstract class figure. Derive two classes rectangle and triangle. Calculate area of both (use super keyword).
- (ii) Write a program in Java for sorting a given list of numbers in ascending order.
- (iii) Write a program in Java that will check whether a given string is palindrom or not ?

Total No. of Questions—5]

[Total No. of Printed Pages—3

Seat No.	
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[5261]-31

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

301 : ADVANCED OPERATING SYSTEM

(2013 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 non-client area mouse messages.
 - (b) Describe UNIX architecture in detail.
 - (c) Define GDI. Explain GDI functions.
 - (d) Write a note on WM-PAINT message.
 - (e) Explain Modal and Modeless dialog Boxes.

2. State true or false and justify your answer (any *four*) : [16]
 - (a) Window is multitasking operating system.
 - (b) The 'edit' control provides built in cut, copy, paste functionality.
 - (c) Common window controls generally send WM-Command Message.
 - (d) System menu of a Window cannot be modified.
 - (e) WM-Quit Message destroys the message in queue.

P.T.O.

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

- (a) What is call back function ?
- (b) Define SDK.
- (c) What are metafiles ?
- (d) What are functions of kernel ?
- (e) Explain Peek Message().
- (f) Define term signal in Unix O.S.
- (g) State functions of caret.
- (h) Which are the different windows resources ?
- (i) Define valid and invalid rectangles.
- (j) Write any *two* advantages of queued and non-queued messages.

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

- (a) Write a shell script to display Fibonacci series.
- (b) Write a shell script to find Min and Max number from given numbers.
- (c) Display a button control on the program's client area at the location where the user clicks the left button. The button should be destroyed and recreated at the cursor location every time the left mouse button is clicked.
- (d) Display a hello message at the point in client area where the right mouse button is pressed and erased when it is released.

- (e) Display Four Push Buttons LINEUP, PAGEUP, PAGEDN that changes thumb position of vertical scroll bar, Set scroll bar position from 1 to 100 initially.

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

- (a) Explain Hungarian Notation.
- (b) Describe mounting and unmounting file system.
- (c) What is shell programming ? Explain types of shell.
- (d) Explain algorithm sleep and wake-up.
- (e) Write a note on memory management.

Total No. of Questions—8]

[Total No. of Printed Pages—2

Seat No.	
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[5261]-32

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

EXAMINATION, 2017

303 : ENTERPRISE RESOURCES 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. Explain the term ERP and discuss its benefits in detail. [16]
2. What is datawarehouse ? Describe its features, uses and structure. [16]
3. Explain ERP implementation life-cycle. [16]
4. Discuss in detail various advantages and disadvantages of inhouse ERP implementation. [16]
5. Explain the role of consultant for ERP. [16]
6. What is BPR ? Explain different phases of BPR. [16]

P.T.O.

7. Explain the following : [16]
- (a) EDI Services
 - (b) EDI Integration
 - (c) EDI Standards
 - (d) IDoc Application.
8. Write short notes on : [16]
- (a) SAP
 - (b) Supply Change Management
 - (c) Baan Company
 - (d) QAD.

Total No. of Questions—5]

[Total No. of Printed Pages—2

Seat No.	
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[5261]-33

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

304 : BUSINESS STRATEGIES

(2008 PATTERN)

Time : Three Hours

Maximum Marks : 80

N.B. :— All questions are compulsory.

1. Answer the following questions : (any *four*) : [16]
 - (a) Why does an organisation need a strategy ?
 - (b) What do you mean by internal environment Analysis ?
 - (c) Explain the process of Strategic decision-making.
 - (d) Define Vision and Mission.
 - (e) State the guidelines for formulating the objectives of an organization.

2. Answer the following questions : (any *four*) : [16]
 - (a) State and explain the elements of a mission statement.
 - (b) Give the importance of organizational appraisal.
 - (c) How will you identify the opportunities and threats of a business ?
 - (d) Describe the issues involved in the formulation of strategies.
 - (e) Explain the concept of Functional level strategies.

3. Answer the following questions : (any *four*) : [16]
 - (a) State and explain the reasons for Mergers and Acquisitions.
 - (b) Explain the concept of Key factor.
 - (c) Describe the process of strategic control.
 - (d) Discuss the role and importance of strategic management.
 - (e) Write a short note on SWOT Analysis.

P.T.O.

4. Answer the following questions : (any *two*) [16]
- (a) "A company gains competitive advantage with a global strategy." Discuss.
 - (b) Describe in detail the pricing strategies of a new product.
 - (c) Explain the components of Business Environment.
5. Write short notes (any *four*) : [16]
- (a) Strategic Advantage
 - (b) Interrelationship between strategy formulation and implementation
 - (c) Evaluation of Strategy
 - (d) Horizontal Integration
 - (e) Objectives of Strategic planning.

Total No. of Questions—5]

[Total No. of Printed Pages—2

Seat No.	
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[5261]-34

**MCA (Commerce) (Third Semester) EXAMINATION, 2017
CYBER LAW AND ETHICS
(2008 PATTERN)**

Time : Three Hours

Maximum Marks : 80

N.B. : *All* questions are compulsory.

1. Attempt any *four* of the following : [4×4=16]
 - (a) Explain Trojan Horse Programme.
 - (b) Explain Virus in detail.
 - (c) Explain Communication Act of 1996-section 23.
 - (d) Explain DSA Algorithm.
 - (e) Give a brief description about www.

2. Attempt any *four* of the following : [4×4=16]
 - (a) Is Hacking a cyber crime ? Justify.
 - (b) What are the applications and mirror image rule ?
 - (c) Explain direct and indirect Harassment.
 - (d) Explain Battle of forms and list the steps to govern the contract in case of Battle of forms.
 - (e) Explain Dichotomy of offer and invitation of treat with example.

3. Attempt any *four* of the following : [4×4=16]
 - (a) Explain with example Asymmetric Cryptosystem for Authentication.
 - (b) List the duties of subscriber.
 - (c) Explain the section 16 security procedure.
 - (d) Explain in detail skipjack.
 - (e) Explain Internal Crime with example.

P.T.O.

4. Attempt any *four* of the following : [4×4=16]
- (a) Explain Intellectual property in cyberspace.
 - (b) Explain logic Bomb in detail.
 - (c) List and explain types of victims of stalking.
 - (d) Define Insurance. Give its advantages.
 - (e) Explain different techniques used to identify the parties.
5. Attempt any *four* of the following : [4×4=16]
- (a) Explain ICMP attack in brief.
 - (b) Give some limitations of symmetric cryptosystem.
 - (c) Write down functions of controller.
 - (d) What are the real problems in the virtual world ?
 - (e) List some multifaceted issues of E-commerce.

Total No. of Questions—6]

[Total No. of Printed Pages—2

Seat No.	
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[5261]-35

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

306 : FINANCIAL AND INVESTMENT ANALYSIS

(2008 PATTERN)

Time : Three Hours

Maximum Marks : 80

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

(ii) *All* questions carry equal marks.

1. Explain the difference between :
 - (a) Primary Market and Secondary Market.
 - (b) Investment and Speculation.
2. What do you mean by Portfolio Management ? Explain the process of Portfolio Management.
3. What do you mean by Mutual Fund ? Describe the advantages and disadvantages of Mutual Funds.
4. Explain in detail the Process of Book Building in an IPO.
5. Explain the role of SEBI in Regulations of Primary Market.

P.T.O.

6. Write short notes on (any *four*) :

(a) Objectives of Investment

(b) OTCEI

(c) BSE

(d) Functions of Financial Intermediaries.

(e) Derivatives

(f) Open ended and Close ended Mutual Funds.

Total No. of Questions—5]

[Total No. of Printed Pages—3

Seat No.	
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[5261]-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) Figures to the right indicate full marks.

1. Write notes on (any *four*) : [4×4=16]
 - (a) HITS Algorithm
 - (b) SOAP
 - (c) Vertical Fragmentation
 - (d) Partitioned Join
 - (e) KDD.

2. Attempt any *four* : [4×4=16]
 - (a) Differentiate between ORDBMS and RDBMS.
 - (b) Explain R-Trees in detail.
 - (c) What are responsibilities of transaction manager and transaction coordinator ?
 - (d) What is Data Mart ? What are the advantages and disadvantages ?
 - (e) What is Multimedia database ?

P.T.O.

- 3.** Attempt any *four* : [4×4=16]
- (a) Differentiate between OLAP and OLTP.
 - (b) What is replication ? What are advantages and disadvantages ?
 - (d) What are applications of spatial data ?
 - (c) What are characteristics of object-oriented database ?
 - (e) What is use of Vector Space Model ?
- 4.** Attempt any *four* : [4×4=16]
- (a) What is distributed databases ? What are advantages and disadvantages ?
 - (b) What is XML DTD ?
 - (c) Explain single lock manager approach in distributed database system.
 - (d) Write a note on Object.
 - (e) Define :
 - (i) GIS
 - (ii) Region
 - (iii) Point Data
 - (iv) Region Data.
- 5.** Attempt any *four* : [4×4=16]
- (a) Explain Data Warehouse in detail.
 - (b) Why is there need of parallel database system ? Differentiate between shared disk and shared memory architecture.
 - (c) Define :
 - (i) Lexicon
 - (ii) Recall
 - (iii) Precision
 - (iv) Term Frequency.

(d) Consider the following schema :

Book(Bno, Bname, Cost)

Perform horizontal fragmentation of Book relation using the following predicates :

P1 : SL Cost < 150

P2 : SL Cost > 150 and Cost \leq 500

P3 : SL Cost > 500

(e) Perform Vertical fragmentation of Project relation given below
Project(Pno, Pname, Startdate, Budget, Status)

according to the following requirements :

(i) Site 1 requires information about Pno, Pname, Budget

(ii) Site 2 requires information about Startdate, Status.

Total No. of Questions—5]

[Total No. of Printed Pages—3

Seat No.	
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[5261]-42

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

402 : DATA CENTRE TECHNOLOGIES

(2008 PATTERN)

Time : Two Hours

Maximum Marks : 80

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

(ii) Figures to the right indicate full marks.

1. Answer the following (any *four*) : [4×4=16]
- (1) Explain network operation centre (NOC).
 - (2) State the difference between Inband and out-of band monitoring.
 - (3) Explain TPC Benchmarks.
 - (4) Explain briefly the following cluster components :
 - (a) Local disks
 - (b) Servers.
 - (5) Explain briefly the best practiseses that one must follow to ease configuration and maintenance for a network infrastructure in a data centre.
2. Answer the following (any *four*) : [4×4=16]
- (1) Explain briefly the commercial cluster management software.
 - (2) Write a short note on ISP WAN Links.
 - (3) Explain the term internet Access and its components.
 - (4) Explain power distribution units (PDUs)
 - (5) Write a short note on Linpack benchmarks.

P.T.O.

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

- (1) ABC Automobiles company has several off-line stores around the state. The owners have decided to establish an online presence to be able to allow anyone in the country to order spares parts. They have acquired services from a software development firm to place their catalogue online. They have rented a building in the state of India. Study the above case study for data centre and give the proper requirements and the suitable solutions for the above.
- (2) Define data centre. Explain the cost of downtime.
- (3) Explain briefly data centre pre-requisites.
- (4) Write a short note on Generator.
- (5) State the difference between cold-liquid air-conditioning system and dry-liquid air-conditioning system.

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

- (1) Describe the various phases for capacity planning.
- (2) State and explain the automation guidelines which will help in increase of software effectiveness.
- (3) What is load balancing ? State its advantages.
- (4) What is cluster ? Explain asymmetric two-node cluster.
- (5) In theory you can get more than enough money for constructing a data center, but in practice this rarely happens. Comment.

5. Answer the following (any *four*) : [4×4=16]
- (1) State software and hardware requirements for the cluster implementation.
 - (2) Write a short note on one-to-many failover model.
 - (3) Explain benchmark. State the aspects of system performance.
 - (4) What are the guidelines for planning a data centre ?
 - (5) State the objectives of HVAC systems.

Total No. of Questions—5]

[Total No. of Printed Pages—2

Seat No.	
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[5261]-43

M.C.A. (Commerce) (Fourth Semester) EXAMINATION, 2017
403 : WEB ENABLING SYSTEMS AND
BUSINESS APPLICATIONS
(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) Assume suitable data if necessary.

- 1.** Attempt any *four* : [4×4=16]
- (a) What is e-business ? Explain various models used in e-business application design.
- (b) Write a note on JDBC Architecture.
- (c) Explain different technologies support in J2EE.
- (d) What is XML ? How XML is used in the enterprise ?
- (e) List steps creating a servlet application.
- 2.** Attempt any *four* : [4×4=16]
- (a) Explain advantages of JavaBean.
- (b) What are the inner workings of e-business XML ?
- (c) How access pattern is used in accers to enterprise component ?
- (d) Explain client server technology.
- (e) List features of JSP.
- 3.** Attempt any *four* : [4×4=16]
- (a) Explain JavaBean API.

P.T.O.

- (b) What is XML ? How is XML used in servlet ?
 - (c) What is factory Pattern ? How is it used in database connection ?
 - (d) What do you mean by Bean ? Give its Coding conventions.
 - (e) Explain how JDBC can be adverted using serrate.
4. Write notes on the following (any *four*) : [4×4=16]
- (a) J2EE Multitier Architecture
 - (b) Jar and Manifest files
 - (c) Fundamental parts of E-business
 - (d) Life-cycle of servlet
 - (e) Model-view controller (MVC) architecture.
5. Attempt any *four* : [4×4=16]
- (a) Write a program using JSP to convert the temperature Celsius to Fahrenheit.
 - (b) Write a program to display Actor (actorname, moviename) details by using JSP.
 - (c) Write a servlet program to accept the patient details from user and display the details on the next page.
 - (d) Write a JDPC program to update the Doctor (dno, dname, city) information. Update city from 'Pune' to 'Mumbai.
 - (e) Write a XML program to store Employee (eno, ename, sal) information.

Total No. of Questions—5]

[Total No. of Printed Pages—4

Seat No.	
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[5261]-44

M.C.A. (Commerce Faculty) (IV 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 data, if necessary.

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

(i) Explain Application and Session Object in ASP.

(ii) Explain Date and string object in Javascript.

(iii) What is difference between Server Side Validation and Client Side Validation ?

(iv) How are parameter defined and passed between the client and the server.

(v) What is Fat Server ? Explain with example.

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

(i) Write a Java Script Code to accept name and age and validate it.

(1) Name should not contain number.

(2) Age should be between 18 to 25.

P.T.O.

- (ii) Write HTML and Javascript code to accept information and display accepted information :

Name	<input type="text"/>
E-mail	<input type="text"/>
Hobbies	<input type="checkbox"/> Reading
	<input type="checkbox"/> Singing
	<input type="checkbox"/> Watching TV
	<input type="checkbox"/> Dancing
<input type="button" value="Display"/>	<input type="button" value="Clear"/>

- (iii) Create a login screen in ASP with Fields Username and Password. Write a code to validate the user. If user exists in database, display welcome message, else display error message.
- (iv) Write an ASP code to delete a record from employee table, where emp_id has to be accepted from html page, take suitable structure of employee table.

Assumption:- Employee structure

Emp_id Text 10

Ename Text 30

Edept Text 20

Edop Date 08

Edoj Date 08

Eadd Text 50

Emob Num 10

- (v) Write an ASP code to check the given no. is Armstrong or not ?

3. Explain the term in brief : [4×4=16]

(i) Socket

(ii) 2-Tier client/server

(iii) Client/Server for Tiny Shops and Nomadic Tribes.

(iv) Client building block

(v) SMDS.

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

(i) What is Bandwidth chokepoint explain with example.

(ii) What are the properties of connection object ?

(iii) Write a short note on error handling in ASP.

(iv) Explain *five* Axes of client/server Tools.

(v) What is Groupware server ? Explain with example.

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

(i) What is difference between 2 Tier and 3 Tier client/server.

- (ii) Explain client/server for intergalactic enterprises with suitable diagram.
- (iii) Write a short note on session object.
- (iv) Explain Arrays in Javascript. Explain Dense Arrays with example.
- (v) Explain Internet, Intranet and Extranet.

Total No. of Questions—5]

[Total No. of Printed Pages—2

Seat No.	
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[5261]-45

M.C.A. (Commerce Faculty) (IV Semester) EXAMINATION, 2017

KNOWLEDGE MANAGEMENT FOR BUSINESS

(2008 PATTERN)

Time : Three Hours

Maximum Marks : 80

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

(ii) Assume suitable data, if necessary.

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

(i) Explain goals and objectives of Knowledge Management.

(ii) Explain Semantic Network with example.

(iii) Define knowledge acquisition and compare it with knowledge representation.

(iv) "Knowledge Engineers are compared with system Analyst."
Comment.

(v) What do you mean by uncertainty ? What are the methods of representing uncertainty.

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

(i) Explain organizational culture.

(ii) Compare Artificial Intelligence with Natural Intelligence.

(iii) Explain feasibility study.

(iv) Compare case based with model based reasoning.

(v) Explain difference between data information and knowledge.

P.T.O.

- 3.** Attempt any *four* of the following : [4×4=16]
- (i) Inference tree
 - (ii) Forward chaining
 - (iii) CKO
 - (iv) RGA
 - (v) Maintenance phase.
- 4.** Attempt any *four* of the following : [4×4=16]
- (i) Explain different methods of knowledge Acquisition.
 - (ii) What are the problems and limitation of Expert system ?
 - (iii) Explain process of protocol analysis.
 - (iv) Explain difference between Deep and Shallow Knowledge.
 - (v) Write a note on structured interview.
- 5.** Attempt any *two* of the following : [2×8=16]
- (i) Explain how Expert system work.
 - (ii) Explain Project Initialization phase.
 - (iii) Explain AI development strategy

Total No. of Questions—5]

[Total No. of Printed Pages—2

Seat No.	
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[5261]-51

M.C.A. (Commerce) (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 wherever necessary.

1. Attempt any *four* of the following : [4×4=16]
 - (a) What is moodle ? Explain principles of moodle.
 - (b) CM is distributing business value. Explain.
 - (c) Explain content is information put to use.
 - (d) Explain Authoring with diagram.
 - (e) How to gauge the complexity by number of publications.

2. Attempt any *four* of the following : [4×4=16]
 - (a) What is formatting ? Explain formatting by method.
 - (b) What is repository ? Explain its components.
 - (c) Explain content organization starts with purpose.
 - (d) Explain when actually we need a CMS. Explain *four* guidelines by which we can gauge complexity.
 - (e) How the CM is balance of organization forces.

3. Attempt any *four* of the following : [4×4=16]
 - (a) Define content management and explain CM is collection, management and publishing.
 - (b) What is functionality ? Differentiate between monolithic and mixed-match functionalities.
 - (c) Explain static website with diagram.
 - (d) How moodle used in education and training ?
 - (e) Explain Agreegating from collection system.

P.T.O.

4. Attempt any *four* of the following : [4×4=16]
- (a) What do you mean by content is named information ?
 - (b) Write a short note on The Web CMS.
 - (c) What are the myths about teaching with moodle.
 - (d) What is structure ? Explain structure by type.
 - (e) Explain publishing services with its functions.
5. Write down the steps for the following using Joomla/CMS (any *four*) : [4×4=16]
- (a) Create a website for car showroom and add Meta tag to it.
 - (b) Create a website for readymade cloths and insert images.
 - (c) Create a website for wrist watch showroom and edit the prices of watches.
 - (d) Create a website for book of all subjects and navigate to computer books.
 - (e) Create a website for college and add a new article having subjects of MCA (Commerce).

Total No. of Questions—5]

[Total No. of Printed Pages—4

Seat No.	
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[5261]-52

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

502 : DISTRIBUTED DATABASE APPLICATIONS

(2008 PATTERN)

Time : Three Hours

Maximum Marks : 80

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

(ii) *All* questions carry equal marks.

1. Write notes on (any *four*) : [4×4=16]
 - (a) DBMS performance benchmarks
 - (b) Quad trees
 - (c) E-commerce
 - (d) Mixed Fragmentation
 - (e) T-P Monitor Architecture.

2. Attempt any *four* : [4×4=16]
 - (a) What are different alternatives for allocation of catalogs ?
 - (b) Define :
 - (i) Simple predicate
 - (ii) Minterm predicate.
 - (c) Write a note on query optimization.
 - (d) What are objectives of the design of data distribution ?
 - (e) What is DDS ? What are its advantages and disadvantages ?

3. Attempt any *four* : [4×4=16]
 - (a) Define :
 - (i) Local transaction
 - (ii) DWFG

P.T.O.

- (iii) Join graph
- (iv) Global Transaction.
- (b) What is log record ? Which are different fields of log records ?
- (c) Which are optimistic methods for distributed concurrency control ?
- (d) Write a note on deadlock detection.
- (e) What is use of catalog ?

4. Attempt any *four* : [4×4=16]

- (a) What is deadlock ? Explain false deadlock with example.
- (b) What is distributed transaction ? Explain ACID properties.
- (c) Write a note on parametric queries.
- (d) Explain Nested and multilevel transactions with example.
- (e) Explain different types of spatial queries.

5. Attempt any *four* : [4×4=16]

- (a) Consider the following relation :

Dept (dno, dname, location)

Perform horizontal fragmentation of Dept relation using the following predicates :

Dept 1 = σ location = "Nashik"

Dept 2 = σ location = "Delhi"

Using fragments of Dept perform derived Horizontal fragmentation of relation

Emp (Eno, Ename, address, sal, dno)

- (b) Transaction T_{10} & transaction T_{11} are executing at site 1.
Transaction T_{12} & T_{13} are executing at site 2. Transaction T_{14} & T_{15} are executing at site 3. Transaction T_{10} is waiting for transaction T_{11} . Transaction T_{11} is waiting for transaction T_{14} .

Transaction T_{14} is waiting for transaction T_{15} .
Transaction T_{15} is waiting for transaction T_{13} .
Transaction T_{13} is waiting for transaction T_{12} .
Transaction T_{12} is waiting for transaction T_{10} .
Draw LWFG and DWFG detect deadlock.

(c) Consider the relation

Stud (sid, sname, class)

Competition (cid, cname)

S-C (sid, cid, rank, year)

Draw the optimized operator tree for the following query :

Select sname, cname, rank
from stud, competition, S-C
where stud. sid = S-C, sid
and competition. cid = S-C. cid
and year = 2016
and class = "T.Y. MCA"
and cname = "Quiz"

(d) Consider the relation Book (Bno, bname, price) is horizontally fragmented as

Book 1 = σ price < 200

Book 2 = σ price \geq 200 and σ price < 400

Book 3 = σ price \geq 400

Reduce the following query.

Select * from Book where price between 200 and 700.

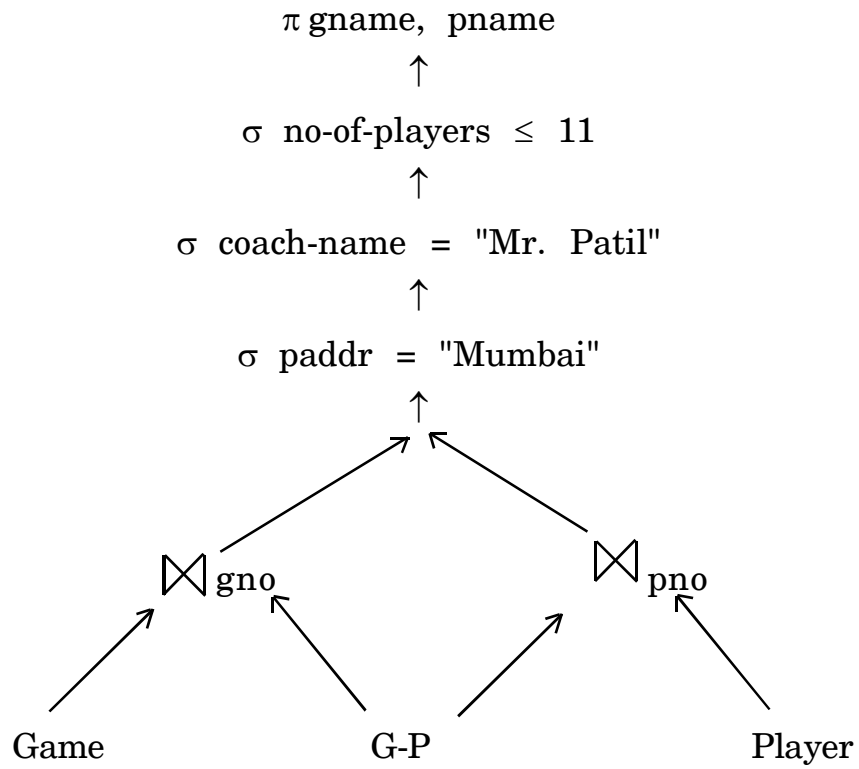
(e) Consider the following relations :

Game (gno, gname, no-of-players, coach-name)

Player (pno, pname, paddr)

G-P (gno, pno)

Convert the following simple operator tree into optimized operator tree :



Total No. of Questions—5]

[Total No. of Printed Pages—2

Seat No.	
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[5261]-53

M.C.A. (Commerce) (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 and explain how E-commerce evolved.
 - (b) Explain P2P business model in detail.
 - (c) What is Personalization ? Explain with example.
 - (d) Explain growth and evolution of Portal.
 - (e) Explain spoofing in detail.

2. Attempt any *four* of the following : [4×4=16]
 - (a) What are online stored value system ? Explain with example.
 - (b) What are the limitations to encryption solutions ?
 - (c) Explain system analysis and design for a E-commerce website.
 - (d) Explain any *two* types of auction in detail.
 - (e) Explain the important tools for interactivity and active content.

3. Attempt any *four* of the following : [4×4=16]
 - (a) Explain how to choose a web-server s/w for building an E-commerce website ?

P.T.O.

- (b) Explain any *six* unique features of E-commerce.
 - (c) Explain “Digital accumulating balance payment system” in detail.
 - (d) Write a note on Malicious code.
 - (e) Explain public key encryption using digital signatures.
4. Attempt any *four* of the following : [4×4=16]
- (a) Explain Denial of Service.
 - (b) Write a note on Digital Wallet.
 - (c) Explain B2B business model.
 - (d) Explain when to use auction and state disadvantages of auction.
 - (e) Explain how Internet Communication can be secured ?
5. Attempt any *two* of the following : [2×8=16]
- (a) Why are cell-phone networks a threat to pay-pals future growth ?
 - (b) How can P2P file-sharing networks make money if they do not sell music ?
 - (c) What are some risks using payable when compared to credit and debit cards ?

Total No. of Questions—5]

[Total No. of Printed Pages—2

Seat No.	
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[5261]-54

M.C.A. (Commerce) (Fifth Semester) EXAMINATION, 2017
504 : DATA MINING AND WAREHOUSING
(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 side indicates full marks.

1. Attempt any *four* of the following : [4×4=16]
 - (a) What are the components of business intelligence ?
 - (b) What is structured data and unstructured data ? Explain with example.
 - (c) Difference between OLAP and OLTP.
 - (d) Difference between Data mart and Data warehouse.
 - (e) Write a note on Recovery in Data warehouse.

2. Attempt any *four* of the following : [4×4=16]
 - (a) Write down the different types of server.
 - (b) What is Cluster Analysis.
 - (c) Describe important task of data pre-processing.
 - (d) Explain Hardware architecture of Data warehouse.
 - (e) What is service level Agreement ? Explain in detail.

3. Attempt any *two* of the following : [2×8=16]
 - (a) Explain with an example Bayesian classification.
 - (b) Write down the KDD process.
 - (c) What are the three techniques used in decision tree ? Explain any *one* of them.

P.T.O.

4. Attempt any *two* of the following : [2×8=16]
- (a) Explain Snowflake schema with suitable example.
 - (b) Explain the architecture of Query Manager with suitable diagram.
 - (c) Explain the method that mines the complete set of frequent item sets without candidate generalization.
5. Attempt any *four* of the following : [4×4=16]
- (a) Decision tree
 - (b) Data mart
 - (c) Star schema
 - (d) Meta data
 - (e) Hierarchical method.

Total No. of Questions—5]

[Total No. of Printed Pages—6

Seat No.	
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[5261]-55

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

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) Give illustrations wherever necessary.

(iv) Use of calculator is allowed.

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

(a) Give the significance of the role of operations research in industry.

(b) Explain the following terms :

(i) Objective functions

(ii) Feasible region

(iii) Basic variable

(iv) Non-degenerated basic feasible solution.

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

Minimize $(z) = 6x_1 + 7x_2$

Subject to the constraint :

$$-3x_1 + 4x_2 \leq 12$$

$$2x_1 - x_2 \geq -12$$

$$2x_1 + 3x_2 \geq 12$$

$$x_1 \leq 4$$

$$x_2 \geq 2$$

$$x_1, x_2 \geq 0$$

P.T.O.

(d) Show that the following L.P.P. has unfounded solution :

$$\text{Max. } (z) = 5x_1 + x_2 + 4x_3 + 3x_4$$

Subject to :

$$4x_1 + 6x_2 - 5x_3 + 3x_4 \leq 15$$

$$3x_1 - 2x_2 + 4x_3 + x_4 \geq -10$$

$$10x_1 - 3x_2 - 3x_3 + 2x_4 \leq 13$$

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

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

(f) Obtain an initial basic feasible solution of the following transportation problem by North West Corner method :

Destination →	D ₁	D ₂	D ₃	D ₄	Supply
Origin ↓					
O ₁	14	25	45	5	6
O ₂	65	25	35	55	8
O ₃	35	3	65	15	16
Demand	4	7	6	13	

Also find the corresponding transportation cost.

2. Attempt any *four* of the following :

[16]

(a) Write the dual of the following L.P.P.

$$\text{Minimize } (z) = x_1 + 2x_2 - 3x_3$$

Subject to :

$$2x_1 + x_2 - x_3 \geq 10$$

$$x_1 - x_2 - x_3 \geq 20$$

$$5x_1 - 4x_2 + 3x_3 \geq 6$$

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

(b) Define :

(i) Successor Activity

(ii) Dummy Activity.

(c) Write the standard form of the L.P.P. :

$$\text{Maximize } (z) = x_1 - 10x_2 + 7x_3$$

Subject to :

$$x_1 + x_3 \geq 4$$

$$x_1 + 2x_3 \leq 8$$

$$x_1 - x_2 + 3x_3 = 5$$

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

(d) Solve the following game by dominance principle :

Player B

		I	II	III	IV	V
Player A	A_1	4	6	5	10	7
	A_2	6	7	4	8	9
	A_3	9	8	10	9	8
	A_4	5	5	9	6	4

(e) Solve the following assignment problem for minimization :

Machines

		I	II	III	IV
Jobs	A	1	3	5	2
	B	8	6	9	8
	C	3	4	10	6
	D	7	6	7	4

(f) Find initial basic feasible solution of the following transportation problem by Matrix Minima method.

	Destination →					
Origin ↓		D ₁	D ₂	D ₃	D ₄	Supply
O ₁		5	3	6	2	18
O ₂		4	7	9	1	37
O ₃		3	4	7	5	35
Demand		15	16	34	25	

Also find the corresponding transportation cost.

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

(a) A company produces two types of presentation goods A and B that require gold and silver. Each unit of type A requires 3 gm of silver and 1 gm of gold while B requires 1 gm of silver and 2 gm of gold. The company can produce 9 gm of silver and 8 gm of gold. If each unit of type A brings a profit of Rs. 40 and that of type B Rs. 50. Determine the number of units of each type that should be produced to maximize the profit.

(b) Define the following terms with reference to transportation problem.

- (i) Initial basic feasible solution;
- (ii) Dummy source;
- (iii) Degenerated basic feasible solution
- (iv) Optimal solution.

(c) Convert the following transportation problem into linear programming problem.

Destination →			
Origin ↓	D ₁	D ₂	Supply
O ₁	11	15	20
O ₂	2	14	15
Demand	16	29	

(d) Solve the following assignment problem :

	A ₁	A ₂	A ₃	A ₄
I	2	3	4	5
II	4	5	6	7
III	7	8	9	8
IV	3	5	8	4

Does it have alternative optimal solution ? If yes, find it.

- (e) Explain the following terms in PERT/CPM :
- (i) Critical path
 - (ii) Earliest time
 - (iii) Latest time
 - (iv) Total activity time
- (f) Explain Vogel's approximation method for obtaining an initial basic feasible solution of a transportation problem.

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

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

(b) Solve the following L.P.P. by using Big-M Method :

$$\text{Maximize } (z) = 60x_1 + 96x_2$$

Subject to :

$$2x_1 + 4x_2 \geq 40$$

$$3x_1 + 3x_2 \geq 35$$

$$x_1, x_2 \geq 0$$

(c) Initial basic feasible solution of a transportation problem is given below :

	1	2	1	4	30
②0			⑩0		
	3	3	2	1	50
		②0	②0	⑩0	
	4	2	5	9	20
		②0			
20	40	30	10		

Show that it has an optimal solution (use MOWI method) and find an alternate optimal solution if exists.

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

(a) What is goal programming ? Clearly state its assumptions.

(b) Define the following terms :

(i) Two-person zero-sum game

(ii) Pay-off matrix

(iii) Maximin

(iv) Value of the game

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

		Player B	
		I	II
Player A	I	6	2
	II	4	6