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M.C.A. (Sem. I) EXAMINATION, 2018

(Commerce Faculty)

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) Strategy
- (b) SWOT Analysis
- (c) Job Rotation
- (d) Decision Support System
- (e) Knowledge Management System.

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

- (a) State and explain the nature of management.
- (b) What is the purpose and types of planning ?
- (c) Explain any *two* theories of organisation.
- (d) State the advantages and limitations of transaction processing system.
- (e) Explain how Internet plays a vital role in today's Business Organisation.

P.T.O.

- 3.** Answer the following (any *four*) : [16]
- (a) What is the scope and importance of management in Business Organisation ?
  - (b) Define the term plan and explain policy making.
  - (c) Explain the concept of staffing and steps of recruitment.
  - (d) Explain the flow of Information in the Organisation.
  - (e) Discuss the latest developments taking place in Hardware and Software.
- 4.** Answer the following (any *four*) : [16]
- (a) Explain how E-Commerce changed the trend of Business.
  - (b) Discuss the role of information system in supply chain management.
  - (c) Explain the need of formal and informal structure of organisation.
  - (d) Explain significance of reference check in recruitment process.
  - (e) Explain importance of Administrative Test or Aptitude Test at recruitment process.
- 5.** Write short notes on (any *four*) : [16]
- (a) Behavioural Approach of Information System
  - (b) Open Loop and Closed Loop Control Mechanism
  - (c) McGregor's Theory X and Y
  - (d) Mission and Vision of Management
  - (e) Regression Model.

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**M.C.A. (Commerce) (First Semester) EXAMINATION, 2018**

**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.

**Q.1) Attempt any four:**

**[4X4=16]**

- a) Explain any two data types of 'C' program.
- b) Define following :
  - i) Keywords
  - ii) Constants
  - iii) Variables
  - iv) Identifiers
- c) Explain getchar() and putchar() functions in detail.
- d) Describe different sections from structure of C program.
- e) Explain 'for' loop with proper example.

**Q.2) Attempt any four:**

**[4X4=16]**

- a) Write a 'C' program to check whether a given number is even or not.
- b) Write a 'C' program to print fibonacci series up to 'n' terms.
- c) Write a 'C' program to calculate x\*y using function.
- d) Write a 'C' program to calculate sum of digits of a number.
- e) Write a 'C' program to find maximum and minimum element from an array.

**Q.3) Attempt any four:**

**[4X4=16]**

- a) Explain different parameter passing techniques used in 'C'.
- b) Write a short note on: Union
- c) What is pointer? What are the uses of pointers in 'C'?
- d) Explain following functions with suitable example :
  - i) fputc()
  - ii) fseek()
- e) What is string? Explain strlen() and strcmp() function with proper syntax.

P.T.O.

**Q.4) Trace the output: ( any four)**

**[4X4=16]**

- a) `#include<stdio.h>`  
`int main()`  
`{`  
`int a, b = 10;`  
`a = b--;`  
`printf("a = %d, b = %d", a, b);`  
`return 0;`  
`}`
- b) `int main()`  
`{`  
`char str[10]="Hello";`  
`printf("%d,%d\n",strlen(str),sizeof(str));`  
`return 0;`  
`}`
- c) `#include<stdio.h>`  
`#include<string.h>`  
`void main()`  
`{`  
`char uni[30]="savitribaiphulepuneuniversity";`  
`printf("%d \n", sizeof(uni));`  
`printf("%d \n", strlen(uni));`  
`}`
- d) `#include<stdio.h>`  
`int main()`  
`{`  
`int i=2;`  
`i=4+2*i++;`  
`printf("%d",i);`  
`return 0;`  
`}`

```
e) #include<stdio.h>
void main()
{
    int x=5;
    float y=5.0;
    if(x==y)
        printf("x and y are equal \n");
    else
        printf("x and y are not equal \n");
}
```

**Q.5) Attempt any four:**

**[4X4=16]**

- a) Write a 'C' program to accept two strings and concatenate them without using standard library function.
- b) Write a 'C' program to create structure 'cust'. Accept customer 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 below Rs. 20000.
- c) Write a 'C' program to calculate sum of all non-diagonal elements of an m X m matrix using dynamic memory allocation.
- d) Write a 'C' program to append contents of one file to the another file.
- e) Write a 'C' program to accept two arrays from user and display intersection of them.

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M.C.A. (Commerce) (Sem. I) EXAMINATION, 2018

NUMERICAL AND STATISTICAL 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 calculator and statistical table is allowed.

(iv) Symbols have their usual meanings.

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

(a) Find the root of the equation :

$$x^4 + x^2 - 80 = 0$$

between  $x = 2.8$  and  $3$  by using Bi-section method, perform 3 iteration.

(b) Use Newton-Raphson method to find the root of the equation :

$$x^3 - 5x - 3 = 0.$$

(c) Derive general quadrature formula for equidistance ordinates for numerical integration.

(d) Explain Picard's method of successive approximation.

(e) Show that :

$$E \equiv 1 + \Delta \text{ and } E^{-1} \equiv 1 - \nabla.$$

P.T.O.

2. Attempt any *three* of the following :

[3×5=15]

(a) Solve :

$$\frac{dy}{dx} = e^x - y, y(0) = 0$$

by Picards method.

(b) Evaluate :

$$\int_0^6 \frac{dx}{1+x^2}$$

by :

(i) Trapezoidal rule

(ii) Simpson's  $\left(\frac{1}{3}\right)^{\text{rd}}$  rule.

(c) Find  $\frac{dy}{dx}$  and  $\frac{d^2y}{dx^2}$  of the data function at  $x = 3$  :

X	Y
1	4
2	9
3	16
4	25
5	36

(d) State and explain Runge-Kutta fourth order formula.

(e) Construct the forward difference table for the following values of X and Y :

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

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

- (a) What do you mean by Time Series ? Explain additive and multiplicative model of time series.
- (b) (i) Define classical definition of probability.  
(ii) What is the probability that a leap year selected at random will contain 53 Sundays ?
- (c) State probability density function of normal distribution. State its properties.
- (d) If  $X \rightarrow N(100, 25)$ , then solve :  
 $P(X < 100)$ ,  $P(X > 100)$ ,  $P(90 < X < 110)$ .
- (e) Marks scored by students in an examination follows normal distribution, 44% of the students obtained marks below 55 and 6% of the students obtained marks above 80. Find parameters of the normal distribution.

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

- (a) Define the terms : (i) Null hypothesis, (ii) Alternative hypothesis, (iii) Critical region.
- (b) Describe the large sample test for testing equality of two population means  $\mu_1$  and  $\mu_2$ , when two independent random samples of size  $n_1$  and  $n_2$  (both large) are drawn from the two populations.
- (c) A certain factory, runs in two shifts. A sample of 1000 items selected from production of day shift, gave 52 defective items. However a sample of 700 items selected from production of night shift gave 42 defective items. Can we conclude that production of defective items in the day shift is less than that of night shift ? Use 5% level of significance.



- (d) Explain in brief the Chi-square test of goodness of fit.
- (e) A nationalized bank utilizes four teller windows to render fast service to the customer. On a particular day 800 customers were observed. They were given service at the different windows as follows :

Window No.	No. of Customer
1	150
2	250
3	170
4	230

Test at 5% level of significance, whether the customers are uniformly distributed over the windows.

5. Attempt the following : [2×10=20]

(a) Given :

$$\frac{dy}{dx} = x + y$$

If  $x = 0$ , then  $y = 1$ , find  $y(0.1)$  and  $y(0.2)$  correct upto 4 decimal places using Runge-Kutta second order formula.

*Or*

Using Euler's modified method, find the solution of the equation :

$$\frac{dy}{dx} = x + \sqrt{y}$$

with initial condition  $y = 1$  at  $x = 0$  for the name of  $0 \leq x \leq 0.3$  in steps of 0.1.

(b) The time taken by workers in performing a job by method I and method II is given below :

**Method I**    20    16    26    27    23    22

**Method II**   27    33    42    35    32    34    38.

Do the data shows that the variance of time distribution of population from which these samples are drawn do not differ significantly ? Use 10% level of significance.

*Or*

The hours of sleep of 10 patients before and after giving a new drug are recorded :

<b>Patient No.</b>	<b>Hours of Sleep (Before)</b>	<b>Hours of Sleep (After)</b>
1	6	7
2	5	8
3	7	7.5
4	7	9
5	8	7
6	9	6.5
7	6	7
8	6	8
9	7	8.5
10	8	7

Test whether there is a significance difference in the average hours of sleep. Use 5% level of significance.

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M.C.A. (Commerce) (I-Semester) EXAMINATION, 2018

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.

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

(a) What is process ? Explain process control block (PCB) in detail.

(b) Explain multiprocessor system.

(c) Explain I/o structure.

(d) What is system call ? State the system calls provided by the operating system for the device management.

(e) What are the performance criteria for CPU scheduling algorithms ?

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

(a) What is a semaphore ? What are different types of the semaphore ? Explain their usage.

(b) What is Dead lock prevention ? Explain dead lock prevention strategies.

(c) What are the different allocation methods used in a file system ? Explain any *one*.

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- (d) Write a note on Interrupts ?
- (e) Explain Internal and External Fragmentations.

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

- (a) Consider the following snap shot of the system :

Job	Arrival Time	Burst Time
1	1	5
2	0	7
3	3	3
4	2	10

Calculate the average turn around time and total wait time using non-premptive SJF scheduling algorithm.

- (b) Write a note on Direct Access method.
- (c) When do page faults occur ? Describe action taken by the operating system when a fault occurs.
- (d) Explain various types of system programs.
- (e) Explain free space management method.

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

- (a) Consider the following reference string 1, 2, 3, 4, 1, 2, 5, 1, 2, 3, 4, 5.

How many page faults will occur for the following algorithms with 3 page frames ?

- (1) FIFO
- (2) LRU.

- (b) Consider the following snapshot of a system. System has 5 processes  $P_0, P_1, P_2, P_3, P_4$  and resources A,B,C,D.

	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	5	2	0
$P_1$	1	0	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				
$P_4$	0	0	1	4	0	6	5	6				

- (i) What are the contents of matrix need ?
- (ii) Is the system in safe state.
- (c) Explain swapping.
- (d) What do you mean by thrashing.
- (e) Explain access methods of file system.

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

- (a) What is DMA ? How does DMA increase system concurrency.
- (b) Explain C-SCAN disk scheduling algorithm.
- (c) "Round Robin Algorithm is non-pre-emptive" Comment and justify.
- (d) Explain activities performed by operating system in connection with process management.
- (e) Define the following terms :
- (1) CPU burst cycle
  - (2) Dead lock
  - (3) Bit map
  - (4) Polling.

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

**EXAMINATION, 2018**

**106 : 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 Diagram whenever necessary.**

**1. Solve the following case study :**

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 (TOC), who computes daily incentives amount payable

P.T.O.

based on a table and records it in register. Monthly, worker-by-worker totals from this register are transferred to the pay sheet at the end of each month.

Draw the following :

- (a) Context Level Diagram. [4]
- (b) First Level Data Flow Diagram. [6]
- (c) Structure Chart. [6]

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

- (a) Prepare a Decision Table for the following case. An Inventory control procedure rules are given below :
  - (i) If the stock-in-hand is  $\geq$  maximum level, then any batch on order is cancelled.
  - (ii) If the stock-in-hand has dropped to or below the re-order level, an order is placed unless a batch is already on order in which case it is chased it overdue.
  - (iii) If re-order level stock-in-hand is  $<$  maximum level, any batch on order is delayed.
  - (iv) When the stock-in-hand has dropped to the danger level any batch on order is chased otherwise a rush order is placed.
- (b) What is test data generators ?
- (c) Define quality. Explain capability maturity model in detail.
- (d) Give the benefits of prototyping.
- (e) Write the principles of coupling.

3. Explain the following in details (any *four*) : [4×4=16]
- (a) Explain system with its types.
  - (b) Explain the role of system analyst.
  - (c) Explain why normalization is necessary.
  - (d) Explain data Dictionary with its contents.
  - (e) Explain cohesion with its types.
4. Write notes on the following (any *four*) : [4×4=16]
- (a) ISO standards
  - (b) Reverse Engineering
  - (c) Software Maintenance
  - (d) Testing process
  - (e) Spiral Model.
5. Differentiate between (any *four*) : [4×4=16]
- (a) White Box Testing and Black Box Testing.
  - (b) Structured Interview and unstructured interview.
  - (c) Software product and software project.
  - (d) System Approach and system Analysis.
  - (e) Physical DFD and Logical DFD.



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**M.C.A. (Commerce) (Second Semester) EXAMINATION, 2018**

**202 : RELATIONAL DATABASE MANAGEMENT SYSTEMS**

**(2008 PATTERN)**

**Time : Three Hours**

**Maximum Marks : 80**

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

(ii) Figures to the right indicate full marks.

**Q.1) Attempt all**

**(8X2 = 16)**

- List Properties of transaction.
- Diagrammatically represent 3-tier database architecture.
- Define 1) Super key 2) Referential Integrity
- What is View? Give syntax.
- What is NOT NULL constraint?
- Define Growing and Shrinking Phase.
- Differentiate Simple and Composite attributes.
- What is timestamp? Which are 2 types of timestamps?

**Q.2) Attempt Following (Any Four)**

**(4X4 = 16)**

- What is Deadlock? Explain how deadlock is recovered?.
- Write a note on Immediate Data base Recovery.
- What is Transaction? Explain states of transaction with diagram.
- Explain different types of failure in system.
- What is Database Recovery? Which are the fields of Log Records?

**Q.3) Attempt Following (Any Four)**

**(4X4 = 16)**

- Explain Disadvantages of file system.

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- b) Differentiate between 2-Phase protocol and Strict-2-Phase protocol.
- c) Write a note on graph based protocol.
- d) Explain following operation with example i ) Cartesian Product ii) Union
- e) What is Integrity Constraint? Which are different types of Integrity Constraint?

**Q.4)**

**a) Attempt the following (10X1 = 10)**

Singh Book Store is a renowned book agency, which runs a large book store. It keeps books on various subjects. Colleges send an enquiry to the book store and receive a quotation in turn. Book store then receives a purchase order from various colleges and delivers the book along with the delivery challan. M/S Singh wants to automate the entire activities.

**Draw the ERD for the above scenario. Identify Entities and Relationships.**

**b) Attempt Following (3X2 = 6)**

- i) Write a note on Normalization.
- ii) Write a note on Generalization.

**Q.5)**

**a) Attempt Following (2X5 = 10)**

Consider the following schema  
 Wholesaler (Wno, Wname, City)  
 Product(Pno, Pname, Price)  
 WP(Wno, Pno)

**Solve the following queries using SQL**

- i) List names of wholesalers of product " Keyboard".
- ii) Give the product names with maximum price.
- iii) Display name of wholesalers from "Mumbai" City and who supplies "Harddisk".

**Solve the following queries using relational algebra.**

- i) Give product number of product having price less than Rs. 1000.
- ii) Give the wholesaler city who are supplying "Mouse".

**b) Attempt Following**

**(3X2 = 6)**

i) Consider the following schedule

<b>T1</b>	<b>T2</b>
R(x)	R(y)
x=x+150	y=y-100
W(x)	W(y)
R(y)	R(z)
Y=y+50	z=z-10
W(y)	W(z)

Give one non-serial schedule that is serializable.

ii) Consider the following schedule and check its serializability using precedence graph.

<b>T1</b>	<b>T2</b>
R(z)	
	R(z)
R(y)	
	W(z)
W(y)	

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**M.C.A. (Commerce) (Second Semester) EXAMINATION, 2018**  
**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.

**Q. 1)** What is costing? Explain the advantages and limitations of cost accounting. [16]

**OR**

**Q. 1)** What is overhead? Explain the classification of overheads. [16]

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

- Cost unit.
- Elements of cost.
- Behaviourwise classification of overheads.
- Under and over absorption of overheads.
- Advantages of standard costing.
- Budget and budgetary control.

**Q. 3)** The following is the summary of all expenses for the year ending 31<sup>st</sup> March, 2017 by a manufacturing company operating a job costing system. Draft a suitable statement showing the subdivisions of the total cost: [16]

Wages traceable to different jobs	Rs. 90500
Hire of cranes on jobs	Rs. 1400
Power	Rs. 10100
Light (factory)	Rs. 1800
Salesmen's salaries	Rs. 9200
Machinery repairs	Rs. 5700
Shafting repairs	Rs. 1400
Storekeeper's wages	Rs. 800
Advertising	Rs. 2500
Director's fees	Rs. 3000
Office salaries and expenses	Rs. 2900
Loss of profit insurance	Rs. 2000
Drivers' wages and distribution expenses	Rs. 10000

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Travelling and other expenses to salesmen	Rs. 2800
Materials used on jobs	Rs. 95000
Wages paid to maintenance workers	Rs. 24200
Rent and rates (factory)	Rs. 4600
Salesmen's commission	Rs. 1200
Sundry sales office expenses	Rs. 4700
Machinery depreciation	Rs. 12800
Shafting depreciation	Rs. 1700
Belting renewals and repairs	Rs. 700
Works salaries	Rs. 5400
Auditor's fees	Rs. 200
Postages and stationery	Rs. 600

**Q. 4)** ABPL Construction Limited, Pune is engaged on contract Y during the year. The following particulars are obtained at the year-end: [16]

<b>Particulars</b>	<b>Contract Y</b>
Date of commencement	01/04/2016
Contract price	Rs. 500000
Materials delivered direct to site	Rs. 54000
Materials issued from store	Rs. 10000
Materials returned to store	Rs. 2000
Materials at site on 31/03/2017	Rs. 8000
Direct labour payments	Rs. 35000
Direct expenses	Rs. 30000
Architect's fees	Rs. 1000
Establishment charges	Rs. 7000
Plant installed at cost	Rs. 70000
Value of plant on 31/03/2017	Rs. 64000
Accrued wages on 31/03/2017	Rs. 7000
Accrued expenses on 31/03/2017	Rs. 5000
Cost of contract not yet certified	Rs. 10000
Value of contract certified by architect	Rs. 135000
Cash received from contractee	Rs. 125000

**You are required to show:**

- a) Contract Y Account, and
- b) Contractee Account

**OR**

**Q. 4)** Product B is obtained after it passes through three distinct processes. The following information is obtained from the accounts for the week ending April, 12, 2017:

<b>Particulars</b>	<b>Total Cost</b>	<b>Process-I</b>	<b>Process-II</b>	<b>Process-III</b>
Direct materials	Rs. 7542	Rs. 2600	Rs. 1980	Rs. 2962
Direct wages	Rs. 9000	Rs. 2000	Rs. 3000	Rs. 4000
Production overhead	Rs. 9000			

1000 units Rs. 3 each were introduced to process I. There was no stock of materials or work-in-process at the beginning or end of the period. The output of each process passes direct to the next process and finally to stores. Production overhead is recovered on 100% of direct wages. The following additional data are obtained:

<b>Process</b>	<b>Output during the week</b>	<b>Percentage of normal loss to input</b>	<b>Value of scrap per unit</b>
I	950 units	5%	Rs. 2
II	840 units	10%	Rs. 4
III	750 units	15%	Rs. 5

Prepare process cost accounts and abnormal gain or loss accounts.

[16]

**Q. 5)** The expenses for the production at 5000 units at 50% capacity in a factory are given as follows:

<b>Particulars</b>	<b>Per Unit Rs.</b>
Materials	50
Labour	20
Variable overheads	15
Fixed overheads (Rs. 50000)	10
Administrative expenses (5% variable)	10
Selling expenses (20% fixed)	6
Distribution expenses (10% fixed)	<u>5</u>
<b>Total cost of sales per unit</b>	<b><u>116</u></b>

You are required to prepare a budget for 70% and 90% production capacity. At 90% capacity cost of materials will increase by 10% whereas labour cost will decrease by 5%. [16]

**OR**

**Q. 5 A)** The following figures for profit and sales are obtained from the accounts of Z Company:

<b>Year</b>	<b>Sales Rs.</b>	<b>Profit Rs.</b>
2015	20000	2000
2016	30000	4000

**Calculate:**

- a) P/V ratio.
- b) Fixed cost.
- c) Break-event-point in rupees.
- d) Sales to earn a profit of Rs. 5000.

[8]

**Q. 5 B)** The details regarding the composition and the weekly wage rates of labour force engaged on a job scheduled to be completed in 30 weeks are as follows:

Category of workers	Standard		Actual	
	No. of workers	Weekly wage rate per worker Rs.	No. of workers	Weekly wage rate per worker Rs.
Skilled	75	60	70	70
Semi-Skilled	45	40	30	50
Unskilled	60	30	80	20
<b>Total</b>	<b>180</b>		<b>180</b>	

The work is actually completed in 32 weeks. Calculate the following variances:

- a) Labour Cost Variance.
- b) Labour Rate Variance.
- c) Labour Efficiency Variance.

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**M.C.A. (Commerce) (Second Semester) EXAMINATION, 2018**  
**204 : 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.

Q. 1 Define Management Accounting. Explain in detail scope and limitations of Management Accounting. (16)

OR

Q. 1 State and explain the various techniques used for financial statement analysis. (16)

Q. 2 From the following information provided by Tulip Limited as on 31<sup>st</sup> March, 2017, prepared Balance Sheet as on 31<sup>st</sup> March, 2017 (16)

Current Ratio	1.5 : 1
Liquid Ratio	1.25 : 1
Working Capital	Rs. 1,00,000/-
Gross Profit Ratio	25%
Stock Turnover Ratio	15 times.
Fixed Assets Turnover Ratio	2 times
Average Collection Period	1 ½ months
Fixed Assets to Net Worth	5/6 times
Reserves and Surplus	Rs. 1,00,000/-

OR

Q. 2 Define the term Marginal Cost and Marginal Costing. Explain advantages and limitations of Marginal Costing. (16)

P.T.O.



Q. 3 From the following budget data, forecast the cash position at the end of April, May and June 2017. (16)

Months	Sales Rs.	Purchases Rs	Wages Rs	Sundry Exp. Rs
February 2017	12,00,000	8,40,000	1,00,000	70,000
March 2017	13,00,000	10,00,000	1,20,000	80,000
April 2017	8,00,000	10,04,000	80,000	60,000
May 2017	11,60,000	8,06,000	1,00,000	1,20,000
June 2017	8,80,000	8,00,000	80,000	60,000

Additional Information –

1. Sales – 20% realized in the month of sales, Balance realized equally in two subsequent months.
2. Purchases – These are paid for in the month following the month of supply.
3. Wages - 25% paid in arrears following the month.
4. Sundry Expenses - Paid a month in arrears.
5. Rent - Rs. 10,000/- a month paid quarterly in advance due in April 2017
6. Income Tax - First instalment of advance tax Rs. 50,000/- due on 15<sup>th</sup> June, 2017.
7. Cash on hand – Rs. 1,50,000/- on 1<sup>st</sup> April, 2017.

OR

Q. 3 The Sales and Profit during two years were as follows

Year	Sales Rs	Profit Rs
2015	30,00,000/-	4,00,000/-
2016	34,00,000/-	5,00,000/-

You are required to calculate -

(16)

- a) The P/V Ratio.
- b) Fixed Costs
- c) The Break-even Point.
- d) The sales required to earn a profit of Rs. 8,00,000/-
- e) The Profit made when sales are Rs. 50,00,000/-
- f) Margin of Safety at profit of Rs. 10,00,000/-
- g) Variable Cost of two years.

Q. 4 Define Budget and Budgetary Control. State and Explain various types of Budgets. (16)

OR

Q. 4 Balance sheets of Santosh Limited as on 31<sup>st</sup> March, 2016 and 2017

Liabilities	31-3-2016	31-3-2017	Assets	31-3-2016	31-3-2017
Equity Share Capital	20,00,000	25,00,000	Land and Building	10,00,000	12,00,000
Share Premium	-----	1,00,000	Plant & Machinery	9,00,000	14,00,000
General Reserve	5,00,000	5,80,000	Investments	5,00,000	6,00,000
Profit & Loss A/c.	3,00,000	3,20,000	Stock	6,50,000	7,50,000
10% Debentures	10,00,000	8,00,000	S. Debtors	15,00,000	17,20,000
S. Creditors	7,00,000	9,50,000	Cash and Bank	2,00,000	1,00,000
Bills Payable	4,00,000	6,15,000	Bills Receivable	2,50,000	2,30,000
Provision for Taxation	1,00,000	1,35,000			
	50,00,000	60,00,000		50,00,000	60,00,000

Additional information –

1. Depreciation charged on all fixed assets at 10% p.a.
2. During the year one plant having WDV of Rs. 2,30,000/- was sold for Rs. 1,90,000/-
3. Taxes paid amounted to Rs, 1,25,000/-
4. 10% Debentures were redeemed by purchase from open market at 95 /- per debenture.

Prepare Statement showing changes in working capital and Funds Flow Statement for year ended 31<sup>st</sup> March, 2017 along with necessary working notes. (16)

Q.5) Write Short Notes (Any two) (16)

1. Limitations of Ratio Analysis
2. Role of Management Accountant.
3. Types of Financial Analysis.
4. Cash Flow Statement.

Total No. of Questions—5]

[Total No. of Printed Pages—2

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[5361]-25

M.C.A. (Commerce Faculty) (II Semester) EXAMINATION, 2018

205 : NETWORKING OPERATIONS

(2008 PATTERN)

Time : Three Hours

Maximum Marks : 80

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

(ii) *All* questions carry equal marks.

(iii) Draw diagrams wherever necessary.

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

(a) Write a short note on : SAP.

(b) Compare Twisted-pair and Fiber-optic cable.

(c) What is Computer Network ? Explain goals of computer network.

(d) Explain the term Search Engines.

(e) Explain frame format of IP-datagram.

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

(a) IIS

(b) Communication Types

(c) Infra-Red

(d) Bluetooth

(e) Peer-Entities.

P.T.O.

3. Answer the following (any *four*) : [16]
- (a) Describe functions of Application layer and Network layer.
  - (b) Explain types of NIC.
  - (c) Write a note on modes of communication.
  - (d) Compare server based LANs and peer-to-peer LANs.
  - (e) Explain in detail designs issues of the layers.

4. Answer the following (any *four*) : [16]
- (a) Write a note on IEEE 802.3 frame format.
  - (b) Explain the term Synchronous and Asynchronous types of communication.
  - (c) Explain the role of switches in network.
  - (d) Compare connection oriented services with connection less services.
  - (e) Explain physical structure of coaxial cable.

5. Answer the following (any *one*) : [16]
- (A) (a) Explain the *two* MAC sub-layer in IEEE 802.11. [8]
  - (b) Compare Guided and Unguided media. [8]

*Or*

- (B) (a) Define the terms : [8]
  - (1) Interface
  - (2) Gateway
  - (3) Radio-waves
  - (4) Half-Duplex Communication
- (b) Explain ISO-OSI Reference Model in detail. [8]

Total No. of Questions : 5]

SEAT No. :

P5229

[Total No. of Pages : 3

[5361]-26

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

*Time : 3 Hours]*

*[Max. Marks : 80*

*Instructions to the candidates:*

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

**Q1)** Attempt any four :

**[4 × 4 = 16]**

- a) Write similarities of Abstract class and interface in java.
- b) Explain the structure of C++ program with suitable example?
- c) Write a note on destructor?
- d) Explain the terms with example :
  - i) Pass by reference
  - ii) Return by reference
- e) Explain encapsulation?

**Q2)** Attempt any four :

**[4 × 4 = 16]**

- a) Explain the terms constants and variables used in program.
- b) Explain various access specifiers in C++?
- c) Write a note on Garbage Collection.
- d) "Java is Platform Independent." Justify.
- e) How arrays are represented in Java? Explain with suitable example.

**Q3)** Attempt any four :

**[4 × 4 = 16]**

- a) Write a note on Interface using Java.
- b) List at least 4 features of C++ that are removed from Java.
- c) Explain how member functions of a class can be defined in C++, with the help of suitable example.
- d) What is Late Binding and Early Binding?
- e) Write a note on Need of operator overloading in C++.

**P.T.O.**

**Q4)** Attempt any four :

**[4 × 4 = 16]**

- a) Write a C++ program to calculate area of a triangle, circle and rectangle.
- b) Create a class String. Use overloading operator == to compare two strings.
- c) Write a Java program to accept two integer values X, Y from Command Line Argument and calculate  $X^Y$ .
- d) Write a program in java that accepts a shopping list of 5 items from command line and store, display them. (using array)
- e) Create an abstract class shape which consist area(). Create two classes circle and Cylinder. Write a java program to calculate area() of both classes.

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

i)

```
class test
{
public static void main (string args[])
{
int a, b;
a = 5;
b = 10;
if (a > 5)
if (b > 5)
{
    System.out.println ("b is" +b);
}
else
    System.out.println ("a is" +a);
}
}
```

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

ii)

```
int m=1;
while(m<11)
{
    m++;
    cout<<m++;
}
```

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

b) Attempt any two : **[2 × 4 = 8]**

- i) Write a Java program that displays the count of vowels in a given word.
- ii) Write a Java program to accept a name from user and throw a user defined exception 'Invalid Name Exception' if it does not consist first letter as Capital letter. (eg I/P mca - o/p Exception, I/P Mca o/p Correct ip)
- iii) Write a C++ program to enter two integer and find their sum and average.



Total No. of Questions—5]

[Total No. of Printed Pages—3

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[5361]-31

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

EXAMINATION, 2018

ADVANCED OPERATING SYSTEM

(2003 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) What do you mean by “Capturing the mouse” ? Explain application function related to mouse capture.

(b) Write a note on WM\_PAINT.

(c) Explain features of unix operating system.

(d) Write different methods of creating menus. Explain the code of any *one*.

(e) Explain why virtual key codes were introduced by windows programs.

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

(a) Peekmessage() write for a message to be placed in application message queue before returning.

P.T.O.



- (b) An application requiring input focus calls create during WM\_CREATE message.
- (c) Virtual addresses have a fixed range.
- (d) Windows runs on DOS operating system.
- (e) System menu of a window cannot be modified.

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

- (a) Give difference between DOS and windows O.S. (2 points)
- (b) Define caret.
- (c) Which are different window resources.
- (d) Explain pages and page table.
- (e) What are the fields of U-Area ?
- (f) What are the types of Pipe ?
- (g) Write syntax of chown and chmod.
- (h) Draw diagram for architecture of Unix O.S.
- (i) Give the contents of Process table.
- (j) What is Timer ?

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

- (a) Explain loop control statement of shell.
- (b) Click on 4 places and draw curve line.
- (c) Write a shell program to print factorial of numbers between one to fifty.

- (d) Change the printing attributes (eg 'color') of child control (e.g. 'Push button').
- (e) Write a program where when a mouse is dragged in client area while pressing left mouse button, points are stored and when button is released, a polygon is drawn joining all these points.

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

- (a) Give difference between interrupts and exception.
- (b) What are the cases of reading and writing pipes ?
- (c) What do you mean by mounting and unmounting file system ?
- (d) Explain sleep Algorithm.
- (e) Define Region. Enlist and explain the operations that can be performed on Region.

Total No. of Questions—8]

[Total No. of Printed Pages—1

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[5361]-34

M.C.A. (Commerce) (III-Semester) EXAMINATION, 2018

**BUSINESS STRATEGIES**

(2008 PATTERN)

Time : Three Hours

Maximum Marks : 80

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

(ii) Each question carries equal marks.

1. Define the term 'Business Strategy'. Explain the different types of strategies.
2. Discuss the elements of marketing.
3. What do you mean by Mergers and Acquisitions ? Explain the causes of Mergers and Acquisitions.
4. State and explain the need and importance of Environment Analysis.
5. Discuss the need of SWOT analysis for a new business enterprise.
6. Explain the role of strategy formulation in achieving the objectives of organisation.
7. Write short notes on :
  - (a) Qualities required for strategists.
  - (b) Strategic control.

Total No. of Questions—5]

[Total No. of Printed Pages—2

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[5361]-35

M.C.A. (Commerce) (III-Semester) EXAMINATION, 2018

305 : 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) What are main types of intellectual property ?
  - (b) Is Cyber Harassment also a cyber crime ? Comment.
  - (c) What is meant by cyberspace insurance ?
  - (d) How is authentication provided in cyber space ?
  - (e) Write a short note on e-governance.
  
2. Attempt any *four* of the following : [4×4=16]
  - (a) Write a note on attribution, acknowledgement and dispatch of electronic record.
  - (b) Explain triple DES with a diagram.
  - (c) Write a note on Data Integrity.
  - (d) Describe advantages and disadvantages of symmetric and asymmetric key cryptography.
  - (e) What is idea behind man-in-the-middle attack ?

P.T.O.

3. Attempt any *four* of the following : [4×4=16]
- (a) What are different categories of cyber contracts ?
  - (b) Write a note on dichotomy of offer and invitation to treat.
  - (c) What is process of EDI ?
  - (d) Define cyber stalking. What are potential effect of cyber stalking ?
  - (e) Write a short note on typology of cyber stalking.
4. Attempt any *four* of the following : [4×4=16]
- (a) Write a note on skipjack algorithm.
  - (b) What is cyber crime ? Explain with classification.
  - (c) Explain ICMP attack.
  - (d) What are common entry points for computer viruses ?
  - (e) Write a short note on Hacking.
5. Attempt any *four* of the following : [4×4=16]
- (a) List down the mistakes in E-commerce.
  - (b) What is online Harassment ?
  - (c) Explain the Bulletin Board system.
  - (d) Write a short note on RSA algorithm.
  - (e) If a wants to send a message securely to B what would be the typical steps involved.

Total No. of Questions—6]

[Total No. of Printed Pages—1

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**[5361]-36**

**MCA (Commerce) (III Sem.) EXAMINATION, 2018**

**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.

Q.1. What do you mean by Investment? Explain the process of Investment.

Q.2. Explain in detail “ Fundamental Analysis”

Q.3. What do you mean by Mutual Fund? Describe the advantages and Disadvantages of Mutual Funds.

Q.4. What is Primary Market? Explain the Regulations of Primary Market.

Q.5. Explain the Objectives and Functions of SEBI.

Q.6. Write Short Notes on ( Any Four )

- a. Depositories
- b. OTCEI
- c. Merchant Banking
- d. Functions of Financial Intermediaries
- e. NSE
- f. Secondary Market

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Total No. of Questions—5]

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[5361]-41

**M.C.A. (Commerce) (Fourth Semester) EXAMINATION, 2018**  
**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 marks.

**Q.1) Write a note on(Any Four) (4x4 = 16)**

- HITS Algorithm
- SOAP
- Mixed Fragmentation
- Partitioned Join
- KDD

**Q.2) Attempt any Four. (4x4 = 16)**

- Differentiate between ORDBMS and RDBMS.
- Explain R-Trees in detail.
- What are responsibilities of transaction manager and transaction coordinator?
- What is Data Mart? What are advantages and disadvantages?
- What is Multimedia database?

**Q.3) Attempt any Four. (4x4 = 16)**

- Differentiate between OLAP and OLTP.
- What is replication? What are advantages and disadvantages?
- What are applications of spatial data?
- What are characteristics of object oriented database?
- What is use of Vector Space Model?

P.T.O.

**Q.4) Attempt any Four. (4x4 = 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) Boolean Query ii) Ranked Query  
iii) Term Frequency iv) Precision

**Q.5) Attempt any Four. (4x4 = 16)**

- a) Explain Data Mining in detail.
- b) Define 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  
Emp(Eno, Ename, Salary, Desg)  
Perform horizontal fragmentation of Emp relation using following predicates  
P1: SL sal < 15000  
P2: SL sal >=15000 and sal <40000  
P3: SL sal >=40000
- e) Perform Vertical fragmentation of Account relation given below Account(Ano, Cname, branch, bal)  
According to following requirements  
i) Site 1 requires information about Ano, branch  
ii) Site 2 requires information about Ano, Cname, bal



Total No. of Questions—5]

[Total No. of Printed Pages—2

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[5361]-46

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

**EXAMINATION, 2018**

**406 : KNOWLEDGE MANAGEMENT FOR BUSINESS**

**(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) Explain the different success factors of knowledge management.
- (b) Compare artificial intelligence and natural intelligence.
- (c) Explain different methods of knowledge Acquisition.
- (d) Explain O-A-V Triplet.
- (e) Explain different methods of representing uncertainty.

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

- (a) Distinguish between data, information and knowledge.
- (b) Explain how expert system works.
- (c) Describe process of protocol analysis.
- (d) Contrast Inductive and Deductive Reasoning.
- (e) Explain post-implementation phase of expert system.

P.T.O.

3. Write short notes on any *four* : [4×4=16]
- (a) Demonstration prototype.
  - (b) Cyclic model of knowledge management
  - (c) Frame
  - (d) Interview
  - (e) Uncertainty.
4. Attempt any *four* of the following : [4×4=16]
- (a) Explain Decision Tree with an example.
  - (b) Describe benefit of internet on expert system.
  - (c) Explain Case Based Reasoning.
  - (d) Explain deficiencies of manual knowledge acquisition.
  - (e) Write a note on Knowledge Repository.
5. Attempt any *two* of the following : [2×8=16]
- (a) Explain process of forward chaining with example.
  - (b) Explain structure of expert system with diagram.
  - (c) Explain phases of expert system.

Total No. of Questions—5]

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[5361]-51

**M.C.A. (Commerce) (Fifth Semester) EXAMINATION, 2018**

**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.

Q1. Attempt any FOUR of the following.

[4 x 4 = 16]

1. Explain – Content is not data.
2. Explain ‘Aggregating’ in details.
3. What is Moodle? Explain any two principles of Moodle.
4. What are the rules for creating context?
5. Explain – Gauging the amount of content.

Q2. Attempt any FOUR of the following.

[4 x 4 = 16]

1. Explain content organization starts with purpose.
2. Explain repository’s components?
3. Content is information plus data – Explain.
4. Explain dynamic website in details.
5. What is structure? Explain structure by type.

Q3. Attempt any FOUR of the following.

[4 x 4 = 16]

1. What is functionality? Explain Monolithic functionality.
2. Explain Web CMS with diagram.
3. Explain any four myths about teaching with moodle.
4. Explain ‘Workflow System’ with diagram.
5. Explain rules for creating contents.

Q4. Attempt any FOUR of the following.

[4 x 4 = 16]

1. Explain any four do’s of Moodle.
2. What is formatting? Explain formatting by method.
3. What is CM. Explain it in details.
4. Write short note on “Content is named information “.
5. Write short note on: web publications.

P.T.O.

Q5. Write the steps for the following. [Any FOUR]

[4 X 4 = 16]

1. Create a website for Gold Ornaments Showroom and Edit the prices of ring ornaments.
2. Create a website for book of all subjects and navigate to chemistry books.
3. Create a website for different hostels in Pune and add the new hostel to it.
4. Create a website for Ready-made Cloths and insert images.
5. Create a website for two wheeler showroom and add Meta Tag to it.

Total No. of Questions—5]

[Total No. of Printed Pages—4

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[5361]-52

**M.C.A. (Commerce) (Fifth Semester) EXAMINATION, 2018**

**502 : DISTRIBUTED DATABASE 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) Draw the neat diagrams if necessary.

**1. Attempt any four :** [4×4=16]

(a) What is Performance Tuning ? Explain :

(i) Improving Set Orientation

(ii) Tuning of Bulk Loads and Updates.

(b) List advantages of distributed systems.

(c) Write the difference between optimistic and pessimistic concurrency control.

(d) Write a note on architectural aspects of distributed transaction.

(e) What is replication ? Why is it necessary ?

**2. Attempt any four :** [4×4=16]

(a) Explain in brief :

(i) Overview of distributed database

(ii) Global optimization.

P.T.O.

- (b) Write a note on temporal databases.
- (c) Write a note on multiversion timestamp based protocol.
- (d) Write different approaches to calculate distributed weight for graph.
- (e) Write a note on primary copy 2-phase locking protocol.

3. Attempt any *four* : [4×4=16]

- (a) Write a note on Transaction Processing Monitor.
- (b) Write a note on Mixed Fragmentation.
- (c) What are the objectives of data distribution ?
- (d) Explain optimistic timestamp based protocol in detail.
- (e) What are the correctness rules of Fragmentation ?

4. Attempt any *four* : [4×4=16]

- (a) Explain top-down approach to design distributed database.
- (b) Define the following terms :
  - (i) Simple Predicate
  - (ii) Minterm Predicate
  - (iii) Distributed DBMS
  - (iv) Distributed database.
- (c) What is spatio-temporal database ? Explain with suitable example.
- (d) Write a note on recovery procedure in centralized system.
- (e) What are different alternatives for allocation of catalogs ?

5. Attempt any *four* : [4×4=16]

(a) Consider the following schema :

EMP(ENUM, ENAME, DESG, SAL)

Consider given predicates :

$P_1 = \text{DESG} = \text{"Manager"}$

$P_2 = \text{DESG} = \text{"Worker"}$

$P_3 = \text{DESG} = \text{"Supervisor"}$

Divide the given relation using horizontal fragmentation.

(b) Consider the following schema :

EMP(ENO, ENAME, TITLE)

PAY(TITLE, SAL)

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

Select ENAME from EMP, PAY where SAL > 1,00,000 and PAY.TITLE = EMP.TITLE.

(c) Consider the given situation where Transactions  $T_1$  and  $T_2$  are executing at site 1. Transactions  $T_3$  and  $T_4$  are executing at site 2.

Transaction  $T_1$  is waiting for  $T_2$ . Transaction  $T_3$  is waiting for  $T_4$ . Transaction  $T_4$  is waiting for  $T_2$  and Transaction  $T_1$  is waiting for  $T_3$ .

Draw local and global weight for graphs.

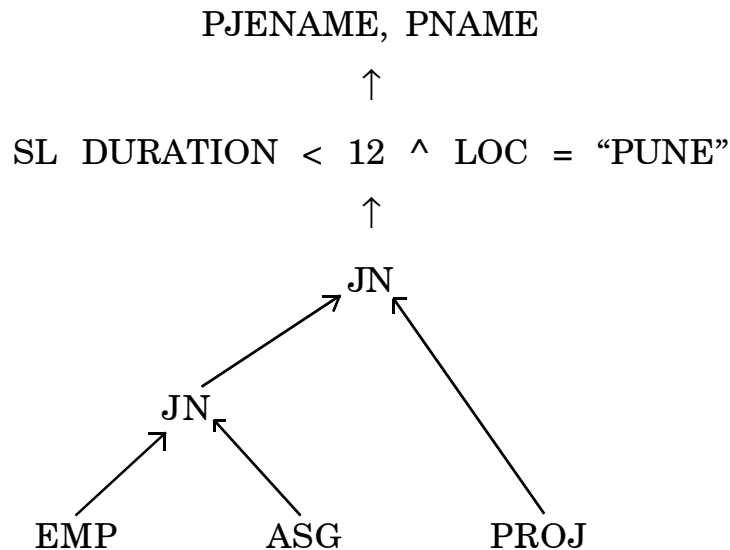
(d) Consider the following schema :

EMP(ENO, ENAE)

PROJ(PNO, PNAME, LOC)

ASG(ENO, PNO, DURATION)

Convert the given operator tree into optimized operator tree :



(e) Consider the following schema :

PRODUCT(PROD\_NO, PROD\_NAME, TYPE, WEIGHT)

PRODUCT relation is divided into tree fragments :

PRODUCT1 = SL TYPE = "PLASTIC" (PRODUCT)

PRODUCT2 = SL TYPE = "FIBRE" (PRODUCT)

PRODUCT3 = SL TYPE = "WOODEN" (PRODUCT)

Consider the given query.

Select PROD\_NAME from PRODUCT where TYPE = "WOODEN".

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



Total No. of Questions—5]

[Total No. of Printed Pages—3

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[5361]-53

M.C.A. (Commerce) (Sem. V) EXAMINATION, 2018

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]

(i) What are major types of E-commerce ? Explain with suitable example.

(ii) Describe M-commerce advantages and disadvantages.

(iii) What is Personalization ? Explain different personalization approaches.

(iv) Explain benefits of online auction

(v) Explain hacking and cybervandalism.

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

(i) Describe phishing with an example.

P.T.O.

- (ii) Write difference between symmetric/asymmetric key encryption.
- (iii) What do you mean by website optimization ? Discuss different tools of website optimization.
- (iv) What is online auction ? Discuss different types of auction with example.
- (v) Explain testing of e-commerce website.

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

- (i) Explain planning, analysis of e-commerce website.
- (ii) Write difference between e-commerce and e-business with an example.
- (iii) Compare traditional and electronic payment system.
- (iv) Write a note on security threats in e-commerce environment.
- (v) Write a note on digital signature.

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

- (i) Describe limitations of encryption solution.
- (ii) What do you understand by electronic payment system ? Explain digital cash.
- (iii) Explain value proposition and revenue model in e-commerce business model.

- (iv) What are e-commerce portals ? Give different examples of e-commerce portals.
- (v) What is an importance of encryption in e-commerce communications.

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

- (i) What is the value proposition that Paypal offers consumers ?  
How about merchants ?
- (ii) What strategies would you recommend that Paypal pursue in order to maintain its growth over next five years ?
- (iii) Discuss case study of P2P network rock, music industry rolls.

Total No. of Questions—5]

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Seat No.	
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[5361]-54

M.C.A. (Commerce) (V-Semester) EXAMINATION, 2018

504 : 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 wherever necessary.

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

(a) What is B.I. ? Explain its purpose ?

(b) What is multidimensional data model ? Why is it used in Data warehousing ?

(c) What is snowflake schema with diagram ?

(d) What are the social implications of data mining ?

(e) Write a note on backup and recovery in data warehousing.

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

(a) What is temporal mining ? Why is it used ?

(b) Discuss the issue of data mining system.

(c) What is web usage mining ?

(d) Describe different types of server.

(e) Explain hardware architecture of data warehouse.

P.T.O.

3. Attempt any *two* of the following : [2×8=16]
- (a) Explain star schema with example and diagram.
  - (b) Explain KDD process and draw a diagram.
  - (c) Solve the following example of single level association rule, with minimum support as 2 :

Transaction ID	Items
T <sub>1</sub>	C, B, H
T <sub>2</sub>	B, F, S
T <sub>3</sub>	A, F, G
T <sub>4</sub>	C, B, H
T <sub>5</sub>	B, F, G
T <sub>6</sub>	B, E, O

4. Attempt any *two* of the following : [2×8=16]
- (a) Explain the method that mines the complete set of frequent itemsets without candidate generalization.
  - (b) Explain outlier analysis and types of outlier analysis.
  - (c) What is knowledge base ? Explain any 5 data mining technique.
5. Attempt any *four* of the following : [4×4=16]
- (a) Data Integration
  - (b) Decision Tree
  - (c) Prediction
  - (d) Multidimensional cube
  - (e) Aggregation of Data.

Total No. of Questions : 5]

SEAT No. :

P3960

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

MATHEMATICS

506 : Operations Research

(2008 Pattern)

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates :

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

Q1) Attempt any four of the following :

[16]

- a) Explain the following terms :
  - i) Surplus variables
  - ii) Basic solution
  - iii) Alternate solution
  - iv) Degenerate Basic Feasible solution
- b) Show that the following LPP has unbounded solution

$$\text{Max (z)} = 2x_1 + 3x_2 + x_3 + 5x_4$$

Subject to :

$$x_1 + 6x_2 - 5x_3 + x_4 \geq -4$$

$$3x_1 - 4x_2 + 5x_3 + 3x_4 \leq 9$$

$$8x_1 - x_2 + 3x_3 - x_4 \leq 19$$

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

- c) Solve the following LPP by graphical method

$$\text{Max (z)} = 10x_1 + 8x_2$$

Subject to the constraints :

$$x_1 + x_2 \leq 4$$

$$3x_1 - 8x_2 \leq 24$$

$$10x_1 + 7x_2 \leq 35$$

$$x_1, x_2 \geq 0$$

P.T.O.

- d) Obtain an initial basic feasible solution of the following transportation problem by Matrix Minima method.

From \ To →	W <sub>1</sub>	W <sub>2</sub>	W <sub>3</sub>	W <sub>4</sub>	Supply
F <sub>1</sub>	5	2	4	3	22
F <sub>2</sub>	4	8	1	6	15
F <sub>3</sub>	4	6	7	5	8
Demand	7	12	17	9	

Also find the corresponding transportation cost.

- e) Write the standard form of the following L.P.P.

$$\text{Minimize } (z) = 2x_1 + 3x_2 + 5x_3$$

Subject to :

$$x_1 - 2x_2 + 3x_3 \leq 15$$

$$-4x_1 + 5x_2 \leq 10$$

$$-x_1 + 5x_2 + 8x_3 \geq -23$$

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

- f) What is general linear programming problem? Write it in mathematical form?

**Q2)** Attempt any four of the following :

**[16]**

- a) Define :

i) Event

ii) Successor Activity Network

- b) Write the dual of the following LPP :

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

Subject to :

$$2x_1 - 4x_2 + 5x_3 \leq 4$$

$$x_1 - 6x_2 \leq 7$$

$$4x_1 - x_3 \geq 3$$

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

- c) Find the initial basic feasible solution of the following transportation problem by North West corner method.

Origin ↓ \ Destination →	A	B	C	D	E	Supply
O <sub>1</sub>	2	11	10	3	7	4
O <sub>2</sub>	1	4	7	2	1	8
O <sub>3</sub>	3	9	4	8	12	9
Demand	3	3	4	5	6	

Also find the corresponding transportation cost.

- d) Discuss the various steps involved in the application of PERT and CPM.  
 e) Solve the following game by dominance principle.

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

- f) Solve the following assignment problem for minimization.

		Machines			
		I	II	III	IV
Jobs	A	1	4	6	3
	B	9	7	10	9
	C	4	5	11	7
	D	8	7	8	5

**Q3)** Attempt any four of the following :

**[16]**

- a) Define the following terms with reference to transportation problem.
- i) Balanced Transportation Problem
  - ii) Basic Feasible Solution
  - iii) Optimal Solution
  - iv) Dummy destination



- b) Food X contains 5 units of vitamin A per gram and 12 units vitamin B per gram. Food Y contains 10 units of Vitamin A per gram and 6 units of vitamin B per gram. Costs of food X and food Y are 12 paise and 20 paise per gram respectively.

The daily minimum requirement of vitamin A is 100 units and that of B is 120 units. Formulate this problem as LPP minimise the total cost.

- c) Solve the following assignment problem for maximisation.

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

- d) Explain the following terms in PERT/CPM :

- i) Total Activity Time
- ii) Latest Time
- iii) Critical Path

- e) Convert the following transportation problem into linear programming problem.

From \ To	D <sub>1</sub>	D <sub>2</sub>	Supply
O <sub>1</sub>	6	10	20
O <sub>2</sub>	7	11	21
Demand	15	26	

- f) Explain vogel's approximation method for obtaining an initial basic feasible Solution of a transportation problem.

**Q4) 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 LPP by Simplex method.

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

Subject to :

$$x_1 + x_2 \leq 2$$

$$5x_1 + 2x_2 \leq 10$$

$$3x_1 + 8x_2 \leq 12$$

$$x_1, x_2 \geq 0$$

c) Following is an initial basic feasible solution of the transportation problem. Is this solution optimal? If not, find the optimal solution by MODI method.

	8		7		3
				(60)	
	3		8		9
(50)		(20)			
	11		3		5
		(60)		(20)	

Q5) Attempt any two of the following :

[16]

- What is goal programming? Clearly state its assumptions.
- Define the following terms :
  - Pure Strategy
  - Pay - off
  - Maximin
  - Value of game
- Solve the following  $2 \times 2$  game by algebraic method

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

▽▽▽▽