

MCA-111

MCA-11

**M.C.A. DEGREE EXAMINATION –
DECEMBER, 2018.**

Second Year

COMPUTER GRAPHICS

Time : 3 hours

Maximum marks : 75

PART A — (5 × 5 = 25 marks)

Answer any FIVE questions.

1. Explain Line Drawing algorithm.
2. Explain about the Region filling techniques.
3. Write note on Matrix Representation in 2-D Transformation.
4. Write down the Sutherland Hodgman Algorithm.
5. Discuss on Scaling and Rotation in 3-D Transformation.
6. Write note on Cohen Sutherland Algorithm.
7. Explain about the Styles Command Language.

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Describe the Bresenham's algorithm in detail.
9. Explain briefly about Input and Hard Copy Output Devices with neat sketch.
10. Describe about the 2-D Transformation Principles in detail.
11. Explain about the Clipping and Shielding in 2-D Transformation.
12. Discuss about the Hidden Surface Algorithm in 3-D Transformation.
13. Explain briefly about Viewing and Clipping in 3-D Transformation.
14. Describe about User Interface Design in detail.

**M.C.A. DEGREE EXAMINATION —
DECEMBER, 2018.**

Second Year

ACCOUNTING AND FINANCE ON COMPUTERS

Time : 3 hours

Maximum marks : 75

SECTION A — (5 × 5 = 25 marks)

Answer any FIVE questions.

1. Write a proforma of a trading account in the final accounts.
2. What do you mean by financial statements? Discuss the nature of financial statements.
3. What is meant by ratio? Explain the advantages of Ratio analysis.
4. In a company, weekly minimum and maximum consumption of material A are 25 and 75 respectively. The reorder quantity as fixed by the company is 300 units. The material is received within 4 to 6 weeks from issue of supply order. Calculate minimum level and maximum level of material A.

5. A worker is paid at 25 paise per hour for completing a work within 8 hours. If he completes the work within 6 hours, calculate his wages under Halsey plan when the rate of premium is 50%. Also ascertain the effective hourly rate of earning by the worker.
6. From the following data calculate :
- (a) P/V Ratio;
 - (b) Variable Cost
 - (c) Profit.
- Sales Rs. 80,000, Fixed expenses Rs. 15,000,
Break Even Point Rs. 50,000.
7. Define 'Budget' and 'Budgetary Control'. What are their limitations of budgetary controls?

SECTION B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Are adjustments necessary for the preparation of final accounts? If yes why?
9. Describe the classifications of errors with suitable examples.

10. From the following Balance Sheet as on 31-12-2017 and 31-12-2016. Prepare a Cash flow statement.

Balance Sheets

Liabilities	2017	2016	Assets	2017	2016
	Rs.	Rs.		Rs.	Rs.
Share capital	1,50,000	1,00,000	Fixed assets	1,50,000	1,00,000
Profit and			Goodwill	40,000	50,000
Loss A/c	80,000	50,000	Stock	80,000	30,000
General			Debtors	80,000	50,000
reserve	40,000	30,000	Bills		
6% debentures	60,000	50,000	receivable	20,000	30,000
Creditors	40,000	30,000	Bank	15,000	10,000
Outstanding					
expenses	15,000	10,000			

11. What do you mean by ABC analysis? What are its advantages and limitations?
12. Two components A and B are used as follows:
 Re-ordering quantity: A - 1,200 units; B - 100 units
 Re-ordering period: A - 2 to 4 weeks; B - 3 to 6 weeks
 Normal usage - 300 units per week each
 Minimum usage - 150 units per week each
 Maximum usage - 450 units per week each

You are required to calculate the following for each of the components :

- (a) Re-ordering level
- (b) Maximum level
- (c) Minimum level
- (d) Average stock level.

13. Discuss briefly about the applications of marginal costing.

14. Explain the importance of budgets.

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**M.C.A. DEGREE EXAMINATION –
DECEMBER, 2018.**

Second Year

COMMUNICATION SKILLS

Time : 3 hours

Maximum marks : 75

PART A — (5 × 5 = 25 marks)

Answer any FIVE questions.

1. State the Barriers of Communication.
2. Explain agenda writing with an example.
3. Write a brief notes on storming method.
4. How to present report? Give an example report.
5. Write down the techniques of effective communication during an interview.
6. What is lateral thinking?
7. Explain the art of negotiation in communication.

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Explain the techniques of English language writing.
9. List out the importance of reading skill.
10. How to become effective speaker?
11. Explain group discussion and its effects.
12. Examine personality test through group discussion.
13. “Bode language” as powerful communication – Discuss.
14. Write down the negotiation techniques with its ways.

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**M.C.A. DEGREE EXAMINATION –
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Second Year

COMPUTER NETWORKS

Time : 3 hours

Maximum marks : 75

PART A — (5 × 5 = 25 marks)

Answer any FIVE questions.

1. Explain MAN with example.
2. Give detailed explanation on the diagrammatic representation of fiber cable in fiber optics.
3. Briefly explain pure ALOHA.
4. Explain shortest path algorithm.
5. List the advantages of IPv6.
6. Sketch UDP header and explain it.

7. Define :
- (a) Plain text.
 - (b) Key
 - (c) Fire walls
 - (d) Subnets
 - (e) Petri Net.

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Explain TCP/IP reference model.
9. Discuss about Error-Detecting codes.
10. Write in detail about classful IP Address and special IP Address.
11. Describe about :
- (a) Substitution ciphers. (5)
 - (b) Transposition ciphers. (5)
12. Give the general description of RSA algorithm.
13. Enumerate MPEG standard.
14. Describe about subnet.

**M.C.A. DEGREE EXAMINATION —
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OPERATIONS RESEARCH

Time : 3 hours

Maximum marks : 75

PART A — (5 × 5 = 25 marks)

Answer any FIVE questions.

1. What are the advantages and disadvantages of OR modules?
2. Vitamins V and W are found in two different foods F1 and F2. one unit of food F1 contains 2 units of vitamin V and 5 units of vitamin W. one unit of food F2 contains 4 units of vitamin V and 2 units of vitamin W. one unit of food F1 and F2 cost Rs.30 and 25 respectively. The minimum daily requirements (for a person)of vitamin V and W is 40 and 50 units respectively. Assuming that anything in excess of daily minimum requirement of vitamins V and W is not harmful, find out the optimal mixture of food F1 and F2 at the minimum cost which meets the daily minimum requirement of vitamins V and W. FORMULATE this as a linear programming problem.

3. Use simplex method to solve the Lp problem.

$$\text{Maximize } Z = 5x_1 + 6x_2 + x_3$$

Subject to the constraints

$$9x_1 + 3x_2 - 2x_3 \leq 5$$

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

$$x_1 + 4x_2 + x_3 \leq 3$$

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

4. Write the dual of the following LP problem.

$$\text{Maximize } Z = 3x_1 + 4x_2$$

Subject to the constraints

$$2x_1 + 3x_2 \leq 16$$

$$5x_1 + 2x_2 \geq 20$$

$$x_1, x_2 \geq 0$$

5. Using least cost method corner rule find a basic feasible solution to be following transportation problem.

Factory	Warehouse				Capacity (supply)
	W1	W2	W3	W4	
F1	21	16	25	13	11
F2	17	18	14	23	13
F3	32	27	18	41	19
Demand (Requirements)	6	10	12	15	43

6. In a project there are several activities which are listed in the following table along with the predecessor activity .Draw a network diagram.

Activity	Predecessor Activity
A	None
B	None
C	A
D	A
E	B
F	C
G	D and C

7. Consider the following investment data (in Rs.Thousand)

Project	Required investment			Present value of expected return
	Year 1	Year 2	Year 3	
1	700	550	400	650
2	300	150	350	700
3	300	150	100	225
4	350	200	0	250
Funds available for investment	1,200	700	400	

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. A Company produces three products A, B and C. These products require three ores 01, 02 and 03. The maximum quantities of the ores 01, 02 and 03 available are 22 tonnes, 14 tonnes and 14 tonnes respectively. For one tonne of each of these products, the ore requirements are

Product	01	02	03	Profit per tonne (in Rs.'000)
A	3	1	3	1
B	—	2	2	4
C	3	3	0	5

How many tonnes of each product A, B and C should company produce to maximize the profit?

9. Five machines are available to do five different jobs. From past records the time in hrs that each machine takes to do each job is known and given in the following table.

	Job				
Machine	I	II	III	IV	V
A	2	9	2	7	1
B	6	8	7	6	1
C	4	6	5	3	1
D	4	2	7	3	1
E	5	3	9	5	1

Find the Assignment of machines to jobs that will minimize the total time taken.

10. Find Solution of Transportation Problem using Vogel's Approximation method

	D1	D2	D3	D4	Supply
S1	19	30	50	10	7
S2	70	30	40	60	9
S3	40	8	70	20	18
Demand	5	8	7	14	

11. Following is the payoff matrix for player A :

Player A	Player B				
	I	II	III	IV	V
I	2	4	3	8	4
II	5	6	3	7	8
III	6	7	9	8	7
IV	4	2	8	4	3

Using dominance property, obtain the optimal strategies for both the players and determine the value of the game.

12. We consider an example where four jobs (J1, J2, J3, and J4) need to be executed by four workers (W1, W2, W3, and W4), one job per worker. The matrix below shows the cost of assigning a certain worker to a certain job. The objective is to minimize the total cost of the assignment.

	J1	J2	J3	J4
W1	82	83	69	92
W2	77	37	49	92
W3	11	69	5	86
W4	8	9	98	23

Below we will explain the Hungarian algorithm using this example. Note that a general description of the algorithm can be found.

13. A company uses a high grade raw material. The consumption pattern is probabilistic as given below and it takes two months to replenish stocks:

Consumption per month (tonnes)	1	2	3
Probability	0.15	0.30	0.45

The cost of placing an order is Rs.1,000 and the cost of caring stocks is Rs.50 per month per tone. The inventory carrying costs are calculated on the stocks held at the end of each month.

The company has two options for the purchase of raw materials as under :

Option — 1 : order for 5 tonnes when the closing inventory of the month plus outstanding order falls below 8 tonnes.

Option — II : Order for 8 tonnes when the closing inventory of the month plus order outstanding falls below 8 tonnes.

Currently on 1st April 2008, the company has a stock of 8 tonnes of raw materials plus 6 tonnes ordered two months ago. The ordered quantity is expected to be received next month.

Using the random numbers given below, simulate 12 months consumption till 31.3.2009 and advise the company as to which purchase option should be accepted such that the inventory costs are minimum.

Random numbers are

88, 41, 63, 48, 74, 27, 16, 11, 64, 49, 21.

14. Minimize $Z = 7x_1 + 6x_2$

Subject to the constraints

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

$$6x_1 + 5x_2 \leq 30$$

where x_1, x_2 must be non – negative integers

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**M.C.A. DEGREE EXAMINATION –
DECEMBER, 2018.**

Second Year

OPERATING SYSTEMS

Time : 3 hours

Maximum marks : 75

PART A — (5 × 5 = 25 marks)

Answer any FIVE questions.

1. What are the basic concepts of operating system?
Write shortly process.
2. Write short note on Semaphore.
3. Explain round robin scheduling with example.
4. Write about device driver in I/O software.
5. What are the basic memory management scheme and explain multiprogramming without swapping or paging.
6. Write short note on memory management with linked list swapping.
7. Explain directory operations.

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Explain the operating system structure in detail.
 9. What is Inter-process Communication? Explain Mutual Exclusion.
 10. What is deadlock? How to avoid deadlock? Briefly explain.
 11. Explain the principles of I/O software.
 12. Describe about virtual memory.
 13. Briefly explain disk space management.
 14. Explain in detail File system reliability.
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**M.C.A. DEGREE EXAMINATION –
DECEMBER, 2018.**

Second Year

OBJECT ORIENTED ANALYSIS AND DESIGN

Time : 3 hours

Maximum marks : 75

PART A — (5 × 5 = 25 marks)

Answer any FIVE questions.

1. What do you mean by Topology of Object-Based and Object-Oriented Programming Languages? Explain with necessary models.
2. With a necessary example explain Instantiation.
3. How to identify the key abstraction?
4. Write a short note on Rational Design Process.
5. What do you mean by Sequence diagram? Explain.
6. Briefly explain why do we need Analysis and design.
7. Write a short note on Micro Development Process.

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Write a detailed note on Elements of the Object Model.
 9. Discuss about the interplay of Classes and Objects and its building quality in detail.
 10. Explain Object-Oriented Analysis in detail.
 11. Elaborate and explain Macro Development Process.
 12. With necessary specification model explain the patient monitoring system programming using UML.
 13. Clearly explain the Class Diagram with the necessary examples.
 14. Write detailed note on UML Dynamic Modeling.
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**M.C.A. DEGREE EXAMINATION –
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Second Year

INTERNET PROGRAMMING

Time : 3 hours

Maximum marks : 75

PART A — (5 × 5 = 25 marks)

Answer any FIVE questions

1. Compare Internet Vs Intranet.
2. Write short notes on IP address and domain names.
3. Discuss the importance of using frames in webpage designing.
4. What is the purpose of JVM?
5. Discuss Perl operators with example.
6. What is seamless webpage embedding?
7. List the steps to add graphics in webpage.

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions

8. Explain TCP/IP Protocol.
 9. Explain private key and public key encryption.
 10. Explain Cascading Style Sheets and why it is important.
 11. Discuss Java Applets with example.
 12. Explain the structure and components of CGI Program.
 13. Explain the Active X Controls.
 14. Discuss the working model of VDO live technology.
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**M.C.A. DEGREE EXAMINATION –
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Second Year

VISUAL PROGRAMMING

Time : 3 hours

Maximum marks : 75

PART A — (5 × 5 = 25 marks)

Answer any FIVE questions.

1. What is the role of the message box in windows programming?
2. What are the SDK tools used in Windows programming?
3. Briefly explain the Data types used in VB Programming.
4. How function calls take place in programming? Explain with an example.
5. Explain about sequential files in VC++.
6. What are the VBX controls and how to import them?
7. List the principles of Database Design.

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Describe about the traditional programming paradigms used.
9. Explain with an example decision-making and looping structures.
10. Explain about the toolbox controls used in VC++ environment.
11. (a) Explain about the classes and objects in VC++ Programming.
(b) Write a program that uses the class C Student to calculate and display a student's semester grade.
12. Explain about the file handling in VC++ Programming.
13. (a) Explain OLE in VC++.
(b) Write a program, which creates a spreadsheet for college expenses and uses the spreadsheet to add up the values for the different categories. The user should place numbers into the text boxes and then press the first command button to tabulate total college expenses.
14. Explain the database connectivity with VC++ programming with a real-time example.

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**M.C.A. DEGREE EXAMINATION –
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Second Year

DESIGN AND ANALYSIS ALGORITHMS

Time : 3 hours

Maximum marks : 75

PART A — (5 × 5 = 25 marks)

Answer any FIVE questions.

1. How to design an algorithm?
2. Write note on Correctness of Algorithm.
3. Write down the Linked List Representation with neat sketch.
4. Explain about the Top-Down Structured Program.
5. Write a Recursion algorithm for Fibonacci series.
6. Discuss about the basic problem solving methods in DAA.
7. Write an algorithm for Quick Sort.

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Briefly explain about the steps to develop an algorithm.
9. Explain about development of a model.
10. Explain briefly about algorithm in trees with neat sketch.
11. Describe about the performance analysis of heap sort.
12. Explain about traveling sales man problem with an example.
13. Write an algorithm for back track problem in detail.
14. What are the sorting techniques? Explain in detail.
