

**MCA-211**

**MCA-11**

**M.C.A. DEGREE EXAMINATION  
JUNE 2019.**

**Second Year**

**COMPUTER GRAPHICS**

**Time : 3 hours**

**Maximum marks : 75**

**SECTION A — (5 × 5 = 25 marks)**

**Answer any FIVE questions.**

1. What is a video display generation?
2. Explain circle generation algorithms.
3. Explain 2D transformations.
4. Write down point clipping.
5. What is three dimensional viewing?
6. Describe depth comparison
7. Explain components of user interface.

SECTION B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Describe DDA Bresenham's algorithms in detail.
  9. Explain in detail hardcopy output devices.
  10. Discuss composite transformation in detail.
  11. Discuss about Sutherland Hodgman algorithm.
  12. Explain in detail translation, scaling, rotation
  13. Explain Z-Buffer algorithm in detail.
  14. Describe about components of user interface.
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**MCA-212**

**MCA-12**

**M.C.A. DEGREE EXAMINATION –  
JUNE 2019.**

**Second Year**

**DESIGN AND ANALYSIS OF ALGORITHMS**

**Time : 3 hours**

**Maximum marks : 75**

**SECTION A — (5 × 5 = 25 marks)**

**Answer any FIVE questions.**

1. Describe the correctness of the algorithm.
2. Explain the basic steps in developing an algorithm.
3. Define Linked list. Construct an algorithm for delete a cell from a linked list.
4. Write short notes on Jeep problem.
5. Build the algorithm for Fibonacci series using recursion.
6. Explain in detail about single server problem.
7. Design an algorithm for binary search.

SECTION B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. How a network can be represented by its incidence matrix? Explain with an example.
9. Explain how the backtracking can be applied to solve a bicycle lock problem.
10. Design an algorithm for addition and deletion in Queue.
11. Design an algorithm for travelling sales person problem for five city network using bran and bound.
12. Describe the hill climbing algorithm in detail.
13. Define heap. How the heap sort can be applied given series of numbers.
14. Explain how the binary tree search can be applied and insert a node in binary search tree.

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**MCA-213**

**MCA-13**

**M.C.A. DEGREE EXAMINATION –  
JUNE, 2019.**

**Second Year**

**ACCOUNTING AND FINANCE ON COMPUTERS**

**Time : 3 hours**

**Maximum marks : 75**

**SECTION A — (5 × 5 = 25 marks)**

**Answer any FIVE questions.**

1. Differentiate between profit and loss account and balance sheet.
2. Draw the Performa of trading account.
3. Discuss the benefits and significance of ratio analysis.
4. Explain factors affecting efficiency of ratio.
5. Briefly explain the classification of costs.
6. Discuss the concept of machine hour rate method.
7. Summarize the concept of budget factor.

SECTION B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Discuss briefly about the applications of marginal costing.
9. 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.
10. 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.

11. Explain in detail about principles of accounting.

12. The following are the summarized balance sheet of ABC PVT as on march 31<sup>st</sup> 1992 and 1993.

	1992 Rs.	1993 Rs.		1992 Rs.	1993 Rs.
7% redeemable			Fixed assets	4,100	4,000
Preference shares	-	1,000	Less :		
Equity shares	4,000	4,000	Depreciation	1,100	1,500
General reserve	200	200		<u>3,000</u>	<u>2,500</u>
Profit and loss			Debtors	2,000	2,400
account	100	120	Stock	3,000	3,500
Debentures	600	700	Prepaid		
Creditors	1,200	1,100	expenses	30	50
Provision for			Cash	120	350
taxation	300	420			
Proposed dividend	500	580			
Bank over draft	1,250	680			
	<u>8,150</u>	<u>8,800</u>		<u>8,150</u>	<u>8,800</u>

13. From the following information and the assumption that the balance in hand on 1<sup>st</sup> Jan. 2000 is Rs. 72,500. Prepare a cash budget.

Month	Sales Rs.	Materials Rs.	Wages Rs.	Selling and Dis. cost Rs.	Production Cost Rs.	Administration Cost Rs.
Jan	72,000	25,000	10,000	4,000	6,000	1,500
Feb.	97,000	31,000	12,100	5,000	6,300	1,700
March	86,000	25,500	10,600	55,000	6,000	2,000
April	88,600	30,600	25,000	6,700	6,500	2,200
May	1,02,500	37,000	22,000	8,500	8,000	2,500
June	1,08,700	38,800	23,000	9,000	8,200	2,500

Assume that 50% are cash sales assets are to be acquired in the month of February and April. Therefore, provision should be made for the payment of Rs. 8,000 and Rs. 25,000 for the same. An application has been made to the bank for the grant of a loan of Rs. 30,000 and it is hoped that it will be received in the month of May.

It is anticipated that a dividend of Rs. 35,000 will be paid in June. Debtors are allowed one month's credits. Sales Commission @ 3% on sales is to be paid. Creditors (for goods or overheads) grant one month's credit.



14. From the following ledger balance of a trader prepare trading, profit and loss and balance Sheet as at 31<sup>st</sup> December 2013.

Particulars	Rs.
Opening Stock	50,000
Drawings	9,000
Sales	1,30,000
Sundry debtors	12,000
Capital	26,000
Wages	14,000
Salary	2,800
Carriage on Purchase	2,500
Rent	3,500
Purchase	60,000
Discount on purchase	2,000
Interest on bank loan	200
Bills Receivable	3,000
Plant and Machinery	10,000
Cash	1,000
Building	2,500
Bills Payable	2,500

Particulars	Rs.
Reserve for bad debts	2,500
Bank loan	2,000
Return outwards	750
Sundry creditors	11,680

Adjustments :

Rent @100 per month is not paid for two months. Wages and salaries are unpaid to the extent of 750 and 225 respectively, Depreciate plant by 10% stock at close was Rs. 17,500/-. Write -off Rs. 1,500 as bad debts and maintain a reserve of 5% on debtors.

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**MCA-214**

**MCA-14**

**M.C.A. DEGREE EXAMINATION –  
JUNE 2019.**

**Second Year**

**COMMUNICATION SKILLS**

Time : 3 hours

Maximum marks : 75

**SECTION A — (5 × 5 = 25 marks)**

Answer any FIVE questions.

1. What is effective communication?
2. Write short notes on inter, intra communication.
3. What are the listening tests? Describe the benefits of good listening.
4. Mention the disadvantages of telephonic interview.
5. What you know about process of group discussion?
6. What are the attitudes of body language?
7. Discuss lateral thinking and participation techniques.

SECTION B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Explain in detail different types of communication.
9. Point out some strategies to improve your listening skill.
10. Name and explain the different interviews used in an organization.
11. How must an interview be conducted for a candidate who is to be selected for the post of IPS?
12. Briefly elaborate body language as a powerful communication.
13. Describe in detail about analysis of body language and attitude of body language.
14. Why mock negotiation meetings? What are the advantages? Discuss.

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**MCA-215**

**MCA-15**

**M.C.A. DEGREE EXAMINATION —  
JUNE, 2019.**

**Second Year**

**Including Lateral Entry Candidates**

**COMPUTER NETWORKS**

**Time : 3 Hours**

**Maximum marks : 75**

**PART A — (5 × 5 = 25 Marks)**

**Answer any FIVE questions.**

1. Compare Local Area Network (LAN) with Metropolitan Area Network (MAN).
2. What is ATM? Explain its features.
3. Describe the data link layer design issues.
4. Differentiate between ALOHA and Pure ALOHA protocol.
5. Compare adaptive and non-adaptive routing algorithms.

6. Explain the uses of packet filters and application gateway in firewall.
7. Identify the kind of services provided by transport layer.

PART B — (5 × 10 = 50 Marks)

Answer any FIVE questions.

8. With a neat sketch, explain the function of OSI reference model.
9. Write a detailed note on communication satellites.
10. Explain the function of Finite State Machine Models with an example.
11. Describe the importance of HDLC in detail.
12. Elaborate on internetworking.
13. Discuss the uses of User Datagram Protocol (UDP).
14. Write note on
  - (a) SNMP (5)
  - (b) Data compression (5)

M.C.A. DEGREE EXAMINATION —  
JUNE, 2019.

Second Year

OPERATIONS RESEARCH

Time : 3 hours

Maximum marks : 75

PART A — ( $5 \times 5 = 25$  marks)

Answer any FIVE questions.

1. The manager of an oil refinery must decide on the optimum mix of two possible blending processes of which the inputs and outputs per production run is as follows:

Process	Input		Output	
	Grade A	Grade B	Gasoline X	Gasoline Y
1	6	4	6	9
2	5	6	5	5

The maximum amounts available of crudes A and B are 250 and 200 units respectively. Market demand shows that at least 150 units of gasoline X and 130 units of gasoline Y must be produced. The profits per production run from process 1 and process 2 are Rs.400 and Rs.500 respectively. Formulate the problem for maximizing the profit.

2. Find an optimal sequence for the following sequencing problem of four jobs and five machines when passing is not allowed of which processing time (in hours) is given below:

Job	Machine				
	A	B	C	D	E
1	7	5	2	3	9
2	6	6	4	5	10
3	5	4	5	6	8
4	8	3	3	2	6

Also find the total elapsed time.

3. A department store has only one cashier. During the rush hours, customers arrive at a rate of 20 customers per hour. The average number of customers that can be handled by the cashier is 24 per hour. Assume the conditions for use of the single-channel queuing model find out.
- (a) Probability that cashier is idle,
  - (b) Average number of customer in the system,
  - (c) Average time a customer spends in the system,
  - (d) Average number of customers in the queue, and
  - (e) Average time a customer spends in the queue.



4. The data collected in running a machine, the cost of which is Rs.60,000 are given below:

Year	1	2	3	4	5
Resale value (Rs)	42,000	30,000	20,400	14,400	9,650
Cost of value (Rs)	4,000	4,270	4,880	5,700	6,800
Cost of Labour (Rs)	14,000	16,000	18,000	21,000	25,000

Determine the optional period for replacement of the machine.

5. A construction company is preparing a PERT network for laying the foundation of a new art museum. Given the following set of activities, their predecessor requirements and three time estimates of completion time.

Activity	Predecessors	Time estimates (days)		
		Optimistic	Pessimistic	Most likely
A	None	2	4	3
B	None	8	8	8
C	A	7	11	9
D	B	6	6	6
E	C	9	11	10
F	C	10	18	14
G	C,D	11	11	11
H	F,G	6	14	10
I	E	4	6	5
J	I	3	5	4
L	H	1	1	1

- (a) Draw the PERT network  
 (b) Computer the slack for each activity and determine the critical path.

(c) The contract specifies a Rs.5,000 per day penalty for each day the completion the project extends beyond 37 days. What is the probability that this company will have to pay a maximum penalty of Rs. 15,000?

6. A group of volunteers of a service organization raises money each year by selling gift articles outside the stadium after a football match between Teams X and Y. They can buy any of the three different types of gift articles from a dealer. Their sales are mostly dependent which team wins the match. A conditional payoff table is as under:

	Types of articles		
	I	II	III
Team X wins	Rs. 1,000	900	600
Team Y wins	Rs. 400	500	800

- (a) Construct the opportunity loss table, and
- (b) Which type of gift article should the volunteers buy if the probability of Team X's winning is 0.8?

7. Obtain an initial basic feasible solution to the following transportation problem.

Warehouse	I	II	III	IV	Supply
A	7	3	5	5	34
B	5	5	7	6	15
C	8	6	6	5	12
D	6	1	6	4	19
Demand	21	25	17	17	80

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Roma Pharmaceutical Company produces two popular drugs A and B which are sold at the rate of Rs.9.60 and Rs.7.80 respectively. The main ingredients are X, Y and Z and they are required in the following proportions:

Drugs	X	Y	Z
A	50%	30%	20%
B	30%	30%	40%

The total available quantities (gms.) of different ingredients are 1,600 in X, 1,400 in Y and 1,200 in Z. The costs (Rs.) of X;Y and Z per gm. are Rs. 8, Rs. 6 and Rs. 4 respectively.

Estimate the most profitable quantities of A and B to be produced, using the simplex method.

9. A company is producing a single product and is selling it through five agencies situated in different cities. All of a sudden, there is a demand for the product in another five cities not having any agency of the company. The company is faced with the problem of deciding on how to assign the existing agencies to dispatch the product to needy cities in such a way that the travelling distance is minimized. The distances (in kms.) between the

Surplus cities /Deficit cities	I	II	III	IV	V
A	160	130	175	190	200
B	135	120	130	160	175
C	140	110	155	170	185
D	50	50	80	80	110
E	55	35	70	80	105

Determine the optimal assignment schedule.

10. 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

11. Following is the payoff matrix for player A:

Strategies	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. 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 ton. 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 – I: Order for 5 tones when the closing inventory of the month plus outstanding order falls below 8 tones.

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

Currently on 1st April 2008, the company has a stock of 8 tons of raw materials plus 6 tones 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.

13. Solve the Transportation problem using Vogel's Approximation method.

	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	V <sub>4</sub>
u <sub>1</sub>	3	1	7	4
u <sub>2</sub>	2	6	5	9
u <sub>3</sub>	5	3	3	2

14. It is considered 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.

**M.C.A. DEGREE EXAMINATION –  
JUNE, 2019.**

**Second Year**

**OPERATING SYSTEMS**

**Time : 3 hours**

**Maximum marks : 75**

**PART A — (5 × 5 = 25 marks)**

**Answer any FIVE questions.**

1. Briefly explain fourth generation computer.
2. Write short note on semaphores.
3. What is mean by scheduling? Explain priority scheduling with example.
4. Explain about device drivers with neat diagram.
5. Explain in detail about memory management with linked list.
6. Discuss about Not-Recently used page replacement algorithm.
7. Discuss about the most common system calls relating to files.

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Explain in detail about the basic concepts of operating systems.
9. What is mean by process? Explain it with neat diagram.
10. What are the scheduling algorithms used in batch systems? Explain in detail.
11. Discuss in detail about deadlock prevention.
12. Define and explain swapping.
13. Briefly explain segmentation with paging.
14. Explain in detail about directories in file concept.



**MCA-218**

**MCA-18**

**M.C.A. DEGREE EXAMINATION –  
JUNE, 2019.**

**Second Year**

**OBJECT ORIENTED ANALYSIS AND DESIGN**

**Time : 3 hours**

**Maximum marks : 75**

**PART A — (5 × 5 = 25 marks)**

**Answer any FIVE questions.**

1. Explain the relationships among Objects briefly.
2. Give in detail about the interplay of Classes and Objects.
3. Describe the Classical and Modern Approaches.
4. Explain in brief about the behavioral analysis in Object Oriented Analysis.
5. Elucidate the design concepts in brief.
6. Elaborate the concept of UML.
7. Write about Activity Diagram with an example.

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Explain in detail about the ways on building the quality classes.
  9. Detail out the Classes and Objects with appropriate diagrams.
  10. Elaborate in detail about the Classification in Object Oriented Analysis.
  11. Write about Key Abstraction Mechanisms in detail.
  12. Elucidate the development process in detail.
  13. Write down the detail explanation on Patterns.
  14. Explain with an example on Behavior Diagram.
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**MCA-219**

**MCA-19**

**M.C.A. DEGREE EXAMINATION —  
JUNE, 2019.**

**Second Year**

**INTERNET PROGRAMMING**

**Time : 3 hours**

**Maximum marks : 75**

**PART A — (5 × 5 = 25 marks)**

**Answer any FIVE questions.**

1. Define Firewall and discuss the different types of firewall.
2. What do you mean by encryption and decryption , discuss the usage with some applications?
3. List the tags used for alignment and formatting in html.
4. Write short notes on Java Applets life cycle.
5. Explain Perl Operators. Give example.
6. Compare filebase vs streaming plugins.
7. Discuss the steps required to create ActiveX controls.

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Discuss accessing of data in Internet for large organizations.
  9. Explain creation of tables and frames with an example in html.
  10. Explain the usage of CGI and its limitation.
  11. Explain the looping constructs in VB Script.
  12. Brief on VDO live technology.
  13. Elaborate on steps for designing graphics and animation.
  14. Discuss the data types and control structure in Java Script.
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**MCA-220**

**MCA-20**

**M.C.A. DEGREE EXAMINATION –  
JUNE 2019.**

**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 context help in windows programming?
2. List the SDK tools used in Windows Programming.
3. Briefly explain the Constants and its types used in VB Programming.
4. Explain with an example the concept of Pass by Value.
5. Explain about random files in VC++.
6. What are the VC++ Components?
7. What are the data bound controls? Explain briefly with an example.

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Describe about the flowchart and Pseudo code in detail.
9. Explain control structures with suitable examples.
10. Explain about the menu controls used in VC++ environment.
11. (a) Explain about the concept of object oriented programming.  
(b) Write a program that uses the class CStudent to calculate and display a student's semester marks.
12. Explain the Document View Architecture in VC++ Programming.
13. (a) Explain Exception Handling in VC++.  
(b) Write a program, which creates a spreadsheet for monthly expenses at home 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 expenses every month.

14. (a) Explain the database connectivity with VC++ programming.
  - (b) Write a program to create and design an inventory stock in a supermarket and use SQL queries to use the software.
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