M.C.A. (WEEK END) DEGREE EXAMINATION NOVEMBER 2010

Computer Applications

DISTRIBUTED COMPUTING

(CBCS—2008 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part - A   (10 × 2 = 20)

Answer **all** questions.

1. What are the advantages of Distributed systems over Independent PCs ?

2. What are the functions of Internet Protocol ?

3. Define Protocol.

4. What do you mean by Skeleton ?

5. What is the purpose of Process table ?

6. What is meant by symmetric cryptosystem ?

7. Define State and Method.

8. What is Logical Time ?

9. What is the role of Locke in transaction ?

10. What are the methods to avoid distributed deadlock ?

Part - B   (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain the challenges of distributed systems.

(*Or*)

     RW-6201

(b) Discuss Network principles.

12. (a) Explain Group communications.

(*Or*)

(b) Explain the basic RPC operations.

13. (a) Explain the Threads in distributed systems.

(*Or*)

(b) Discuss Digital signatures.

14. (a) Explain Domain name system.

(*Or*)

(b) Describe the distributed mutual exclusion.

15. (a) Explain nested transaction with an example.

(*Or*)

(b) Discuss Transaction recovery.

Part - C (3 × 10 = 30)

Answer any **three** questions.

16. Explain different types of networks and its principles.

17. Describe the client-server communication methods.

18. Explain the Sun network file systems.

19. Explain the directory and discovery services.

20. Describe the distributed Multimedia systems.

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M.C.A. (WEEK END) DEGREE EXAMINATION
NOVEMBER 2010
Computer Applications
DIGITAL COMPUTER ORGANISATION
(NCBCS–2006 onwards)

Time : 3 Hours   Maximum : 70 Marks

Answer any **five** questions.

All questions carry equal marks.

$(5 \times 14 = 70)$

1. (a) Show decimal to binary, octal and hexadecimal number systems with examples.

(6)

   (b) Explain the significance of GRAY code and BCD code. How are errors detected in a digital system ?

(8)

2. (a) State the prove De Morgan's theorem for 3 variables with the help of a truth table.

(6)

(b) What are universal gates ? Why are they called so ? Justify with illustrative logic diagrams.

(8)

3. (a) For the Boolean function

$F(xyz) = x'yz' + x'yz + xyz' + xyz$ draw the truth table and a two-level implementation with minimum number of literals.

(6)

(b) Simply using Karnaugh map method, the function $F = \Sigma(0, 6, 8, 13, 14)$ with $d(A,B,C,D) = \Sigma(2, 4, 10)$ and draw a logic diagram using NAND gates only for the simplified function.

(8)

4. (a) Explain Canonical form, Minterms and Maxterms.

(6)

(b) Simplify using Tabulation method :

$$f = (w, x, y, z) = \Sigma(0,1, 2, 5, 7, 8, 9, 10, 13, 15)$$

(8)

5. (a) Explain the working of a D flip flop and discuss any one application.

(7)

(b) Discuss the different types of shift registers.

(7)

6. (a) Draw the block diagram of a 16-bit binary ripple counter and explain its working.

(7)

(b) Discuss the connection and working of an asynchronous decimal counter.

(7)

7. (a) Explain half adders and full-adders. How are they used to construct a parallel binary adder ?

(7)

(b) What are the different types of ROM ? Discuss the significance of each type of ROM.

(7)

8. (a) Discuss the sequence of operation of control register.

(7)

(b) Explain the DMA concept and I/O processors.

(7)

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M.C.A. (WEEK END) DEGREE EXAMINATION NOVEMBER 2010

Computer Applications

PRINCIPLES OF INFORMATION TECHNOLOGY

(NCBCS—2006 onwards)

Time : 3 Hours　　　　　　　　　Maximum : 70 Marks

$(5 \times 14 = 70)$

Answer **five** questions.

All questions carry equal marks.

1. (a) Describe the revolution of computers. (7)

    (b) Write the impact of Information Technology on society. (7)

2. (a) Write the basic capabilities of Word Processor. (7)

(b) In what way the presentation software is useful ? Explain.

(7)

3. (a) Describe the factors that affect the data transmission.

(7)

(b) Write the merits and demerits of Video/Voice Communication.

(7)

4. (a) Describe the criteria for rating secondary storage devices.

(7)

(b) Explain the basic concepts of file management system.

(7)

RW-6203

5. (a) What is programming ? Explain the process of programming development.

(7)

(b) Write the security issues. (7)

6. (a) What do you mean by Internet ? Describe the activities that you can do on the Internet.

(7)

(b) Describe the media that are used for communication system.

(7)

7. (a) Describe the different types of database organisation.

(7)

RW-6203

(b) What is HTML ? What is its importance ?

(7)

8. (a) What is an electronic spreadsheet ? What are the advantages of using a spreadsheet ?

(7)

(*Or*)

(b) Discuss about cyberethics. (7)

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M.C.A. (WEEK-END) DEGREE EXAMINATION NOVEMBER 2010

Computer Applications

C AND DATA STRUCTURES

(NCBCS–2006 onwards)

Time : 3 Hours   Maximum : 70 Marks

Answer any **five** questions.

$(5 \times 14 = 70)$

1. (a) What the term "data type" refers ? And discuss various data types of "C" language.

(7)

   (b) What is control statements ? Explain any one.

(7)

2. (a) Describe recursive function with program example.

(6)

(b) Write a program to read '*n*' integer numbers in an array and set a pointer to the array to find the smallest number among '*n*' given numbers.

(8)

3. (a) Discuss about :

(i) Structure.

(ii) Union.

(iii) Preprocessing statements.

(9)

(b) Discuss the objectives of data structure.

(5)

4. Write procedures to represent stack using array and linked list. And also explain how insertion, deletion of element in a stack takes place.

(14)

5. (a) Discuss the sequential representation of queue with procedure.

(8)

(b) Discuss simulation using Linked List.

(6)

6. (a) Describe how binary tree is represented using linked list.

(8)

(b) Explain Huffman Algorithm.

(6)

7. (a) Describe a game tree problem.

(7)

(b) Explain Insertion sort with procedure.

(7)

8. (a) Describe briefly about general searching techniques.

(8)

(b) Discuss Hashing technique. (6)

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M.C.A. (WEEK END) DEGREE EXAMINATION NOVEMBER 2010

Computer Applications

OFFICE AUTOMATION

(NCBCS—2006 onwards)

Time : 3 Hours Maximum : 70 Marks

$(5 \times 14 = 70)$

Answer any **five** questions.

All questions carry equal marks.

1. (a) Describe the common elements of a window.

(5)

   (b) Explain various operations in Windows Explorer.

(9)

2. (a) Explain the Word software's screen elements.

(7)

(b) Explain Paragraph formatting dialog box options.

(7)

3. (a) Explain Table Handling features in Word.

(9)

(b) Describe the contents and meaning of options in Page setup dialog box.

(5)

4. (a) Explain the meaning of White PLUS, Black PLUS Blinking Vertical bar, I-Beam Cursors in Excel.

(6)

(b) Explain any four cell formatting options in Excel.

(8)

RW-6205

5. Write step by step procedure to create three different charts for the following data and formatting the areas of charts.

(14)

Year	Profit in Crores
2000	35
2001	39
2002	42
2003	24
2004	33
2005	20

6. Explain the use of any 14 functions in Excel, giving examples.

(14)

RW-6205

7. (a) Explain the objects and their purpose, that can be created in a database.

(7)

(b) Describe the data types and their use in MS-Access.

(7)

8. Write short notes on the following :

(a) Update Query   (4)

(b) Animation in Power Point.   (5)

(c) Form letter .   (5)

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| RW-6206 | | 545105 |

M.C.A. (WEEK END) DEGREE EXAMINATION NOVEMBER 2010

Computer Applications

DISCRETE MATHEMATICS

(NCBCS—2005/2006 Batch)

Time : 3 Hours   Maximum : 70 Marks

$(5 \times 14 = 70)$

Answer any **five** questions.

All questions carry 14 marks.

1. (a)   Show that

   (i) $\neg (P \wedge Q) \rightarrow \left(\neg P \vee \left(\neg P \vee Q \right) \right) \Leftrightarrow \left(\neg P \vee Q \right).$

   (3)

   (ii) $(P \vee Q) \wedge \left(\neg P \wedge \left(\neg P \wedge Q \right) \right) \Leftrightarrow \left(\neg P \wedge Q \right).$ (4)

(b) Obtain the principal conjunctive normal form of the formula S given by $\left(\rceil P \to R \right) \wedge (Q \rightleftarrows P)$ also write down the conjunctive normal form of $\rceil$ S.

(7)

2. (a) Show that $R \to S$ can be derived from the premises $P \to (Q \to S)$, $\rceil R \vee P$ and Q.

(4)

(b) Show that :

$$(x) \left(P(x) \to Q(x) \right) \wedge (x)(Q(x) \to R(x)) \Rightarrow$$
$$(x)\left(P(x) \to (x) \right)$$

(5)

(c) Show that $\rceil P(a, b)$ follows logically from

$$(x)\,(y)\,\left(P(x, y) \to W(x, y) \right) \text{ and } \rceil W(a, b)$$

(5)

RW-6206

3. (a) If $A = \{\alpha, \beta\}$ and $B = \{1, 2, 3\}$. What are $A \times B$, $B \times A$, $A \times A$, $B \times B$ and $A \times B \cap B \times A$?

(4)

(b) Determine the properties of the relation given by the graph and write down its relation matrix.
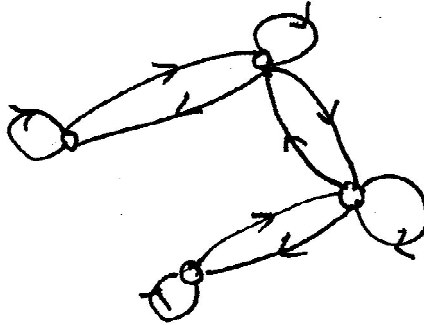
(6)

(c) Let X = {1, 2, ...7} and

$$R = \{\langle x, y \rangle \,|\, n - y \text{ is divisible by } 3\}$$

Show that R is an equivalence relation. Draw the graph of R.

(4)

4. (a) Let R $\{\langle 1,2\rangle, \langle 3,4\rangle, \langle 2,2\rangle\}$ and

$S = \{\langle 4,2\rangle, \langle 2,5\rangle, \langle 3,1\rangle, \langle 1,3\rangle\}$ find R o S, S o R,

R o (S o R), (R o S) o R and S o S.

(5)

(b) Let A = $\{a,b,c\}$. and $\rho(A)$ be its power set. Let $\subseteq$

be the inclusion relation. Show $\langle P(A), \subseteq\rangle$ is

partially ordered set. Draw its Hasse diagram.

(5)

(c) Let $t : R \to R$ and $g : R \to R$ where R is the set

of real numbers. Find f o g and g o f where

$f(x) = x^2 - 2 \ g(x) = x + 4$.

(4)

5. (a) Define characteristic function. If A is any set

show that $\sim\sim A = A$.

(4)

RW-6206

(b) Define Monoid. Show that for any Commutative monoid $\langle m, * \rangle$ the set of all indempotent elements of m forms a submonoid.

(5)

(c) If M and T are two monoids, define homomorphism between them. Show that this homomorphism preserves identity

(5)

6. (a) A subset S $\neq \phi$ of G is a sub group of $(G, *)$ iff for any pair of elements a, b $a * b^{-1} \in$ S. (7)

(b) Prove that every finite group of order n is isomorphic to permutation group of degree n.

(7)

7. (a) State and prove Lagrange's theorem on finite groups.

(7)

RW-6206

(b) Define weakly and strongly connected graph. In a simple diagraph G = (V, E) prove that every node of the diagraph lies in exactly one strong Component.

(7)

8. (a) Define identy matrix of a directed graph. (7)

What is the information given by the diagonal elemenets of the matrix AA^T.

What is the information given by diagonal elements of the matrix A^TA.

What is the information provided by the elements of the matrix A^2.

(b)   Define the terms.

   (i)   Directed tree.

   (ii)   Leaf.

   (iii)   Binary tree.

   Draw the corresponding to the expression :

   $$V_1 \, V_2 + \left(V_4 + \frac{V_5}{V_6} \right) V_3 \, .$$

(7)

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M.C.A. (WEEK END) DEGREE EXAMINATION NOVEMBER 2010

Computer Applications

COMPUTER NETWORKS

(NCBCS—2007 Batch)

Time : 3 Hours   Maximum : 70 Marks

(5 × 14 = 70)

Answer any **five** questions.

Each question carries 14 marks.

1. Explain in detail the different types of computer networks.

2. Write a detailed account on communication satellites.

3. Discuss the data link layer design issues.

4. Explain the following protocol verification :

   (a) Finite state machine models.

   (b) Petri net models.

5. List out the network layer design issues. Explain them.

6. Explain the following elements of transport protocols

   (a) Addressing.

   (b) Flow control and buffering.

7. Discuss the following symmetric key algorithms.

  (a) The data encryption standard.

  (b) The advanced encryption standard.

8. Explain the following video compression standards.

  (a) The JPEG standard.

  (b) The MPEG standard.

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M.C.A. (WEEK END) DEGREE EXAMINATION NOVEMBER 2010

Computer Applications

RESOURCE MANAGEMENT TECHNIQUES

(NCBCS—2005-2007 Batch)

Time : 3 Hours　　　　　　　　　　Maximum : 70 Marks

Answer any **five** questions.

All questions carry equal marks.

$(5 \times 14 = 70)$

1. (a)　　A firm manufactures headache pills in two sizes A and B. size A contains 2 grains of aspirin, 5 grains of bicarbonate and 1 grain of codeine. Size B contains 1 grains of aspirin, 8 grains of bicarbonate and 6 grains of codeine. It is found by users that it requires at least 12 grains of aspirin, 74 grains of bicarbonate and 24 grains of codeine for providing immediate effect. It is required to determine the least number of pills a patient should take to get immediate relief. Formulate the problem as a standard LPP.

(8)

(b) Obtain the dual problem of the following LPP

Minimize $z = x_1 + 2x_2$

subject to $2x_1 \ 4x_2 \leq 160$

$$x_1 - x_2 = 30$$

$$x_1 \quad \geq 10$$

$$x_1, x_2 \geq 0$$

(6)

2. (a) Use simplex method to maximize

$z = 3x_1 + 2x_2$

subject to $x_1 + x_2 \leq 6, 2x_1 + x_2 \leq 6 , x_1 \geq 0, x_2 \geq 0.$

(8)

(b) Find out the total cost by VAM Techniques

		D_1	D_2	D_3	D_4	Supply
	P_1	2	3	11	7	6
Plant	P_2	1	0	6	1	1
	P_3	5	8	15	9	10
Demand		7	5	3	2	

(6)

3. (a) A T.V. repairman finds that the time spent on his jobs has an exponential distribution with mean 30 minutes. If he repair sets in the order in which they came in, and if the arrival of sets is approximately Poisson with an average rate of 10 per 8 hour day, what is repairman's expected idle time each day ? How many jobs are ahead of the average set just brought in ?

(7)

(b) In a heavy machine shop, the overhead crane is 75 percent utilized. Time study observations gave the average service time as 10.5 minutes with a standard deviation of 8.8 min. What is the average calling rate for the services of the crane and what is the average delay in getting service ? If the average service time is cut to 8 min with standard deviation of 6 min, how much reduction will occur, on average, in the delay of getting served ?

(7)

4. (a) Explain the steps in simulation process. State the reasons why computer simulations is so widely used ?

(6)

(b) Bright Bakery keeps stock of a popular brand of cake. Previous experience indicates the daily demand as gives here.

Daily demand : 0 10 20 30 40 50

Probability : 0.01 0.2 0.15 0.50 0.12 0.02

Consider the following sequence for random numbers. 48, 78, 19, 51, 56, 77, 15, 14, 68, 09. Using this sequence simulate the demand for the next 10 days. Find out the stock situation of the owner of the bakery decides to make 30 cakes everyday. Also estimate the daily demand for the cakes on the basis of simulated data.

(8)

5. (a) Describe briefly the EOQ concept. What are its limitations ? Discuss.

(6)

RW-6208

(b)   A dealer supplies you the following informations with regard to a product dealt in by him. Annual demand : 10,000 units, Ordering cost Rs. 10 per order. Price : Rs.20 per unit. Inventory carrying cost : 20% of the value of inventory per year.

The dealer is considering the possibility of allowing some back, order to occur. He has estimated that the annual cost back ordering will be 25% of the value of inventory.

(i)   What should be the optimum number of units of the products he should buy in one lot ?

(ii)   What quantity of the product should be allowed to be book ordering, if any ?

(iii)   What would be the maximum quantity of inventory at any time of the year ?

(iv)   Would you recommend to allow book ordering ? If so, what would be the annual cost saving by adopting the policy of back ordering ?

(8)

6. (a) Distinguish between PERT and CPM. (4)

(b) A small project is composed of seven activities whose time estimates are listed in the label as follows.

Activity		Estimated	Duration	(weeks)
		Optimistic	Most likely	Pessimistic
1 – 2	...	1	1	7
1 – 3	...	1	4	7
1 – 4	...	2	2	8
2 – 5	...	1	1	1
3 – 5	...	2	5	14
4 – 6	...	2	5	8
5 – 6	...	3	6	15

(i) Draw the project network.

(ii) Find the expected duration and variance of each activity. What is the expected project length ?

(iii) Calculate the variance and standard deviation of project length. What is the probability that the project will be completed at least 4 weeks earlier than expected ? ($z = -1.33$, Area 0.0918)

(10)

7. (a) Describe various types of replacement situations.

(6)

(b) The following failure rates have been observed for a certain type of transistors in a digital computer

End of the week :	1	2	3	4	5	6	7	8
Probability of failure to date :	.05	.13	.25	.43	.68	.88	.96	1

The cost of replacing an individual failed transistor is Rs. 1.25. The decision is made to replace all these transistors simultaneously at fixed intervals and to replace the individual transistors as they fail in service. If the cost of group replacement is 30 paise per transistor, what is the best interval between group replacement ? At what group replacement price per transistor would a policy of strictly individual replacement become preferable to the adopted policy ?

(8)

8. (a) Discuss the "Hungarian" method of solving an assignment problem.

(6)

(b) (i) Explain the various costs involved in inventory models.

(4)

(ii) Explain Resource smoothing and Resource labelling.

(4)

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M.C.A. (WEEK-END) DEGREE EXAMINATION NOVEMBER 2010

Computer Applications

INTERNET PROGRAMMING

(NCBCS—2007 Batch)

Time : 3 Hours   Maximum : 70 Marks

Answer any **five** questions.

Each question carries 14 marks.

(5 × 14 = 70)

1. (a) What is WWW ? Explain the usage of WWW.

(5)

    (b) Give an overview of Internet programming   (4)

    (c) Distinguish between Internet and Intranet.   (5)

2. (a) Discuss in brief about CGI. (7)

(b) How will you process strings using Perl ? (7)

3. (a) List out the various Javascript programming statements.

(7)

(b) Write a note on VB script. (7)

4. (a) Write short notes on the structure of the HTML and explain any five HTML tags with example.

(7)

(b) Explain about Microsoft Internet Explorer in detail.

(7)

RW-6209

5. (a) How to create ActiveX control to activate a web page ? Explain.

(7)

(b) How can you pull the web information from the website ? Explain.

(7)

6. (a) Define Web graphics. Explain the features of web graphics.

(7)

(b) How to add graphics in your web page ? Give example.

(7)

7. (a) Explain how the hyperlinks are used to load images in the web page.

(7)

(b) Discuss about ⟨TABLE⟩ tag and its attributes in HTML with example.

(7)

8. (a) Briefly explain about Javascript Arrays. (7)

(b) Give the purpose of Internet Explorer. (7)

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M.C.A. (WEEK END) DEGREE EXAMINATION NOVEMBER 2010

Computer Application

PATTERN RECOGNITION AND IMAGE PROCESSING

(NCBCS—2007 Batch)

Time : 3 Hours   Maximum : 70 Marks

Answer any **five** questions.

All questions carry equal marks.

$(5 \times 14 = 70)$

1. (a) Explain the grey-level transformation procedure.

   (b) What is meant by sampling and quantization ?

$(8 + 6 = 14)$

2. (a) Describe the various image presentation methods.

   (b) Explain the pyramid edge detection.

   $$(6 + 8 = 14)$$

3. (a) Explain the fractal compression procedure.

   (b) Write note on image compression standards

   $$(8 + 6 = 14)$$

4. (a) Explain the problems in the design of automatic pattern recognition system.

   (b) Write a note on Quadtrees.

   $$(8 + 6 = 14)$$

5. (a) Discuss pattern classification using linear decision functions.

    (b) Write a description on generalized decision functions.

$(9 + 5 = 14)$

6. (a) Explain the maximum distance algorithm.

    (b) Describe the various clustering criteria.

$(8 + 6 = 14)$

7. (a) Discuss the Baye's classification procedure.

   (b) What is meant by K-nearest neighbour ?

   $(8 + 6 = 14)$

8. (a) Explain Evan's algorithm for pattern recognition.

   (b) Describe the juxtaposition rules.

   $(8 + 6 = 14)$

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M.C.A. (WEEK END) DEGREE EXAMINATION NOVEMBER 2010

Computer Applications

NEURAL NETWORKS AND FUZZY LOGIC

(NCBCS—2006/2007 Batch)

Time : 3 Hours   Maximum : 70 Marks

$(5 \times 14 = 70)$

Answer any **five** questions.

1. What is a neural network ? Explain Back-Propagated Delta Rule Networks BP and RBF architecture.

2. Explain the Counter-propagation neural networks algorithm with a neat flow chart.

3. Explain Boltzmans training and Cauchy training.

4. Explain Adaptive bidirectional associative memories.

5. Explain the following :

   (a) Fuzzy logic.

   (b) Fuzzy number.

   (c) Fuzzy interval.

6. Define Fuzzy set and explain various set operations.

7. Explain the Fuzzy relations with a neat diagram.

8. What is pattern recognition ? Explain Pattern Recognition procedure.

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M.C.A. (WEEK END) DEGREE EXAMINATION NOVEMBER 2010

Computer Applications

OPERATING SYSTEM

(NCBCS—2006 Batch)

Time : 3 Hours   Maximum : 70 Marks

Answer any **five** questions.

All questions carry equal marks.

$(5 \times 14 = 70)$

1. (a) Define Operating System. Explain the history of Operating System.

   (b) Explain System calls for process management.

2. (a) What is Race condition ? How it can be avoided ?

   (b) Explain priority scheduling with an example.

3. (a) Describe Banker's algorithm with example.

   (b) Explain various Deadlock avoidance methods.

4. (a) Explain Multiprogramming without swapping with example.

   (b) Discuss LRU page replacement algorithm with example.

5. (a) Explain the structure of Directories.

   (b) Explain file security system.

6. (a) Explain the structure of Operating System.

   (b) Write short notes on Interrupt handlers.

7. (a) Explain Segmented memory allocation with an example.

(b) Write short notes on File systems.

8. A system has following jobs to generate with a processor

JOB	:	1	2	3	4	5
DURATION	:	9	6	2	4	5
ARRIVAL TIME	:	0	2	3	5	7

The jobs have arrived in the order 1, 2, 3, 4, 5. Find the waiting time of each job for the following algorithms.

(a) First Come First Served.

(b) Round Robin with a time slice of one unit.

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RW-6213   **545402**

M.C.A. (WEED END)DEGREE EXAMINATION NOVEMBER 2010

Computer Applications

VISUAL PROGRAMMING

(NCBCS—2006 Batch)

Time : 3 Hours   Maximum : 70 Marks

Answer any **five** questions.

All questions carrry equal marks.

(5 × 14 = 70)

1. Give a detailed overview of windows programming and its important features.

2. Explain :

   (a) Message Handler definitions.

   (b) Message categories.

3. Explain the methods of drawing the geometrical objects.

4. Write a VC ++ program to simulate any five functions of a calculator.

5. Explain activex controls with examples.

6. Explain OLE classes in MFC by mentioning their features and specifications.

7. Illustrate the method of connecting to a database with an example.

8. Write short notes on :

(a) MDI.

(b) Splitter windows.

(c) Printing a document.

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