BCA/5/CC/27

Student's Copy

Professional Course (Odd) Examination, 2024

(CBCS)

(5th Semester)

BACHELOR OF COMPUTER APPLICATIONS

(GUI Programming)

Full Marks: 75

Time : 3 hours

The figures in the margin indicate full marks for the questions

(PART : A-OBJECTIVE)

(Marks : 25)

SECTION-I

(Marks: 15)

A. Tick (1) the correct answer in the brackets provided : 1×10=10

- What is the primary function of the Common Language Runtime (CLR) in the .NET framework?
 - (a) To provide a way to access data from different databases ()
 - (b) To manage the execution of .NET applications and provide services like garbage collection ()
 - (c) To handle user interface design and rendering ()
 - (d) To ensure compatibility between different .NET languages ()

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[Contd.

2.	Which operator in VB.NET is used	for logical AND operation?
	(a) &&& ()	(b) 8s ()
	(c) AND ()	<i>(d)</i> පිපේරේ ()
3.	Which control is best suited for pre	senting a hierarchical list of items
	in VB.NET?	5
	(a) ListBox ()	(b) ComboBox ()
	(c) TreeView ()	(d) ListView ()
4.	Which dialog control is used to pro-	mpt the user to choose a location
	and filename to save a file?	
	(a) FontDialog ()	(b) OpenFileDialog ()
	(c) SaveFileDialog ()	(d) ColorDialog ()
5.	What is the output of the following	VB.NET code?
	Dim x AS Integer = 5	
	If $x > 10$ Then	
	Console.WriteLine("Greater'	")
	Else	
	Console.WriteLine("Lesser of	or Equal")
	End If	
	(a) Greater ()	(b) Lesser or equal ()
	(c) Error ()	(d) No output ()
6.	What type of error occurs when a p	rogram runs into an isssue that
	was not anticipated during coding	, such as dividing by zero or
	accessing a null object?	
	(b) Logic error ()	
	(c) Runtime error ()	
	(d) Compilation error (
7.	How do you define an interface in V	/B NET2
	(a) Interface IMyInterface (
	(b) Class IMyInterface ()	
	(c) Module IMyInterface ()	
	(d) Abstract Class IMyInterface	()

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[Contd.

	8.	Which access modifier allows a class n within the same assembly but not from	member to be accessible only
		(a) Public () (b)	Private ()
		(c) Protected () (d)	Friend ()
1	9.	Which of the following is not a component	nent of ADO.NET?
		(a) DataSet () (b)	DataAdapter ()
		(c) Command () (d)	DataLink ()
	10.	. Which control is commonly used in displaying reports within a Windows Fo	VB.NET for generating and orms Application?
		(a) CrystalReportViewer () (b)	ReportViewer ()
		(c) DataGridView () (d)	PrintDocument ()
B.	Sta Ticl	tate whether the following statements are T_{ck} (\checkmark) mark in the brackets provided :	<i>True (T)</i> or <i>False (F)</i> by putting a 1×5=5

1. VB.NET supports both implicit and explicit type conversion.

(T / F)

 In VB.NET, access keys are assigned to menu items using the '&' before a letter in the menu item's text.

(T / F)

 The Queue collection in VB.NET follows a Last-In, First-Out (LIFO) order.

(T / F)

4. A class can implement multiple interfaces in VB.NET.

(T / F)

The Command object in VB.NET can only execute SELECT SQL queries.

(T / F)

[Contd.

(Marks: 10)

C. Answer the following questions in short :

- What is MSIL?
- 2. Discuss methods and events.
- 3. What are collections in VB.NET?
- 4. What are constructor and destructor?

5. What is a datagrid?

(PART : B-DESCRIPTIVE)

(Marks : 50)

D. Answer the following questions :

1. Explain the key components of the .NET architecture and their roles.

OR

Explain any five arithmetic and logical operators with example.

2. What is a form? Discuss eight controls with their properties in a form.

OR

Explain five types of dialog boxes.

3. What is an array? Give example program on single-dimensional array.

OR

Explain passing by value and passing by reference with example programs.

4. What is a class? Explain methods and properties with examples.

OR

What is access modifier? What are the different types of access modifier?

5. What is ADO.NET? Explain the architecture of ADO.NET.

OR

What is dataset? What are the different components of dataset?

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 $10 \times 5 = 50$

BCA/5/CC/27

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(CBCS)

(5th Semester)

BACHELOR OF COMPUTER APPLICATIONS

(GUI Programming)

Full Marks : 75

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The figures in the margin indicate full marks for the questions

(PART : A-OBJECTIVE)

(Marks : 25)

SECTION-I

(Marks: 15)

A. Tick (\checkmark) the correct answer in the brackets provided : $1 \times 10 = 10$

- What is the primary function of the Common Language Runtime (CLR) in the .NET framework?
 - (a) To provide a way to access data from different databases ()
 - (b) To manage the execution of .NET applications and provide services like garbage collection ()
 - (c) To handle user interface design and rendering ()
 - (d) To ensure compatibility between different .NET languages ()

2.	Which operator in VB.NET is used	for logical AND operation?
	<i>(a)</i> 8585 ()	(b) & ()
	(c) AND ()	<i>(d)</i> &&&& ()
3.	Which control is best suited for pre-	senting a hierarchical list of items
	in VB.NET?	
	(a) ListBox ()	(b) ComboBox ()
	(c) TreeView ()	(d) ListView ()
4.	Which dialog control is used to pro	mpt the user to choose a location
	and filename to save a file?	
	(a) FontDialog ()	(b) OpenFileDialog ()
	(c) SaveFileDialog ()	(d) ColorDialog ()
5.	What is the output of the following	VB.NET code?
	Dim x AS Integer = 5	
	If $x > 10$ Then	
	Console.WriteLine("Greater	")
	Else	
	Console.WriteLine("Lesser of	or Equal")
	End If	- /
	(a) Greater ()	(b) Lesser or equal ()
	(c) Error ()	(d) No output ()
б.	What type of error occurs when a p	rogram runs into an isssue that
	was not anticipated during coding	g, such as dividing by zero or
	(a) Syntax error (
	(b) Logic error ()	
	(c) Runtime error ()	
	(d) Compilation error ()	
7.	How do you define an interface in V	B.NET?
	(a) Interface IMyInterface ()	
	(b) Class IMyInterface ()	
	(c) Module IMyInterface ()	
	(d) Abstract Class IMyInterface	()

8.	Which ac	cess modifier allows a class member to be accessible only
	within th	e same assembly but not from other assemblies?
	(a) Dubli	s and not not outer assembles

	(a) Public	()	ſb) Private	(1	
	(c) Protected	()	10) Friend	ì	í	
9.	Which of the fo	llowing is r	iot a comp	onent of A	DO.NET	?	
	(a) DataSet	()	(1) DataAda	apter	()	ĵ
	(c) Command	()	(0	l) DataLin	k ()	
10.	Which control displaying repo	is common	nly used in	NUT VB.NET	for gen	erating	and
	anopiajing repo	its within a	a windows	Forms App	blication	·	
	(a) CrystalRepo	ortViewer	() (b) ReportV	liewer	()
	(c) DataGridVi	ew () (d) PrintDo	cument	()

- B. State whether the following statements are True (T) or False (F) by putting a Tick (✓) mark in the brackets provided : 1×5=5
 - 1. VB.NET supports both implicit and explicit type conversion.
 - (T / F)
 - In VB.NET, access keys are assigned to menu items using the '&' before a letter in the menu item's text.
 - (T / F)
 - The Queue collection in VB.NET follows a Last-In, First-Out (LIFO) order.
 - (T / F)
 - 4. A class can implement multiple interfaces in VB.NET.
- (T / F)
- The Command object in VB.NET can only execute SELECT SQL queries.
 - (T / F)

(Marks: 10)

- C. Answer the following questions in short :
 - 1. What is MSIL?
 - Discuss methods and events.
 - What are collections in VB.NET?
 - 4. What are constructor and destructor?
 - 5. What is a datagrid?

(PART : B-DESCRIPTIVE)

(Marks : 50)

D. Answer the following questions :

1. Explain the key components of the .NET architecture and their roles.

OR

Explain any five arithmetic and logical operators with example.

2. What is a form? Discuss eight controls with their properties in a form.

OR

Explain five types of dialog boxes.

3. What is an array? Give example program on single-dimensional array.

OR

Explain passing by value and passing by reference with example programs.

4. What is a class? Explain methods and properties with examples.

OR

What is access modifier? What are the different types of access modifier?

5. What is ADO.NET? Explain the architecture of ADO.NET.

OR

What is dataset? What are the different components of dataset?

* * *

2×5=10

 $10 \times 5 = 50$

BCA/1/CC/04

Student's Copy

Professional Course (Odd) Examination, 2024

(CBCS)

(1st Semester)

BACHELOR OF COMPUTER APPLICATIONS

(Digital Computer Fundamentals)

Full Marks: 75

Time : 3 hours

The figures in the margin indicate full marks for the questions

(PART : A-OBJECTIVE)

(Marks : 25)

SECTION-I

(Marks: 15)

A. Tick (\checkmark) the correct answer in the brackets provided :

- 1. The 2's complement of the binary number 100101 is
 - (a) 111010 () (b) 100110 ()
 - (c) 011010 () (d) 011011 ()
- 2. The 10's complement for (825)10 is
 - (a) 175(b) 165(c)(c) 174(c)(c) 164(c)

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| Contd.

 $1 \times 10 = 10$

3.	The decimal equivalent of a bir	nary nu	mber 1	1011 is	
	(a) 24 ()	<i>(b)</i>	25	())
	(c) 26 ()	(đ)	27	()	
4.	The octal equivalent of the num	nber (45	5F) ₁₆ is		
	(a) 2137 ()	<i>(</i> b <i>)</i>	2053	(-)
	(c) 2127 ()	(d)	2153	()
5.	PLA stands for				
	(a) Popular Logic Array ()			
	(b) Programable Logic Array	()			
	(c) Programable Large Array	()		
	(d) Product of Large Array	()			
б.	Which Boolean algebra theorem	states	that A +	$A \cdot B =$	A?
	(a) Distributive law ()				
	(b) Absorption law ()	,			
	(d) Complement law ()			
	(,, (
7.	The Boolean expression $x \cdot x' = 2$)			
	(a) 0 ()	(Ь)	1 ()	
	(c) x ()	(d)	x'	()	
8.	What is the purpose of a decod	er in a	combina	tional c	ircuit?
	(a) To select one of several input	it signa	ls ()	
	(b) To perform addition or subt	raction	()	
	(c) To store binary data () a more	readable	form	7
	al lo convert binary data into	a more	reauable	5 IOIIII	1

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- 9. In which counter does the flip-flop output transition serve as a source for triggering other flip-flop?
 - (a) Binary counter () (b) Shift counter ()
 - (c) Ripple counter () (d) Up-down counter ()

 The counters in which the clock pulses are applied to the CP inputs of all flip-flops are called

- (a) all counters ()
- (b) synchronous counters ()
- (c) asynchronous counters ()
- (d) syndicate counters ()
- B. State whether the following statements are True (T) or False (F) by putting a Tick (✓) mark : 1×5=5
 - Decimal number (41)₁₀ to its binary number equivalent is (101001)₂.

(T / F)

2. In a NAND gate, the output is high when all inputs are high.

(T / F)

- XOR is also called as universal gate.
- (T/F)

4. A half-adder can add three bits.

(T / F)

In a synchronous binary counter, the flip-flop in the lowest order position is complemented with every pulse.

(T/F)

(Marks: 10)

- C. Answer the following questions :
 - 1. What are alphanumeric codes?
 - State De Morgan's theorem.
 - 3. Write the truth table of the function

 $\mathbf{F} = \mathbf{x'y} + \mathbf{xz'} + \mathbf{y'z}$

- 4. What is encoder?
- 5. What is flip-flop?

(PART : B-DESCRIPTIVE)

(Marks : 50)

- 1. (a) Draw the block diagrams of a digital computer and explain its units. 6
 - (b) Convert (45)10 to binary, octal and hexadecimal.

OR

- (c) Obtain the r's and (r 1)'s complements of the following numbers : 5
 (i) (110110)₂
 - (ii) (362)₁₀
- (d) Convert (1101011110)₂ to decimal, octal and hexadecimal numbers. 5
- 2. (a) Simplify the Boolean expression (BC' + A'D)(AB' + CD'). 4
 - (b) Express the following function in a sum-of-product (SOP) : 6

$$\mathbf{F}(\mathbf{w},\mathbf{x},\mathbf{y},\mathbf{z}) = \mathbf{y}'\mathbf{z} + \mathbf{w}\mathbf{x}\mathbf{y}' + \mathbf{w}\mathbf{x}\mathbf{z}' + \mathbf{w}'\mathbf{x}'\mathbf{z}$$

OR

- (c) Using Karnaugh's three-variable mapping, simplify the Boolean function F(x,y,z) = x'yz + x'yz' + xy'z' + xy'z.
- (d) Simplify the Boolean function F, together with Don't care condition.
 F(A,B,C,D) = Σ(2, 4, 6, 10, 12)
 D(A,B,C,D) = Σ(0, 8, 9, 13)

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Contd.

5

5

2×5=10

4

3.	(a)	Write any five digital logic gates with graphic symbols and truth table.	5
	(b)	Implement the Boolean function $F = xyz + x'y' + y'z$ using AND, OR and NOT gates.	5
		OR	
	(c)	Write the steps for subtraction with r's complement method. Give examples.	4
	(d)	Solve the following binary numbers :	6
		(i) $(1011)_2 \div (101)_2$	
		(ii) $(1101)_2 \times (110)_2$	
		(iii) $(11010)_2 + (10001)_2$	
4.	(a)	What is a decoder? Design a 3-to-8 line decoder showing its truth tables.	5
	(Ъ)	What is a multiplexer? Explain the block diagram, logic diagram and function table of a 4-to-1 multiplexer. OR	5
	(c)	What are combinational circuits? Write the steps for designing one.	4
	(d)	What is a full adder? Write the Boolean expression, truth table and logic diagram implementation.	6
5.	(a)	What is J-K flip-flop? Write the logic diagram, characteristics table and graphic symbol of a J-K flip-flop.	6
	(b)	Write and explain the working of a shift register constructed using D flip-flop.	4
		OR	
	(c)	Explain edge trigger flip-flop with the suitable diagram and characteristic table.	5
	(d)	Explain 4-bit ripple counter along with diagrams.	5

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BCA/1/CC/04

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(CBCS)

(1st Semester)

BACHELOR OF COMPUTER APPLICATIONS

(Digital Computer Fundamentals)

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(PART : A-OBJECTIVE)

(Marks: 25)

SECTION-I

(Marks: 15)

A. Tick (\checkmark) the correct answer in the brackets provided :

1. The 2's complement of the binary number 100101 is

	(a)	111010	()	(b)	100110		()
	(c)	011010	()	(d)	011011		()
2.	The	10's com	plemen	t for (8	25) ₁₀ is				
	(a)	175	()		(b)	165	()	

(a) 175(b) 105(c)(c) 174(c)(d) 164(c)

1×10=10

3.	The decimal equivalent of a binary number 11011 is
	(a) 24 () (b) 25 ()
	(c) 26 () (d) 27 ()
4.	The octal equivalent of the number $(45 \text{ F})_{16}$ is
	(a) 2137 () (b) 2053 ()
	(c) 2127 () (d) 2153 ()
5.	PLA stands for
	(a) Popular Logic Array
	(b) Programable Logic Array (
	(c) Programable Large Arrow (
	(d) Product of Large Array ()
б.	Which Boolean algebra theorem states that $A + A \cdot B = A^2$
	(a) Distributive law ()
	(b) Absorption law ()
	(d) Complement law ()
7.	The Boolean expression $x_i x' = 2$
	(a) 0 () (b) 1 ()
	$(c) \times (c)$ $(d) \times (c)$
8	What is the
0.	(a) To select of a decoder in a combinational circuit?
	(b) To perform addition
	(c) To store binary data ()
	(d) To convert binary data into a more readable for
	()

| Contd.

2

- 9. In which counter does the flip-flop output transition serve as a source for triggering other flip-flop?
 - (a) Binary counter () (b) Shift counter ()
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 The counters in which the clock pulses are applied to the CP inputs of all flip-flops are called

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(T/F)

(Marks: 10)

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 $\mathbf{F} = \mathbf{x'y} + \mathbf{xz'} + \mathbf{y'z}$

- 4. What is encoder?
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(PART : B-DESCRIPTIVE)

(Marks : 50)

1. (a) Draw the block diagrams of a digital computer and explain its units. 6 (b) Convert (45)10 to binary, octal and hexadecimal. 4 OR (c) Obtain the r's and (r-1)'s complements of the following numbers : 5 (i) (110110)₂ (ii) (362)10 (d) Convert $(1101011110)_2$ to decimal, octal and hexadecimal numbers. 5 2. (a) Simplify the Boolean expression (BC' + A'D)(AB' + CD'). 4 (b) Express the following function in a sum-of-product (SOP) : 6 F(w,x,y,z) = y'z + wxy' + wxz' + w'x'zOR Using Karnaugh's three-variable mapping, simplify the Boolean (c) function F(x,y,z) = x'yz + x'yz' + xy'z' + xy'z. 5 (d) Simplify the Boolean function F, together with Don't care condition. $F(A,B,C,D) = \Sigma(2, 4, 6, 10, 12)$ $D(A,B,C,D) = \Sigma (0, 8, 9, 13)$ 5

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Contd.

2×5=10

3.	(a)	Write any five digital logic gates with graphic symbols and truth table.	5
	(b)	Implement the Boolean function $F = xyz + x'y' + y'z$ using AND, OR and NOT gates.	5
		OR	
	(c)	Write the steps for subtraction with r's complement method. Give examples.	4
	(d)	Solve the following binary numbers :	6
		(i) $(1011)_2 + (101)_2$	
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		OR	
	(c)	What are combinational circuits? Write the steps for designing one.	4
	(d	What is a full adder? Write the Boolean expression, truth table and logic diagram implementation.	6
I	5. (a	What is J-K flip-flop? Write the logic diagram, characteristics table and graphic symbol of a J-K flip-flop.	6
	(E	Write and explain the working of a shift register constructed using D flip-flop.	4
		OR	
	(c) Explain edge trigger flip-flop with the suitable diagram and characteristic table.	5
	(d) Explain 4-bit ripple counter along with diagrams.	5

* * *

5