HS/XII/A.Sc.Com/CAP/18

2 0 1 8

COMPUTER APPLICATIONS

(Arts / Science / Commerce)

(Theory)

Full Marks : 70

Time : 3 hours

The figures in the margin indicate full marks for the questions

General Instructions :

 (i) Write all the answers in the Answer Script.

 (ii) Attempt Part—A (Objective Questions) serially.

 (iii) Attempt all parts of a question together at one place.

 (iv) Part—A (Objective Questions) is to be attempted according to stream as mentioned.

 (v) Attempt Part—B [Descriptive (Unit—I)] according to stream as mentioned.

(PART : A—OBJECTIVE)

(*Marks* : 35)

SECTION—I

(*Marks* : 25)

1. Fill in the blanks from the list of words/phrases given below : 1×10=10

(For Science stream candidates only)

 (a) A signal that does not change its state in time is called a _____ signal.

 (b) The number of rows in the truth table for a function of three literals will be _____.

(c) According to the commutative law of Boolean algebra, $X \quad Y$ _____.

(d) A NAND gate is a combination of an AND gate and a _____ gate.

(For Arts/Commerce stream candidates only)

(a) An IP address is made up of _____ bits of information.

(b) _____ is the protocol for remote login.

(c) A _____ is a program that is responsible for replying to Web browser's requests.

(d) Each separate hyperlink within a drawing is called a _____.

(For all Science/Arts/Commerce stream candidates : C Language)

(e) In C, while is a _____ word.

(f) printf ("%d", & max); is used to print the _____ of the variable max.

(g) The _____ statement can be used to alter the normal sequence of execution by transferring control to some other part of the program.

(3)

(h) Automatic variable does not retain its _____ once control is transferred out of its defining function.

(i) The expression 11%3 evaluates to _____.

(j) The _____ operator appears between names of structure variable and one of its members.

List of words/phrases :

value	goto	2	macro
32	Telnet	Web server	hotspot
keyword	address	switch	reserved
interlaced	function	email	constant
8	minterm	variable	NOT
Y X	.(dot)		X Y
NOR	maxterm		

2. State whether the following statements are *True* or *False* :   1×10=10

(For Science stream candidates only)

(a) When each term of a logic expression contains all variables, then it is said to be in canonical form.

(b) A four-variable Karnaugh map will have 12 cells.

(c) According to the distributive law of Boolean algebra

$$a \cdot (b \cdot c) \quad (a \cdot b) \cdot (a \cdot c)$$

(d) In a NOR gate, the output will be 1 only when the values of both the inputs are 1.

(For Arts/Commerce stream candidates only)

(a) FTP translates domain names to IP address.

(b) The Web is as old as the net.

(c) To create a table in FrontPage, click the insert table button on the standard toolbar.

(d) To crop an image means to cut off part of it.

(For all Science/Arts/Commerce stream candidates : C Language)

(e) One cannot have octal or hexadecimal integer constant in C.

(f) When a variable '*i*' is incremented with the operation '*i*++' in a statement, it means that '*i*' has to be incremented before the statement is executed.

(g) The functions 'getchar()' and 'putchar()' do the same thing, so they are interchangeable in a program.

(h) If 'X' is an integer variable and 'pX' is a pointer, the statement is pX = *X; assign the address of 'X' to 'pX'.

(i) A structure is a composite data type which contains more than one member and all members can be of different data types.

(j) All files need to be opened with 'fopen()' before it is used for reading or writing in the program.

(**5**)

3. Choose and write the correct answer :   1×5=5

(For Science stream candidates only)

(a) Two switches connected in parallel, behave as

  (i) AND gate

  (ii) OR gate

  (iii) NAND gate

  (iv) NOR gate

(b) For a two-variable Karnaugh map, the variable

  (i) AB has the value 00

  (ii) AB has the value 01

  (iii) Both *(i)* and *(ii)*

  (iv) None of the above

(For Arts/Commerce stream candidates only)

(a) A network which spreads over a small room, building or campus is known as

  (i) MAN

  (ii) WAN

  (iii) LAN

  (iv) WI-FI

(b) In class C, network the format is

  (i) network·node·node·node

  (ii) network·network·node·node

  (iii) network·network·network·node

  (iv) network·node·network·node

(6)

**(For all Science/Arts/Commerce stream candidates :
C Language)**

(c) A variable with the data type of int occupies
_____ bytes in memory.

   (i)   4

  (ii)   2

 (iii)   8

 (iv)   1

(d) The expression '*i*++' can also be written as

   (i) i 1

  (ii) i i 1

 (iii)   Both *(i)* and *(ii)*

 (iv)   None of the above

(e) The 'do-while' statement guarantees that the
loop is executed

   (i)   only once

  (ii)   at least once

 (iii)   more than once

 (iv)   None of the above

SECTION—II

(*Marks* : 10)

4. Answer any *five* of the following in not more than *3* to *4* sentences each :   2×5=10

(For Science stream candidates only)

(a) Verify using truth table the following Boolean expression :   2

$$AB \quad A\,BC \quad AB\,C \quad AB \quad BC \quad AC$$

(b) Simplify the following logical expressions :

   (i) $A \quad A\,B$ 1

   (ii) $A \ (A \quad B)$ 1

(For Arts/Commerce stream candidates only)

(a) Give a brief discussion on the Internet and how it works.   2

(b) What are the applications of the Internet?   2

**(For all Science/Arts/Commerce stream candidates :
C Language)**

(c) What is an identifier? State the rules of naming an identifier.   2

(d) Summarize the rules that apply to all numeric type constants.   2

(**8**)

(e) What is the purpose of the 'switch' statement?   2

(f) How is a pointer variable declared?   2

(g) Describe the use of conditional operator to form conditional expression. How is conditional expression evaluated?   1+1

(PART : B—DESCRIPTIVE)

(*Marks* : 35)

UNIT—I

(For Science stream candidates only)

5. (a) State De Morgan's theorems.   2

(b) Write the other canonical forms of the following logical functions :   1+1=2

   (i) $F(a, b, c)$ $(1, 2, 3, 4)$

   (ii) $F(a, b, c, d)$ $(0, 4, 8, 9, 10, 15)$

(c) Draw a 4-variable Karnaugh map.   1

OR

6. (a) Write the implementation of logic expression with logic gates of the following expression :   3

$$Z \quad AB \quad CD$$

(b) Verify the following using truth table :   2

$$(A \quad B)(A \quad C) \quad A \quad B \quad C$$

7. (a) Explain AND and OR operations with suitable examples.   3

(b) Define minterm and maxterm.   2

OR

8. *(a)* Write the sum of product forms of the function $F(A, B, C)$. The truth table for F is as follows :   2

A	B	C	F
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	0
1	1	1	1

    (b) What is a Karnaugh map?   2

    (c) What is 'don't care' condition?   1

(For Arts/Commerce stream candidates only)

5. *(a)* Define File Transfer Protocol.   2½

    (b) Write a note on class B network.   2½

OR

6. *(a)* Write a note on Internet Service Provider.   2½

    (b) What is an interlaced image? How is it obtained in FrontPage?   2½

7. *(a)* What is Telnet?   3

    (b) What are attachments? Describe.   2

(10)

OR

8. *(a)* Explain how texts and images can be added to a table in FrontPage. 2½

(b) How can one change the font style and add color to the text in a page? 2½

**(Unit—II, Unit—III and Unit—IV :
For all Science/Arts/Commerce stream candidates)**

UNIT—II

9. *(a)* Describe the four basic data types in C. 2

(b) What is meant by the term 'operator precedence'? What are the precedences of arithmetic operators? 2

OR

10. *(a)* Write a C program to find out whether the given year is a leap year or not. 3

(b) What are unary operators? 1

11. *(a)* How can the value of an expression be converted to different data types? What is this called? 2

(b) What is the purpose of the 'if-else' statement? 2

OR

12. *(a)* What is the purpose of 'do-while' statement? How does it differ from the 'while' statement? 2½

(b) What is meant by looping? Describe the two forms of loop. 1½

UNIT—III

13. *(a)* What is meant by storage class of a variable? Name the four storage class specifications included in C.   1+1=2

(b) What is meant by the scope of a variable within a program?   2

(c) What is recursion?   1

OR

14. *(a)* Describe automatic variables.   2½

(b) How is an array name interpreted when it is passed to a function?   2½

15. *(a)* How is a pointer variable declared? What is the purpose of the data type included in the declaration?   2

(b) Write a program to swap the contents of *A* and *B* using function.   3

OR

16. *(a)* What is the relationship between the data item represented by a variable 'V' and the corresponding pointer variable 'pv' ?   1½

(b) Why is it sometimes desirable to pass a pointer to a function as an argument?   1

(c) What is meant by 'dynamic memory allocation' ? What library function is used to allocate memory dynamically?   1½+1=2½

UNIT—IV

17. *(a)* What is a 'structure' ? How does it differ from an array? 2

(b) What is a 'union' ? 1½

OR

18. *(a)* What is the purpose of the 'typedef' feature in C? 2

(b) What is meant by opening a data file? How is this accomplished? 1½

19. *(a)* How can a data file be viewed once it has been created? 2

(b) What are the purposes of the 'fprintf' and 'fscanf' functions? 1½

OR

20. *(a)* What is a macro? How is a macro defined? Give example. 1½

(b) What is the purpose of the 'fclose' function? 1

(c) What is the purpose of the 'feof()' function? 1

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