Total No. of Printed Pages—12

HS/XII/A.Sc.Com/CAP/19

2019

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) Boolean algebra does not have operations for division and _____.

(b) _____ algebra does not have a complement function.

(c) Two switches connected in series behave as _____ gate.

(d) If m_i is the minterm for row i and M_i is the maxterm for row i, then _____ = M_i.

(For Arts/Commerce stream candidates only)

(a) Technically, TELNET is a _____.

(b) _____ network reserved for the numerous networks with a small number of nodes.

(c) In FrontPage, _____ view gives you a WYSIWYG editing environment for creating and editing Web pages.

(d) To add alternative text to an image, click on _____ tab on picture properties.

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

(e) _____ are names that are given to various program elements, such as variables, functions and arrays.

(f) A _____ statement consists of several individual statements enclosed within a pair of braces {}.

(g) The _____ tests the condition after having executed the statements within the loop.

(h) _____ is a process by which a function calls itself repeatedly, until some specified condition has been satisfied.

(i) _____ function finds last occurrence of a given character in a string.

(j) _____ increments what *p* points to.

List of words/phrases :

real	repetition	iteration	class C
protocol	OR	$\overline{m}_i$	while
identifiers	class A	strrchr ( )	AND
addition	service provider	*p++	Boolean
tasks	compound	subtraction	m_i'
general	macros	page	expression
recursion	multiplication	picture	do ... while
	(*p)++	strchr	

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

(For Science stream candidates only)

(a) According to De Morgan's theorem,

$$(a \quad b) \quad a \quad b$$

(b) If logic expressions are given in product of sums forms, the logic network can be realized using OR-AND gates or only NOR gates.

(For Arts/Commerce stream candidates only)

(a) A sprider strips away many other markup features so that it simply sees pure HTML source.

(b) To 'crop' an image means to 'interlace' GIF images to create a special visual effect.

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

(c) Suppose *i* is an integer variable whose value is 7 and *f* is a floating-point variable whose value is 8·5. The expression (*i* *f*)% and results in the integer remainder 3.

(d) The switch statement is a form of a one-way decision.

(e) The function prototype declaration contains— function's name, return type and argument type(s).

(f) 'Strncat' function appends one string at the end of another.

(g) a[i][j] = b[k++]; means that

```
a[i][j] = b[k];
k++;
```

(h) When we subtract two pointers, as long as they point into the same array, the result is the number of bytes separating them.

(i) Only one member of a union can be assigned a value at any one time.

(j) The statement

typedef int LENGTH

declares LENGTH as a variable of type int.

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

(For Science stream candidates only)

(a) According to associative law of Boolean algebra,

(i) $a\ (b\ c)\ (a\ b)\ (a\ c)$

(ii) $a\ (b\ c)\ (a\ b)\ c$

(iii) $a\ b\ b\ a$

(iv) $a\ (b\ c)\ (a\ b)\ c$

(b) A/an _____ is an implicant which can be wholly enclosed by a larger implicant on a Karnaugh map.

(i) prime implicant

(ii) nonprime implicant

(iii) essential prime implicant

(iv) nonessential prime implicant

(For Arts/Commerce stream candidates only)

(a) _____ protocol breaks e-mail messages into packets.

(i) FTP

(ii) IP

(iii) TCP

(iv) HTTP

(b) _____ identifies problems with pages and links in the Web.

(i) Page view

(ii) Reports view

(iii) Navigation view

(iv) Hyperlinks view

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

(c) The statements which are used to create special program features, such as logical tests, loops and branches, are known as

(i) expression statements

(ii) compound statements

(iii) control statements

(iv) None of the above

(d) switch (choice=getchar())
{
case 'R' : printf ("red\n");
_____;
default : printf ("color\n");
}

(i) break

(ii) continue

(iii) Either *(i)* or *(ii)*

(iv) None of the above

(e) The sorting method in which two elements are interchanged immediately upon discovering that they are out of order is known as

(i) selection sort

(ii) bubble sort

(iii) insertion sort

(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) Write a note on the principle of duality.

(b) Explain what is meant by "don't care" condition.

(For Arts/Commerce stream candidates only)

(a) Write a note on TELNET.

(b) Write the required steps to add images to a table.

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

(c) What is the purpose of the printf function? Compare it with the putchar function.

(d) What is the purpose of the if-else statement?

(e) In C, arrays are zero-based. Explain.

(f) What is a structure and a structure member?

(g) What are the three sorts of ways, the C preprocessor performs textual substitutions on your source code?

(PART : B—DESCRIPTIVE)

(*Marks* : 35)

UNIT—I

(For Science stream candidates only)

5. *(a)* Convert the following into minterm : 1+1=2

(i) *A B*

(ii) *XY Z*

(b) Write the implementation of logic expressions with logic gates of the following expression : 3

$Y \quad AB\,C \quad ABC \quad ABC$

[Use the necessary block diagram.]

OR

6. *(a)* Find the dual of the following logic expression : 1

$X \;\; Y\,(Y \quad Z \quad X) \quad X \;\; Y$

(b) Simplify the following expression : 2

$(X \quad Y)(X \quad Z)(Y \quad Z)$

(c) Convert the following expressions into canonical forms : 1+1=2

(i) $XZ \quad X\;YW \quad XZW$

(ii) $X\,(Y \quad Z\;)$

7. *(a)* Represent the following Boolean function on Karnaugh map and simplify it : 3

$F\,(A, B, C, D) \qquad m\,(1, 3, 7, 11, 15) \qquad d\,(0, 2, 5)$

(b) Explain map rolling. 2

OR

8. *(a)* Obtain the following simplified POS form of the Boolean function : 3

$F\,(A, B, C, D) \qquad (0, 1, 3, 4, 5, 6, 7, 9, 10, 11, 13, 15)$

(b) Explain essential prime implicant and nonessential prime implicant. 1+1=2

(For Arts/Commerce stream candidates only)

5. *(a)* Write a note on file transfer protocol. 2

(b) Briefly explain different types of Internet connectivity available. 3

OR

6. Explain Class A, Class B and Class C networks, clearly bringing out the distinction among them. 5

7. *(a)* Write the steps to add your own image to a Web page. 3

(b) Describe various steps to move an image. 2

OR

8. *(a)* List different views available in FrontPage. 3

(b) Write the steps to check for slow pages in FrontPage. 2

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

UNIT—II

9. Name and describe the four basic data types in C. 1×4=4

OR

10. *(a)* Mention the differences between getch() and getche() functions. 1+1=2

(b) Write a note on the GOTO statement. 2

11. *(a)* What is an escape sequence? What is its purpose? 1+1=2

(b) What is the purpose of the do-while statement? How does it differ from the while statement? 1+1=2

OR

12. *(a)* Write a note on scanf function. 2

(b) Write a user-friendly C program demonstrating an if statement showing the value entered is negative. 2

UNIT—III

13. *(a)* What is a function? What is a function call? 2

(b) What is the purpose of return statement? 1

(c) Write a program in C to illustrate the call of a function. 2

OR

14. *(a)* What is recursion? 1

(b) Write a program in C to calculate the factorial of an integer quantity using recursion. 3

(c) What are header files in C? 1

15. *(a)* Explain with an example, how elements of an array can be accessed by using a pointer. 2

(b) Write a program in C to sort an array of integers into ascending order, using selection sort method. 3

OR

16. *(a)* What is a null pointer? 1

(b) What is meant by dynamic memory allocation? How is the size of the memory block specified? 1+1=2

(c) How can a two-dimensional array be represented with a pointer notation? Give example. 2

UNIT—IV

17. *(a)* What is the purpose of the 'typedef' feature in C? 1½

(b) Write a note on enumerations. 2

OR

18. Explain what is meant by formatted I/O. What record I/O deals with? 3+½=3½

19. Explain the union data type, contrasting it with a structure using a suitable example. 3½

OR

20. Write a program to copy the contents of one file into another, character-by-character. 3½

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