Total No. of Printed Pages—12

HS/XII/A.Sc.Com/CAP/OC/21

2021

COMPUTER APPLICATIONS

(Old Course)

(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) Each occurrence of a variable or its complement in an expression is called _____.

(b) The number of rows in the truth table for a function of 3 (three) literals will be _____.

(c) Two switches connected in parallel behaves as _____ gate.

(d) A _____ is an implicant which cannot be wholly enclosed by a larger implicant on a K-map.

(For Arts / Commerce stream candidates only)

(a) Network.Node.Node.Node is the format of _____ network.

(b) _____ is the primary method of transferring files over the Internet.

(c) DNS translates the domain name into _____.

(d) _____ is the central authority for assigning numbers to Internet sites.

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

(e) #define statement calls for simplest type of _____ substitution.

(f) A do-while loop with test condition is known as _____ loop.

(g) C language supports _____ data types such as pointer reference types, array and struct.

(h) _____ statement results in unconditional branching.

(i) The starting subscript of an array in C is _____.

(j) FILE is defined in the _____ header file.

List of words / phrases :

Internet	derived	variable	implicit	Class C
3	essential	prime	NIC	EOF
Class A	0(zero)	OR	MAC	literal
conio.h	NULL	exit-control	8	macro
IP address	goto	stdio.h	AND	continue
DNS	break	URL	FTP	exit

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

(For Science stream candidates only)

(a) Accoding to De Morgan's theorem

$$(A + B)' = A' + B'$$

(b) Fundamental conditions or self-evident propositions are called postulates.

(For Arts/Commerce stream candidates only)

(a) Telnet can be used for remote login.

(b) To specify multiple recipients of carbon copy of same mail message, CC : field is used.

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

(c) File handling functions are prototyped in conio.h.

(d) A break statement must be used following the statements for each case in a switch statement.

(e) The conversion specification %d is used to read the values in decimal.

(f) The program's ability to access a variable from the memory is called visibility.

(g) The loop-control elements in a for–loop are optional.

(h) If an array had been defined like this : int array[11]; then the word 'array' represents the address of the array.

(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.

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

(For Science stream candidates only)

(a) In Boolean theorem, $X + X'Y$ will be equal to

(i) $X' + XY$

(ii) $X + Y$

(iii) $X + XY'$

(iv) None of the above

(b) Which statement below best describes a Karnaugh map?

(i) The Karnaugh map eliminates the need for using NAND and NOR gates.

(ii) A Karnaugh map can be used to replace Boolean rules.

(iii) Variable complements can be eliminated by using Karnaugh maps.

(iv) It is simply a rearranged truth table.

(For Arts / Commerce stream candidates only)

(a) In the term 'IP addresses', IP stands for

(i) International Protocol

(ii) Internet Protocol

(iii) Internet Provider

(iv) None of the above

(b) In a client/server system, a client issues request to

(i) hyperlink

(ii) mainframe

(iii) a server

(iv) a token ring card

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

(c) When applied to a variable, what does the unary '&' operator yield?

(i) The variable address

(ii) The variable right value

(iii) The variable binary form

(iv) The variable value

(d) Which of the following is a valid example of constant definition?

(i) N 25;

(ii) #define X=2·5

(iii) #define PASS_MARK 50

(iv) All of the above

(e) The functions fgets() and fputs()

(i) read and write strings from or to data files

(ii) read and write strings from or to input/output stream

(iii) read and write records from or to data files

(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) *(i)* Find dual of the following logic expression : 1

$$1 \cdot X.Y + Y'.XZ + 0$$

(ii) What will be other canonical form for the following Boolean expression? 1

$$F(a, b, c) = \sum(0, 2, 5)$$

(b) Simplify the logical expressions : 1+1=2

(i) $A + A'B$

(ii) $A.(A' + B)$

(For Arts / Commerce stream candidates only)

(a) What is a URL? Does it case-sensitive? 1+1=2

(b) What is the purpose of the reports view in FrontPage?

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

(c) Describe two different ways that floating point constants can be written.

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

(e) In what two ways can a structure variable be declared?

(f) State the rules for naming an identifier.

(g) What is the difference between fprintf() and fwrite() functions?

(PART : B—DESCRIPTIVE)

(*Marks* : 35)

UNIT—I

(For Science stream candidates only)

5. *(a)* Explain minterms and maxterms. 2

(b) State and verify absorption law using truth table. 1+2=3

OR

6. *(a)* Verify the following using Boolean laws : 2

$$A + C = A + A' \cdot C + B \cdot C$$

(b) Name the Boolean law shown below and verify it using a truth table : 1+2=3

$$A + B \cdot C = (A + B) \cdot (A + C)$$

7. *(a)* Using Karnaugh map method, simplify the following function : 2

$$Y = A'B'C' + A'BC' + A'B'C$$

(b) Realize the logic expression $AB + BC + CD$ using basic gates. 2

(c) Define constant signal. 1

OR

8. *(a)* If

$$F(a,b,c,d) = \sum(0, 1, 3, 4, 5, 7, 8, 9, 11, 12, 13, 15)$$

obtain the simplified form using K-map. 3

(b) What is meant by 'don't care' condition? Explain with the help of a K-map. 2

(For Arts / Commerce stream candidates only)

5. *(a)* Distinguish between a Web browser and a Web server. 2

(b) What is domain name? What is the role of DNS on the Internet? 1+2=3

OR

6. *(a)* What do you mean by cross-platform? 2

(b) What is a mail header ? What does it contain? 1+2=3

7. *(a)* How to add check boxes on a Web page design through FrontPage? 2

(b) What do you mean by slow pages? How to check for slow pages? 1+2=3

OR

8. *(a)* How to add a 'theme' to your Web site using FrontPage? 2

(b) Describe various steps for inserting a hyperlink in FrontPage. 3

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

UNIT—II

9. *(a)* How can comments be included within a C program? Where can comments are placed? 1+1=2

(b) Name and describe the four basic types of constants in C. 2

OR

10. *(a)* Why are some of the statements within a C program indented? Why are empty lines included within a typical C program? 1+1=2

(b) Name and describe the four data types qualifiers in C. 2

11. Write the printf() specifiers and flags with meanings in C language. 4

OR

12. *(a)* In what ways does the control string within a printf() function differ from the control string within a scanf() function? 2

(b) Distinguish between getchar() and gets() functions. 2

UNIT—III

13. *(a)* What is a function? What is meant by the term 'function call'? 1+1=2

(b) What is an array? Explain the declaration of one-dimensional array with example. 1+2=3

OR

14. *(a)* Write a program that will find the greatest number in an integer array of user-defined size. 3

(b) What is the scope of a static variable? Give example. 1+1=2

15. *(a)* Explain the difference between parameter passing mechanisms call by Value and call by Reference. 2

(b) How can a portion of an array be passed to a function? 1

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

OR

16. *(a)* What is a pointer? What is the relationship between the data item represented by a variable var and the corresponding pointer variable pvar? 1+1=2

(b) What is meant by dynamic memory allocation? 1

(c) Explain recursion with example. 2

UNIT—IV

17. *(a)* How does a structure differ from an array? 1½

(b) What is the purpose of typedef feature? How is this feature used with structures? 2

OR

18. *(a)* Differentiate between structure data type and union. 1½

(b) Write a note on enumeration. 2

19. *(a)* Describe the use of arguments within a macro. 1½

(b) What is the principle advantage in the use of macro rather than a function ? What is the principle disadvantage? 2

OR

20. *(a)* What is the difference between r+ and w+ modes in standard I/O? 1½

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

(c) What is the purpose of the fwrite() function? 1

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