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

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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 _____.

(2)

- (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.

(3)

(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) According 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.

(4)

**(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

(5)

(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

(6)

(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

(7)

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

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

- (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?

(8)

- (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

(9)

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

(10)

(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

(11)

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

(12)

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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