Total No. of Printed Pages—16

HS/XII/A.Sc.Com/CAP/13

2 0 1 3

COMPUTER APPLICATIONS

(Science / Arts / 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) are 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 : ½×20=10

(For Science stream candidates only)

(a) Fundamental conditions or self-evident propositions are called ——.

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

(c) One way to simplify the sum of products equation is to use Boolean algebra; another way is ——.

(d) When each term of logic expression contains all variables, it is said to be in the ——.

(e) A —— is an implicant which cannot be wholly enclosed by a larger implicant on a Karnaugh map.

(For Arts/Commerce stream candidates only)

(a) URL is the abbreviation for ——.

(b) —— layer of the OSI reference model is the physical topology.

(c) Device usually tears down a frame and rebuilds it to accommodate a different protocol stack called ——.

(d) An e-mail message is made up of binary data, usually in the —— test format.

(e) "network.network.network.node" is of type ——.

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

(f) The first line starting with the character /* and ending with the character */ is ——.

(g) Every complete statement in C program must terminate with ——.

(h) In programming language C, 'char' is a —— word.

(i) Scope of an automatic variable can be —— than the entire function.

(j) The starting subscript of an array in C is ——.

(k) The logical operator == checks for —— of two values.

(l) The expression 11%3 evaluates to ——.

(m) The —— statement is used to skip some statements within a loop and start next iteration.

(n) The loop can be —— also, if a loop contains another loop inside its body.

(o) An infinite 'for' loop has missing —— expression.

(p) C language provides a multiple branch selection statement known as ——.

(q) —— functions convert a string of characters into a numeric value.

(r) The declaration of a function in the calling program is known as ——.

(s) A —— is a name given to a set of instructions that can be called by another program.

(t) All the variables defined in a program including pointer variables reside at specific ——.

List of words/phrases :

sequence	module	semicolon	2	identifier	r
prototype	Program	Equal	address	logic	active
postulate	Block diagram	gate	non-prime implicant	Karnaugh map	*X Y*
continue	4	class A	smaller	Equality	pretest
prime implicant	*Y X*	truth table	OR operation	EBCDIC	AND operation
ASCII	canonical form	class C	Comment	test	class B
Itoa( )	bridge	break	colon	gateway	reserved
longer	engaged	physical	ISCII	transport	nested
argument	Printf( )	interface	Uniform Resource Locator	macro	union
switch	8 bits	sub-program	Atoi( )	rb	increment

2. State whether the following statements are *True* or *False* : ½×20=10

(For Science stream candidates only)

(a) In case of NAND gate, the output will be 1 only when both the inputs are 1.

(b) The XNOR gate also sometimes behaves like universal operation.

(c) 7404 is an example of inverter in IC form.

(For Arts/Commerce stream candidates only)

(a) A fibre-optic cable may transmit pulses of laser light in an all-digital network.

(b) LANs are arranged in star, bus or ring configurations.

(c) Analog signals can take on many values.

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

(d) The function getchar() is a library function which reads a single character from standard input.

(e) Consider the following C statement :

```
while(( C==getchar( )) !=EOF )
```

where 'C' is of type int.

There is a run-time error in this statement.

(f) The conversion specification %h is used to read the values in hexadecimal.

(g) The 'while' and 'for' loops test the termination condition at the bottom of the loop, but the 'do-while' tests the termination condition at the top.

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

(i) A 'do-while' loop is useful when the body of the loop will be executed at least once.

(j) *p++ increments the content of the memory location pointed by p.

(k) Int(*p)[10] is a pointer to 10-element integer array.

(l) If a loop does not contain any statement in its loop body, it is said to be an empty loop.

(m) The compiler interprets else-if differently than it does an equivalent if-else.

(n) The function fseek() finds a given word or phrase in a data file.

(o) A file that is written to but not closed properly may lose data.

(p) A 'continue' statement causes an exit from a loop.

(q) We can create data file using library function fcreate( ).

(r) A single statement 'for' loop is terminated with a semicolon.

(s) The function fprintf( ) is meant for unformatted write to data.

(t) To write a block of data to a file in standard I/O, the appropriate function is fwrite( ).

3. Choose and write the correct answer : ½×10=5

(For Science stream candidates only)

(a) Before drawing a Karnaugh map the logic expression must be in

(i) expanded (canonical) form

(ii) sum of the products form

(iii) product of sums form

(iv) minimal form

(b) The dual of Boolean's expression 1 XYZ 0 is

(i) (1 X)YZ 0

(ii) (0 X)(Y Z) 1

(iii) (1 X) (Y Z) 0

(iv) (0 X)(Y Z) 1

(For Arts/Commerce stream candidates only)

(a) Which of the following solutions is suitable for networking within a building?

(i) WAN

(ii) LAN

(iii) MAN

(iv) None of the above

(b) Which of the following is used to connect two LANs using same LAN protocols over a wide area?

(i) Router

(ii) Bridge

(iii) Gateways

(iv) None of the above

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

(c) An array is a collection of

(i) different data types scattered throughout the memory

(ii) the same data type scattered throughout the memory

(iii) the same data type placed next to each other in the memory

(iv) different data types placed next to each other in the memory

(d) A character variable can at a time store

(i) 1 character

(ii) 8 characters

(iii) 255 characters

(iv) None of the above

(e) If *a* is an integer variable, *a* 5 / 2 will return a value

(i) 2

(ii) 3

(iii) 2·5

(iv) 0

(f) The expression *x* *x* 1 can also be written as

(i) *x* 1

(ii) *x*

(iii) *x*

(iv) None of the above

(g) A 'do-while' loop is useful when we want that the statements within the loop must be executed

(i) only once

(ii) at least once

(iii) more than once

(iv) None of the above

(h) A pointer is

(i) address of variable

(ii) a variable for storing address

(iii) an indication of the variable to be accessed next

(iv) None of the above

(i) On opening a file for reading, which of the following activities is performed?

(i) The disk is searched for existence of the file

(ii) The file is brought into memory

(iii) A pointer is set up which points to the first character in the file

(iv) All of the above

(j) If one does not initiate a static array, what will be the element set to?

(i) The character constant '\0'

(ii) An undetermined value

(iii) A floating-point number

(iv) 0

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 the 'sum of the product' form with example.

(b) Write the minimal Boolean expression.

(For Arts/Commerce stream candidates only)

(a) Write a short note on Internet service provider.

(b) What is the purpose of the report View in FrontPage?

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

(c) Distinguish between 'while' loop and 'do-while' loop.

(d) What is an identifier? State the rules for naming them.

(e) What are the purposes of the fscanf( ) statement?

(f) Write on void types.

(g) Write on symbolic constants.

(PART : B—DESCRIPTIVE)

(*Marks* : 35)

UNIT—I

(For Science stream candidates only)

5. *(a)* Write the implementation of logic expressions with logic gates of the following expression :

$$Z \quad AB \quad CD$$

[Use the necessary block diagram] 3

(b) What are the considerations that must kept in mind while forming groups in three-variable Karnaugh map? Note them. 2

OR

6. *(a)* Simplify the function of the following : 2

$$Y \quad A\,BC \quad A\,BC \quad A\,B\,C$$

(b) Simplify and show the Karnaugh map of the following : 2

$$Y \quad A\,BC\,D \quad ABC\,D \quad A\,BCD \quad ABCD \quad A\,B\,C\,D$$

(c) Define 'literal' in Karnaugh map. 1

7. *(a)* What is a map rolling? Illustrate your answer by depicting in K-map. 3

(b) What is a non-prime implicant? Explain with the help of diagram. 2

OR

8. *(a)* Draw Karnaugh map and simplify the Boolean function for the following : 3

$Y(A, B, C, D)$ $M(1, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15)$

(b) What is meant by 'don't care' condition? Explain. 2

(For Arts/Commerce stream candidates only)

5. *(a)* Briefly explain different types of Internet connectivity available. 3

(b) Explain the meaning and use of URL. 2

OR

6. *(a)* What are the main applications of Internet? 3

(b) Write a short note on class A network. 2

7. *(a)* What is domain name? What is the role of DNS on the Internet? 1+2=3

(b) What is the attachment feature while sending e-mail? Explain. 2

OR

8. *(a)* What is hyperlink? 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)

UNIT—II

9. *(a)* Describe the use of comma operator with a suitable example. 2

(b) What is the purpose of the scanf( ) function? Explain with an example. 2

OR

10. *(a)* Explain, with example, the concept of 'associativity of operators'. 2

(b) What is 'type casting' in C language? Explain. 2

11. *(a)* Write the printf( ) conversion characters and flags in C language. 3

(b) What are the logical operators in C? Explain. 1

OR

12. *(a)* What is the function of the ternary operator? Illustrate with suitable example. 2

(b) Explain 'nesting' of 'for' loop with example. 2

UNIT—III

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

(b) Write a short note on array address. 2

OR

14. *(a)* What is an automatic variable? Explain in detail with its syntax. 3

(b) What is external variable in C? Explain. 2

15. Distinguish between the following :

(a) Global variable and Local variable 2

(b) Actual variable and Formal variable 2

(c) & operator and * operator 1

OR

16. *(a)* What is pointer? Explain. 1½

(b) How is a pointer initialized? Explain. 2½

(c) Distinguish between (*m) [5] and *m[5]. 1

UNIT—IV

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

(b) What is a macro? Explain with example. 2

OR

18. Explain the general format of fseek( ) function. What is the difference between ftell( ) and fseek( )? 3½

19. *(a)* What are the main advantage and disadvantage of unions? 2

(b) What is a binary file? 1½

OR

20. Write a program to copy the contents of one text file to another text file. 3½

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