Total No. of Printed Pages—16

HS/XII/A.Sc.Com/CAP/15

2 0 1 5

COMPUTER APPLICATION

(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) 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 : ½×20=10

(For Science stream candidates only)

(a) A NOR gate has two or more input signals. All inputs must be —— to get a high output.

(b) One way to simplify the sum-of-products equation is to use Boolean algebra. Another way is the ——.

(c) An XOR gate recognizes only words with an —— number of 1's.

(d) A NAND gate is equivalent to an AND gate followed by an ——.

(e) The number of rows in the truth table for a function of 3 literals will be ——.

(For Arts/Commerce stream candidates only)

(a) —— is a kind of code segment, which replicates by attaching copies of itself to existing executable files.

(b) —— is a protocol for communication between two computers using a serial interface typically a PC connected by phone line to a server.

(c) —— refers to the systematic hierarchical organization of domain name.

(d) The most popular search engine is ——.

(e) Computer systems are vulnerable to many kinds of —— that can inflict various types of damage resulting in significant loses.

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

(f) The —— statement, when executed in a repetition statement, causes the next iteration of the loop to be performed immediately.

(g) —— conversion character is used as signed floating-point value in E notation.

(h) In C language, —— statement is used to terminate any type of loop.

(i) The program that translates high-level language programs into machine language is called ——.

(j) Repetition of a set of instructions for a specific number of times is called a —— repetition.

(k) A(n) —— is a graphical representation of an algorithm.

(l) The —— statement is executed in a switch when none of the conditions is satisfied.

(m) A sentinel-controlled loop is known as ——.

(n) One must avoid the use of —— statement anywhere in the program.

(o) The variable used as a subscript in an array is popularly known as —— variable.

(p) An array can be initialized either at compile time or at ——.

(q) A function that calls itself is known as a —— function.

(r) The variable declares in a structure definition is called its ——.

(s) The keyword —— is used to define a new data type.

(t) Function —— closes a file in data files in C language.

List of words/phrases :

typedef	Default	Backup	Sizeof	Standard
fend( )	Continue	unconditional	odd	Subscripted constant
Goto	recursive	Factorial	runtime	fclose( )
High	Boolean map	End	low	Internet
Virus	subscripted	PPP	Definite repetition	Crackers
member	Break	%e	variable	%c
DNS	Worms	Google	8	threats
compiler	conditional	Skip	Exit	Interpreter
SLIP	3	Process time	indefinite repetition	DNS
algorithm	Karnaugh map	inverter	Even	flowchart

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

(For Science stream candidates only)

(a) A bus is a group of wires carrying digital signals.

(b) A controlled inverter is a logic circuit that transmits a binary word or its 2's complement.

(c) A group whose 1's are all overlapped by other groups is called a redundant group.

(For Arts/Commerce stream candidates only)

(a) Internet relay chat is an application layer protocol that facilitates transfer of messages in the form of text.

(b) Computer on the Internet necessarily does not uses the same protocol.

(c) Domain names are easy to remember than IP address.

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

(d) Floating-point constants, by default, denote float type values.

(e) Declaration can appear anywhere in a program.

(f) 'Associativity' is used to decide which of several different expressions is evaluated first.

(g) An expression statement is terminated with a period.

(h) An expression containing the || operator is true if either or both of its operands are true.

(i) The 'default' case is required in the 'switch' selection statement.

(j) The 'getchar( )' cannot be used to read a line of text from the keyboard.

(k) The operator "==" is an assignment-cum-increment operator in C.

(l) A two-dimensional array element like $x[i, j]$ instead of $x[i][j]$ is a compile time error.

(m) The header file <ctype.h> is required when using general utility functions.

(n) A 'return' statement can occur anywhere within the body of a function.

(o) When we use 'typedef' definition, the 'type-name' comes before the closing brace but after the semicolon.

(p) Passing structures to functions by pointers is more efficient than passing by value.

(q) Only an address of a variable can be stored in a pointer variable.

(r) We use 'sizeof' operator to determine the size of a structure.

(s) In data file, 'rewind( )' will set the position to the beginning of the file.

(t) EOF is integer type with a value 1. Therefore, we must use an integer variable to test EOF.

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

(For Science stream candidates only)

(a) In Boolean theorem, $X \quad X\,Y$ will be equal to

(i) $X \quad XY$

(ii) $X \quad Y$

(iii) $X \quad XY$

(iv) None of the above

(b) The dual of $X \quad XY \quad X$ will be

(i) $X.X \quad Y$

(ii) $X.Y \quad X$

(iii) $X.(X \quad Y) \quad X$

(iv) $X.X.X \quad X$

(For Arts/Commerce stream candidates only)

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

(i) hyperlink

(ii) an Apple Macintosh

(iii) a server

(iv) a token ring card

(b) If you want a shareware program that is available on a computer on the internet, you could transfer the program to your computer by using

(i) UseNet

(ii) FTP

(iii) Telnet

(iv) the U. S. Mail

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

(c) A variable of the data type float occupies —— bits in memory.

(i) 8

(ii) 32

(iii) 4

(iv) 16

(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 expression !(x<y); will be equivalent to

(i) x>=y

(ii) x<=y

(iii) x!=y

(iv) x<y

(f) Increment and decrement operators are unary operators and they require

(i) expression as their operands

(ii) array as their operands

(iii) variable as their operands

(iv) None of the above

(g) Which of the following operators can be used to link the related expression together?

(i) Member operator

(ii) Comma operator

(iii) Sizeof operator

(iv) Logical operator

(h) Which of the following format codes is used to read a hexadecimal inter?

(i) %o

(ii) %i

(iii) %u

(iv) %x

(i) Which of the following copies only the left-most *n* characters of the source string to the target string variable?

(i) strcpy( )

(ii) strcat( )

(iii) strncpy( )

(iv) None of the above

(j) The —— directive causes an implementation-oriented action.

(i) #elif

(ii) #error

(iii) pragma

(iv) None of the above

SECTION—II

(*Marks* : 10)

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

(For Science stream candidates only)

(a) Minterm and maxterm

(b) Canonical form

(For Arts/Commerce stream candidates only)

(a) URL

(b) Domain name

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

Any *three* :

(c) Conditional operator in C language

(d) Sizeof operator in C language

(e) Entry-controlled loop

(f) What are the common uses of a header file?

(g) What is the purpose of fopen( )?

(PART : B—DESCRIPTIVE)

(*Marks* : 35)

UNIT—I

(For Science stream candidates only)

5. *(a)* What are the postulates of Boolean algebra? 3

(b) Find the complement of the following expression : 1

$$(XY \quad YZ \quad XY \; Z)\,XYZ$$

(c) What is an inverter in logic gate? 1

OR

6. *(a)* Simplify the following logical expression : 2+2=4

(i) $XYZ \quad XYZW \quad XZ$

(ii) $XY \quad XZ \quad YZ \quad YZW$

(b) What is truth table? 1

7. *(a)* What is a Karnaugh map? Explain the 'three-variable' Karnaugh map. 1+2=3

(b) What is a quad? Explain. 2

OR

8. *(a)* What is an 'alternative way of representing the sum of products' expression? Explain. 2½

(b) Write a short note on 'don't care condition'. 2½

(For Arts/Commerce stream candidates only)

5. *(a)* What is IP address? Explain the different types of IP address classes. 4

(b) Define Web browsers. 1

OR

6. *(a)* Write a note on WWW. 4

(b) What is Telnet? Explain. 1

7. *(a)* Write a short note on 'block-oriented elements'. 2½

(b) What is hypertext link in MS FrontPage? 2½

OR

8. *(a)* List the steps to add picture to a Web Page created using FrontPage. 2

(b) What is header element? Explain. 1½

(c) Write a note on 'visual markup'. 1½

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

UNIT—II

9. *(a)* Explain the four basic data types. 3

(b) What is initialization? Why is it important? 1

OR

10. Distinguish between the following pairs :

(a) getchar and scanf functions 2

(b) *(i)* %s and %c specifications for reading 1

(ii) %g and %f specifications for printing 1

11. *(a)* Explain the conditional operator with necessary syntaxes required. 2

(b) Explain the 'SWITCH' statement. 2

OR

12. *(a)* What are unary operators? 1

(b) Write a program to convert a given temperature in Fahrenheit to Celsius. 3

UNIT—III

13. *(a)* What is subscripted variable? Explain. 2

(b) Write a program that outputs a list of ASCII values of the word 'COMPUTER'. 3

OR

14. *(a)* What is the relationship between the address of a variable 'v' and corresponding pointer variable 'pv'? 1½

(b) Summarize the rules for writing a one-dimensional array definition. 3½

15. *(a)* Explain the 'passing arrays to functions' with example. 3

(b) What is a function? What is a function call? 2

OR

16. *(a)* Define a pointer 'nptr' that points to an object of type float. 2½

(b) Explain recursion with example. 2½

UNIT—IV

17. *(a)* What is a structure member? 1

(b) Mention the differences between a structure and an array. 2½

OR

18. *(a)* What is a tag in structure? ½

(b) Is a tag be included in a structure type definition *or* is a tag be included in a structure variable declaration? Explain. 3

19. *(a)* Mention the uses and limitations of the functions getc and putc in data files. 2

(b) What is the significance of EOF? 1½

OR

20. *(a)* What is the syntax of opening a data file? ½

(b) Summarize the three major file modes that can be specified by the fopen( ) function. 3

★★★