Total No. of Printed Pages—12

HS/XII/A.Sc.Com/CAP/OC/20

2020

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) When each term of a logic expression contains all _____, it is said to be in canonical form.

(b) A _____ is an implicant which cannot be wholly enclosed by a larger implicant.

(c) The logical OR of literals is called the _____ term.

(d) The expression $a + a \cdot b$ is equal to _____.

(For Arts / Commerce stream candidates only)

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

(b) _____ provides a grid for inputting tasks we need to complete in our Web.

(c) _____ translates domain names to IP addresses.

(d) A / An _____ address is a numeric identifier assigned to a computer on a network.

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

(e) A function that does not return anything has return type _____.

(f) The _____ operator is unary operator to find the address of a variable.

(g) The function _____ indicates an end-of-file condition for any stream oriented data file.

(h) _____ function allows us to enter data from the keyboard.

(i) ? : is a _____ expression.

(j) The expression 3*5%3 evaluates to _____.

List of words / phrases :

product	variables	IP	conditional
&	http	$a+b$	Boolean
canonical	*	EOF	scanf()
folder view	non-prime implicant	prime implicant	ISP
FTP	a	task view	6
DNS	minterm	sum	void
int	feof()	printf()	0
	report view	Class A	

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

(For Science stream candidates only)

(a) In a Karnaugh map, quad reduction makes a pair of adjacent cells that contains the value 1.

(b) Product of sum is the sum (logical OR) of product terms.

(For Arts / Commerce stream candidates only)

(a) Excite is one of the popular search engines.

(b) Using News Group, users anywhere on the Internet can log into any other machine on which they have an account.

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

(c) The escape sequence '\v' stands for vertical tab.

(d) Every C program must have a main() function.

(e) If *x* is an integer variable and *px* is a pointer, the statement

$$px = *x;$$

assigns the address of *x* to *px*.

(f) FILE is a structure which has been defined in the stdio.h header file.

(g) Each case label in a switch statement must end with semicolon.

(h) The operator $i=+j$ is shorthand for $i = i+j$.

(i) "12,245" is a legal string constant.

(j) In case of call by reference, the parameter will be always of pointer type.

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

(For Science stream candidates only)

(a) The expression $ab + ab'$ is equal to

(i) $a + b$

(ii) a

(iii) 0

(iv) None of the above

(b) When POS of logic expression is in canonical form, each sum term is called

(i) minterm

(ii) maxterm

(iii) Both *(i)* and *(ii)*

(iv) None of the above

(For Arts / Commerce stream candidates only)

(a) The DNS system is a/an

(i) database

(ii) protocol

(iii) connectivity

(iv) Internet

(b) ISP stands for

(i) Internet Social Provider

(ii) Information Service Protocol

(iii) Internet Service Provider

(iv) Information Service Provider

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

(c)
```
Void main() {
    int k, i = 1;
    k = 2* ++i;
    printf("%d", k);
    getch();
    }
```

What will be the output of the code?

(i) 2

(ii) 3

(iii) 6

(iv) 4

(d)
```
Void main()
{
    enum colors {pink, red, blue, green} c;
    c = blue;
    printf("%d", c);
    getch();
}
```

What is the output of the above code?

(i) 2

(ii) Blue

(iii) 3

(iv) Both *(i)* and *(ii)*

(e)
```
int i;
void main()
{
    increment();
    getch();
}
void increment()
{
    printf("%d", i);
}
```

What is the storage class of variable i ?

(i) Auto

(ii) Register

(iii) Static

(iv) Extern

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) State De Morgan's theorem.

(b) Verify the following using truth table :

$$a+(b\cdot c)=(a+b)(a+c)$$

(For Arts / Commerce stream candidates only)

(a) Write a note on WWW.

(b) Define Internet and its applications.

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

(c) Name the four basic types of constant in C.

(d) Differentiate between array of pointers and pointer to an array.

(e) How is structure different from an array? Explain.

(f) How are library function different from user define function?

(g) Write a program using macro to find the area of a circle.

(PART : B—DESCRIPTIVE)

(*Marks* : 35)

UNIT—I

(For Science stream candidates only)

5. *(a)* Simplify the following logical expressions : 1+1=2

(i) $XY + X'Z + YZ$

(ii) $XY'Z' + XY'Z'W + XZ'$

(b) Draw the K-map for the following Boolean function and simplify it : 2

$$F(A, B, C, D) = \Sigma(0,1,5,7,9,10,11,12,13,14,15)$$

(c) Draw a 3-variable K-map in two different forms. 1

OR

6. *(a)* Point out the difference between Boolean algebra and real number algebra. 2

(b) Convert the following POS expression in canonical form: 1

$$(A + B + C')(A + D)$$

(c) Simplify the following expressions by K-map method: 1+1=2

(i) $Y = A'B' + AB' + A'B$

(ii) $Y = (A + B' + C' + D')(A' + B' + C' + D')$
$(A + B' + C' + D)$

7. *(a)* Define Karnaugh map. Draw a single variable K-map. 2

(b) Draw a logic gate for the following Boolean expression: 1

$$Y = AB'C + ABC' + ABC$$

(c) Write the SOP of the function F(A,B,C). The truth table for F is as follows : 2

A	B	C	F
0	0	0	1
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	0
1	1	0	1
1	1	1	0

OR

8. *(a)* Explain AND and OR operations with suitable examples of logic statements. 2

(b) Simplify the logical expression

$$(X + Y)(X' + Z)(Y + Z)$$ 2

(c) Explain don't care condition. 1

(For Arts / Commerce stream candidates only)

5. *(a)* Write a note on classes of network address. 3

(b) List down the steps to make an image into a hyperlink. 2

OR

6. *(a)* What is a Web server? How is it different from Web pages? 2

(b) Explain the three different types of network connectivity. 3

7. *(a)* What is URL? List out the three parts of URL. 2

(b) Write down the steps to add image to the Web page. 3

OR

8. Explain the header fields of an e-mail message. 5

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

UNIT—II

9. *(a)* What is a variable? How are variables appearing within a C program declared? Explain with example. 1+1=2

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

OR

10. *(a)* How does scanf() function differ from gets() function while accepting string from the keyboard? 1

(b) What is the difference between 'i++' and '++i'? 1

(c) Compare the use of if-else statement with the use of ? : operator with example. 2

11. *(a)* What are relational operator and logical operator? How are they used in if statement? 2

(b) Explain the difference in the syntaxes of 'for loop' and 'while loop'. 2

OR

12. *(a)* What is the use of default keyword inside the switch statement? Explain with example. 2

(b) What is the use of format specifier in printf() and scanf() functions? 2

UNIT—III

13. *(a)* Write a note on any of the two storage classes in C. 2

(b) Write a program using function name as int sum (int x, int y) to find the sum of two numbers. 2

(c) Define pointer. 1

OR

14. *(a)* What are formal and actual arguments? What is the relationship between them? 3

(b) Write a program using function as void reverse() to reverse a number. 2

15. *(a)* What is a function? Explain call by value and call by reference. 3

(b) What is the difference in the function prototype void display() and int display()? 2

OR

16. *(a)* Write a program using function to swap two numbers. 2

(b) What is recursion? 1

(c) How does an array variable differ from an ordinary variable? How can array elements be accessed? 2

UNIT—IV

17. *(a)* What is the difference between #include <filename.h> and #include "filename.h"? 2

(b) Discuss fgets (s, 30, fp). $1\frac{1}{2}$

OR

18. *(a)* Write a program using structure to store the details of students name, roll_no and age. 2

(b) Describe the work of preprocessor in C. $1\frac{1}{2}$

19. *(a)* Point out the similarities and difference on the mode "w" and "a". 2

(b) What is the difference between fprintf() and fwrite() functions? $1\frac{1}{2}$

OR

20. *(a)* Summarize the preprocessor directries #include and #define. 2

(b) What are the two operators used to access the elements of a structure? $1\frac{1}{2}$

★ ★ ★