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

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

(2)

- (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 _____.

(3)

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.

(4)

(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

(5)

(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();  
}
```

(6)

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);
}

(7)

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.

(8)

(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

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

(9)

- (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

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

- (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

(10)

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). $1\frac{1}{2}$

(12)

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 directives #include and #define. 2
(b) What are the two operators used to access the elements of a structure? $1\frac{1}{2}$

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