

PAPER :PHYSICS CC505

CODE:21480

DIGITAL ELECTRONICS AND PROGRAMMING IN C

Total Marks:70

- Q-1 A Reduce the following Boolean expression 14
- (1) $y = \bar{A} + \overline{AB} \cdot C + \overline{ABC}$
 (2) $y = \bar{A} + AB + \overline{AB} C + \overline{ABC} D$
 (3) $y = AB + \bar{A} + (\overline{AB + \bar{A}})C + \overline{AB + \bar{A} + (\overline{AB + \bar{A}})C} D$
 (4) $y = A + \overline{AB} + \overline{ABC}$
- OR
- Que.-1 A (i) Explain NAND gate with transistor based circuit. 07
- Que.-1 A(ii) Convert the following Boolean expression (without reducing) in NOR logic 07
- i. $y = A\bar{B} + \overline{A\bar{B}} + \bar{B} + C$
 ii. $y = \overline{ABC} + \bar{A} \overline{BC}$
- Que.-1 B Any four out of six. 04
- i. State characteristic of OR gate.
 ii. State De Morgan's theorem.
 iii. Draw a logic circuit in which NAND gate act as a NOR gate.
 iv. "if one of my input is zero then output is always zero"-state the gate.
 v. How many NAND gates are required to use it as AND gate.
 vi. What is negative logic ?
- Que.-2 A Write Boolean expression, reduce it using mapping and implement in NOR logic : $F = \sum m(0,2,4,6,7,11,13,14,15)$ using POS and SOP method. 14
- OR
- Que.-2 A(i) Find the minterms of following and then find designated value of each. 07
- also show it in mapping.
 i. $y = ABC\bar{C} + A\bar{B}D + \bar{A}BC + BD$
 ii. $y = AB\bar{D} + AD + ABC\bar{C} + BC$
- Que.-2 A(ii) Reduce following expression using mapping 07
- i. $y = \overline{A\bar{B}\bar{C}D} + \overline{A\bar{B}\bar{C}D} + \overline{A\bar{B}\bar{C}D} + \overline{ABC\bar{D}}$
 ii. $y = \overline{A\bar{B}\bar{C}\bar{D}} + \overline{ABC\bar{D}} + \overline{ABC\bar{D}}$
- Que.-2 B Any four out of six. 04
- i. What are minterm of $AB+BC$?
 ii. Designated value of $\overline{ABC\bar{D}}$ _____ and of $\overline{A\bar{B}CD}$ _____
 iii. Term corresponding to 1110 _____ and 0101 _____
 iv. Show in mapping $m(0,1,5,7)$.
 v. Give truth table of NOR gate.
 vi. What are minterms of $\overline{A\bar{C}} + AC$?
- Que.-3 A Find the value of 'a' in each of following statement 14
- i. $a = b - ((i + j)/(k + i)) * C$
 if $i = 5, j = 5, k = 7, b = 5.5, c = 2.5$.
 ii. if $j = 3, k = 6$.
 $a = k * \frac{2}{3} + \frac{k}{4} + 6 - j * j * j / 8$
 iii. if $a = 1.5, b = 3.0$.
 $a = \frac{b}{2.0} + b * \frac{4}{a} - 8.0$

OR

Que.-3A(i) Find the final value of K following expressions 07

$int\ k = 5, i = 3, j = 252, m;$
 $m = i * 1000 + j * 10$
 $k = m/1000 + k * i$
 $k = m\%k + +$

Que.-3A(ii) Write a program in C language for following expression 07

$$\frac{ab}{c + \frac{dk}{m} + k} + a$$

All the variable a,b,c,d,k,m is the float type.

Que.-3 B Any three out of five. 03

i. Which is not valid in floating point constant.

(a) 5.8E8 (b) 5.8e8 (c) .5 (d) 152E8

ii. Which one is valid variable in 'C-programming'.

(a) 2nd (b) Min1 (c) Roll no (d) No.

iii. Write a following expression in correct way for 'C program' : $\frac{1}{2}mv^2 + \frac{mgh}{4d}$

iv. If x=5.0 and y=2.5 then which expression is not valid in programming.

(a) x*y (b) x/y (c) x+y (d) x%y

v. If x*=y then it say

(a) x=x*y (b) y*y=y (c) y=x*y (d) none of above

Que.-4 A i Write a program for following patterns in 'C' language. 14

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1
1 2
1 2 3
1 2 3 4
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ii. Write a program in C language two find area and perimeter of circle of radius R.

OR

Que.-4 A (i) Write a program in 'C' language for print a multiplication table of 1 to 10 using loop. 07

Que.-4 A(ii) Write program in 'c' language for largest numbers from a set of number using if..... else... statement. 07

Que-4 B Any three out of five. 03

i. What is the difference between x++ and ++x.

ii. Find the error from follwing 'C-programming' statement.
for(i=1;i<=5;i++);

iii. Draw flow chart of while loop.

iv. Which one of the following is not a relation operators.

(a) == (b) ++ (c) < (d) <=

v. In the following statements, which is meaning that "replace the contets of A by the contents of B".

(a) A=B (b) A==B (c) A+=B (d) B+=A