GYALPOZHING COLLEGE

OF

INFORMATION TECHNOLOGY

Royal University of Bhutan

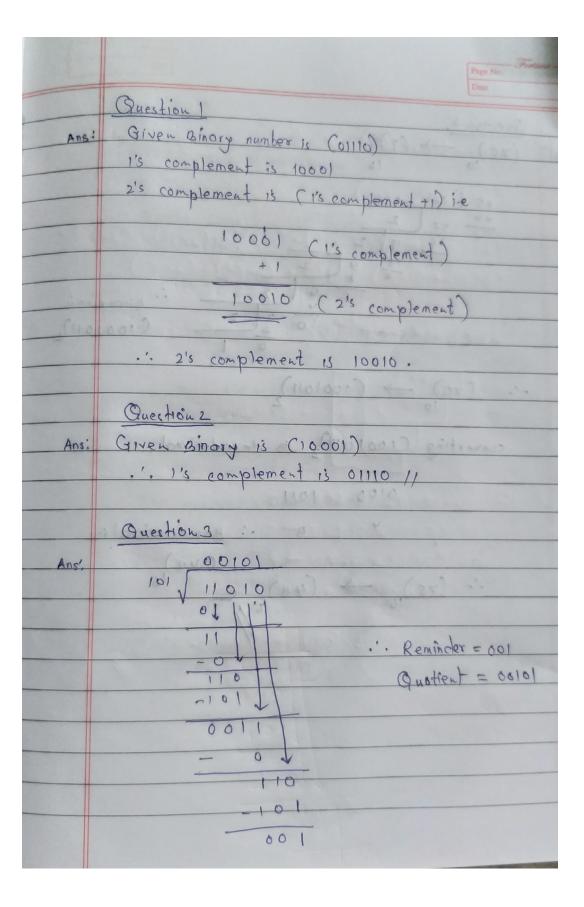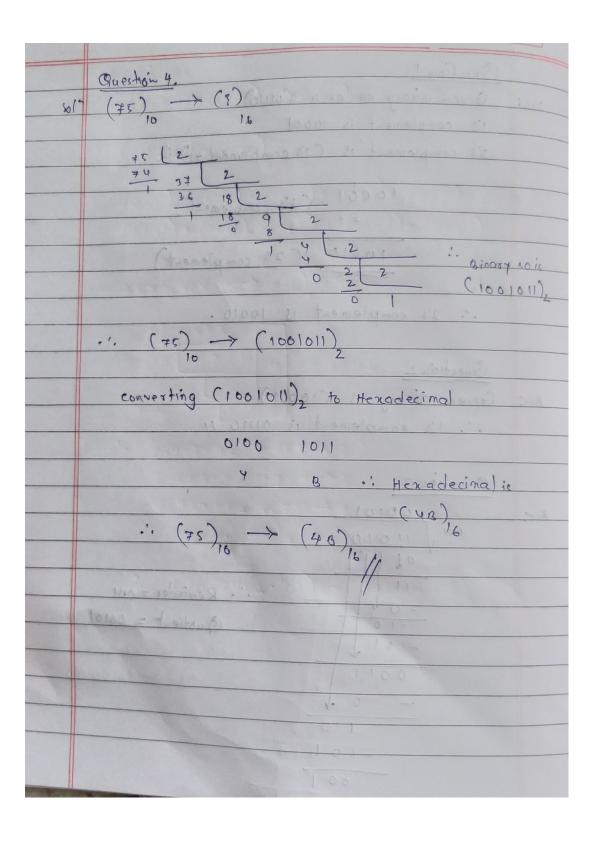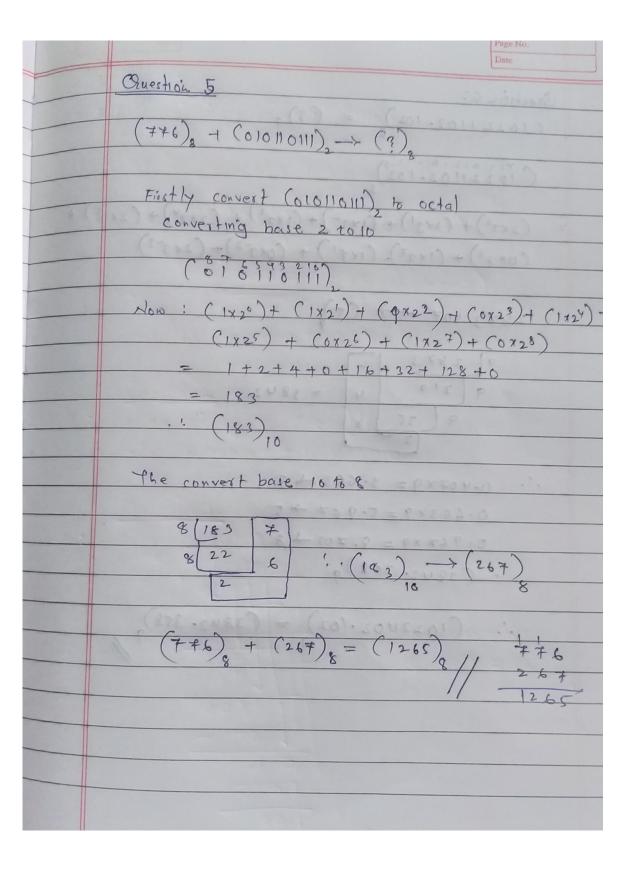**GYALPOZHING**
COLLEGE OF INFORMATION TECHNOLOGY

C programming
ITP203

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Group A

Question 1

Ans: Given Binary number is (01110)

1's complement is 10001

2's complement is (1's complement +1) i.e

$$10001 \quad (1's\ complement)$$
$$+\ 1$$
$$\overline{10010} \quad (2's\ complement)$$

∴ 2's complement is 10010.

Question 2

Ans: Given Binary is (10001)

∴ 1's complement is 01110 //

Question 3

Ans:

```
          00101
    101 √ 11010
          01↓
          11
         - 0 ↓
         110
        -101 ↓
         0011
         -  0 ↓
          110
         -101
          001
```

∴ Reminder = 001

Quotient = 00101

Question 4.

sol^n $(75)_{10} \longrightarrow (?)_{16}$

$$
\begin{array}{r|l}
75 & 2 \\
74 \\ \hline
1
\end{array}
\quad
\begin{array}{r|l}
37 & 2 \\
36 \\ \hline
1
\end{array}
\quad
\begin{array}{r|l}
18 & 2 \\
18 \\ \hline
0
\end{array}
\quad
\begin{array}{r|l}
9 & 2 \\
8 \\ \hline
1
\end{array}
\quad
\begin{array}{r|l}
4 & 2 \\
4 \\ \hline
0
\end{array}
\quad
\begin{array}{r|l}
2 & 2 \\
2 \\ \hline
0
\end{array}
\quad
\begin{array}{r}
1
\end{array}
$$

∴ binary no is

$(1001011)_2$

∴ $(75)_{10} \longrightarrow (1001011)_2$

converting $(1001011)_2$ to Hexadecimal

$$0100 \qquad 1011$$

$$4 \qquad\quad B \qquad ∴ \text{Hexadecimal is}$$

$$(4B)_{16}$$

∴ $(75)_{16} \longrightarrow (4B)_{16} \,//$

Question 5

$$(776)_8 + (010110111)_2 \rightarrow (?)_8$$

Firstly convert $(010110111)_2$ to octal
converting base 2 to 10

$$\left(\overset{8}{0}\overset{7}{1}\overset{6}{0}\overset{5}{1}\overset{4}{1}\overset{3}{0}\overset{2}{1}\overset{1}{1}\overset{0}{1}\right)_2$$

Now : $(1 \times 2^0) + (1 \times 2^1) + (0 \times 2^2) + (0 \times 2^3) + (1 \times 2^4)$
$(1 \times 2^5) + (0 \times 2^6) + (1 \times 2^7) + (0 \times 2^8)$

$= 1 + 2 + 4 + 0 + 16 + 32 + 128 + 0$

$= 183$

$\therefore (183)_{10}$

The convert base 10 to 8

$$
\begin{array}{r|l|l}
8 & 183 & 7 \\
8 & 22 & 6 \\
& 2 &
\end{array}
$$

$\therefore (183)_{10} \longrightarrow (267)_8$

$$(776)_8 + (267)_8 = (1265)_8 \quad // \quad \begin{array}{r} \overset{1}{7}\overset{1}{7}6 \\ 267 \\ \hline 1265 \end{array}$$

Question 7

```c
#include <stdio.h>
int main() {
int x1 = 0, x2 = 1, nextTerm = 0, n;
printf("Enter a positive number: ");
scanf("%d", &n);
printf("Fibonacci Series: %d, %d, ", x1, x2);
nextTerm = x1 + x2;
while (nextTerm <= n) {
printf("%d, ", nextTerm);
x1 = x2;
x2 = nextTerm;
nextTerm = x1 + x2;
}
return 0;
}
```

Output

Question8

```c
#include <stdio.h>
int main() {
int num, Number, remainder, result = 0;;
printf("Enter a three-digit number: ");
scanf("%d", &num);
Number = num;
while (Number != 0) {
// remainder contains the last digit
remainder = Number % 10;
result += remainder * remainder * remainder;
// removing last digit from the orignal number
Number = Number/ 10;
}
if (result == num)
printf("%d is an Armstrong number.", num);
else
printf("%d is not an Armstrong number.", num);
printf("\n");
return 0;
}
```

Output