

Class : VIITopic : June 2026Month : The Language of the Universe
Notes of LessonI. Answer the following questions:

1. Differentiate between the Hindu-Arabic and Roman numeral systems.

Ans	Hindu arabic system	Roman system
	The Value of each digit depends on its position in the number.	The Value of each symbol is added or subtracted to find the total.
	It can show very large numbers and is easy for doing maths.	It works for small numbers but it is difficult for large ones.
	Example: 245	Example; I, II, III

2. How can we Convert binary numbers directly into Octal numbers? Give one example.

Ans To Convert a binary number directly into an Octal number, follow these steps:

Converting a binary number $(101101)_2$
into Octal Number

Step 1: Group into 3 bits from right
101 101

Step 2: Convert each group using table

$$101 = 5$$

$$101 \quad 101$$

$$5 \quad 5$$

Step 3: Write the Octal numbers

$$(55)_8$$

Table.

	Binary	Octal
So, the Octal equivalent	000	0
of $(101101)_2$ is $(55)_8$	001	1
	010	2
	011	3
	100	4
	101	5
	110	6
	111	7

3. How can decimal numbers be converted to binary, Octal or hexadecimal systems?

Ans. (1) Decimal number to Binary number Conversion:

Steps to be followed:

1. Divide the number by 2 and note down the quotient and the remainder (which will be either 0 or 1).
2. Take the quotient obtained and divide it by 2 again. Now down the quotient, and write the remainder just to the left of the previous remainder.
3. Repeat the first two steps until you reach a quotient of 0, writing the remainders on the left of the previous remainders.
4. The set of remainders will be the binary representation of the decimal number.

(2) Decimal to Octal number Conversion:

1. Divide the number by 8 and note down the quotient and the remainder.
2. Take the quotient obtained and divide it by 8 again. Now note down the quotient and write the remainder just left of the previous remainder.
3. Repeat the first two steps until you

reach a quotient of 0, writing the remainders on the left of the previous remainder.

4. The set of remainders will be the Octal representation of the decimal number.

(3) Decimal numbers to hexadecimal number Conversion:

Steps to be followed:

1. Divide the number by 16 and note down the quotient and the remainder.

2. Take the quotient obtained and divide it by 16 again. Note down the quotient and write the remainder just to the left of the previous remainder.

3. Repeat the first two steps until you reach a quotient of 0. Writing the remainders on the left of the previous remainders.

4. The set of remainders will be the Hexadecimal representation of the decimal number.

Competency Based Questions:

1. A gamer sends a message to a friend :
01001000 01001001. He says, "This is how robot says Hello!". What word is hidden in the message?

Convert each binary code into letters
using ASCII Code - 01001000 01001001

01001000 → H 01001001 → I

hidden word is "HI"