TYPE-A:DATA REPRESENTATION:CH-2

1) What are some number systems used by computers ?

sol:

Number Systems Used by Computers

- Binary Number System (Base 2)
- Decimal Number System (Base 10)
- Octal Number System (Base 8)
- Hexadecimal Number System (Base 16)

2) What is the use of Hexadecimal number system on computers ?

sol:

The hexadecimal number system is used in computers to represent large binary numbers in a short and simple form. It is used in memory addresses, programming, and error codes. It helps programmers to read and understand binary data easily.

3) What does radix or base signify ?

sol:

Radix or base signifies the total number of different digits used in a number system.

4) What is the use of encoding schemes ?

sol:

Encoding schemes are used to convert characters, numbers, and symbols into binary form so that computers can store, process, and transmit data.

5) Discuss UTF-8 encoding scheme.

sol:

UTF-8 is a character encoding scheme used to represent text in computers. It can represent letters, numbers, symbols, and characters from many languages. UTF-8 uses one to four bytes to store each character. English letters and common symbols use one byte, while special and international characters use more bytes. UTF-8 is widely used on the internet and in computer systems because it saves space and supports many languages.

6) How is UTF-8 encoding scheme different from UTF-32 encoding scheme ?

sol:

UTF-8 uses one to four bytes to store each character, so it saves memory space. Common characters use fewer bytes, and special characters use more bytes. UTF-8 is widely used on the internet and in computer systems.

UTF-32 uses four bytes to store every character, whether it is simple or complex. It is easy to

process because each character has the same size, but it uses more memory space.
So, UTF-8 is space-saving and popular, while UTF-32 is simple but uses more memory.

7) What is the most significant bit and the least significant bit in a binary code ?

sol:

In a binary code, the most significant bit (MSB) is the leftmost bit. It has the highest value and affects the number the most.

The least significant bit (LSB) is the rightmost bit. It has the lowest value and affects the number the least.

8) What are ASCII and extended ASCII encoding schemes ?

sol:

ASCII (American Standard Code for Information Interchange) is an encoding scheme that uses 7 bits to represent characters. It can represent 128 characters, including letters, numbers, symbols, and control characters.

Extended ASCII is an improved form of ASCII that uses 8 bits to represent characters. It can represent 256 characters, including extra symbols, special characters, and letters of different languages.

9) What is the utility of ISCII encoding scheme ?

sol:

ISCII (Indian Script Code for Information Interchange) is an encoding scheme used to represent Indian language characters in computers. It is used to write and process languages like Tamil, Hindi, Telugu, Malayalam, and other Indian languages in digital form. It helps in storing, displaying, and exchanging Indian language text on computers.

10) What is Unicode ? What is its significance ?

sol:

Unicode is a universal encoding system used to represent characters of all languages in the world. It gives a unique number to every character, symbol, and sign.

The significance of Unicode is that it helps computers to store, display, and share text from different languages correctly. It avoids confusion between different encoding systems and allows people to use many languages on the same computer and on the internet.

11) What all encoding schemes does Unicode use to represent characters ?

sol:

Unicode uses the following encoding schemes to represent characters:

- UTF-8

- UTF-16
- UTF-32

12) What are ASCII and ISCII ? Why are these used ?

sol:

ASCII (American Standard Code for Information Interchange) is an encoding scheme used to represent English letters, numbers, and symbols in computers.

ISCII (Indian Script Code for Information Interchange) is an encoding scheme used to represent Indian language characters in computers.

These are used to convert characters into binary form so that computers can store, process, and display text correctly.

13) What are UTF-8 and UTF-32 encoding schemes. Which one is more popular encoding scheme ?

sol:

UTF-8 is a Unicode encoding scheme that uses one to four bytes to represent each character. It saves memory space and is widely used on the internet and in computer systems.

UTF-32 is a Unicode encoding scheme that uses four bytes to represent every character. It is simple to use because all characters have the same size, but it uses more memory.

UTF-8 is the more popular encoding scheme because it saves space and works well on most computers and websites.

14) What do you understand by code point ?

sol:

A code point is a unique number given to each character in Unicode. It is used to identify letters, numbers, symbols, and characters of different languages in computers.

15) What is the difference between fixed length and variable length encoding schemes ?

sol:

In fixed length encoding schemes, every character is stored using the same number of bits. This makes processing simple but uses more memory.

In variable length encoding schemes, different characters are stored using different numbers of bits. Common characters use fewer bits and rare characters use more bits. This saves memory space.