

Difference Between Encoder and Decoder

Apart from the use of the encoder being totally opposite to that of the decoder, there are other differences between the two. The difference between encoder and decoder is important for the Notes are over the years various questions are seen based on this topic.

Key Differences Between Encoder and Decoder

Encoder	Decoder
Used to convert raw signals to coded signals.	Used to convert coded signals to the original or raw form of signals.
Input- 2^n	Input - n
Output - n	Output - 2^n
The operation of the encoder is a simple process.	The operation of the decoder is a complex process.
Produces coded outputs.	Produces active/raw/original outputs.
Uses OR gate.	Uses AND gate along with NOT gate.
Examples: video encoders, Emails, etc.	Examples: Memory storage devices, microprocessors, etc.

What is an Encoder?

The encoder is a combination logic circuit used to convert the input signal into binary code. The encoder is a component that transforms an analog signal into a coded signal and are essential as per the GATE CSE syllabus.

If there are ' 2^n ' inputs in the encoder, then it will generate an 'n' number of outputs, which will be a coded signal. For example, if there are 4 inputs in an encoder, it will produce 2 outputs. Similarly, 3 outputs for 8 inputs, and so on

What is a Decoder?

The decoder is also a type of combinational logic circuit. The functioning of a decoder is opposite to that of the encoder. It is used to convert the coded inputs into original

signals. The decoder is thus known as the component which is used to transform the coded signal back to the original signal.

If there are 'n' number of input signals in a decoder, it will produce the ' 2^n ' number of outputs. candidates can expect 1-2 questions in alternate years from this topic in the GATE question paper. Internal logic circuits convert the coded signal to the original form.

