

# Prep for Texas Instruments

## Who are we?

Texas Instruments Incorporated (TI) is a global semiconductor company that designs and manufactures semiconductors and various integrated circuits. TI is one of the top-10 semiconductor companies worldwide, based on sales volume and is focused on developing analog chips and embedded processors, which account for more than 80% of our revenue. TI has been a pioneer in many innovations in the semiconductor domain including the development of the first integrated circuit, the first patent on a single-chip microprocessor, the first single-chip linear predictive coding speech synthesizer, developing the prototype of the world's first transistor radio and the invention of the digital light processing device (also known as the DLP chip), which serves as the foundation for the award-winning DLP technology and DLP Cinema (used in IMAX theatres).

TI India was set up in 1985 and has R&D presence for all the major business units of TI including Analog (Data Converters, Amplifiers, Clocks & Synthesizers, Motor Drives, Power Management) and Embedded Processors (Connected Microcontrollers, Radar, ADAS - Advanced Driver Assistance, Infotainment Processors etc.) and caters to products for different market segments - Industrial, automotive, personal Electronics, Communication and Enterprise.

By employing the world's brightest minds, TI creates innovations that shape the future of technology. TI is helping about 100,000 customers transform the future, today. We're committed to building a better future – from the responsible manufacturing of our semiconductors, to caring for our employees, to giving back inside our communities and developing great minds. Put your talent to work with us – change the world, love your job!

To know more about TI, visit <http://www.ti.com>

## Who are we looking for?

We are looking for individuals who are passionate about electronics, love to tackle challenging problems and build solutions that have an impact and can improve human lives through technology.

- **Basics, basics, basics!** Strong basics and fundamentals are what allow engineers to tackle new problems effectively
- **Perseverance** – people who quickly give up on a problem without trying or just saying “I don't know” without taking time to think, are pretty much immediately ruled out
- **Sharpness** – being able to identify patterns, and making logical leaps that can circumvent multiple steps
- **Thoroughness** – after making such a leap, being able to go back and justify the answer

## How to prepare for the TI Selection Process?

### Digital:

1. Digital Electronics
  - a. Combinational/Sequential Circuits
  - b. FSM (Mealy-Moore)
  - c. Flip-Flops
  - d. Counters
  - e. Pattern Detector Clock divider
  - f. Synchronizers

Reference material: Digital Design by Morris Mano

2. Microprocessors/Microcontrollers
  - a. RISC/CISC
  - b. Pipelining
  - c. 8085 architecture

Reference material: Intel X86 Microprocessors by Barry Brey

3. Network Theory
  - a. LC Circuits Steady State & Transients

Reference material:

- a. Network Analysis – Van Valkenburg, Hayt and Kemmerly - Circuit theory
- b. <https://www.edx.org/course/circuits-electronics-2-amplification-mitx-6-002-2x-0>

4. CMOS Inverter Characteristics, Logic Gates

Reference material:

- a. CMOS VLSI Design: A Circuits and Systems Perspective by David Harris and Neil Weste
- b. CMOS Digital Integrated Circuits by Sung-Mo Kang and Yusuf Leblebici

5. Design Flow, Static Timing Analysis (STA), Layout basics

Reference material:

- a. Digital Integrated Circuits: A Design Perspective by Anantha P. Chandrakasan, Borivoje Nikolić, and Jan M. Rabaey
- b. For STA: <http://www.vlsi-expert.com/2011/04/static-timing-analysis-sta-basic-part3b.html>

## 6. Verilog and VHDL

Reference material:

- a. A VHDL Primer by J Bhasker; Verilog HDL by Samir Palnitkar
- b. <http://www.asic-world.com/verilog/>

## 7. Signals & Systems

Reference material:

- a. <https://www.edx.org/course/signals-systems-part-1-iitbombayx-ee210-1x-2>
- b. <https://www.edx.org/course/signals-systems-part-2-iitbombayx-ee210-2x-2>

## General Interview Tips & Guidelines

CV:

1. Clearly mention key achievements, projects, papers / publications, interest areas and grades in relevant courses

Personal Interview:

2. Think out loud while solving any question. The Interviewer judges you on the approach and not the answer
3. Pay attention to the question and think before proceeding, it is okay to take few seconds before answering if you are not sure
4. If you don't know the answer or are not sure about the answer, then mention the same before answering
5. There might be questions on areas that you have not worked on. That does not mean you completely give up and not answer. Try answering the questions based on the hints provided by the interviewer. The interviewer is trying to see if you would be able to solve a question logically even though you do not have a background on the topic
6. Show curiosity and your drive to solve problems. Ask questions, seek help and think aloud
7. If you have hit a roadblock, don't be afraid to go back to square one and start afresh on a new path