RUCHI GUPTA BOSS (Y13)

1. **Please tell us a little bit about your journey in this field?**

- Graduated from LNMIIT in 2017
- Kept working on projects in this domain which built interest in this domain
- One year internship with Synopsys - Off-Campus
- Moved to Qualcomm as DFT Hardware Engineer
- Joined very recently in Texas Instruments as Senior DFT Engineer during the lockdown

2. **Introduce us to the VLSI domain and the industry?**

- Various domains - VLSI, Embedded etc - of which people are generally unaware of
- FPGA Boards etc fall in the Embedded category
- VLSI includes chip design etc
- Industry categorisation: Tool vendors, Service-based and Product-based
- Tool vendors (EDA components) - Mentor Graphics, Cadence, Synopsys
- Service-based - Smart SoC, Mirafra
- Product-based - Qualcomm, Texas Instruments

3. **How and when did you decide that you want to pursue a career in this field amongst the competitive coding and CS oriented culture of our college?**

- Culture of our college might get you demotivated but you have to motivate yourself
- You will have to prepared to see all your friends and wingmates get placed
- TCS etc used to come to college at that time. I decided to keep one backup offer and then try full-fledged for opportunities off-campus, but couldn't crack any of it
- It doesn't generally work because people who have practised coding and stuff from long before or are genuinely interested will obviously have a better chance than you and these people are many. Instead, getting rejected might lead to demotivation
- Not many experienced seniors in my time
- There was only one company, Power Meter, in the core domain but was rejected after the last round. But I kept myself motivated, preparing and applying off-campus. Finally got a call for the internship in October.
- Kept in touch with people on LinkedIn regularly who are connected to this domain, doesn't matter how great the company is or what post the person is in. Talked to them about the projects I have done, took guidance about what to do and how to approach etc. Many don't reply, but then you have to see from the person's perspective. A busy person with a few years of experience would not like to entertain a very long message from a random person. Even if they genuinely want to help, they might decide to reply later when they ave time and then forget all about it. Again, sending just a simple 'Hi'

message does not solve the purpose because they will not know if you genuinely want a conversation or it is just another of those random messages. One should be very brief while sending messages on LinkedIn and stick to about two lines and then ask for guidance as to how to proceed.

- Not many companies hire fresh grads from regular colleges (only IITs and select NITs) Synopsys and a few other companies do. When you are really interested in the subject do not look at the internship span (one-year internships are common) or the pay scale (they generally pay less) You get to learn a lot, and once you are experienced, you can apply into all those companies also that have a high payscale but do not hire fresh grads. You have to be patient, confidence and stay motivated and keep trying.

4. How did you prepare?

- Companies do not expect a lot from fresh grads. 'Cracking in ECE companies is tough' is a hype. They always focus on the basics.
- I still refer to the Digital Electronics slides that Sandeep Saini Sir taught in our first year as a part of the Basic Electronics course. It covers all the basic concepts that are most important in this domain of study. Setup time, Hold time, Encoder, Decoder, Mux etc are basic topics but you should be thorough about it. Formulae are not important, the concepts are. Solve questions to understand the concepts clearly
- Interviewers ask follow-up questions and they can easily understand if you are thorough with the concept or if you have mugged it up by the way you answer your followup questions
- If you write something on your resume / CV, you should be completely thorough about it
- If you have done any project in the domain, add it to your resume. It will actually enhance your portfolio, however small the project may be. Because they do not expect you to be all-knowledgeable. But you should know everything about it if you are mentioning.
- Internships are great. But it is not necessary to have an internship experience. There can be various reasons as to why you do not have an internship experience. But you should not waste your holidays. Add something to your CV. You may do a small project on your own. Or take a project under any faculty. They also work fine.

5. When do you think it is high time for students to decide and start preparing for their career?

- If you look at it closely, there are these basic subjects of every domain that are covered in the first two years of study which help you to understand the concepts of the subsequent subjects and also, there are the very topics that are asked in the core interviews, definitely. (One example is setup-time and hold-time, this will definitely be asked)
- You can even put up courses on your resume that you have done as part of the curriculum. They will ask you questions on that too, but again they just ask the basic

concepts and do not generally have high expectations. But they make sure that you understand the concept and have not just mugged it up.
● And to know if you are really interested in a subject, you would not have to put in a lot of efforts to understand the concept. It will come automatically to you that you are interested in the subject when you know that you are being able to understand it easily if you invest a little time in it, and you can very easily revise just by going through it once or twice. People have different interests and must pursue it.

6. **In case the curriculum is not sufficient for understanding the subject and the faculty member is not being able to sync up with you to clarify your doubts, what are other go-to resources? Because sometimes doubts keep on adding up and may ultimately lead a person to lose interest in the subject altogether.**

● It is true that we do not sync with all teachers alike. In such a case internet resources work fine. If you search any topic on YouTube, you will get a basic and easy introduction to it and it does solve your doubts explaining in thorough detail.
● Teachers also recommend books. Putting in a little effort by going through the books can get your doubts cleared in case you do not get understanding from the professor's teaching style.
● For example, talking about VLSI, they will stick to basic questions like converting Mux into Latches etc, so books will help. The curriculum of digital electronics in the first semester is more than sufficient for cracking VLSI interviews
● Our college curriculum at that time covered all the topics that were necessary for interviews. I have seen many colleges teaching a much lesser syllabus but I feel our course is sufficient. I don't know if the course has changed now but you can refer to the syllabus of our time, in case it has. Just investing a little time in the subject will solve the purpose, at least from an interview perspective.
● Our college has a much better curriculum and teaching, but the location poses a problem. I have seen companies recruiting students from colleges with much lesser student quality, just because they are located in areas like Bangalore and Hyderabad and they can save on recruitment efforts and costs.

7. **What is the contribution of CGPA? Some students face problems in maintaining a decent grade point owing to working on projects and investing time in their domain of interest**

● On-campus recruitments value CGPA a lot but if you apply off-campus, your experience and knowledge will also be taken into account. So if you maintain a decent pointer of 7 above you are good to go. 7.5 above will be considered good in off-campus.
● In case you have a low pointer, that is below 7, you will really have to have exceptionally good knowledge and projects as a trade off. Both low does not work. So if you have done so much work, that will anyway boost up your profile and then pointer doesn't matter if you are applying off campus

8. What is the importance of research work?

- If you are looking to get recommendations and referrals in jobs or internships by doing research work under a faculty member of our college, then it will not be as helpful because not every professor has contacts and can help with referrals, but it will definitely help you if you do the project sincerely.
- Divyang Rawal sir can actually help you with references or can guide you regarding this

9. How beneficial is a masters degree compared to industrial experience?

- From personal experience, I also had second thoughts of going for a masters degree, that is prepare for GATE when I saw that I had very less scope of getting a job as a fresh grad and a masters degree would increase the scope and the payscale
- I have even asked people around in my company as to why do people go for masters generally, as most people have an M.Tech degree. Not everyone has the same reason of course, but in the general scenario, people go for M.Tech to get a better opportunity when they do not have one as a fresh grad.
- If you are proper research oriented and look to having a PhD degree or something similar in the future, or want to take up a career in lectureship, then you should definitely go for masters or higher degrees
- But if you are job oriented, then a masters degree only helps with the pay scale. Other than that, if your concepts are strong enough, your experience is as valuable. An M.Tech fresher will have a different designation and pay scale because of his degree, as it is counted as a 2 yr experience. But industry experience is completely different from learning something from textbooks, and can be much more valuable.
- People who go for higher education like MS degrees after industrial experience actually get benefitted as this experience helps them better MS colleges. So industry experience is always better and if you are getting an opportunity, you should go for it

10. What other domains other than VLSI in today's industrial world where an electronics engineer in india might have good job prospects?

- There are a lot of other domains apart from Embedded and VLSI in the core industry like communication etc. And even embedded and vlsi also get branched into Design, DFT, Verification etc
- If you are aspiring to get into any domain, entering the core industry is the real problem. Because if you are interested in softwares, if you have a laptop or a system, you hire a few people and start a company where you are making an app or a website. But this is not the case for a VLSI or Embedded or a similar company. To start a software company is easier than a hardware company. The cost of hardware is itself high. Hence there are fewer companies and opportunities less. But if you enter once, everything becomes easy

and you will see that the pay scale is equal, even to the major software giants like Google, Amazon etc. In fact, Google has recently started a hardware section.

11. I had a conversation with someone from the RF-Microwave department of Qualcomm for an internship, but the feedback was that a master degree is necessary. How much according to you is the scope for we students to get into the RF department of any company?

● Qualcomm doesn't hire fresh graduates other than IITs and selected NITs and they do it via campus recruitment. For getting into Qualcomm from any other institute would require you to have a masters degree or industrial experience. I had one year experience and that too internship, so apart from this policy, I don't think they would require a master's degree for taking you in. They had actually considered me as a fresh grad itself and they took the same tests of aptitude and basic electronics that they take in on campus hirings.
● Synopsys, Einfochips are some of the companies that hire fresh graduates apart from NITs and IITs
● There are 3rd Party companies that deal in the VLSI domain which you can apply for

12. How often does the industry change and what are the predicted changes, if any, that are expected that might create a major shift in how the industry works?

● As part of the VLSI industry, there is this competition that changes everything. Almost everyone uses a smartphone nowadays. If we talk about Qualcomm's Snapdragon, it has to launch a new processor in about every 3 or 4 months.
● Similarly, competition is entering the automotive industry also. Cars are becoming smarter with addition of so many sensors for facilitating better and easier driving

13. How did you manage time for academics, projects and all other activities in college?

● I didn't do a lot of extra projects. For example, there was a course on image processing where we had to do a project. What I did was I continued the same project in my DFT course by relating to it. That helped in saving time, and also the project became a good one due to the addition of a new topic and getting extended. If I picked up an entirely new topic which I had to start from scratch, I would have had to invest a lot of time and effort.
● It is not necessary to do a lot of projects. It is just that you should have thorough knowledge in whatever you do. And do not waste your time. Not getting an internship is not an excuse, because you can always keep learning and doing projects on your own or under the guidance of any faculty member. It need not be very documentative, but will add a value to your knowledge and also to your CV. Small things also matter.

14. Any funny incident in your college life that you remember and would like to share with us?

- We had access to stay in the lab overnight. There was this one time when we decided to actually stay in the lab overnight and have fun. But we eventually ended up falling asleep in the lab in the soothing AC, that too with one of our M.Tech seniors.

15. Any other advice that you would want to give to your juniors?

- ECE is not a hard subject. It takes time and patience and needs you to stay self motivated. You should not panic and should not be tense. I know, even though I tell you to not be tense, you will be, it is natural and everybody goes through the same phase. But you should never doubt yourself. Rejection doesn't mean you are not eligible or that you don't know or did not put in efforts. You just have to wait. It takes time and often results come late.
- You should talk to seniors and other people who can guide you. You can always approach me anytime for anything you would need just a call or a text message away