Analog Circuit Design

Introduction:

"We are analog beings living in a digital world, facing a quantum future – Neil Turok". Analog links real-world senses to the digital world. The analog electronics field is going through very exciting times. The digital revolution in electronics has made analog even more necessary. The modern electronics technology will play an ever- increasing role in the quality and variety of our lives. Therefore, it is very necessary to realize the importance of Analog electronics. We here at Wissenaire'22 invite you to grab this opportunity and test your knowledge in the field of Analog electronics.

Event description:

Analog electronics constitutes of basic elements such as resistors, diodes, transistors (like BJT and MOSFET) and Op-Amps with which many circuits like amplifiers, filters, regulators, clippers, clampers are built. Here we will test your understanding on such Analog circuits and of course basic fundamentals.

Event format:

Participants will be given a design-based experiment where they have to design a circuit and simulate it in the "LT Spice software" and attach the results along with screenshots of LT Spice schematic and required graphs in the final report within the given time duration.

- Each participant will be provided with some specifications for every experiment. Utilizing the provided data, they need to calculate some values, build a circuit and finally simulate it in the software.
  For example, if for a low pass filter, 3 dB cut-off frequency is given as 10Hz, and it is mentioned that one is allowed to take capacitance value in the closed interval [10µF,100µF], then R can be determined. Now these determined values should be used as component values while doing the simulation in LT-Spice.
- After completing the simulation, participants should save the graphs and schematic diagrams. These along with some brief explanation about the experiment and the results should form the final report.
- Apart from all the things mentioned in the previous point, participants should also provide short answers to some questions (related to the experiment) given in the question paper at the time of the event and include them in the final report.

Rules and regulations:
- Each participant is allowed only once to appear for the event.
- Everyone should make sure to confine to their given specifications unless one is left free to assume certain values.
- The final report should be made very concisely (Answers should be to the point).

- No extra time shall be provided. Participants are expected to utilize their time efficiently for doing simulations and making the final report.

Eligibility Criteria:
Participants belonging to any branch of engineering who are familiar with Analog electronics and LT -Spice software can participate in the event.

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