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Certified Electronics Design Associate
VS-1105

Vskills Certifications

Skills for a secure future

Certified Electronics Design Associate

Certification Code VS-1105

The Electronics Design Associate certification is an entry level certification in Electronics design.

Why should one take this certification?

The Indian Electronics Industry is going through a very exciting time. In last one year, the Government has announced a slew of policies to accelerate the domestic production of electronics goods (ESDM policy 2013). Amongst the broad electronics market, certain segments that are expected to drive spectacular growth across the value chain are –

- ✓ Smartphones
- ✓ Set top boxes
- ✓ LED lighting
- ✓ Medical Devices
- ✓ Tablets

At the current rate of growth and development, the Indian ESDM industry could potentially employ 2.78 crore by 2020 compared to 44 lakh in 2010. This indicates an urgency to develop skilled manpower by creating the necessary institutions, providing infrastructure and encourage collaboration between industry and academia to hone skill sets. There is a strong need for standardized certification in Electronics to assess the skill of candidates. A Certified Electronics Design Associate will possess the right skills to the hiring companies looking to hire in this space.

Who will benefit from taking this certification?

Engineering undergraduates, graduates, ITI and polytechnic undergraduates and graduates, working professionals in Electronics looking for a career enhancement can take the Electronics Design Associate Certification.

Test Details

- • **Duration:** 60 minutes
- • **No. of questions:** 50
- • **Maximum marks:** 50, Passing marks: 25 (50%)

There is no negative marking in this module.

Fee Structure

Rs. 3,499/- (Excludes taxes)*

*Fees may change without prior notice, please refer http://www.vskills.in for updated fees

How is this different from other Electronics Certifications?
Most Electronics certifications offer mock tests. In case of Electronics Design Associate Certification, along with the test, the candidate gets a complete e-book of 13 modules – edited by well-known industry professionals and online virtual labs to refresh his knowledge in Electronics.

Companies that hire Vskills Certified Electronics Design Associate

Electronics Design professional are in great demand. Companies specializing in electronic design business are constantly hiring knowledgeable electronics design professionals. Various public and private companies also need electronics design professional for developing electronic products.

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revolution", it won't be an exaggeration. Finally, switching application of MOSFET is introduced in brief

6. Operational Amplifier

This topic briefly introduces the concepts of differential amplifiers followed by its most popular integrated circuit form called operational amplifiers or OPAMPs. In fact, initially operational amplifier was considered as a building block for implementing some mathematical operations like addition, summation, differentiation and integration in analogue computers. However, soon it was noticed that it can be used for many other applications besides computations and amplification. Now it is possibly the most frequently used analogue integrated circuit for implementing a broad range of analogue circuit applications. The basic concept of OPAMP is an enhanced form of a differential amplifier. Thus initially we introduce differential amplifier in brief. Further the concept and general block diagram of an OPAMP is introduced along with its characterizing parameters. The OPAMP can be used in two configurations i.e. open loop and closed loop. Though applications designed around open loop configuration i.e. without feedback, are comparatively less in number, closed loop configuration enjoys wide popularity among analogue electronic circuit design. Also the circuit applications can be categorized as linear applications like amplifiers, integrators and differentiators and not linear applications like precision rectifiers and logarithmic amplifiers.

7. Introduction to Digital Circuits

In earlier topics, BJT and MOSFET characteristics were revisited. BJT and MOSFET applications were categorized in two types as linear applications like amplifiers and switching applications those are foundation of digital electronics. Finally for studying the representation of voltage levels in analog systems, the decimal number counting system was demonstrated with an algorithmic approach to count generation. But the digital circuits and systems use system with only two symbols 0 and 1 i.e. binary system. It was discussed that the digital systems are more immune to noise as compared to analog systems, though the implementation procedure may require complex integrated circuits. Finally, a brief comparison of analog and digitals systems is presented

8. Number Systems

Number systems are numerical mathematical counting or measuring tools. Different number systems are used for counting different entities. The most popular and frequently used number system in human day to day life is the decimal number system. Decimal number system is used throughout the world for domestic counting purposes. For example, the whole currency system uses the decimal system and we have 1 (one) rupee, 10 (ten) rupees, 100 (hundred) rupees etc. On the other hand, for counting time, we use a system that uses decimal number symbols but with different counting style. After counting 60 seconds, we count one minute and after counting 60 such minutes, we count one hour. Twelve such hours mark day time and twenty four such hours mark a complete day and counting proceeds to week, month and year etc. Finally, it is obvious that for

counting every entity we require a number system. But for counting different objects and entities different number systems may be required. We have already discussed basis concepts of number systems in the first chapter with an example of decimal number system. We have also discussed a number system to represent functioning of digital systems that has only two voltage levels defined in it; namely binary system. It is quiet clear that a number system is basically characterized by its set of symbols and its base.

9. Combinatorial Logic Systems

This topic introduces basic digital logic circuits those are used as building blocks for implementing complex digital circuits and systems. As already discussed, in the eighth topic, these circuits may be implemented using either BJTs or MOSFETs. Before actually starting the study of logic circuits, they are explained using analogous electrical circuits for clear conceptual understanding.

10. Logic Expression and Minimisation

In the ninth topic, we have studied basic digital logic gates circuits like NOT, AND, OR. The outputs of these circuits (represented by Y) are some specific functions of inputs or outputs represented by A and B. It is to be noted here that in all those digital circuits the input or output represented by A, B and Y can assume only two values i.e. 0 or 1. Thus, in a limited sense A, B and Y (or inputs and outputs of digital circuits) are called variables. As already studied in the topic, the output variables can be expressed as functions of input variables using the characteristic equations of each basic digital logic circuit. These equations are called Boolean equations and the related mathematics is called Boolean Algebra after a mathematician George Bool.

11. Combinatorial Logic Modules

This topic introduces a few most commonly used combinational logic blocks for designing practical digital circuits and systems. All these combinational logic blocks use basic logic for their implementation and they are available in commercial integrated circuit packages with different specifications.

- ✓ Decoders
- ✓ Encoders
- ✓ Multiplexers
- ✓ Demultiplexers
- ✓ Half Adder
- ✓ Full Adder

12. Sequential Logic Systems

So far we have studied digital logic circuits of which the outputs are Boolean functions of their current inputs. The outputs of these circuits are not functions of the earlier inputs or outputs. Such circuits are called combinational logic circuits. Sequential systems are the

systems in which the output depends not only on the current inputs but also on the current and may be many earlier outputs. Initially, we introduce the basic concept of sequential systems as finite state machines. Further, two types of the state machines named Moore and Mealy machines have been presented in brief. The sequential machines require memory elements to store the earlier state(s) of outputs. So we introduce a basic latch as a memory element that can hold data.

13. Programmable Logic Devices

Programmable logic devices are of high importance not only as non-volatile memory devices but also as digital hardware building components. In this topic, we discuss some basic types of programmable logic devices and further present their applications in digital hardware design.

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