Examination Assignment

Introduction to Automotive Software Development

In this assignment there are **20** questions about Scum, Functional Safety and Automotive Software Architecture.To get **G**(godkänd) you need to correctly answer at least **15** questions and to get **VG**(väl godkänd) you shall answer all the questions correctly.
Please note that

- The submission deadline is **2021-09-26 23:59** and if you submit after the deadline you can not get VG(väl godkänd).
- Please answer the questions briefly. It is enough to show that you have understood the subjects.The submission shall be in a word or a pdf file.
- You can answer the questions in English or swedish.
- Search in google to find information. But don't copy and paste. When you get information from a resource, you need to refer to it. So you need to have a reference list of the resources you have used.

Agile Software Development

1. What is Scrum? (G)
2. Name and briefly explain the pillars of Scrum. (G)
3. Name and briefly explain the roles in a Scrum team. (G)
4. Name and briefly explain the Scrum artifacts. (G)
5. Name and briefly explain the Scrum events. (G)
6. T-shirt Sizing is a Scrum story point estimation technique. Explain it. (VG)

Functional Safety

1. What is functional safety?(G)
2. Briefly explain the V-model used by ISO 26262 to develop products at software level (G)
3. Explain the following ISO 26262 guidelines in software development level
    a. Use of defensive programming. Why? What is defensive programming? (VG)
    b. Use of language subsets like MISRA C. Why? What is MISRA C? (G)
    c. Software unit testing. Why? What is unit testing? (G)
    d. Software integration testing. Why? What is integration testing? (G)

Automotive software Architecture

1. What is software architecture and why do we need structured software? (VG)
2. How can the architecture improve maintainability of a software? (VG)
3. What is AUTOSAR? (G)
4. What is the main idea behind the RTE layer in AUTOSAR? (VG)
5. Explain the purposes of the following layers in the AUTOSAR basic software architecture
    a. Microcontroller Abstraction Layer (G)
    b. ECU Abstraction Layer (G)
    c. Services Layer (G)
    d. Complex Drivers (G)

Some useful links

1. Functional safety
2. ISO 26262 - Road vehicles – Functional safety
3. ISO 26262 - Road vehicles – Functional safety: Vocabulary
4. ISO 26262 - Functional Safety Draft International Standard for Road Vehicles
5. Understanding the Automotive Functional Safety
6. Functional Safety with ISO 26262 - Principles and Practice
7. SDLC - V-Model
8. Defensive programming
9. The Art of Defensive Programming
10. The MISRA C Coding Standard and its Role in the Development
11. Build secure and reliable embedded systems with MISRA C/C++
12. Using MISRA C and C++ for security and reliability(1)
13. Using MISRA C and C++ for security and reliability(2)
14. Using MISRA C and C++ for security and reliability(3)
15. CERT C Programming Language Secure Coding Standard
16. Software Architecture & Design Introduction
17. Architecture Models
18. Hierarchical Architecture
19. AUTOSAR (AUTomotive Open System ARchitecture)
20. AUTOSAR - STANDARDS
21. AUTOSAR - CLASSIC PLATFORM
22. Introduction to AUTOSAR