English Exam

Programming language theory is a branch of computer science that deals with the design, implementation, analysis, characterization, and classification of programming languages and their individual features. It falls within the discipline of computer science, both depending on and affecting mathematics, software engineering, and linguistics. It is an active research area, with numerous dedicated academic journals.

Formal methods are a particular kind of mathematically based technique for the specification, development and verification of software and hardware systems. The use of formal methods for software and hardware design is motivated by the expectation that, as in other engineering disciplines, performing appropriate mathematical analysis can contribute to the reliability and robustness of a design. They form an important theoretical underpinning for software engineering, especially where safety or security is involved. Formal methods are a useful adjunct to software testing since they help avoid errors and can also give a framework for testing. For industrial use, tool support is required. However, the high cost of using formal methods means that they are usually only used in the development of high-integrity and life-critical systems, where safety or security is of utmost importance. Formal methods are best described as the application of a fairly broad variety of theoretical computer science fundamentals, in particular logic calculi, formal languages, automata theory, and program semantics, but also type systems and algebraic data types to problems in software and hardware specification and verification..

Questions:

Part I: Comprehension (10 pts)

1) Read carefully the text above and suggest a title for it: (1 pts)

……………………… *Programming language theory* ……………………………..................

2) Answer the following questions according to the text: (3 pts)

a)   What is programming language theory? …*it is a branch of computer science that deals with the design, implementation, analysis, characterization, and classification of programming languages and their individual features*……...…………………….………………………………………………….…..

b)   Name three programming languages:

………………………….*Java, C++, C, Python, R, PHP …etc*. ……………...….………………...

3) Find in the text the synonyms of these words: (2 pts)
1)   Assumption (§2) = ____*expectation*_____   2) Basics (§2) = ___*fundamentals*_____

4) Find in the text the opposites of these words: (2 pts)
1) Practical (§2) ≠ _____*theoretical*_____   2) Few (§1) ≠ ____*numerous*_____

5) Find in the text the English translation of the words below: (2 pts)
1) Fiabilité (§2) = _____*reliability*_____   2) Caractéristiques (§1) = _____*features*____
3) Logiciel (§2) = _____*software*_____   4) Théorie des automates (§2) =____*automata theory*___

Part II: Scientific writing (10 pts)

1) Complete the following paragraph with _a, an_, or _the_. (3 pts)

Computer science is considered by some to have a much closer relationship with mathematics than many scientific disciplines, with some observers saying that computing is __*a*___ mathematical science. Early computer science was strongly influenced by _*the*__ work of mathematicians such as Kurt Gödel, Alan Turing, and John von Neumann and there continues to be __*a*__ useful interchange of ideas between the two fields in areas such as mathematical logic, category theory, domain theory, and algebra.

2) Complete the following paragraph with the appropriate tenses (Simple Present / Present Continuous) choosing either the active or the passive form (3 pts)

The relationship between Computer Science and Software Engineering **(to be)** ___*is*_____ a contentious issue, which is further muddied by disputes over what the term "Software Engineering" means, and how computer science **(to define)** ____*is defined*_____. David Parnas, taking a cue from the relationship between other engineering and science disciplines, has claimed that the principal focus of computer science **(to study)** _____*is studying*____ the properties of computation in general, while the principal focus of software engineering is the design of specific computations to achieve practical goals, making the two separate but complementary disciplines.

3) Fill in the gaps with the following words: software, automation, academic, information theory. **(4pts)**

Computer science is the study of computation, ___*automation*___, and information. Computer science spans theoretical disciplines, such as algorithms, theory of computation, and ___*information theory*____, to practical disciplines including the design and implementation of hardware and _____*software*_____. Computer science is generally considered an area of ____*academic*___ research and distinct from computer programming.

P.S. *The grammar exercises will be double marked as the assessment for the students who were absent in the first evaluation.*

Good Luck