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Compiler Design

I.

1. B
2. B
3. D
4. A
5. A

6. B
7. C
8. A
9. C
10. A

II

Rules:

$S \to AAA$ (R1), $A \to AAA$ (R2), $A \to a$ (R3), $A \to b$ (R4), $A \to c$ (R5), $A \to aA$ (R6), $A \to bA$ (R7), $A \to cA$ (R8)

1.) aabbcc

$S \to AAA$ R1
$A \to aAA$ R3
$A \to aaA$ R3
$A \to aabA$ R7
$A \to aabbA$ R7
$A \to aabbcA$ R8
$A \to aabbcc$ R5

2.) aba

$S \to AAA$ R1
$A \to aAA$ R3
$A \to abA$ R4
$A \to abc$ R5

3.) baccb

$S \to AAA$ R1
$A \to bAAA$ R7
$A \to baAA$ R3
$A \to bacA$ R5
$A \to baccA$ R8
$A \to baccb$ R4

4.) cabab

$S \to AAA$ R1
$A \to cAAA$ R8
$A \to caAA$ R3
$A \to cabAA$ R7
$A \to cabaA$ R3
$A \to cabab$ R4

5.) acbcb

$S \to AAA$ R1
$A \to aAA$ R3
$A \to acAA$ R8
$A \to acbAA$ R7
$A \to acbcA$ R5
$A \to acbca$ R3

1. Describe the purpose of compiler?

→ Compiler is a computer program that reads and translates the source code or the source language written in a high-level programming languages like phython, java and C++ etc. into a low level language, usually assembly or a machine code. Assembly and machine code is quite difficult that's why we are high level language to write the code and are use compilers to translate that code so that the computer can understand.

2. Discuss the importance of production rules?

→ In context Free Grammar production rules is important in defining the structure and syntax of a language. Production rules are the fundamental components in CFG, they define the symbols that can be replaced by other symbols. The Production rules allows for the generation of valid sentences in the language based on the defined rules.