24 Lecture - CS402

Important Mcqs

1. **What is the complement of the language {a, b} over the alphabet {a, b, c}?**
   a) {a, b, c}
   b) {c}
   c) {aa, bb, ab, ba, ac, bc, ca, cb}
   d) {?}
   Answer: c) {aa, bb, ab, ba, ac, bc, ca, cb}

   Which of the following is true about the complement of a regular language?
   a) It is always regular.
   b) It is never regular.
   c) It can be regular or non-regular.
   d) None of the above.
   Answer: a) It is always regular.

   What is the complement of the language {?} over the alphabet {0, 1}?
   a) {?}
   b) {0, 1}
   c) ?
   d) {00, 11}
   Answer: c) ?

   Which of the following is true about the complement of a context-free language?
   a) It is always context-free.
   b) It is never context-free.
   c) It can be context-free or non-context-free.
   d) None of the above.
   Answer: c) It can be context-free or non-context-free.

   What is the complement of the language {a^n b^n | n ? 0} over the alphabet {a, b}?
   a) {a^n b^m | n ? m}
   b) {a^n b^m | n = m}
   c) {a^m b^n | n ? m}
   d) {a^m b^n | n = m}
   Answer: a) {a^n b^m | n ? m}

   Which of the following is true about the complement of the empty language?
   a) It is the empty language itself.
   b) It is the universal language.
   c) It is both the empty language and the universal language.
   d) It is neither the empty language nor the universal language.
   Answer: b) It is the universal language.

   What is the complement of the language {a^n | n ? 0} over the alphabet {a, b}?
   a) {a^n b^m | n ? m}

b) {a^n b^m | n = m}
c) {b^n | n ? 0}
d) {a}
Answer: c) {b^n | n ? 0}

Which of the following is true about the complement of a regular language?
a) It is always a context-free language.
b) It is always a regular language.
c) It can be a context-free language or a non-context-free language.
d) It can be a regular language or a non-regular language.
Answer: d) It can be a regular language or a non-regular language.

What is the complement of the language {a^n b^n c^n | n ? 0} over the alphabet {a, b, c}?
a) {a^n b^m c^k | n ? m or n ? k}
b) {a^n b^m c^k | n = m and n = k}
c) {a^n b^n c^n | n ? 0}
d) {a^n | n ? 0}
Answer: a) {a^n b^m c^k | n ? m or n ? k}

Which of the following is true about the complement of a non-regular language?
a) It is always a regular language.
b) It is never a regular language.
c) It can be a regular language or a non-regular language.
d) None