AGBOOLA ABIOLA
17/SCI01/007
COMPUTER SCINCE
REVISED QUESTION PART 2

ANSWERS

15)

i) L = {∑, a, b, aa, ab, ba, bb}
∑ + a + b + aa + ab + ba + bb
(∑+a+b) (∑+a+b)

ii) L = {0, 2, 4, 6}
Using length 2
((a+b)(a+b)*

iii) L = a(a+b)*a

iv) L = a(a+b)*b + b(a+b)*a

16)

Regular expression are used for representing certain set of strings in an algebraic fashion

i) The symbol **λ** and the pair ( ) are regular expression

ii) Each letter A in ∑ is a regular expression

iii) if r is a regular expression then r* is a regular expression

iv) if r1 and r2 are regular expression then r1r2 is a regular expression all regular expression are formed that way'

17)

i) A = {a, b} Let r = L(r)

ii) r = a*

r = a a*

a u b*

(aub)*

R = (aub)*bb

18)

i) Consists of all B's including **λ** (ii) Consists of all positive powers of 'a' excluding the empty word

iii) Consists of 'a' or any word in b (iv) The language consists of all words over the given alphabet

v) It must end with bb (vi) It consists of words in a and b

19)

i) L1 consists of words starting with one or more B followed by two or more A

ii) L2 consists of words starting with one or more A followed by two or more B followed by one A

iii) L3 consists of words starting with one A followed by one or more B

iv) L1 = L(r) for all I = 1,2,3

L1 = bb*aaa*

L2 = aa*bbb*a

L3 = abb*

20)

i) It is any set represented by a regular expression (ii) The set represented by R1R2 is the union of the sets represented by R1 and R2

21)

i) {0}{1} are represented by 1 and 0 respectively. Therefore 0 is obtained by concatenating 1,1, and 0

ii) This is the union of {01} and {10} then we have 01+10 (iii) This is represented by abb+a+b+bba

iv) Is also represented as **λ**+01 (v) represented as {a}* regular expression for this set is a*

vi) this is the regular expression for the set a{a}*

22)

i) The set {abb,a,b,baa} is represented by abb+a+b+baa

ii) {0}{1} are represented by 1 and 0 respectively. 0 is obtained by concatenating 1,1,0

iii) represented as {1}* regular expression for this set is 1*

23)

i) A grammar is a 4-tuple such that G = (V, T, P, S)

V= Finite non-empty set of non-terminal

T= Finite set of terminal symbols

P= Finite non-empty set of production rules

S= Start symbol

ii) A formal grammar is a set of rules, where as a formal language is a set of strings. A regular grammar is a formal grammar that describes a regular language

24)

A sentential form is any derivable from the start symbol. Thus, in the derivation of

E = E*E = E*(E) = E* (E + E)