CS402-THORY OF AUTOMATA

QUIZ-2 LEC (29 TO 40)

SOLVED BY JUNAID MALIK AND TEAM

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ALL answers are verified if found any mistake then Correct ACCORDINGLY

1. To write the expression from the tree,it is required to travel from____
   - Top to bottom of the tree
   - Left side of the tree
   - Bottom to top of the tree
   - Right side of the tree
2. In conversion from of PDA, no two___states exit in a row without___state.
   - PUSH, READ
   - POP, READ
   - PUSH, START
   - POP, REJECT
3. The CFG-S→aSa|a|b|^represents____language.
   - EVEN-EVEN
   - PALINDROME
   - EQUAL
   - ODD-ODD
4. The CFG that generates the regular language is called____
   - Regular expression
   - Finite automata
   - Regular grammar
   - Non-regular grammar
5. Null production is a____
   - Word
   - String
   - Terminal
   - All of the given option
6. The CFG is said to be ambiguous if there exist at least one word of its language that can be generated by___ production trees
   - One
   - Two

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- More than one
- At most one

7. The structure given below is called
   S->aA|bB
   A->aS|a
   B->bS|b
   - RE
   - TG
   - CFG
   - PDA
8. Identify the TRUE statement.
   - A PDA is Non-deterministic, if there are more than one READ state in PDA
   - A PDA is never non-deterministic
   - Like TG,A PDA can also be non- deterministic
   - A PDA is Non-deterministic, if there are more than one REJECT state in PDA
9. In new format of an FA (discussed in Leacture 37)._____state is like a final state of an FA
   - ACCEPT
   - REJECT
   - START
   - READ
10. In new format of an FA (discussed in Leacture 37)._____state is like a Initial state of an FA

- ACCEPT
- REJECT
- START
- READ

11. Consider the Following CFG (NOTE:^means NULL)
    S->Xa
    X->aX|bx|^
    Above given CFG can be represented by RE___
    - A*b*

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- A*b*a
- (a+b)*a
- a(a+b)*a

12. The major problem in the earliest computers was____
    - TO state the contents in the registers
    - To display mathematically formula
    - To Load contents from the register
    - To calculate the mathematically formula
13. Identify the correct statement from the following:
    - There always exists a corresponding PDA for every CFG
    - There does not exist a corresponding PDA for every CFG
    - For a CFG to convert to PDA the CFG should have at least 3 Nonterminal
    - For a CFG to convert to PDA the CFG should have at least 5 Nonterminal
14. The PDA is called non-deterministic PDA when there are more than one out going edges from___state.
    - START or READ
    - POP or REJECT
    - READ or POP
    - PUSH or POP
15. Identifying the FALSE statement about following CFG.
    S->SB|AB
    A->CC
    B->b
    C->a
    - CFG generated NULL string
    - CFG is not in CNF
    - CFG has 8 Nonterminal
    - All of the given option
16. In nondeterministic PDA, a string is supposed to be accepted if there exists at least one path traced by the string, leading to____state.
    - ACCEPT

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- REJECT
- START
- READ

17. In a CFG the non-terminal that occurs first from the left in the working string.is said to be___
    - Least Significant nonterminal
    - Most Significant Nonterminal
    - Left most nonterminal
    - Left most derivate
18. Identifying the TRUE statement about following CFG.
    S->SB|AB
    A->CC
    B->b
    C->a
    - The given CFG is in CNF
    - The given CFG has 8 terminals
    - The given CFG is in CNF
    - The given is not in CNF
19. The derivation of word w, generated by a CFG,such that at each step, a production is applied to the left most nonterminal in the following string is said to be_____
    - Left most derivation
    - Right most derivation
    - Left most Terminal
    - Right most Terminla
20. "CFG" stand for_____
    - Context Free Graph
    - Context Free Grammar
    - Context Finite Graph
    - Context Finite Grammar
21. The production of the from Non-terminal->^ is said to be ____production.
    - NULL

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- UNIT
- Chomsky from production
- CNF

22. In nondeterministic PDA, a string is supported to be accepted if there exists at least one path traced by the string, leading to___state, leading to___state.
    - ACCEPT
    - REJECT
    - START
    - READ

23. One GTG can generate _____Language
    - ❖ More than one
    - ❖ Only one
    - ❖ Only two
    - ❖ Only three

24. In STACK
    - The Element PUSHed and firs is POPed firs
    - The element PUSHed first is POPed in the last
    - The element PUSHed in last is POPed in last
    - None of given option

25. Before the PDA is converted into conversion form, a new state___is define which is placed in the middle of any edge.
    - REJECT
    - HERE
    - START
    - STOP

26. ____state are called the halt states
    - ACCEPT and REJECT
    - ACCEPT and READ
    - ACCEPT AND START

27. ACCEPT AND WRITEIf the intersection of two regular languages is regular, then the complement of the intersection of these two languages is _____.

Regular

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28. The language of all strings partition ∑* into _____ class(es).

Two

29. The language of all strings not beginning with 'b' partitions ∑* into _____distinct classes.

Two

30. If Q = {xx, xyxxxy }, and R = {xyxyxyxxyy, xyxyyyxx} then Pref(Q in R) = _____

xyxyyy

31. A language ending with 'b' partitions ∑* into _____distinct classes.

Three

32. If R is regular language and Q is any language (regular/ non-regular), then Pref(_____in _____) is regular.

Q,R

33. The reverse of the string sbfsbb over { sb, f, b }

Sb, f, sb, b

Bsbfsb

34. The basic approach of Myhill Nerode theorem is similar to the concept of:

concatenation of FAs

35. If there is no final state of two FAs then their _____ also have no _____ state

union, final

36. If an FA has N states then it must accept the word of length

N

37. For a machine with N number of sta., the total number of strings to be tested, defined over an alphabet of m letters, is

mN +mN+1+ mN,-2 ,m2N-1

38. Which of the following is not a true theorem?

Pseudo theorem

39. The language "PRIME" is an example of language.

non regular

40. The product of two regular languages is

Regular

41. One language can have _____ CFG(s).

More than one

42. Which of the following is a non-regular language?

Prime

43. If the FA has N states. then test the words of length less than N. If no word is accepted by this FA. then it will _____ word/words.

accept no

44. In large FA with thousands of states and millions of directed edges, without an effective procedure it is _____ to find a path from initial to final state.

Impossible

45. A problem that has decision procedure is called problem.

Decidable problem

46. Which one of the following languages is a non regular language?

Palindrome

47. Using Mayhill Nerode theorem we partition sigma star into distinct

Classes

48. In pumping lemma theorem (x y"n z) the range of n is

n=1. 2, 3, 4.....

49. The values of input (say a & b) do not remain same in one cycle due to

NOT gate

50. The operators like (*" +) in the parse tree are considered as

Terminals

51. Even-Even language partitions ∑* into _____ distinct classes.

Four

52. The strings or words which do not belong to a language are called _____ of that language.

Complement

53. The production S —> SS lalbl^ can be expressed by Regular expression

(a+b)+

54. if L1 and L2 are two regular languages. then they expressed by FAs.

can be

55. The grammatical rules which involve meaning of words are called

Semantics

56. Set of all palindromes over (a,b) is:

Regular and finite

57. The language of all strings not beginning with partitions “b" into distinct classes.

Two

58. The CFG is said to be ambiguous if there exist at least one word of its language that can be generated by production trees.

More than one

59. The CFG S —> aSb|abl^ is used to express the language

Palindrome

60. A non-regular language can be represented by

None of the given options

61. In large FA with thousands of states and millions of directed edges, without an effective procedure it is _____ to find a path from initial to final state.

Impossible

62. In polish notation, (o-o-o) is the abbreviation of _____.

Operator - Operand – Operand

63. If an FA has N states then it must accept the word of length

N

64. Using Myhill Nerode theorem we partition sigma star into distinct _____.

classes

65. If a language is regular it must generate _____ number of distinct classes.

finite

66. If L1 and L2 are regular languages then which statement is NOT true?

L1/L2 is always regular

67. If the FA has N states, then test the words of length less than N. If no word is accepted by this FA, then it will _____ word/words.

accept no

68. A problem that has decision procedure is called _____ problem.

decidable

69. If L1 and L2 are two regular languages, then they _____ expressed by FAs.

can be

70. A language that can be expressed by RE, is said to be a _____ language.

regular

71. The values of input (say a & b) do not remain same in one cycle due to

NOT gate

72. Prime is a _____ language.

non-regular

73. If an effectively solvable problem has answer in YES or NO, then the solution is called _____.

decision procedure

74. To write the expression from the tree, it is required to traverse from _____.

Left side of the tree

75. If there is no final state of two FAs then their _____ also have no _____ state

union,final

76. In CFG, symbols that cannot be replaced by anything are called _____.

terminals

77. Finite Automaton (FA) must have _____ number of states while a language has _____ words.

finite, infinite

78. The language "PRIME" is an example of _____ language.

non regular

79. Using Myhill Nerode theorem we partition sigma star into distinct _____.

classes

80. Even-Even language partitions ∑* into _____ distinct classes.

four

81. What will be the 9's complement of the number 872?

127

82. In pref(Q in R), Q is _____ to/than R.

Not equal

83. There is at least one production in CFG that has one _____ on its left side.

Non terminal

84. In pumping lemma theorem (x y^n z) the range of n is

n=1, 2, 3, 4…….

85. A language ending with ‘b’ partitions ∑* into _____distinct classes.

three

86. The operators like (* , +) in the parse tree are considered as _____.

terminals

87. For a machine with N number of states, the total number of strings to be tested, defined over an alphabet of m letters, is _____.

mN +mN+1+ mN+2 +… +m2N-1

88. In a CFG, the non-terminals are denoted by _____.

Capital letters

89. Incase of Myhill Nerode theorem, if a language L partitions sigma star into distinct classes and L is also regular then L generates _____ number of classes.

finite

90. Which of the following is pumped to generate further strings in the definition of Pumping Lemma?

y

91. The complement of a regular language is also _____.

regular