Branch : CSE/IT Batch : Vijay (CS)

Practice set _2

Compiler Design

Syntax Directed Translation

[MCQ]

1. Synthesized attributes can be easily simulated using
(a) LL grammar
(b) LR grammar
(c) ambiguous grammar
(d) None of these

[MCQ]

2. Consider the following translation rules for the grammar G:

S → a{print "A"} A

A → b {print "C"}B

A → ∈ {print "C"}

B → e {print "B"}A

B → ∈ {print "C"}

C → c {print "A"}

What will be the output for the input string abesebe you top-down parser?

(a) ACBCCBAC
(b) ACCBCCBC
(c) ACBCCBCC
(d) ACBCBCBC

[MCQ]

3. Consider the following attribute grammar:

A → BA'	A'· b = a · a
	A · a = A' · b
A_1' → +BA_2'	A_2' = A_2'b + B · a
	A_1'a = A_2'a

Which of the following is true?

(a) Both a and b are inherited attributed.
(b) Both a and b are synthesized attributed.
(c) a is inherited, b is synthesized
(d) b is inherited, a is synthesized

[MCQ]

4. Consider the following grammar:

E → E + T | T

T → T/F | F

F → F ∗ A | A

A → id

Which one of the following is true?

(a) / have higher precedence than ∗
(b) ∗have higher precedence than +
(c) + have lower precedence than/
(d) ∗, +, / all have some precedence.

[MCQ]

5. A shift reduce parser perform action specified within process immediately after reduction to the corresponding rule of grammar.

S → abv {print '11'}

S → cc {print '2'}

V → Sd {print '33'}

What is the translation of ababccdd using the SDT scheme described by above rules/

(a) 2233113311 (b) 1133113322
(c) 2211331122 (d) 1122113322

[MCQ]

6. Consider the following transition rules:

A → BC

C → +BC | A + | ∈

B → DB {print '+'} | ∈

D → (A) id {print number value}

If input is given "2 + 34" then his translation scheme will generate output.

(a) 2 + 3 + 4 + (b) + 2 + 3 + 4
(c) + + 2 + 34 (d) 2 + 34 + +

[MCQ]

7. ____is performed by attaching rules or algorithms to production in a grammar.

(a) Lexical analysis
(b) Execution
(c) syntax directed translation
(d) None of these.

[MCQ]

8. Consider a translation scheme is given as:

$S \rightarrow S_1 + S_2 \{S \cdot val = S_1 \cdot val + S_2 \cdot val\}$

$S \rightarrow S_1 * S_2 \{S \cdot val = S_1 \cdot val * S_2 \cdot val\}$

$S \rightarrow id \{S \cdot val = id\}$

What will be the output for $5 * 6 + 7$?

(a) 18
(b) 37
(c) 65
(d) Cannot be identified because it is ambiguous grammar.

[MCQ]

9. Consider the given translation rules.

If the expression 8 # 12 & 4 # 16 & 12 # 4 & 2 is evaluated to 512, then which of the following is correctly representing x?

$E \rightarrow E \# T$	$\{E \cdot val = E1 \cdot val * T \cdot val\}$
IT	$\{E \cdot val = T \cdot val\}$
$T \rightarrow T \& F$	x
IF	$\{T \cdot val = F \cdot val\}$
$F \rightarrow id$	$\{F \cdot val = id\}$

(a) $T \cdot val = T_1 \cdot val * f \cdot val$
(b) $T \cdot val = T_1 \cdot val + f \cdot val$
(c) $T \cdot val = T_1 \cdot val - f \cdot val$
(d) $T \cdot val = T \cdot val \div f \cdot val$

[NAT]

10. Consider the following SDT :

$S \rightarrow E$	$\{S \cdot val = E \cdot val\}$
$E \rightarrow E + T$	$\{E \cdot val\} = E_1 \cdot val + T \cdot val\}$
$E \rightarrow T$	$\{E \cdot val = T \cdot val\}$
$T \rightarrow T F$	$\{T \cdot v al = T_1 \cdot val * f \cdot val\}$
$T \rightarrow F$	$\{T \cdot val = f \cdot val\}$
$F \rightarrow (E)$	$\{F \cdot val = E \cdot val\}$
$F \rightarrow a$	$\{f \cdot val = a\}$

What will be the output of the expression "20 + 8 × 6"

[NAT]

11. Consider G be a grammar with the following productions:

$A \rightarrow A + B \mid B$
$B \rightarrow B * C \mid C$
$C \rightarrow (A)$
$C \rightarrow id$

Let, X is set of lookaheads in A→. B and Y is set of lookaheads in C→ .id. Then how many numbers of items are present in $X \cap Y$ if LR (1) parser is used?

[MSQ]

12. Which of the following statement is/are correct?

(a) LALR parser is more powerful the SLR parser.
(b) SLR parser is more powerful the CLR parser.
(c) LR (0) is the least powerful parser.
(d) CLR is powerful that LALR and LR(0) parser.

[MSQ]

13. Which of the following is/are incorrect.

(a) Every regular grammar is LL(1).
(b) If given grammar G is LL(1) then it is LR(0).
(c) Let SLR(1) has x_1 states and CLR(1) has x_2 states then the relation between x_1 and x_2 is $x_1 < x_2$.
(d) Recursive descent parser is a top - down parser.

[MCQ]

14. Consider the given grammar

$X \rightarrow a \mid ab \mid abc$

The given grammar is_____.

(a) LL(1) (b) LL(2)
(c) LL(3) (d) None of these

[NAT]

15. Consider the following grammar.

$S' \rightarrow S$

$S' \rightarrow S*A \mid A$

$A \rightarrow A+B \mid B$

$B \rightarrow B- C \mid C$

$C \rightarrow (S) \mid id$

If I_0 is the set of LR(0) items {[S'→S·] [S→S·*A]}, then goto (closure (I_0, *) contains exactly___items.

[NAT]

16. Consider the given grammar.

$S \rightarrow A$

$A \rightarrow ABC \mid BC$

$B \rightarrow Cc \mid b \mid \in$

$C \rightarrow \in$

How many number of unique production are in closure $(A \rightarrow A \cdot BC) \cup$ closure $(A \rightarrow \cdot BC)$

[MCQ]

17. Consider the following grammars.

G_1: $S \rightarrow aSbS \mid bSaS \mid \in$

G_2: $S \rightarrow aABa$

$A \rightarrow c \mid \in$

$B \rightarrow d \mid \in$

Which of the following is correct?

(a) Only G_1 is LL(1).
(b) Only G_2 is LL(1).
(c) Both G_1 and G_2 are LL(1).
(d) Neither of G_1 and G_2 are LL(1).

[MCQ]

18. Consider the following grammar.

$S \rightarrow (A \mid B] \mid B)$

$A \rightarrow B) \mid B]$

$B \rightarrow \in$

Which of the following is correct statement if CLR(1) parser is used ?

(a) The given grammar has RR conflict but no SR conflicts.
(b) The given grammar has SR conflict but no RR conflicts.
(c) The given grammar has RR and SR conflicts.
(d) The given grammar do not have RR and SR conflicts.

[MSQ]

19. Which of the following statement is/are correct about given language?

$L = \{a^l b^m c^n \mid l = m \text{ or } m = n , l, m, n > 0\}$

(a) The language is not LR(0).
(b) The language is ambiguous.
(c) The language is not LR(k) for any k.
(d) The language recognizes by DPDA (Deterministic Pushdown Automata.)

[MCQ]

20. Consider the given grammar.

$S \rightarrow AaB \mid aA$

$A \rightarrow bB \mid B$

$B \rightarrow aB \mid a$

If S, A, B are non-terminals and a, b are terminals.

The above grammar is?

(a) LALR(1) but not SLR(1)
(b) CLR(1) but not LALR(1)
(c) CLR(1) and LALR(1)
(d) Neither CLR (1) nor LALR(1)

Answer Key

1.	(b)
2.	(d)
3.	(d)
4.	(b, c)
5.	(a)
6.	(d)
7.	(c)
8.	(d)
9.	(c)
10.	(68)
11.	(2)
12.	(a, c, d)
13.	(a, b, c)
14.	(c)
15.	(7)
16.	(7)
17.	(b)
18.	(b)
19.	(a, b, c)
20.	(d)