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ramesh masuna

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13. Evaluate the following expression considering the given rules:
 $3 - 2 * 4 \$ 1 * 2 \$ 3$
 Where \$ mean exponentiation

(a) $(-)$ highest followed by $(*)$ and then followed by $(\$)$ and all are left associative
 (b) $(-)$ highest followed by $(*)$ and then followed by $(\$)$ and all are right associative
 (c) $(\$)$ highest followed by $(-)$ and then followed by $(*)$ and all are left associative

(a) $a < b < c$ (b) $c < a < b$
 (c) $a < c < b$ (d) $b < c < a$

14. Choose the correct statement?
~~(a)~~ a bottom up parsing technique simulates a rightmost derivation
~~(b)~~ a top down parsing technique simulates the reverse of a leftmost derivation
~~(c)~~ a bottom up parsing technique building the derivation tree in bottom up and

17. Consider the following grammar for expressions:
 $\langle \text{expression} \rangle \rightarrow \text{atom} \langle \text{additional} \rangle | \langle \text{expression} \rangle$
 $\langle \text{additional} \rangle \rightarrow + \langle \text{expression} \rangle | * \langle \text{expression} \rangle | \epsilon$

The follow set for $\langle \text{additional} \rangle$ is
 (a) { atom, (} (b) { (, \$ }
 (c) { +, *, \$ } (d) { \$,) }

18. $S \rightarrow ABC$
 $A \rightarrow aA | c$
 $B \rightarrow b | \epsilon$
 $C \rightarrow c$

FIRST (A) \cap FOLLOW (A) is
 (a) { a } (b) { b }
 (c) { c } (d) None

19. FOLLOW (B) in the following grammar
 $A \rightarrow BCD$
 $B \rightarrow w | Bx$

Handwritten calculations for Q13:
 a) $1 * 4 \$ 1 = 2 \$ 3$
 $4 \$ 2 \$ 3 = 16 \$ 3 = 4096$
 b) $1 * 4 \$ 1 * 2 \$ 3$
 $4 \$ 2 \$ 3 = 16 \$ 3 = 4096$
 c) $3 - 2 * 4 = 8$
 $8 * 1 = 8$
 $8 * 2 = 16$
 $16 * 3 = 48$
 Final answer: $c < a < b$

Handwritten notes for Q17:
 $E \rightarrow aA / (\epsilon)$
 $A \rightarrow +E / *E / \epsilon$
 $\text{Follow}(A) = \{ \$,) \}$
 $\text{Follow}(E) = \{ \$,) \}$

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13. (c) (\$) highest followed by (-) and then followed by (*) and all are left associative

Handwritten calculations:
 $4 \times 2 \times 3 = 24$
 $4 \times 3 \times 8 = 96$
 $3 - 2 \times 4 + 8 = 3 - 8 + 8 = 3$
 $1 \times 4 \times 8 = 32$
 $C < A < B$

(a) $a < b < c$ (b) $c < a < b$
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 (c) a bottom up parsing technique building the derivation tree in bottom up and simulates a rightmost derivation in reverse
 (d) a top down parsing technique simulates building the derivation tree in top down and simulates a leftmost derivation in reverse

15. Which of the following is true?
 (a) Brute force technique is a SR parser.
 (b) Operator precedence parser is a Top down parser.

18. $S \rightarrow ABC$
 $A \rightarrow gA | \epsilon$
 $B \rightarrow b | \epsilon$
 $C \rightarrow \epsilon$

$FIRST(A) \cap FOLLOW(A) = \{a, c\} \cap \{b, c\} = \{c\}$

(a) {a} (b) {b}
 (c) {c} (d) None

19. FOLLOW (B) in the following grammar

$A \rightarrow BCD$
 $B \rightarrow w | Bx$
 $C \rightarrow yCz | m$
 $D \rightarrow DB | a$

(a) {x, y, m, \$} (b) {x, y, w, \$}
 (c) {x, w, m, \$} (d) {x, y, m, w, \$}

20. $S \rightarrow [SX] | a$
 $X \rightarrow \epsilon | +SY | Yb$
 $Y \rightarrow \epsilon | -SXc$

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(a) {a} (b) {b}
 (c) {c} (d) None

19. FOLLOW (B) in the following grammar

$A \rightarrow BCD$
 $B \rightarrow w | Bx$
 $C \rightarrow yCz | m$
 $D \rightarrow DB | a$

$FOLLOW(B) = \{x, y, m\} \cup FOLLOW(D)$
 $FOLLOW(D) = \{a\} \cup FOLLOW(A)$
 $FOLLOW(A) = \{c\}$
 $FOLLOW(B) = \{x, y, m, a, c\}$

(a) {x, y, m, \$} (b) {x, y, w, \$}
 (c) {x, w, m, \$} (d) {x, y, m, w, \$}

20. $S \rightarrow [SX] | a$
 $X \rightarrow \epsilon | +SY | Yb$
 $Y \rightarrow \epsilon | -SXc$

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14. a top down parsing technique simulates the reverse of a leftmost derivation
 (e) a bottom up parsing technique building the derivation tree in bottom up and simulates a rightmost derivation in reverse
 (d) a top down parsing technique simulates building the derivation tree in top down and simulates a leftmost derivation in reverse

15. Which of the following is true?
 (a) Brute force technique is a SR parser.
 (b) Operator precedence parser is a Top down parser
 (c) Recursive descent parser is a Bottom up parser
 (d) Operator precedence parser is a SR parser

16. What is FIRST (S) in
 $S \rightarrow AC / Ca / bb$
 $A \rightarrow d / e$
 $B \rightarrow e / \epsilon$
d, f, a, e, b

19. FOLLOW (B) in the following grammar
 $A \rightarrow BCD$
 $B \rightarrow w | Bx$
 $C \rightarrow yCz | m$
 $D \rightarrow Da | a$
 $= \{x, y, m\} \cup \text{Follow}(D)$
 $= \{x, y, m, a\}$

(a) {x, y, m, \$}
 (b) {x, y, w, \$}
 (c) {x, w, m, \$}
 (d) {x, y, m, w, \$}

20. $S \rightarrow [SX] | a$
 $X \rightarrow \epsilon | +SY | Yb$
 $Y \rightarrow \epsilon | -SXc$
 Then FOLLOW (S) is
 (a) { \$, +, -,], c, b }
 (b) { \$, -,], c, b }
 (c) { \$, +, -, b }
 (d) { \$,], c, b }

21. In the grammar $S \rightarrow TA$,
 $A \rightarrow +TA / \epsilon$
 $T \rightarrow a / \epsilon$

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down parser

(c) Recursive descent parser is a Bottom up parser
 (d) Operator precedence parser is a SR parser

16. What is FIRST (S) in
 $S \rightarrow AC / Ca / bb$
 $A \rightarrow d / e$
 $B \rightarrow e / \epsilon$
 $C \rightarrow f / \epsilon$
d, f, a, e, b

(a) {a, d, e, f}
 (b) {a, e, f, e}
 (c) {a, b, d, e, f}
 (d) {a, b, d, e, f, e}

Then FOLLOW (S) is
 (a) { \$, +, -,], c, b }
 (b) { \$, -,], c, b }
 (c) { \$, +, -,], b }
 (d) { \$,], c, b }

21. In the grammar $S \rightarrow TA$,
 $A \rightarrow +TA / \epsilon$
 $T \rightarrow a / \epsilon$
 Follow (T) \cap First (S) is $= \{+, \epsilon\} \cap \{a, +, \epsilon\} = \{+\}$
 (a) {+, e}
 (b) {+, \$}
 (c) {+}
 (d) {a, +, e}

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22. Consider the grammar below :

$$S \rightarrow ABA$$

$$A \rightarrow Bc / dA / \epsilon$$

$$B \rightarrow eA$$

Find FOLLOW(A)

(a) { d, e, \$ } (b) { c, d, \$ }

(c) { c, d, e } (d) { c, d, e, \$ }

23. Consider the following grammar

$$S \rightarrow AaC/Bd$$

$$A \rightarrow BC$$

$$B \rightarrow bB/C$$

$$C \rightarrow accS$$

For which non terminals, its follow set contains terminal 'a'.

(a) {C} (b) {A}

(c) {A,B,C} (d) {A,B,C,S}

24. Consider the following grammar

26. Consider the grammar

$$S \rightarrow \text{if expr then}$$

$$| \text{if expr then stmt}$$

$$| \text{if expr then stmt else}$$

$$| \text{if expr then stmt else stmt}$$

The grammar is

(a) LL(1) (b) LL(4)

(c) LL(5) (d) LL(6)

27. Consider the grammar, G1

$$E \rightarrow E + E \mid E^* E \mid (E) \mid \text{id}$$

Consider the grammar G2,

$$E \rightarrow E + T \mid T$$

$$T \rightarrow T^* F \mid F$$

$$F \rightarrow (E) \mid \text{id}$$

Choose the incorrect statement?

(a) G2 generates the same language as G1

(b) G2 is unambiguous but not LL(1) as it is left

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Find FOLLOW(A)

(a) { d, e, \$ } (b) { c, d, \$ }

(c) { c, d, e } (d) { c, d, e, \$ }

23. Consider the following grammar

$$S \rightarrow AaC/Bd$$

$$A \rightarrow BC$$

$$B \rightarrow bB/C$$

$$C \rightarrow accS$$

For which non terminals, its follow set contains terminal 'a'.

(a) {C} (b) {A}

(c) {A,B,C} (d) {A,B,C,S}

24. Consider the following grammar

$$\langle \text{expression} \rangle \rightarrow \langle \text{factor} \rangle \langle \text{rest} \rangle$$

$$\langle \text{rest} \rangle \rightarrow * \langle \text{expression} \rangle \mid \epsilon$$

$$\langle \text{factor} \rangle \rightarrow \text{identifier}$$

In the predictive parsing table M of the

27. Consider the grammar, G1

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Consider the grammar G2,

$$E \rightarrow E + T \mid T$$

$$T \rightarrow T^* F \mid F$$

$$F \rightarrow (E) \mid \text{id}$$

Choose the incorrect statement?

(a) G2 generates the same language as G1

(b) G2 is unambiguous but not LL(1) as it is left recursive

(c) G2 gives a higher precedence to + over *

(d) None

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56 Consider the grammar shown below (Gate-2003)(2m)

$$S \rightarrow i E t S S' \mid a$$

$$S' \rightarrow e S \mid \epsilon$$

$$E \rightarrow b$$

$\text{follow}(S') = \{ \$, \epsilon \}$

In the predictive parse table, M, of this grammar, the entries $M[S', e]$ and $M[S', \$]$ respectively are

(A) $\{ S' \rightarrow e S \}$ and $\{ S' \rightarrow \epsilon \}$ (B) $\{ S' \rightarrow e S \}$ and $\{ \}$

(C) $\{ S' \rightarrow \epsilon \}$ and $\{ S' \rightarrow \epsilon \}$ (D) $\{ S' \rightarrow e S, S' \rightarrow \epsilon \}$ and $\{ S' \rightarrow \epsilon \}$

$m[S', e] = S' \rightarrow e S, S' \rightarrow \epsilon$

$m[S', \$] = S' \rightarrow \epsilon$

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Statement for Linked Answer Questions 21 & 22

For the grammar below, a partial LL(1) parsing table is also presented along with the grammar. Entries that need to be filled are indicated as E1, E2 and E3. ϵ is the empty string, \$ indicates end of input, and | separates alternate right hand sides of productions.

$$S \rightarrow a A b B \mid b A a B \mid \epsilon$$

$$A \rightarrow S$$

$$B \rightarrow S$$

	a	B	\$
S	E1	E2	$S \rightarrow \epsilon$
A	$A \rightarrow S$	$A \rightarrow S$	error
B	$B \rightarrow S$	$B \rightarrow S$	E3

(GATE - 12)

(4-marks)

21. The FIRST and FOLLOW sets for the non-terminals A and B are _____

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