Quiz (27 Marks)

Immersive Reader in Microsoft Forms allows you to hear the text of a form title and questions read out loud while following along. You can find the Immersive Reader button next to form title or questions after activating this control. You can also change the spacing of line and words to make them easier to read, highlight parts of speech and syllables, select single words or lines of words read aloud, and select language preferences.

Points:

19/27

1

Only OS independent compiler is
(0.5/0.5 Points)

- Java compiler
- Visual basic compiler
- Turbo C compiler
- Pascal compiler

2

Question
(2/2 Points)

Consider the translation scheme shown below

S→TR

R→+T {print ('+');} R|ε

T→ num {print(num.val);}

Here **num** is a token that represents an integer and **num**.val represents the corresponding integer value. For an input string '9 + 5 + 2', this translation scheme will print

- 9+52+
- 95+2+
- 95++2
- 952++

3

Which languages necessarily need heap allocation in the runtime environment?
(1/1 Point)

- Those that support recursion

- Those that not allow dynamic data structure
- Those that use dynamic scoping
- none of these

4

Which of the following is true for line number 3 of given C code.

```
int main ( ) {            /* Line 1 */

int I, N;                 /* Line 2 */

fro (I = 0, I < N, I++);    /* Line 3 */

}
```

(1/1 Point)

- Only syntactic errors
- No compilation error
- Both lexical and syntactic errors
- Only lexical errors

5

In a bottom-up evaluation of a syntax directed definition, inherited attributes can
(1/1 Point)

- Be evaluated only if the definition has synthesized attributes
- Never be evaluated
- none of these
- Be evaluated only if the definition is S-attributed

6

In the following grammar:

A -> B⊕A/B

B -> C∗B/Z

Z -> id

Which of the following is true?
(0/2 Points)

- Both '⊕' and '*' are left associative

- ‘⊕’ is right associative while ‘*’ is left associative
- Both ‘⊕’ and ‘*’ are right associative
- ‘⊕’ is left associative while ‘*’ is right associative

7

Question

(0/1 Point)

Consider the grammar shown below

$S \rightarrow iEtSS' | a$

$S' \rightarrow eS | \varepsilon$

$E \rightarrow b$

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

- {S′→eS} and { }
- {S′→eS, S′→ ε } and { }
- {S′→eS} and { S′→ ε }
- { S′→ ε } and { S′→ ε }

8

For the following SDTS, the output printed by a bottom-up parser for the input "aab" is:

S→aA {print 1}
S→a {print 3}
A→Sb {print 2}

(0/2 Points)

- 1 2 3
- 2 2 3
- 2 3 1
- 3 2 1

9

Consider that for a grammar G; SLR and LALR parsers have X and Y states, respectively. Then the relationship between X and Y is
(1/1 Point)

- X is surely less than Y
- X is surely greater than Y
- X is surely equal to Y
- No relationship between X and Y

10

The 3-address code sequence for the **'A : = B + C'** is
(1/1 Point)

$S \rightarrow$ **id** : = E	{*gen*(**id**.place = E.place;);}
$E \rightarrow E_1 + E_2$	{*t* = *newtemp*( );
	gen(t = E_1.place + E_2.place;);
	E.place = *t*;}
E → id	{E.place = **id**.place;}

Here, gen is a function that generates the output code, and newtemp is a function that returns the name of a new temporary variable on every call Assume that ti's are the temporary variable names generated by newtemp.

- t1:= B; t2 := C; A:= t1+t2
- t1 : = B + C; A: = t1
- t1 : = B + C;
- A : = B + C

11

Question
(3/3 Points)

For an input '5 * 6 + 7' the following translation scheme prints

$$S \rightarrow AB$$
$$B \rightarrow *A\{print('*');\}B|\varepsilon$$
$$A \rightarrow C+A\{print('+');\}|C$$
$$C \rightarrow S|id\{print(id.value);\}$$

- 5 * + 6 7
- 5 6 7+*
- 5 6* + 7
- 5 * 6 + 7

12

A bottom-up parser generates
(0.5/0.5 Points)

- Right-most derivation in reverse
- Left-most derivation in reverse
- Left-most derivation
- Right –most derivation

13

Question
(3/3 Points)

What is the translation of **xxxxyzz** using the following SDT scheme

$S \rightarrow xxW\{print'1'\}$

$S \rightarrow y\{print'2'\}$

$W \rightarrow Sz\{print'3'\}$

- 1 1 2 3 3
- 2 3 1 3 1
- 1 1 2 3 1
- 2 3 1 1 3

14

In context of SLR(1) and LALR (1) tables which is/are false?
(0/2 Points)

- The error entries in the tables may be same
- Shift entries are not identical in both the tables
- The reduce entries may be same
- Goto part of both tables may be same

15

Match the followings:

Group-I

(a) Pointer data type
(b) Activation Record
(c) Repeat -Until
(d) Coercion

Group-II

(p) Type Conversion
(q) Dynamic Data Structure
(r) Nondeterministic loop
(s) Recursion

(1/1 Point)

- a-p, b-r, c-s, d-q
- a-q, b-s, c-r, d-p
- a-r, b-q, c-s, d-p
- a-q, b-r, c-s, d-p

16

Compiler translates the source code to
(2/2 Points)

- [ ] Machine code
- [ ] Executable code
- [ ] None of these
- [ ] Binary code

17

The Semantic Analysis is/are responsible for ....
(0/1 Point)

- [ ] Check semantics
- [ ] Type checking

- [ ] Static checking
- [ ] All of these

18

Question
(1/1 Point)

The grammar A → AA | (A) | ε is not suitable for predictive-parsing because the grammar is

(A) ambiguous

(B) left-recursive

(C) right-recursive

(D) an operator-grammar

- ○ Only (A)
- ○ Only (A), (B), and (C)
- ○ Only (B) and (C)
- ○ All

19

Which phase/phases check the Grammar of the programming.
(1/1 Point)

- [ ] Code generation
- [ ] Syntax analysis
- [ ] Semantic analysis
- [ ] Code optimization