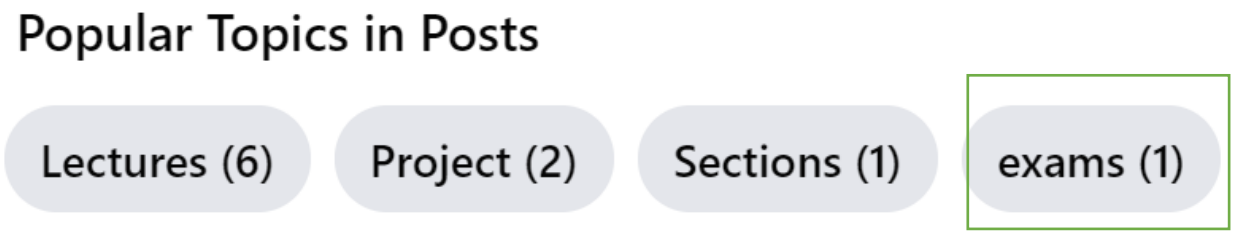
معلومات عن الامتحان

- عدد الاسئله في الاختبار 20 سؤال وفقا لنظام الاختيار المتعدد
- كل سؤال 5 درجات
- النموذج للتدريب فقط ولا يعتبر مراجعه شامله للمنهج
- التصحيح مميكن== ماكينه تقوم بالتصحيح... تاكد من اختيارك للاجابه الصحيحه ...الورق المستخدم للخطوات لا يتم تسليمه في اللجنة. تأكد من دقه اختيارك
- يجب مراعاة وجود اكثر من نموذج للامتحان == يتم تغيير ترتيب الاسئله وترتيب الاختيارات في كل سؤال
- فيما يلي امتحان اخر الفصل الدراسي لعام 2019 بعد تحويله للشكل الجديد
- موجود على الجروب المزيد من الامتحانات
- ممكن تحلوا وتبعثوا الحلول على الجروب واعملوا لي تاج اراجع الحلول



سؤال عن المفاهيم العامه

(سؤالين - 10 درجات)

1. Parts of the front-end_____
   a) Scanner
   b) Parser
   c) Semantic Analyzer
   d) Code generator.
   e) Both a,b
   f) a,b,c
   g) a,b,c,d
2. Parts of the back-end. _____
   a) Scanner
   b) Parser
   c) Semantic Analyzer
   d) Code generator.
   e) Both a,b
   f) a,b,c
   g) a,b,c,d
3. Rejects programs with unbalanced parentheses_____.
   a) Scanner
   b) Parser

c) Semantic Analyzer
d) Code generator.

4. Rejects programs that add integers to strings_____.

a) Scanner
b) Parser
c) Semantic Analyzer
d) Code generator.

5. Produces Tokens as output._____

a) Scanner
b) Parser
c) Semantic Analyzer
d) Code generator.

6. Detects function with incorrect number of arguments_____.

a) Scanner
b) Parser
c) Semantic Analyzer
d) Code generator.

7. Checks that every variable must be declared before it is used_____.

a) Scanner
b) Parser
c) Semantic Analyzer
d) Code generator.

8. Checks that assignment statements must end with a semicolon ";"_____.
a) Scanner
b) Parser
c) Semantic Analyzer
d) Code generator.

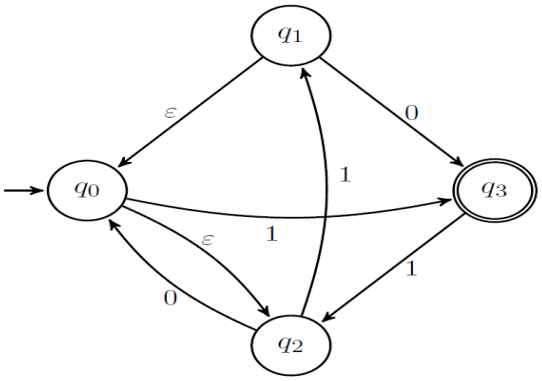
9. A compiler program written in a high level language is called
a) source program
b) object program
c) machine language program
d) none of these

10. Grammar that produce two different parse trees is called
    a) Ambiguous
    b) Unambiguous
    c) Regular
    d) Chomsky

Lexical Analyzers سؤال

(6اسئله- 30 درجه)

1. Build an equivalent DFA for the following NFA using subset construction Algorithm



1.1)The number of states in the DFA is:

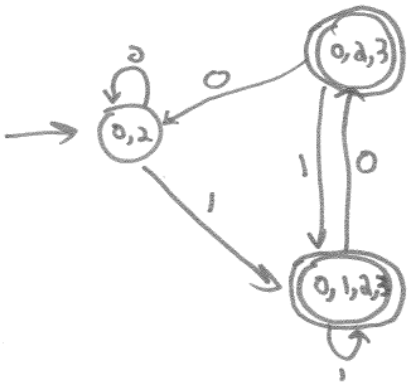
a) 1
b) 2
c) 3
d) 4
e) 5

1.2)The number of accepted states in the DFA is:

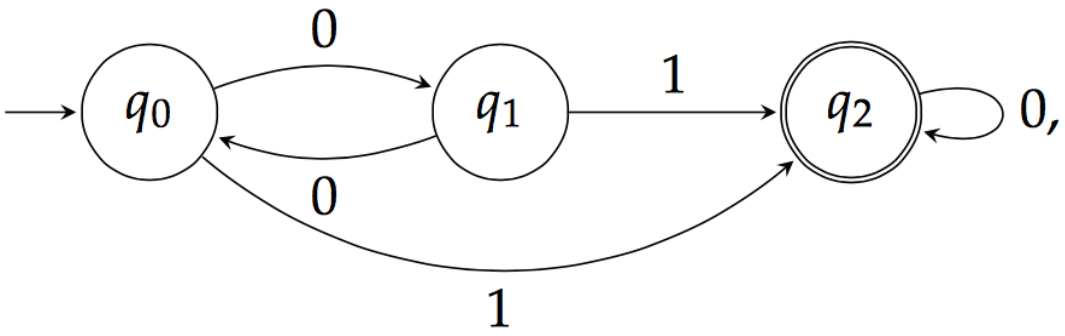
a) 2
b) 3
c) 4

1.3) Choose the correct DFA:

a



b



1.4) the DFA states is:

a. {0,2},{0,2,3},{0,1,2,3}
b. {0],{2,3},{2,3}
c. {0d},{0,2},{0,1,2,3}

2. RE

2.1) Σ={a,b,c}. Write regular expressions to specify all strings over Σ that are in sorted order and has an odd number of occurrences of c e.g. aaaabbc, bbbbbccc,ccc

a. a*b*c*

b. a* b(bb)*c*

c. a*b* cc*

d. a* b* c(cc)*

e. None of the above

2.2) The length of the shortest string NOT in the language (over Σ = {a, b}) of the following regular expression is _____. a*

a) 0

b)1

c)2

d)3

2.3) The length of the shortest string in the language (over Σ = {a, b}) of the following regular expression is _____. a*b*

a) 0

b)1

c)2

d)3

2.4) Choose the string the belongs to the following RE=a*b* (over Σ = {a, b}).

a) abab

b)aa

c)bbaa

d)abc

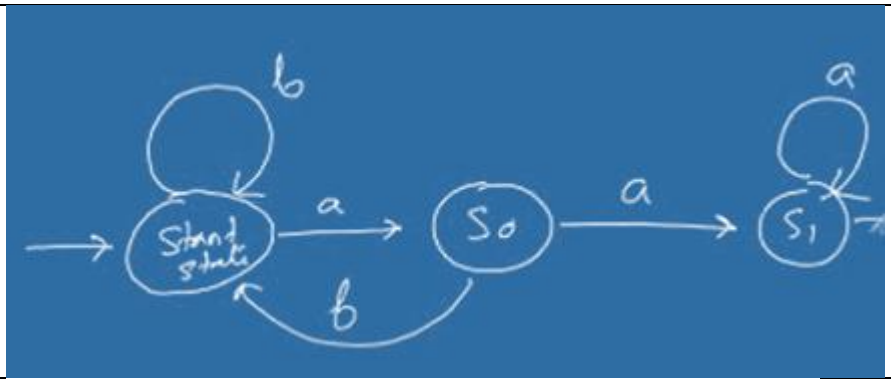
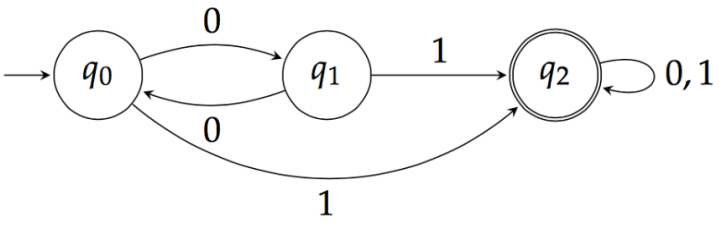
2.5)True or false? Are the following regular expressions exactly equivalent?

a)	$x?\,x^*$	x^*
b)	$y^*\|z^*$	$(y\|z)^*$
c)	a^*b^*	**(ab)***
d)	$(a\|b\|\varepsilon)*$	**(a|b)***
e)	$(a\|b)?$	**a?|b?**

3. DFA to code

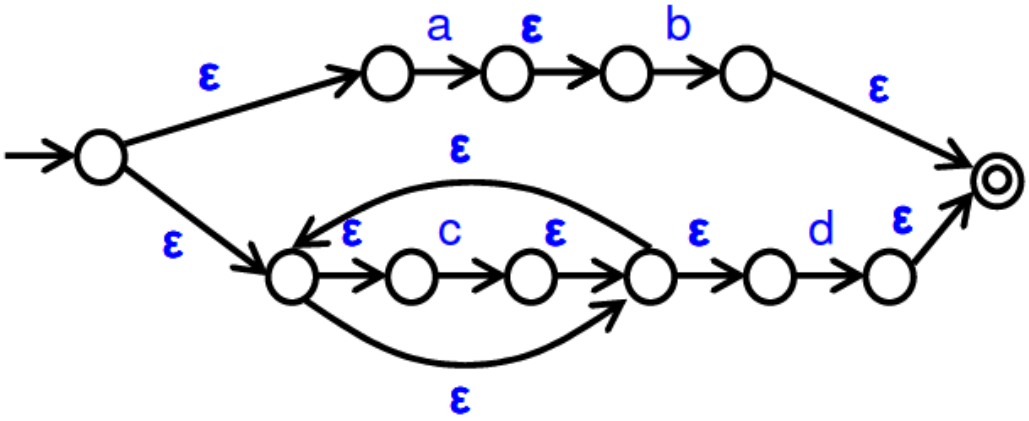
Choose the correct DFA for the following code fragment.

```
DfaStateT currentState = START_STATE;

for(int i = 0; i < inputString.length(); i++) {
  switch(inputString[i]) {
    switch(currentState) {
      case START_STATE:
        {
          case 'a': currentState = STATE0; continue;
          case 'b': currentState = START_STATE;continue;
          default: cout<<"Invalid character"<<endl; return false;
        }
      case STATE0:
        {
          case 'a': currentState = STATE1;continue;
        }
    }
}

}
```

a	
b	

4. RE to NFA

4.1) For the following automata Choose the correct RE

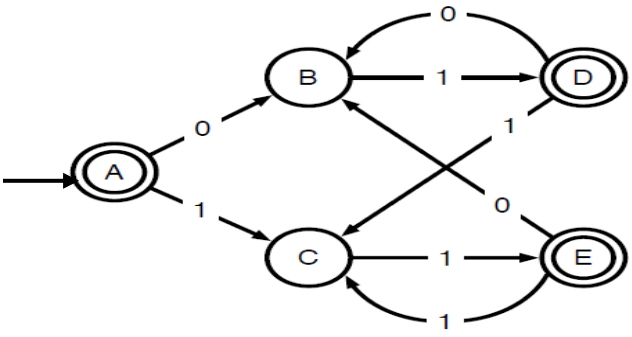


a	**ab|c*d**
b	ab|cd*
c	Abc*d

4.2) Which operation has the highest priority in RE

a. OR
b. AND
c. Star

5. Minimize DFA



a.	{ADE}{BC}
b.	{ADE}{B}{C}
c.	{AD}{B}{C}

6. Flex

What is the output of the following flex scanners

a*	**{printf("<%s ,%s>","1",yytext);}**
a*b*c	**{printf("<%s ,%s>","2",yytext);}**
c*a*b*	**{printf("<%s ,%s>","3",yytext);}**

Input: aabbcc

6.1 The output will be _____

6.2 Rule____ will never be executed.

a. Rule One
b. Rule two
c. Rule Three
d. None of the above

Semantic Analyzer & code Generation(10 Marks)

1. Choose the correct TAC for the following code

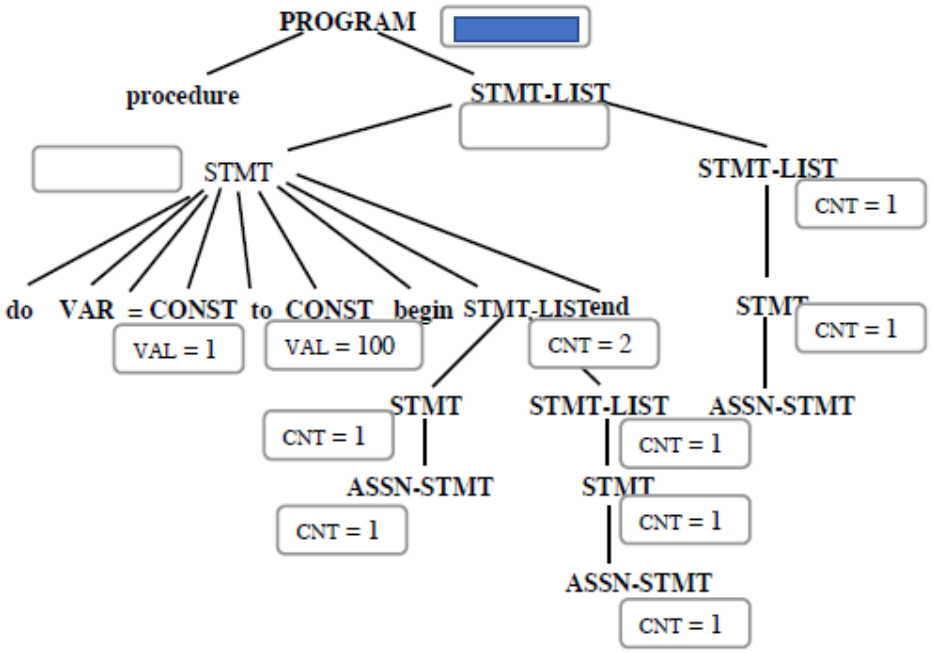
X=a+b+c+d

a.

b.

c.

2. For the following annotated semantic tree and attribute grammar answer the following question



PROGRAM → procedure STMT-LIST	**PROGRAM.cnt = STMT LIST.cnt**
$STMT\text{-}LIST_0$ → STMT $STMT\text{-}LIST_1$	**STMT LIST0.cnt = STMT.cnt + STMT LIST1.cnt**
STMT-LIST → STMT	**STMT LIST.cnt = STMT.cnt**
STMT → do VAR = $CONST_1$ to $CONST_2$ begin STMT-LIST end	**STMT.cnt = STMT LIST.cnt * (CONST2.val - CONST1.val) + 1)**
STMT → ASSN-STMT	

2.1) The Correct attribute grammar rule for the semantic rule STMT→ASSN-STMT is _____

a.

b.

c.

2.2) The Correct value for the CNT at the root of tree(the shaded rectangle)

a. 200

b. 199

c.201

d.222

2.3) the CNT attribute is

a. inherited

b. Synthesiz

Parser

1. ambiguity

1.1 Is the following grammar ambiguous (True or False)

$\boldsymbol{S \longrightarrow E}$

$\boldsymbol{E \longrightarrow E + E | E - E | (E) | num}$

1.2 This grammar is ambiguous because of

a. Associativity
b. Priority
c. Left Recursion
d. Both a and b

1.3 S->aAS|a

A->SbA|ba|SS

Which of the following string is produced by the grammar?

a) aabbaab
b) aabbaa
c) baabab
d) None of the mentioned

2. LL(1)Parsers

For the following grammar

S→AB|PQx
A⟶xy | m
B⟶bC

C→bC|ε
P→pP |ε
Q→qQ|ε

2.1) Is this grammar L1(True/False)
2.2) This grammar is not LL1 because there is a multiple entry in parsing table in rule _____
2.3) in the Parsing table, the cell (S,m) will contain_____
2.4) First set for this grammar is_____
2.5) follow set for this grammar is_____
2.6) for the following grammar

$$\boldsymbol{S \rightarrow AB}$$
$$\boldsymbol{A \rightarrow xaA|\ yaA|\varepsilon}$$
$$\boldsymbol{B \rightarrow b}$$

the string "xayab is accepted (True/False)

3. LR(0)

Consider the following grammar(13Points):

S → BB
B → aB|c

1. In LR(0) Automata , What is the contents of the start state_____
2. The contents of the cell after(Start stat,B)._____
3. This grammar is ___
   a. LR(0)
   b. Not LR(0) because it has shift-reduce conflict.
   c. Not LR(0) because it has reduc- reduce conflict.
   d. Both b and c
4. the string "acac" is accepted by this grammar (True/False).