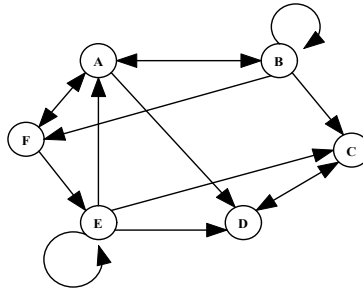考号/Exam Code: _____   姓名/Name:_____   学校/School:_____
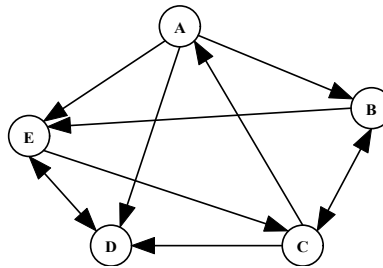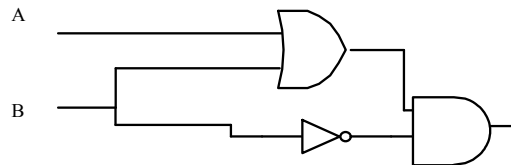
---

1. Graph Theory

Draw the adjacency matrix for the directed graph at the right?

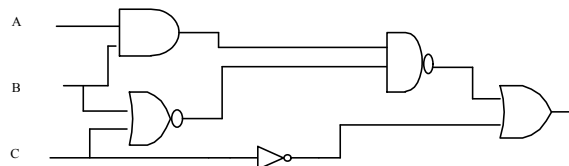**1.**

---

2. Graph Theory

How many paths of length 2 are there in the directed graph at the right?

2.

---

3. Digital Electronics

Which ordered pairs make the digital circuit at the right TRUE?

A

B

3.

---

4. Digital Electronics

Translate the digital circuit at the right to its equivalent Boolean expression.

A

B

C

4.

5. What Does This Program Do? - Strings **5.**

What is the output when this program is run?

```
A="NEWJERSEYISTHEGARDENSTATE"
B="": C="": D="": E="": F=""
for x = 0 to len(A) − 1
        if A[x, x] < "K" then
            B = B + A[x, x]
        else
            C = C + A[x, x]
        end if
next x
for x = 0 to len(B) − 1
        if B[x, x] != "E" then
            D = D + B[x, x]
        end if
        if C[x, x] != "S" then
            E = E + C[x, x]
        end if
next x
for x = 0 to 5
        if ((D[x, x] != "A") && (E[x, x] != "R")) then
            F = D[x, x] + F + E[x, x]
        end if
next x
output F
end
```
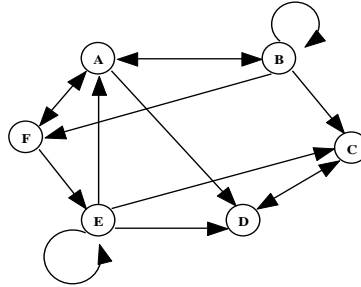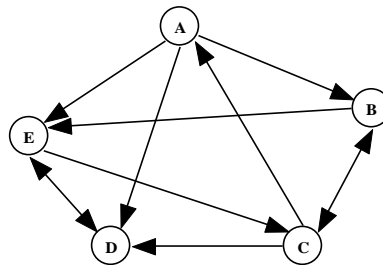
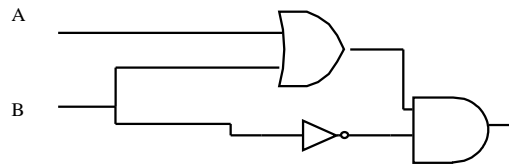考号/Exam Code: _____   姓名/Name:_____   学校/School:_____

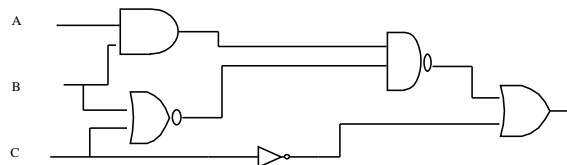## 1. Graph Theory

画出右边有向图的邻接矩阵。

1.

2. Graph Theory

在右边的有向图中，有多少
条长度为 2 的路径?

2.

3. Digital Electronics

哪些有序对使右边
的数字电路为真?

3.

4. Digital Electronics

将右边的数字电路转换为
其等效的布尔表达式。

4.

American Computer Science League

5. What Does This Program Do? - Strings

执行此程序后，输出是什么？

```
A="NEWJERSEYISTHEGARDENSTATE"
B="": C="": D="": E="": F=""
for x = 0 to len(A) − 1
     if A[x, x] < "K" then
          B = B + A[x, x]
     else
          C = C + A[x, x]
     end if
next x
for x = 0 to len(B) − 1
     if B[x, x] != "E" then
          D = D + B[x, x]
     end if
     if C[x, x] != "S" then
          E = E + C[x, x]
     end if
next x
for x = 0 to 5
     if ((D[x, x] != "A") && (E[x, x] != "R")) then
          F = D[x, x] + F + E[x, x]
     end if
next x
output F
end
```

5.