1 (a)

S = database$

BWT(S) = etbda$saa

(please include some steps in your
solution)

1 (b)

During exam, the initial values of the alphabets are less important. For this qn, after MTF, the last two a's should be 2, 0.
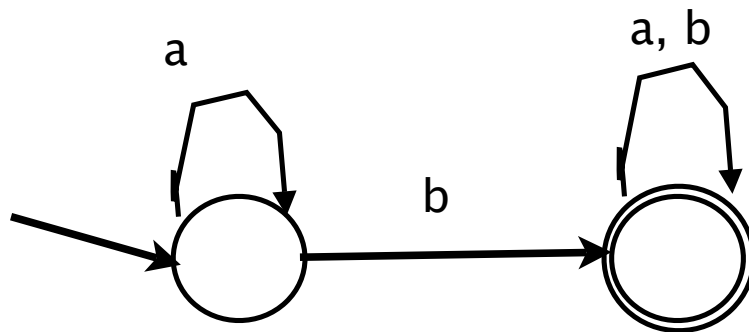
i.e.,

102, 116, …, **2, 0**

1 (c)

Pls illustrate your steps using either F & L column, or C[] and Occ.

Final answer is **barbara$**

2 (a) & (b)

(a? bab)*

3

- /bib//book[year > 2000]/author always produces a subset of the result from /bib[*//year > 2000]//book/author

- As the latter can match more general cases, for example /bib//last-updated/year may contain the last update date of the entire bib database - which includes all the books.
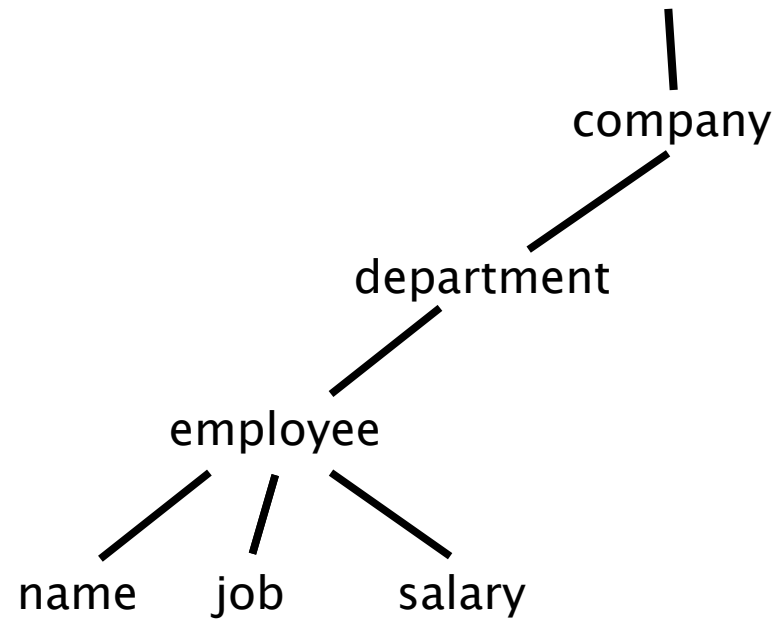
4(a)

The idea:

Your answer should consider the encoding of the XML tree into the balanced parentheses / bits:
(((()()())(()()()))(()))
You will then need to assume these parentheses are stored in blocks and explain how multi-tiered architecture as shown in ISX can efficiently compute some navigational operations.

4(b)

company
department
employee
name   job   salary

5

Use an example to illustrate how to match a sub-path on the following XBW (for simplicity, the text values are not shown here):


```
        C
      /   \
     D     D
    / \     \
   E   E     E
  /|\ /|\
 N J S N J S
```
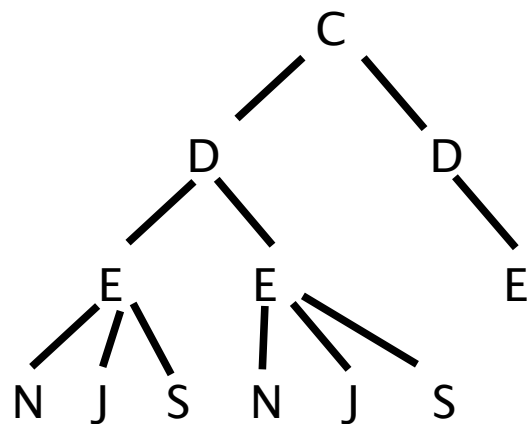
```
1 C
0 D C
0 E DC
0 N EDC
0 J EDC
1 S EDC
1 E DC
0 N EDC
0 J EDC
1 S EDC
1 D C
1 E DC
```

→

```
1 C
0 D C
1 D C
0 E DC
1 E DC
1 E DC
0 N EDC
0 J EDC
1 S EDC
0 N EDC
0 J EDC
1 S EDC
```
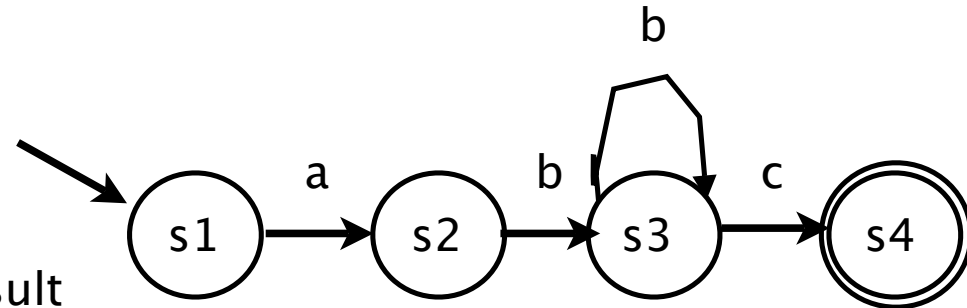
→

XBW
```
1 C
0 D
1 D
0 E
1 E
1 E
0 N
0 J
1 S
0 N
0 J
1 S
```

6

Start   Stop
Site1
(x1,s1) (y1,s3)
(x4,s3) (y3,s4)
Site2
(y1,s2) (z2,s3)
(y1,s3) (z2,s3)
(y3,s2) (z2,s3)
(y3,s3) (z2,s3)
Site3
(z2,s2) (x4,s3)
(z2,s3) (x4,s3)

Start   Result
Site1
(x1,s4) x1
(x4,s4) x4
(x4,s3) x3
Site2
(y1,s4) y1
(y1,s2) y3
(y1,s3) y3
(y3,s4) y3
Site3
(z2,s1) z3
(z2,s4) z2
(z2,s2) z2
(z2,s3) z2

By tracing these
two tables from
(x1, s1), we
obtain the final
results:
y3, z2, x3, y3

42