Important: This is an open book test. You can use any books, notes, or paper but no electronic device. *Do not log into the computer during the test, or use any electronic or communications device. Switch off your cell phones. Any device with an* ON-OFF *switch should have its switch in the* OFF *position.* Any calculations and rough work can be done on the back side of the test pages. If there is a syntax error in any program segment, just point it out and you will get full credit for the problem. You will lose five points for not writing your name.

1. [6 pt] Write a `while` loop to generate ten random numbers between 1 and 64 using Korn shell.

2. [6 pt] Write the `awk` statement to print every even numbered line from the file `foobar`.

3. [4 pt] What would be printed from the following commands:

```
x=24
print ${x:-30}
```

4. [6 pt] What are the types of files that you should put under revision control. Give an example of at least three types of those files. Also give three examples of file types that should not be put under revision control.

5. [6 pt] Give the suffix rules (and any required declarations) to allow the compilation of files with extension `.tex` into files with extension `.dvi`. The compiler to be used is called `latex`. Using command line, I can compile the file `foobar.tex` into `foobar.dvi` using the following command:

```
latex foobar.tex
```

6. [6 pt] What steps will you take to prepare a program for run-time debugging? In `gdb` or `ddd`, how will you create a breakpoint on the first executable line of your program?

7. [6 pt] Consider the following code:

```
int i = 0, j, t = 0;
char name[50];
printf ( "What is your name? " );
scanf ( "%s", name );
for ( ; i < strlen ( name ); i++ )
    for ( j = 'a'; j <= name[i]; j++ )
        t++;
printf ( "%d\n", t );
```

What is the value printed by this code when the user inputs "dad"?

8. [6 pt] What is the output of the following code?

```
int x = 7;
x = ( x | 16 ) << 1;
printf ( "%d\n", x );
```