1 Short questions(17 questions): 3 marks each

1. To execute an internal shell command, the shell searches for the binary file of the command in a list of directories stored in the environment variable **PATH**.
   Your answer (Yes/No) : No

2. Bash has means to define integer and real variables.
   Your answer (Yes/No) : No

3. The standard output **stderr** can be redirected to a file using $>$.
   Your answer (Yes/No) : No

4. A Unix utility that reads its inputs from the keyboard by default, could also read its input from a regular file, if redirected.
   Your answer (Yes/No) : Yes

5. Unix philosophy includes the following : "A complex problem should be solved, if possible, by combining multiple existing utilities."
   What is the name of the mechanism used by Unix to achieve this goal?
   Your answer: Pipes

6. What is the data type of a user ID in Unix?
   Your answer: integer

7. A shell is simply another programming language, like C/Java/Python, used for specific applications.
   Your answer(Yes or No) : No

8. A process ID is usually a number equal to the user ID.
   Your answer(Yes or No) : No

9. **fork()** is a system call that causes the caller process to be terminated.
   Your answer(Yes or No) : No

10. Every live process must have a unique PID that no other live process can have.
    Your answer (Yes/No) : Yes

11. If we type on a Bash terminal

```
echo Today is "`date`"
```

where **date** is between two backticks within double quotations.
The following strings will appear on the screen: **Today is date**.
Your answer (Yes/No) : No

12. The line below will print the value 0 when executed.

```
printf("%d\n", EOF==0);
```

Your answer (Yes/No) : Yes

13. rm *?? means "delete all files whose names are made of exactly two caharacters".
Your answer (Yes/No) : No

14. A process has the option to change its own process ID.
Your answer (Yes/No) : No

15. Assuming you are using Bash, what will be printed when you type:
echo "Hello, my name is Ali Baba" | tr -d " " | wc -w
Hint: **tr -d "X"** deletes all characters, including blanks, present in string **X** from its input.
Your answer : 1

16. Name the environment variable that stores the list of directories used by the shell to search for binary files to be executed
Your answer : PATH

17. To execute an external shell command, the shell searches for the binary file of the command in a list of directories stored in the environment variable **PATH**.
Your answer (Yes/No) : Yes

2 Tracing: 10 marks each

1. The utility **ls** lists files and subdirectories. Suppose we have 13 files and 10 subdirectories in our current directory. What will be printed if we type the following:
ls -F | grep -v "/" | wc -w
Hints:
(1) The **grep** utility searches files for a pattern and only prints the lines containing that pattern. However, when option **-v** is used, **grep** keeps only the lines **NOT** containing the pattern

(2) the **-F** option forces **ls** to mark listed directory names with a trailing slash (/), while regular file names remain unchanged.
(3) **wc -w** outputs word (string) count of a file.
Your answer : 13

2. What does the Bash script below do?

```
for file in `ls`; do
    if [ -d $file ]; then
       echo $file
    fi
done
```

Your answer : print the names of all subdirectories

3. Assume the 5-line script below is stored in a file named **myBash.bash**.
What will be printed if we run this script by typing **myBash.bash myBash.bash 4** ?

```
if [ $# != 2 ]; then
  echo "Synopsis: $0 <fileName> <integer>"
  exit
fi
echo `head -$2 $1 | tail -1`
```

Hints:
(1) head -n fileName outputs the first n lines of fileName
(2) tail -n fileName outputs the last n lines of fileName
(3) The input fileName could be a pipe, containing another program's output.
Your answer : fi

4. In a single sentence, what does the program below do?

```
#include <sys/types.h>
#include <dirent.h>
#include <stdio.h>
#include <stlib.h>

int main(int argc, char *argv[]){
  DIR *dp;
  struct dirent *dirp;

  dp = opendir("./");
  while ( (dirp=readdir(dp)) != NULL)
     if(!opendir(dirp->d_name))
       printf("%s\n", dirp->d_name);
  closedir(dp);
  exit(0);
}
```

Your answer : prints the names of all regular (non directory) files

5. In a single sentence, what does the Bash script below do?

```
echo > A.txt

list=`ls | grep .txt`

for name in $list ; do
      more $name >> A.txt
done
```

Your answer : Combine all text files in a single file named A.txt