5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 1	**Enrollment No:**	**Group : A**
Practical Problem	Write a ***date*** command to display date in following format: (Consider current date as 4th January 2014) 1. dd/mm/yy hh:mm:ss 2. Today's date is: 01/04/14. Current time is: 14:50:03 04th January 2014 3. 2014-02-04 Sat Jan 4 2014 5 PM	
Objective(s)	Students will be able to learn ***date*** command with options and formats.	
Pre-requisite	Use putty software to run commands & usage of date command.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command & output.	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX aoncepts and Applications, McGraw Hill	
Post Laboratory questions	*1. What is the syntax of **date** command?* *2. List out different options of **date** command.* *3. List out different formats of **date** command.* *4. How can you display date after 10 months from today?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 2	**Enrollment No:**	**Group : A**
Practical Problem	Write a ***cal*** command to do following: 1. To display calendar of this month. 2. Display calendar for single month and Monday as the first day of week.	
Objective(s)	Students will be able to learn ***cal*** command with options.	
Pre-requisite	Use putty software to run commands & usage of ***cal*** command.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command & output.	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX aoncepts and Applications, McGraw Hill	
Post Laboratory questions	1. *What is the syntax of **cal** command?* 2. *List out different options of **cal** command.* 3. *List two different ways to display calendar of current month.* 4. *How can you display calendar of year 1800?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 3	**Enrollment No:**	**Group : A**
Practical Problem	Solve following using ***echo*** command: 1. Write the output of a command: $echo "Today's date is `date`" (`` is back quote) 2. Write an interpretation of a command: $echo Welcome to the LINUX's world.	
Objective(s)	Student shall learn ***echo*** command with options & escape sequences.	
Pre-requisite	Use putty software to run commands, usage of ***echo*** command & meaning of back quote (``) character.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command, output & interpretation.	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX aoncepts and Applications, McGraw Hill	
Post Laboratory questions	1. *What is the syntax of **echo** command?* 2. *List out different options of **echo** command.* 3. *List out different types of escape sequences of **echo** command.* 4. *How can you remove effect of escape sequence to be printed in output?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 4	**Enrollment No:**	**Group : A**
Practical Problem	Write ***bc*** command for following: 1. To eveluate "21/2". Answer should contain 5 decimal places. 2. To convert 42 from decimal to hexadecimal. 3. Print "false" if number is 1, print "true" otherwise. (Use if statement, store value in variable) 4. To print digits from 1 to 10 using for loop.	
Objective(s)	Student shall learn ***bc*** command with options & conditional statements.	
Pre-requisite	Usage of ***bc*** command, use of 'banch calculator' in interactive mode.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command & output.	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX aoncepts and Applications, McGraw Hill	
Post Laboratory questions	1. *What is the purpose of **bc** command?* 2. *Give two full forms of "bc"?* 3. *What is the syntax of **bc** command.* 4. *How can you use loops in **bc** calculator?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 5	**Enrollment No:**	**Group : A**
Practical Problem	Write output and interpretation of following commands: 1. echo "1 == 2" | bc 2. echo "2+(3*4)"|bc	
Objective(s)	Student shall be able to get an idea of using ***bc*** command with piping mechanism.	
Pre-requisite	Usage of ***echo*** command and pipe.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command & output.	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX aoncepts and Applications, McGraw Hill	
Post Laboratory questions	1. *What is **pipe**?* 2. *What are the different types of operator used in **bc** command?* 3. *In which order expressions are evaluated?* 4. *How can you use file in **bc** command?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

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Practical No : 6	**Enrollment No:**	**Group : A**
Practical Problem	Write ***ls*** command for following: 1. Display all files names including hidden files. 2. Display all files names including hidden files but do not display "." and ".." files.	
Objective(s)	Student shall learn ***ls*** command with options.	
Pre-requisite	Usage of ***ls*** command, meaning of all options.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command & output.	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX aoncepts and Applications, McGraw Hill	
Post Laboratory questions	1. *What is the syntax of **ls** command?* 2. *List out different options of **ls** command.* 3. *Which fields are displayed in output of "**ls –l**" command?* 4. *What are the hidden files?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 7	**Enrollment No:**	**Group : A**
Practical Problem	Write ***ls*** & ***echo*** command to display following list of files: File names : 1. Having 3 consecutive digits. 2. Having only uppercase letters. 3. First 2 characters are numbers & remaining may be anything. 4. Having 3 consecutive alphabets.	
Objective(s)	Student shall understand meaning of each patterns & effective use of them to match files in group.	
Pre-requisite	Usage of ***ls*** & ***echo*** command and meaning of different meta characters.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command & output	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX aoncepts and Applications, McGraw Hill	
Post Laboratory questions	1. *What are meta characters?* 2. *List out different meta characters.* 3. *What will be the effect of "**rm *" command?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

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Practical No : 8	**Enrollment No:**	**Group : A**
Practical Problem	Write ***chmod*** command for following rwx triplets using symbolic code & octal code either for file or directory: i. rwxrwxrwx ii. - - - - - -rw- iii. r-xr-xr-x iv. -w- -w- -w-	
Objective(s)	Student shall understand use of ***chmod*** command for granting and revoking of permissions to files as well as directories using symbolic code and octal values for user, group & others.	
Pre-requisite	Usage of ***chmod*** command and meaning of all set of permissions.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command & rwx triplets	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Muster J., UNIX made easy, McGraw Hill	
Post Laboratory questions	1. *What is the syntax of **chmod** command?* 2. *List out different symbolic codes with their meaning.* 3. *List out different octal values with permissions.* 4. *What is the difference between use of symbolic code & octal values for granting/revoking permissions?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

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Practical No : 9	**Enrollment No:**	**Group : A**
Practical Problem	Write rwx triplets for file "Linux.txt" based on following command: i. $chmod 000 Linux.txt ii. $chmod u+rwx Linux.txt iii. $chmod +rwx Linux.txt iv. $chmod -r+w Linux.txt	
Objective(s)	Student shall understand concept of converting particular permission into rwx triplets for file.	
Pre-requisite	Usage of ***chmod*** command and meaning of all set of permissions.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command & rwx triplets	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Muster J., UNIX made easy, McGraw Hill	
Post Laboratory questions	*1. List available permissions for file and directory?* *2. List available operations for granting & revoking permissions.* *3. List different users' categories.*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

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Practical No : 10	**Enrollment No:**	**Group : A**
Practical Problem	Write rwx triplets for directory "MSCIT" based on following command: i. $chmod –r+w mscit ii. $chmod a= mscit iii. $chmod ug=rw,o=r- mscit	
Objective(s)	Student shall understand concept of converting particular permission into rwx triplets for directory.	
Pre-requisite	Usage of ***chmod*** command and meaning of all set of permissions.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	*Command & rwx triplets.*	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Muster J., UNIX made easy, McGraw Hill	
Post Laboratory questions	1. *What are the three levels of security in LINUX?* 2. *What permission is needed in directory to list the content of a directory?* 3. *What type of permission is needed to delete a file from a directory?* 4. *What permission is needed in directory so that owner of a directory can copy a file into that directory?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

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Practical No : 11	**Enrollment No:**	**Group : A**
Practical Problem	User issues the following ***umask*** command. Write an rwx triplets for all files and directories created after this command. i. $umask 777 ii. $umask 000 iii. $umask 022 iv. $umask 111 v. $umask 2 vi. $umask 512	
Objective(s)	Student shall understand use of ***umask*** command for setting default permissions for files as well as directories & convert it into rwx triplets .	
Pre-requisite	Usage of ***umask*** command and meaning of all set of permissions.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	*Command & rwx triplets.*	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Muster J., UNIX made easy, McGraw Hill	
Post Laboratory questions	*1. What is the syntax of **umask** command?* *2. What is the difference between use of **chmod** & **umask** command for granting and revoking permissions?* *3. What is the system default permission for file? Write rwx triplets as well as octal code for the same.* *4. What is the system default permission for directory? Write rwx triplets as well as octal code for the same.*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

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Practical No : 12	**Enrollment No:**	**Group : A**
Practical Problem	i. Write command to send your current process in background. ii. Write a command to bring lastly suspended job in forground. iii. Write command that bring second job from background to foreground. iv. Write two different ways to terminate a job having ID 5. v. What will be the effect of following command? A. $fg B. $fg %% vi. What will be the output of ps command? Describe all columns in brief. vii. What will be the output of jobs command? Give detailed of all columns.	
Objective(s)	Student shall understand use of Job Scheduling commands.	
Pre-requisite	Usage and concept of job scheduling commands.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	*Command, output & description.*	
Nature of submission	Handwritten	
References for solving the problem	Book: Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson	
Post Laboratory questions	1. *What is foreground job?* 2. *What is background job?* 3. *What is the meaning of "+"(plus) and "-(minus)" sign in output of "jobs" command?* 4. *What are the six different states of job?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

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Practical No : 13	**Enrollment No:**	**Group : A**
Practical Problem	**i. Write command for followings:** A. Copy contents of ABC.txt into XYZ.txt without using cp command. B. Display total number of current login users. **i. What will be interpretation of following command? Write with output or errors if possible:** A. wc < sample B. wc > sample < sample C. wc sample* D. ls –l t* | tee user.lst	
Objective(s)	Student shall understand Shell feature like, redirection, piping, special file, tee command etc.	
Pre-requisite	Usage of redirection and piping.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO3:** Understand and use Shell features of redirection, pipe, grouping commands, joining commands and running jobs.	
Solution must contain	*Command, output & description.*	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX Concepts and Applications, McGraw Hill	
Post Laboratory questions	*i. What is **Redirection**?* *ii. What is **trash file**?* *iii. What is **terminal file**?* *iv. What is the purpose of **tee** command?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

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Practical No : 14	**Enrollment No:**	**Group : A**
Practical Problem	**What does after executing following commands? (Output or error, describe it properly.)** i. A='file1' echo $A ii. echo \\\\a iii. echo 'This is My "Birth date" ' iv. Msg=" BVPATEL" echo ${Msg} v. A=10 B=A echo $$B echo \$$B eval echo \$$B	
Objective(s)	Student shall understand use of variables, command execution, command substitution, ***eval*** command, etc.	
Pre-requisite	Usage of job scheduling commands.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO3:** Understand and use Shell features of redirection, pipe, grouping commands, joining commands and running jobs.	
Solution must contain	*Command, output & description.*	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX Concepts and Applications, McGraw Hill	
Post Laboratory questions	*i. What are rules for defining variable in LINUX?* *ii. What is **command substitution**?* *iii. What are different types of command execution?* *iv. What is the purpose of **eval** command?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

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Practical No : 15	**Enrollment No:**	**Group :**
Practical Problem	**(next page)**	
Objective(s)	Students will be able to understand the concept of Filtering utilities.	
Pre-requisite	Concepts of redirection, piping & commands like head, tail, cut, paste, uniq, sort, tr etc.	
Duration for completion	90 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO3:** Understand and use Shell features of redirection, pipe, grouping commands, joining commands and running jobs.	
Solution must contain	Command, output & interpretation if asked.	
Nature of submission	Handwritten	
References for solving the problem	Book: iii. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson iv. Das S., UNIX aoncepts and Applications, McGraw Hill	
Post Laboratory questions	5. *What is the purpose of **tr** command?* 6. *List out different options of **uniq** command.* 7. *List out different formats of **sort** command.* 8. *How can we remove multiple blanks from a file?*	

Assessment

	Solution achieves the desired objective(s)	Viva
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

Definition:

- Create file “ABC.txt” and “PQR.txt” with at least 10 lines. Apply following on them.

1. Write a command to store contents of file “ABC.txt” and “PQR.txt” into file “New.txt”.
2. Write command for following:
    a. Display first 3 lines.
    b. Display last 7 lines.
    c. Display all lines rather than last 1 line.
    d. Display lines from 6 to 10.
    e. Display last to 3rd line.
    f. Display only second line.
3. Write command to translate all capital characters into small characters and vice versa in file “ABC.txt”.
4. Sort long listing of current directory by “size” column in ascending order.
5. Lists the five largest files in the current directory.
6. How these two commands are similar and different?
   $ Sort –u “Abc.txt”
   $ uniq “Abc.txt”
7. Extract the name of only user from file ***/etc/passwd***.
8. Write command to count total number of words from file without using ***wc*** command.
9. Write sort command to sort long listing of current directories firstly name wise and secondly their size wise using single ***sort*** command.
10. Write command to extract second and third fields from file PQR.txt vertically.
11. Write command to concatenate two file name ABC.txt and PQR.txt vertically.
12. Write command to merge two sorted file in single file.
13. What happen with following commands? Give comments on interpretation of following commands.
    $ tr “AB” “BA” < myfile
    $ cat myfile

14. What happen with following commands? Give comments on interpretation of following commands.
    $ tr ‘[a-z]’ ‘[A-Z]’ < file1

15. What happen with following commands? Give comments on interpretation of following commands.
    $ tr –s ‘ ‘ < file1

16. What happen with following commands? Give comments on interpretation of following commands.
    $ tr –cd ‘[a-zA-Z]’ < file1

17. Write command to add today’s date and time to the end of a given file.

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Practical No : 16	**Enrollment No:**	**Group : A**
Practical Problem	Write a shell script to find smallest number amongst three numbers that are read from the keyboard as well as from command line.	
Objective(s)	Student shall be able to apply knowledge of commands to develop shell script.	
Pre-requisite	Purpose and syntax of all commands as well as different shell script constructs.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO3:** Understand an use Shell features of redirection, pipe, grouping commands, joining commands and running jobs. **CO4:** Develop, debug & execute Shell script to carry out routine task.	
Solution must contain	*Shell script code & output.*	
Nature of submission	Handwritten	
References for solving the problem	Book: iii. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson iv. Das S., UNIX Concepts and Applications, McGraw Hill	
Post Laboratory questions	1. *What is shell script?* 2. *How will you take input from user in shell script?* 3. *What is the difference between using if statement for numeric and string values?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 17	**Enrollment No:**	**Group : A**
Practical Problem	Write a shell script to count total number of directories under the current directory.	
Objective(s)	Student shall understand use of different operators used in shell script.	
Pre-requisite	Purpose and syntax of different shell script constructs.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO3:** Understand an use Shell features of redirection, pipe, grouping commands, joining commands and running jobs. **CO4:** Develop, debug & execute Shell script to carry out routine task.	
Solution must contain	*Shell script code & output.*	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX Concepts and Applications, McGraw Hill	
Post Laboratory questions	*1. What are different types of file operators?* *2. What are positional parameters?* *3. What is the purpose of **let** command?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 18	**Enrollment No:**	**Group : A**
Practical Problem	Write a shell script to input a number and display following pattern up to inputted number. If inputted number is 5 then pattern will be: * * * * * * * * * * * * * * * (Use only one loop)	
Objective(s)	Student shall understand use of different looping constructs.	
Pre-requisite	Purpose and syntax different shell script constructs.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO3:** Understand an use Shell features of redirection, pipe, grouping commands, joining commands and running jobs. **CO4:** Develop, debug & execute Shell script to carry out routine task.	
Solution must contain	*Shell script code & output.*	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX Concepts and Applications, McGraw Hill	
Post Laboratory questions	1. *What is a **loop**?* 2. *What are different types of looping constructs?* 3. *What is the difference between **while loop** & **until loop**?* 4. *What is the difference between List controlled loop & Command controlled loop?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 19	**Enrollment No:**	**Group : A**
Practical Problem	Write shell script that accept a filename as an argument and display the last modification time if the file exists and suitable message if it doesn't.	
Objective(s)	Student shall understand use of commands inside shell script and file operations.	
Pre-requisite	Purpose and syntax of all commands as well as different shell script constructs.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO3:** Understand an use Shell features of redirection, pipe, grouping commands, joining commands and running jobs. **CO4:** Develop, debug & execute Shell script to carry out routine task.	
Solution must contain	*Shell script code & output.*	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX Concepts and Applications, McGraw Hill	
Post Laboratory questions	1. *How will you sort files according to modification time?* 2. *What is argument validation?* 3. *What is the purpose of **shift** command?* 4. *What is the use of **$@** and **$*** parameters?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 20	**Enrollment No:**	**Group : A**
Practical Problem	Write shell script to create a menu that displays the list of files, the number of current users, contents of a particular file and process status of the system based on the user choice.	
Objective(s)	Student shall understand use of case and select loop constructs.	
Pre-requisite	Usage of commands inside shell script.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO3:** Understand an use Shell features of redirection, pipe, grouping commands, joining commands and running jobs. **CO4:** Develop, debug & execute Shell script to carry out routine task.	
Solution must contain	*Shell script code & output.*	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX Concepts and Applications, McGraw Hill	
Post Laboratory questions	1. *Which construct is used to perform multi-way selection?* 2. *What is the syntax of **select loop**?* 3. *What is the use of **$#** and **$0** parameters?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 1	**Enrollment No:**	**Group : B**
Practical Problem	Write a ***date*** command to display date in following format: (Consider current date as 4th January 2014) 1. yyyy-mm-dd hh-mm 2. Yesterday's date is: 01/03/14. 3. Sat, 04 Jan 2014 15:19:32 +0530 4. 2013-01-04 Saturday January 04 2014 09 AM	
Objective(s)	Students will be able to learn ***date*** command with options and formats.	
Pre-requisite	Use putty software to run commands & usage of date command.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command & output.	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX aoncepts and Applications, McGraw Hill	
Post Laboratory questions	*1. What is the syntax of **date** command?* *2. List out different options of **date** command.* *3. List out different formats of **date** command.* *4. How can you display date after 10 months from today?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 2	**Enrollment No:**	**Group : B**
Practical Problem	Write a ***cal*** command to do following: 1. Display calendar of three months. 2. Display dates of the Julian calendar of Feb-2014.	
Objective(s)	Students will be able to learn ***cal*** command with options.	
Pre-requisite	Use putty software to run commands & usage of ***cal*** command.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command & output.	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX aoncepts and Applications, McGraw Hill	
Post Laboratory questions	1. *What is the syntax of **cal** command?* 2. *List out different options of **cal** command.* 3. *List two different ways to display calendar of current month.* 4. *How can you display calendar of year 1800?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 3	**Enrollment No:**	**Group : B**
Practical Problem	Solve following using ***echo*** command: 1. Write the output of a command: echo {one,two,red,blue}fish 2. Write an interpretation of a command: echo -e "Welcome to the LINUX \cworld."	
Objective(s)	Student shall learn ***echo*** command with options & escape sequences.	
Pre-requisite	Use putty software to run commands, usage of ***echo*** command & meaning of back quote (``) character.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command, output & interpretation.	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX aoncepts and Applications, McGraw Hill	
Post Laboratory questions	*1. What is the syntax of **echo** command?* *2. List out different options of **echo** command.* *3. List out different types of escape sequences of **echo** command.* *4. How can you remove effect of escape sequence to be printed in output?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 4	**Enrollment No:**	**Group : B**
Practical Problem	Write ***bc*** command for following: 1. To find square root of 30 with 10 decimal places. 2. To convert 1100 from binary to decimal. 3. Print "Even Number" if number is even, print "Odd Number" otherwise. (Use if statement, store value in variable) 4. To print digits from 11 to 20 using while loop.	
Objective(s)	Student shall learn ***bc*** command with options & conditional statements.	
Pre-requisite	Usage of ***bc*** command, use of 'banch calculator' in interactive mode.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command & output.	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX aoncepts and Applications, McGraw Hill	
Post Laboratory questions	*1. What is the purpose of **bc** command?* *2. Give two full forms of "bc"?* *3. What is the syntax of **bc** command.* *4. How can you use loops in **bc** calculator?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 5	**Enrollment No:**	**Group : B**
Practical Problem	Write output and interpretation of following commands: 1. echo "4 && 10" | bc 2. echo "2+3*4"|bc	
Objective(s)	Student shall be able to get an idea of using ***bc*** command with piping mechanism.	
Pre-requisite	Usage of ***echo*** command and pipe.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command & output.	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX aoncepts and Applications, McGraw Hill	
Post Laboratory questions	1. *What is **pipe**?* 2. *What are the different types of operator used in **bc** command?* 3. *In which order expressions are evaluated?* 4. *How can you use file in **bc** command?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 6	**Enrollment No:**	**Group : B**
Practical Problem	Write ***ls*** command for following: 1. Display current working directory name. 2. Display all file names in one column.	
Objective(s)	Student shall learn ***ls*** command with options.	
Pre-requisite	Usage of ***ls*** command, meaning of all options.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command & output.	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX aoncepts and Applications, McGraw Hill	
Post Laboratory questions	1. *What is the syntax of **ls** command?* 2. *List out different options of **ls** command.* 3. *Which fields are displayed in output of "**ls –l**" command?* 4. *What are the hidden files?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 7	**Enrollment No:**	**Group : B**
Practical Problem	Write ***ls*** & ***echo*** command to display following list of files: File names : 1. Having only lowercase letters. 2. Having "?" and "*" characters. 3. Minimum length is 4 characters. 4. First character may be in uppercase or lowercase & second character must in uppercase.	
Objective(s)	Student shall understand meaning of each patterns & effective use of them to match files in group.	
Pre-requisite	Usage of ***ls*** & ***echo*** command and meaning of different meta characters.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command & output	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX aoncepts and Applications, McGraw Hill	
Post Laboratory questions	*1. What are meta characters?* *2. List out different meta characters.* *3. What will be the effect of "**rm ***" command?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 8	**Enrollment No:**	**Group : B**
Practical Problem	Write ***chmod*** command for following rwx triplets using symbolic code & octal value: i. r- -r- -r- - ii. -w---x-w- iii. -wx—xr- - iv. rw-rw-rw-	
Objective(s)	Student shall understand use of ***chmod*** command for granting and revoking of permissions to files as well as directories using symbolic code and octal values for user, group & others.	
Pre-requisite	Usage of ***chmod*** command and meaning of all set of permissions.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command & rwx triplets	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Muster J., UNIX made easy, McGraw Hill	
Post Laboratory questions	1. *What is the syntax of **chmod** command?* 2. *List out different symbolic codes with their meaning.* 3. *List out different octal values with permissions.* 4. *What is the difference between use of symbolic code & octal values for granting/revoking permissions?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 9	**Enrollment No:**	**Group : B**
Practical Problem	Write rwx triplets based on following command: i. $chmod 5 Linux.txt ii. $chmod a+rwx Linux.txt iii. $chmod +r Linux.txt iv. $chmod +w-x Linux.txt	
Objective(s)	Student shall understand concept of converting particular permission into rwx triplets for file.	
Pre-requisite	Usage of ***chmod*** command and meaning of all set of permissions.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command & rwx triplets	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Muster J., UNIX made easy, McGraw Hill	
Post Laboratory questions	*1. List available permissions for file and directory?* *2. List available operations for granting & revoking permissions.* *3. List different users' categories.*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 10	**Enrollment No:**	**Group : B**
Practical Problem	Write rwx triplets based on following command: i. $chmod u=rwx mscit ii. $chmod,g=rx,o=r mscit iii. $chmod go= mscit	
Objective(s)	Student shall understand concept of converting particular permission into rwx triplets for directory.	
Pre-requisite	Usage of ***chmod*** command and meaning of all set of permissions.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	*Command & rwx triplets.*	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Muster J., UNIX made easy, McGraw Hill	
Post Laboratory questions	*1. What are the three levels of security in LINUX?* *2. What permission is needed in directory to list the content of a directory?* *3. What type of permission is needed to delete a file from a directory?* *4. What permission is needed in directory so that owner of a directory can copy a file into that directory?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 11	**Enrollment No:**	**Group : B**
Practical Problem	User issues the following ***umask*** command. Write an rwx triplets for all files and directories created after this command. i. $umask 777 ii. $umask 000 iii. $umask 1 iv. $umask 707 v. $umask 110 vi. $umask 222	
Objective(s)	Student shall understand use of ***umask*** command for setting default permissions for files as well as directories & convert it into rwx triplets .	
Pre-requisite	Usage of ***umask*** command and meaning of all set of permissions.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	*Command & rwx triplets.*	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Muster J., UNIX made easy, McGraw Hill	
Post Laboratory questions	*1. What is the syntax of **umask** command?* *2. What is the difference between use of **chmod** & **umask** command for granting and revoking permissions?* *3. What is the system default permission for file? Write rwx triplets as well as octal code for the same.* *4. What is the system default permission for directory? Write rwx triplets as well as octal code for the same.*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 12	**Enrollment No:**	**Group : B**
Practical Problem	i. Write command to send your current process in background. ii. Write a command to bring lastly suspended job in forground. iii. Write command that bring second job from background to foreground. iv. Write two different ways to terminate a job having ID 5. v. What will be the effect of following command? A. $fg B. $fg %% vi. What will be the output of ps command? Describe all columns in brief. vii. What will be the output of jobs command? Give detailed of all columns.	
Objective(s)	Student shall understand use of Job Scheduling commands.	
Pre-requisite	Usage and concept of job scheduling commands.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	*Command, output & description.*	
Nature of submission	Handwritten	
References for solving the problem	Book: Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson	
Post Laboratory questions	1. *What is foreground job?* 2. *What is background job?* 3. *What is the meaning of "+"(plus) and "-(minus)" sign in output of "jobs" command?* 4. *What are the six different states of job?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 13	**Enrollment No:**	**Group : B**
Practical Problem	**i. Write command for followings:** A. Display total number of users.. B. Count total number of directories in current directory. **Ii. What will be interpretation of following command? Write with output or errors if possible:** A. wc sample > sample1 B. cat sample 2>erfile C. wc > sample D. who | tee user1.lst user2.lst	
Objective(s)	Student shall understand Shell feature like, redirection, piping, special file, tee command etc.	
Pre-requisite	Usage of redirection and piping.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO3:** Understand and use Shell features of redirection, pipe, grouping commands, joining commands and running jobs.	
Solution must contain	*Command, output & description.*	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX Concepts and Applications, McGraw Hill	
Post Laboratory questions	*i. What is **Redirection**?* *ii. What is **trash file**?* *iii. What is **terminal file**?* *iv. What is the purpose of **tee** command?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 14	**Enrollment No:**	**Group : B**
Practical Problem	**What does after executing following commands?** **(Output or error, describe it properly.)** i. A='file1' cat $A echo \\\\a ii. echo \\ \\ \\a | wc –c iii. echo "My Birth date is `date "+%d - %b – 1991" ` " iv. path='/home/bca/mydir' cd $path v. A=`cat f1` echo $A | wc –l	
Objective(s)	Student shall understand use of variables, command execution, command substitution, ***eval*** command, etc.	
Pre-requisite	Usage of job scheduling commands.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO3:** Understand and use Shell features of redirection, pipe, grouping commands, joining commands and running jobs.	
Solution must contain	*Command, output & description.*	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX Concepts and Applications, McGraw Hill	
Post Laboratory questions	*i. What are rules for defining variable in LINUX?* *ii. What is **command substitution**?* *iii. What are different types of command execution?* *iv. What is the purpose of **eval** command?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
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Date		

5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 15	**Enrollment No:**	**Group :**
Practical Problem	**(next page)**	
Objective(s)	Students will be able to understand the concept of Filtering utilities.	
Pre-requisite	Concepts of redirection, piping & commands like head, tail, cut, paste, uniq, sort, tr etc.	
Duration for completion	90 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO3:** Understand and use Shell features of redirection, pipe, grouping commands, joining commands and running jobs.	
Solution must contain	Command, output & interpretation if asked.	
Nature of submission	Handwritten	
References for solving the problem	Book: v. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson vi. Das S., UNIX aoncepts and Applications, McGraw Hill	
Post Laboratory questions	9. *What is the purpose of **tr** command?* 10. *List out different options of **uniq** command.* 11. *List out different formats of **sort** command.* 12. *How can we remove multiple blanks from a file?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
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Date		

Definition:

- Create file “ABC.txt” and “PQR.txt” with at least 10 lines. Apply following on them.

1. Write a command to store contents of file “ABC.txt” and “PQR.txt” into file “New.txt”.
2. Write command for following:
    g. Display first 3 lines.
    h. Display last 7 lines.
    i. Display all lines rather than last 1 line.
    j. Display lines from 6 to 10.
    k. Display last to 3rd line.
    l. Display only second line.
3. Write command to translate all capital characters into small characters and vice versa in file “ABC.txt”.
4. Sort long listing of current directory by “size” column in ascending order.
5. Lists the five largest files in the current directory.
6. How these two commands are similar and different?
   $ Sort –u “Abc.txt”
   $ uniq “Abc.txt”
7. Extract the name of only user from file ***/etc/passwd***.
8. Write command to count total number of words from file without using ***wc*** command.
9. Write sort command to sort long listing of current directories firstly name wise and secondly their size wise using single ***sort*** command.
10. Write command to extract second and third fields from file PQR.txt vertically.
11. Write command to concatenate two file name ABC.txt and PQR.txt vertically.
12. Write command to merge two sorted file in single file.
13. What happen with following commands? Give comments on interpretation of following commands.
    $ tr “AB” “BA” < myfile
    $ cat myfile

14. What happen with following commands? Give comments on interpretation of following commands.
    $ tr ‘[a-z]’ ‘[A-Z]’ < file1

15. What happen with following commands? Give comments on interpretation of following commands.
    $ tr –s ‘ ‘ < file1

16. What happen with following commands? Give comments on interpretation of following commands.
    $ tr –cd ‘[a-zA-Z]’ < file1

17. Write command to add today’s date and time to the end of a given file.

5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 16	**Enrollment No:**	**Group : B**
Practical Problem	Write a shell script to find largest number amongst three numbers that are read from the keyboard as well as from command line.	
Objective(s)	Student shall be able to apply knowledge of commands to develop shell script.	
Pre-requisite	Purpose and syntax of all commands as well as different shell script constructs.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO3:** Understand an use Shell features of redirection, pipe, grouping commands, joining commands and running jobs. **CO4:** Develop, debug & execute Shell script to carry out routine task.	
Solution must contain	*Shell script code & output.*	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX Concepts and Applications, McGraw Hill	
Post Laboratory questions	1. *What is shell script?* 2. *How will you take input from user in shell script?* 3. *What is the difference between using if statement for numeric and string values?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
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Date		

5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 17	**Enrollment No:**	**Group : B**
Practical Problem	Write shell script that count number of hidden files under current directory.	
Objective(s)	Student shall understand use of different operators used in shell script.	
Pre-requisite	Purpose and syntax of different shell script constructs.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO3:** Understand an use Shell features of redirection, pipe, grouping commands, joining commands and running jobs. **CO4:** Develop, debug & execute Shell script to carry out routine task.	
Solution must contain	*Shell script code & output.*	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX Concepts and Applications, McGraw Hill	
Post Laboratory questions	*1. What are different types of file operators?* *2. What are positional parameters?* *3. What is the purpose of **let** command?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
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Date		

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Practical No : 18	**Enrollment No:**	**Group : B**
Practical Problem	Write a shell script to input a number and display following pattern up to inputted number. If inputted number is 5 then pattern will be: 1 1 1 1 1 2 1 1 2 3 1 1 2 3 5	
Objective(s)	Student shall understand use of different looping constructs.	
Pre-requisite	Purpose and syntax different shell script constructs.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO3:** Understand an use Shell features of redirection, pipe, grouping commands, joining commands and running jobs. **CO4:** Develop, debug & execute Shell script to carry out routine task.	
Solution must contain	*Shell script code & output.*	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX Concepts and Applications, McGraw Hill	
Post Laboratory questions	1. *What is a **loop**?* 2. *What are different types of looping constructs?* 3. *What is the difference between **while loop** & **until loop**?* 4. *What is the difference between List controlled loop & Command controlled loop?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
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Date		

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Practical No : 19	**Enrollment No:**	**Group : B**
Practical Problem	Write shell script that accept a filename as argument and display the total link number if the file exists and suitable message if it doesn't.	
Objective(s)	Student shall understand use of commands inside shell script and file operations.	
Pre-requisite	Purpose and syntax of all commands as well as different shell script constructs.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO3:** Understand an use Shell features of redirection, pipe, grouping commands, joining commands and running jobs. **CO4:** Develop, debug & execute Shell script to carry out routine task.	
Solution must contain	*Shell script code & output.*	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX Concepts and Applications, McGraw Hill	
Post Laboratory questions	1. *How will you sort files according to modification time?* 2. *What is argument validation?* 3. *What is the purpose of **shift** command?* 4. *What is the use of **$@** and **$*** parameters?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
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Date		

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Practical No : 20	**Enrollment No:**	**Group : B**
Practical Problem	Write menu driven shell script that accept string as argument and do follow as per user choice: i) To count length of string ii) To convert all character in string into capital letter. iii) To display position of 'A' character in string. iv) To display string in equal part in different lines.	
Objective(s)	Student shall understand use of case and select loop constructs.	
Pre-requisite	Usage of commands inside shell script.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO3:** Understand an use Shell features of redirection, pipe, grouping commands, joining commands and running jobs. **CO4:** Develop, debug & execute Shell script to carry out routine task.	
Solution must contain	*Shell script code & output.*	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX Concepts and Applications, McGraw Hill	
Post Laboratory questions	*1. Which construct is used to perform multi-way selection?* *2. What is the syntax of **select loop**?* *3. What is the use of **$#** and **$0** parameters?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
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Date		

5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 1	**Enrollment No:**	**Group : C**
Practical Problem	Write a ***date*** command to display date in following format: (Consider current date as 4th January 2014) 1. dd-mon-yyyy hh 2. Date after 1 week is: 01/11/14. 3. 01/04/14 04 01 2014 15:38:46 15 38 46 4. Thursday 02 009 2014 03:31:45 PM (After 5 days from 4th January)	
Objective(s)	Students will be able to learn ***date*** command with options and formats.	
Pre-requisite	Use putty software to run commands & usage of date command.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command & output.	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX aoncepts and Applications, McGraw Hill	
Post Laboratory questions	*1. What is the syntax of **date** command?* *2. List out different options of **date** command.* *3. List out different formats of **date** command.* *4. How can you display date after 10 months from today?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
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Date		

5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 2	**Enrollment No:**	**Group : C**
Practical Problem	Write a ***cal*** command to do following: 1. Display the calendar using Sunday as the first day of the week. 2. Display the calendar of December 1988.	
Objective(s)	Students will be able to learn ***cal*** command with options.	
Pre-requisite	Use putty software to run commands & usage of ***cal*** command.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command & output.	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX aoncepts and Applications, McGraw Hill	
Post Laboratory questions	*1. What is the syntax of **cal** command?* *2. List out different options of **cal** command.* *3. List two different ways to display calendar of current month.* *4. How can you display calendar of year 1800?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 3	**Enrollment No:**	**Group : C**
Practical Problem	Solve following using ***echo*** command: 1. Write the output of a command: echo -e "\n Projects: \n\n\tplan \n\tcode \n\ttest\n" 2. Write an interpretation of a command: echo -e "Welcome to the LINUX \eworld."	
Objective(s)	Student shall learn ***echo*** command with options & escape sequences.	
Pre-requisite	Use putty software to run commands, usage of ***echo*** command & meaning of back quote (``) character.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command, output & interpretation.	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX aoncepts and Applications, McGraw Hill	
Post Laboratory questions	*1. What is the syntax of **echo** command?* *2. List out different options of **echo** command.* *3. List out different types of escape sequences of **echo** command.* *4. How can you remove effect of escape sequence to be printed in output?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 4	**Enrollment No:**	**Group : C**
Practical Problem	Write ***bc*** command for following: 1. To find m^n (m raised to n) (i.e. power). 2. To convert FF from hexadecimal to octal. 3. Print "Positive Number" if number is greater than zero, print "Negative Number" otherwise. (Use if statement, store value in variable) 4. To print first 5 odd numbers using for loop.	
Objective(s)	Student shall learn ***bc*** command with options & conditional statements.	
Pre-requisite	Usage of ***bc*** command, use of 'banch calculator' in interactive mode.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command & output.	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX aoncepts and Applications, McGraw Hill	
Post Laboratory questions	*1. What is the purpose of **bc** command?* *2. Give two full forms of "bc"?* *3. What is the syntax of **bc** command.* *4. How can you use loops in **bc** calculator?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

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Practical No : 5	**Enrollment No:**	**Group : C**
Practical Problem	Write output and interpretation of following commands: 1. echo "0 || 0" | bc 2. echo "3*4+2"|bc*	
Objective(s)	Student shall be able to get an idea of using ***bc*** command with piping mechanism.	
Pre-requisite	Usage of ***echo*** command and pipe.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command & output.	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX aoncepts and Applications, McGraw Hill	
Post Laboratory questions	*1. What is **pipe**?* *2. What are the different types of operator used in **bc** command?* *3. In which order expressions are evaluated?* *4. How can you use file in **bc** command?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

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Practical No : 6	**Enrollment No:**	**Group : C**
Practical Problem	Write ***ls*** command for following: 1. List all files recursively. 2. List all file names having only one character length.	
Objective(s)	Student shall learn ***ls*** command with options.	
Pre-requisite	Usage of ***ls*** command, meaning of all options.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command & output.	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX aoncepts and Applications, McGraw Hill	
Post Laboratory questions	*1. What is the syntax of **ls** command?* *2. List out different options of **ls** command.* *3. Which fields are displayed in output of "**ls –l**" command?* *4. What are the hidden files?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

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Practical No : 7	**Enrollment No:**	**Group : C**
Practical Problem	Write ***ls*** & ***echo*** command to display following list of files: File names : 1. Having only single characters. 2. Having atleast one alphabet in name. 3. Having first and last character must be capital letter. 4. Having only special symbols	
Objective(s)	Student shall understand meaning of each patterns & effective use of them to match files in group.	
Pre-requisite	Usage of ***ls*** & ***echo*** command and meaning of different meta characters.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command & output	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX aoncepts and Applications, McGraw Hill	
Post Laboratory questions	*1. What are meta characters?* *2. List out different meta characters.* *3. What will be the effect of "**rm ***" command?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

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Practical No : 8	**Enrollment No:**	**Group : C**
Practical Problem	Write ***chmod*** command for following rwx triplets using symbolic code & octal value: i. r- - - - - - - - ii. - - -r-x- - - iii. rw- - -x- -x iv. -wx-wx-wx	
Objective(s)	Student shall understand use of ***chmod*** command for granting and revoking of permissions to files as well as directories using symbolic code and octal values for user, group & others.	
Pre-requisite	Usage of ***chmod*** command and meaning of all set of permissions.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command & rwx triplets	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Muster J., UNIX made easy, McGraw Hill	
Post Laboratory questions	1. *What is the syntax of **chmod** command?* 2. *List out different symbolic codes with their meaning.* 3. *List out different octal values with permissions.* 4. *What is the difference between use of symbolic code & octal values for granting/revoking permissions?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 9	**Enrollment No:** _____	**Group : C**
Practical Problem	Write rwx triplets based on following command: i. $chmod 100 Linux.txt ii. $chmod u+rwx,o-rwx Linux.txt iii. $chmod +rw Linux.txt iv. $chmod +r-x Linux.txt	
Objective(s)	Student shall understand concept of converting particular permission into rwx triplets for file.	
Pre-requisite	Usage of ***chmod*** command and meaning of all set of permissions.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command & rwx triplets	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Muster J., UNIX made easy, McGraw Hill	
Post Laboratory questions	*1. List available permissions for file and directory?* *2. List available operations for granting & revoking permissions.* *3. List different users' categories.*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 10	**Enrollment No:**	**Group : C**
Practical Problem	Write rwx triplets based on following command: i. $chmod g=r mscit ii. $chmod o= mscit iii. $chmod u=rwx mscit	
Objective(s)	Student shall understand concept of converting particular permission into rwx triplets for directory.	
Pre-requisite	Usage of ***chmod*** command and meaning of all set of permissions.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	*Command & rwx triplets.*	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Muster J., UNIX made easy, McGraw Hill	
Post Laboratory questions	1. *What are the three levels of security in LINUX?* 2. *What permission is needed in directory to list the content of a directory?* 3. *What type of permission is needed to delete a file from a directory?* 4. *What permission is needed in directory so that owner of a directory can copy a file into that directory?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

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Practical No : 11	**Enrollment No:**	**Group : C**
Practical Problem	User issues the following ***umask*** command. Write an rwx triplets for all files and directories created after this command. i. $umask 777 ii. $umask 000 iii. $umask 4 iv. $umask 363 v. $umask 500 vi. $umask 177	
Objective(s)	Student shall understand use of ***umask*** command for setting default permissions for files as well as directories & convert it into rwx triplets .	
Pre-requisite	Usage of ***umask*** command and meaning of all set of permissions.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	*Command & rwx triplets.*	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Muster J., UNIX made easy, McGraw Hill	
Post Laboratory questions	1. *What is the syntax of **umask** command?* 2. *What is the difference between use of **chmod** & **umask** command for granting and revoking permissions?* 3. *What is the system default permission for file? Write rwx triplets as well as octal code for the same.* 4. *What is the system default permission for directory? Write rwx triplets as well as octal code for the same.*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

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Practical No : 12	**Enrollment No:**	**Group : C**
Practical Problem	i. Write command to send your current process in background. ii. Write a command to bring lastly suspended job in forground. iii. Write command that bring second job from background to foreground. iv. Write two different ways to terminate a job having ID 5. v. What will be the effect of following command? A. $fg B. $fg %% vi. What will be the output of ps command? Describe all columns in brief. vii. What will be the output of jobs command? Give detailed of all columns.	
Objective(s)	Student shall understand use of Job Scheduling commands.	
Pre-requisite	Usage and concept of job scheduling commands.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	*Command, output & description.*	
Nature of submission	Handwritten	
References for solving the problem	Book: Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson	
Post Laboratory questions	1. *What is foreground job?* 2. *What is background job?* 3. *What is the meaning of "+"(plus) and "-(minus)" sign in output of "jobs" command?* 4. *What are the six different states of job?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
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Date		

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Practical No : 13	**Enrollment No:**	**Group : B**
Practical Problem	**i. Write command for followings:** A. Count total number of files/directory which starts with character "t". B. Count total number of files/directories in current directory. **ii. What will be interpretation of following command? Write with output or errors if possible:** A. wc sample >> sample B. cat > sample >> sample C. cat sample | wc D. ls –l | tee /dev/tty | wc –l	
Objective(s)	Student shall understand Shell feature like, redirection, piping, special file, tee command etc.	
Pre-requisite	Usage of redirection and piping.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO3:** Understand and use Shell features of redirection, pipe, grouping commands, joining commands and running jobs.	
Solution must contain	*Command, output & description.*	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX Concepts and Applications, McGraw Hill	
Post Laboratory questions	*i. What is **Redirection**?* *ii. What is **trash file**?* *iii. What is **terminal file**?* iv. *What is the* purpose of ***tee*** command?	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

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Practical No : 14	**Enrollment No:**	**Group : C**
Practical Problem	**What does after executing following commands? (Output or error, describe it properly.)** i. A=`ls` (back quota.) echo $A ii. A=10 echo "$A" echo '$A' echo $A iii. Bdate=`date "+%d - %b – 1991"` echo "My Birth date is $Bdate " iv. echo $HOME v. a="ls c* | more" $a eval $a	
Objective(s)	Student shall understand use of variables, command execution, command substitution, ***eval*** command, etc.	
Pre-requisite	Usage of job scheduling commands.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO3:** Understand and use Shell features of redirection, pipe, grouping commands, joining commands and running jobs.	
Solution must contain	*Command, output & description.*	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX Concepts and Applications, McGraw Hill	
Post Laboratory questions	*i. What are rules for defining variable in LINUX?* *ii. What is **command substitution**?* *iii. What are different types of command execution?* *iv. What is the purpose of **eval** command?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
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Date		

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Practical No : 15	**Enrollment No:**	**Group :**
Practical Problem	**(next page)**	
Objective(s)	Students will be able to understand the concept of Filtering utilities.	
Pre-requisite	Concepts of redirection, piping & commands like head, tail, cut, paste, uniq, sort, tr etc.	
Duration for completion	90 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO3:** Understand and use Shell features of redirection, pipe, grouping commands, joining commands and running jobs.	
Solution must contain	Command, output & interpretation if asked.	
Nature of submission	Handwritten	
References for solving the problem	Book: vii. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson viii. Das S., UNIX aoncepts and Applications, McGraw Hill	
Post Laboratory questions	**18.** *What is the purpose of* ***tr*** command*?* **19.** *List out different options of* ***uniq*** *command.* **20.** *List out different formats of* ***sort*** *command.* *21. How can we remove multiple blanks from a file?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
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Date		

Definition:

- Create file “ABC.txt” and “PQR.txt” with at least 10 lines. Apply following on them.

1. Write a command to store contents of file “ABC.txt” and “PQR.txt” into file “New.txt”.
2. Write command for following:
    m. Display first 3 lines.
    n. Display last 7 lines.
    o. Display all lines rather than last 1 line.
    p. Display lines from 6 to 10.
    q. Display last to 3rd line.
    r. Display only second line.
3. Write command to translate all capital characters into small characters and vice versa in file “ABC.txt”.
4. Sort long listing of current directory by “size” column in ascending order.
5. Lists the five largest files in the current directory.
6. How these two commands are similar and different?
   $ Sort –u “Abc.txt”
   $ uniq “Abc.txt”
7. Extract the name of only user from file ***/etc/passwd***.
8. Write command to count total number of words from file without using ***wc*** command.
9. Write sort command to sort long listing of current directories firstly name wise and secondly their size wise using single ***sort*** command.
10. Write command to extract second and third fields from file PQR.txt vertically.
11. Write command to concatenate two file name ABC.txt and PQR.txt vertically.
12. Write command to merge two sorted file in single file.
13. What happen with following commands? Give comments on interpretation of following commands.
    $ tr “AB” “BA” < myfile
    $ cat myfile

14. What happen with following commands? Give comments on interpretation of following commands.
    $ tr ‘[a-z]’ ‘[A-Z]’ < file1

15. What happen with following commands? Give comments on interpretation of following commands.
    $ tr –s ‘ ‘ < file1

16. What happen with following commands? Give comments on interpretation of following commands.
    $ tr –cd ‘[a-zA-Z]’ < file1

17. Write command to add today’s date and time to the end of a given file.

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Practical No : 16	**Enrollment No:**	**Group : C**
Practical Problem	Write a shell script that accepts three digits number as argument as well as from keyboard and check whether the number is Armstrong or not.	
Objective(s)	Student shall be able to apply knowledge of commands to develop shell script.	
Pre-requisite	Purpose and syntax of all commands as well as different shell script constructs.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO3:** Understand an use Shell features of redirection, pipe, grouping commands, joining commands and running jobs. **CO4:** Develop, debug & execute Shell script to carry out routine task.	
Solution must contain	*Shell script code & output.*	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX Concepts and Applications, McGraw Hill	
Post Laboratory questions	*1. What is shell script?* *2. How will you take input from user in shell script?* *3. What is the difference between using if statement for numeric and string values?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
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Date		

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Practical No : 17	**Enrollment No:**	**Group : C**
Practical Problem	Write shell script that count number of regular files under current directory.	
Objective(s)	Student shall understand use of different operators used in shell script.	
Pre-requisite	Purpose and syntax of commands & different shell script constructs.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO3:** Understand an use Shell features of redirection, pipe, grouping commands, joining commands and running jobs. **CO4:** Develop, debug & execute Shell script to carry out routine task.	
Solution must contain	*Shell script code & output.*	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX Concepts and Applications, McGraw Hill	
Post Laboratory questions	1. *What are different types of file operators?* 2. *What are positional parameters?* 3. *What is the purpose of **let** command?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

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Practical No : 18	**Enrollment No:**	**Group : C**
Practical Problem	Write a shell script to input a number and display following pattern up to inputted number. If inputted number is 5 then pattern will be: A A B A B C A B C D A B C D E	
Objective(s)	Student shall understand use of different looping constructs.	
Pre-requisite	Purpose and syntax different shell script constructs.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO3:** Understand an use Shell features of redirection, pipe, grouping commands, joining commands and running jobs. **CO4:** Develop, debug & execute Shell script to carry out routine task.	
Solution must contain	*Shell script code & output.*	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX Concepts and Applications, McGraw Hill	
Post Laboratory questions	1. *What is a **loop**?* 2. *What are different types of looping constructs?* 3. *What is the difference between **while loop** & **until loop**?* 4. *What is the difference between List controlled loop & Command controlled loop?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
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Signature		
Date		

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Practical No : 19	**Enrollment No:**	**Group : C**
Practical Problem	Write shell script that accept a filename as argument and display the size if the file exists and suitable message if it doesn't.	
Objective(s)	Student shall understand use of commands inside shell script and file operations.	
Pre-requisite	Purpose and syntax of all commands as well as different shell script constructs.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO3:** Understand an use Shell features of redirection, pipe, grouping commands, joining commands and running jobs. **CO4:** Develop, debug & execute Shell script to carry out routine task.	
Solution must contain	*Shell script code & output.*	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX Concepts and Applications, McGraw Hill	
Post Laboratory questions	1. *How will you sort files according to modification time?* 2. *What is argument validation?* 3. *What is the purpose of **shift** command?* 4. *What is the use of **$@** and **$*** parameters?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

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Practical No : 20	**Enrollment No:**	**Group : C**
Practical Problem	Write menu script which will execute following command as per user's choice: ls -l, date , ps, who, pwd & exit.	
Objective(s)	Student shall understand use of case and select loop constructs.	
Pre-requisite	Usage of commands inside shell script.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO3:** Understand an use Shell features of redirection, pipe, grouping commands, joining commands and running jobs. **CO4:** Develop, debug & execute Shell script to carry out routine task.	
Solution must contain	*Shell script code & output.*	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX Concepts and Applications, McGraw Hill	
Post Laboratory questions	*1. Which construct is used to perform multi-way selection?* *2. What is the syntax of **select loop**?* *3. What is the use of **$#** and **$0** parameters?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

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Practical No : 1	**Enrollment No:**	**Group : D**
Practical Problem	Write a ***date*** command to display date in following format: (Consider current date as 4th January 2014) 1. mon dd, yyyy hh:mm: ss 2. Date of previous month from today is: 12/04/13. 3. 01/04/14 04 01 2014 15:40:07 15 40 07 4. 2013-12-31 Sun Feb 02 2014 10:38:04 AM	
Objective(s)	Students will be able to learn ***date*** command with options and formats.	
Pre-requisite	Use putty software to run commands & usage of date command.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command & output.	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX aoncepts and Applications, McGraw Hill	
Post Laboratory questions	*1. What is the syntax of **date** command?* *2. List out different options of **date** command.* *3. List out different formats of **date** command.* *4. How can you display date after 10 months from today?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

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Practical No : 2	**Enrollment No:**	**Group : D**
Practical Problem	Write a ***cal*** command to do following: 1. Display Monday as the first day of the week. 2. Displays the calendar of April, May and June of year 2013.	
Objective(s)	Students will be able to learn ***cal*** command with options.	
Pre-requisite	Use putty software to run commands & usage of ***cal*** command.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command & output.	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX aoncepts and Applications, McGraw Hill	
Post Laboratory questions	*1. What is the syntax of **cal** command?* *2. List out different options of **cal** command.* *3. List two different ways to display calendar of current month.* *4. How can you display calendar of year 1800?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

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Practical No : 3	**Enrollment No:**	**Group : D**
Practical Problem	Solve following using ***echo*** command: 1. Write the output of a command: echo *.txt 2. Write an interpretation of a command: echo -e "Welcome to the LINUX \rworld."	
Objective(s)	Student shall learn ***echo*** command with options & escape sequences.	
Pre-requisite	Use putty software to run commands, usage of ***echo*** command & meaning of back quote (``) character.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command, output & interpretation.	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX aoncepts and Applications, McGraw Hill	
Post Laboratory questions	*1. What is the syntax of **echo** command?* *2. List out different options of **echo** command.* *3. List out different types of escape sequences of **echo** command.* *4. How can you remove effect of escape sequence to be printed in output?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

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Practical No : 4	**Enrollment No:**	**Group : D**
Practical Problem	Write ***bc*** command for following: 1. To eveluate "5/2" with and without decimal places. 2. To convert 2A from hexadecimal to decimal. 3. Print "Integer" if number does not contains decimal places, print "Float" otherwise. (Use if statement, store value in variable) 4. To print first 5 even numbers using while loop.	
Objective(s)	Student shall learn ***bc*** command with options & conditional statements.	
Pre-requisite	Usage of ***bc*** command, use of 'banch calculator' in interactive mode.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command & output.	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX aoncepts and Applications, McGraw Hill	
Post Laboratory questions	*1. What is the purpose of **bc** command?* *2. Give two full forms of "bc"?* *3. What is the syntax of **bc** command.* *4. How can you use loops in **bc** calculator?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

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Practical No : 5	**Enrollment No:**	**Group : D**
Practical Problem	Write output and interpretation of following commands: 1. echo "length(123456)" | bc 2. echo "(2+3)*4"|bc	
Objective(s)	Student shall be able to get an idea of using ***bc*** command with piping mechanism.	
Pre-requisite	Usage of ***echo*** command and pipe.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command & output.	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX aoncepts and Applications, McGraw Hill	
Post Laboratory questions	1. *What is **pipe**?* 2. *What are the different types of operator used in **bc** command?* 3. *In which order expressions are evaluated?* 4. *How can you use file in **bc** command?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 6	**Enrollment No:**	**Group : D**
Practical Problem	Write ***ls*** command for following: 1. List only directories name from current directories. 2. List filenames with their inode numbers.	
Objective(s)	Student shall learn ***ls*** command with options.	
Pre-requisite	Usage of ***ls*** command, meaning of all options.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command & output.	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX aoncepts and Applications, McGraw Hill	
Post Laboratory questions	*1. What is the syntax of **ls** command?* *2. List out different options of **ls** command.* *3. Which fields are displayed in output of "**ls –l**" command?* *4. What are the hidden files?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

5 years Integrated M.Sc. (IT) 4th Semester

Practical No : 7	**Enrollment No:**	**Group : D**
Practical Problem	Write ***ls*** & ***echo*** command to display following list of files: File names : 1. Having only digits. 2. Having at least one alphabet in name. 3. Having any extensions. 4. Last character must be digit.	
Objective(s)	Student shall understand meaning of each patterns & effective use of them to match files in group.	
Pre-requisite	Usage of ***ls*** & ***echo*** command and meaning of different meta characters.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command & output	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX aoncepts and Applications, McGraw Hill	
Post Laboratory questions	*1. What are meta characters?* *2. List out different meta characters.* *3. What will be the effect of "**rm *" command?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
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Date		

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Practical No : 8	**Enrollment No:**	**Group : D**
Practical Problem	Write ***chmod*** command for following rwx triplets using symbolic code & octal value: i. - -x- -x- - - ii. rwx- - -rwx iii. -w-rwxrwx iv. r- - - - - - -x	
Objective(s)	Student shall understand use of ***chmod*** command for granting and revoking of permissions to files as well as directories using symbolic code and octal values for user, group & others.	
Pre-requisite	Usage of ***chmod*** command and meaning of all set of permissions.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command & rwx triplets	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Muster J., UNIX made easy, McGraw Hill	
Post Laboratory questions	1. *What is the syntax of **chmod** command?* 2. *List out different symbolic codes with their meaning.* 3. *List out different octal values with permissions.* 4. *What is the difference between use of symbolic code & octal values for granting/revoking permissions?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
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Date		

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Practical No : 9	**Enrollment No:**	**Group : D**
Practical Problem	Write rwx triplets based on following command: i. $chmod 607 Linux.txt ii. $chmod a-rwx Linux.txt iii. $chmod +rwx Linux.txt iv. $chmod -w+x Linux.txt	
Objective(s)	Student shall understand concept of converting particular permission into rwx triplets for file.	
Pre-requisite	Usage of ***chmod*** command and meaning of all set of permissions.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	Command & rwx triplets	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Muster J., UNIX made easy, McGraw Hill	
Post Laboratory questions	*1. List available permissions for file and directory?* *2. List available operations for granting & revoking permissions.* *3. List different users' categories.*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
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Date		

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Practical No : 10	**Enrollment No:**	**Group : D**
Practical Problem	Write rwx triplets based on following command: i. $chmod u=rx,g=x,o= mscit ii. $chmod -r mscit iii. $chmod +x mscit	
Objective(s)	Student shall understand concept of converting particular permission into rwx triplets for directory.	
Pre-requisite	Usage of ***chmod*** command and meaning of all set of permissions.	
Duration for completion	30 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	*Command & rwx triplets.*	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Muster J., UNIX made easy, McGraw Hill	
Post Laboratory questions	*1. What are the three levels of security in LINUX?* *2. What permission is needed in directory to list the content of a directory?* *3. What type of permission is needed to delete a file from a directory?* *4. What permission is needed in directory so that owner of a directory can copy a file into that directory?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
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Date		

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Practical No : 11	**Enrollment No:**	**Group : D**
Practical Problem	User issues the following umask command. Write an rwx triplets for all files and directories created after this command. i. $umask 777 ii. $umask 000 iii. $umask 3 iv. $umask 441 v. $umask 676 vi. $umask 333	
Objective(s)	Student shall understand use of ***umask*** command for setting default permissions for files as well as directories & convert it into rwx triplets .	
Pre-requisite	Usage of ***umask*** command and meaning of all set of permissions.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	*Command & rwx triplets.*	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Muster J., UNIX made easy, McGraw Hill	
Post Laboratory questions	*1. What is the syntax of **umask** command?* *2. What is the difference between use of **chmod** & **umask** command for granting and revoking permissions?* *3. What is the system default permission for file? Write rwx triplets as well as octal code for the same.* *4. What is the system default permission for directory? Write rwx triplets as well as octal code for the same.*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
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Signature		
Date		

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Practical No : 12	**Enrollment No:**	**Group : D**
Practical Problem	i. Write command to send your current process in background. ii. Write a command to bring lastly suspended job in forground. iii. Write command that bring second job from background to foreground. iv. Write two different ways to terminate a job having ID 5. v. What will be the effect of following command? A. $fg B. $fg %% vi. What will be the output of ps command? Describe all columns in brief. vii. What will be the output of jobs command? Give detailed of all columns.	
Objective(s)	Student shall understand use of Job Scheduling commands.	
Pre-requisite	Usage and concept of job scheduling commands.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO1**: Study of LINUX/UNIX environment and its need. **CO2**: Understand and use utilities to work with LINUX/UNIX environment.	
Solution must contain	*Command, output & description.*	
Nature of submission	Handwritten	
References for solving the problem	Book: Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson	
Post Laboratory questions	1. *What is foreground job?* 2. *What is background job?* 3. *What is the meaning of "+"(plus) and "-(minus)" sign in output of "jobs" command?* 4. *What are the six different states of job?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
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Date		

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Practical No : 13	**Enrollment No:**	**Group : B**
Practical Problem	**i. Write command for followings:** A. Display contents of two files f1 and f2 with storing combining contents in file f3 B. Store output of ls –l file1 command in file f1, if file f1 is already exist otherwise store error message into e1 file. **ii. What will be interpretation of following command? Write with output or errors if possible:** A. wc < sample > nsample B. cat f* > sample 2>esample C. cat sample | wc | wc –l D. cat sample 2> /dev/null	
Objective(s)	Student shall understand Shell feature like, redirection, piping, special file, tee command etc.	
Pre-requisite	Usage of redirection and piping.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO3:** Understand and use Shell features of redirection, pipe, grouping commands, joining commands and running jobs.	
Solution must contain	*Command, output & description.*	
Nature of submission	Handwritten	
References for solving the problem	Book: v. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson vi. Das S., UNIX Concepts and Applications, McGraw Hill	
Post Laboratory questions	*vi. What is **Redirection**?* *vii. What is **trash file**?* *viii. What is **terminal file**?* ix. *What is the purpose of **tee** command?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
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Date		

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Practical No : 14	**Enrollment No:**	**Group : D**
Practical Problem	**What does after executing following commands? (Output or error, describe it properly.)** i. echo \\\\\\b ii. echo "This is My 'Birth date'" iii. echo $! iv. x="f1 > f2" cat $ v. A="ls –l" B=A echo $$B echo \$$B eval \$$B	
Objective(s)	Student shall understand use of variables, command execution, command substitution, ***eval*** command, etc.	
Pre-requisite	Usage of job scheduling commands.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO3:** Understand and use Shell features of redirection, pipe, grouping commands, joining commands and running jobs.	
Solution must contain	*Command, output & description.*	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX Concepts and Applications, McGraw Hill	
Post Laboratory questions	*i. What are rules for defining variable in LINUX?* *ii. What is **command substitution**?* *iii. What are different types of command execution?* *iv. What is the purpose of **eval** command?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
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Practical No : 15	**Enrollment No:**	**Group :**
Practical Problem	**(next page)**	
Objective(s)	Students will be able to understand the concept of Filtering utilities.	
Pre-requisite	Concepts of redirection, piping & commands like head, tail, cut, paste, uniq, sort, tr etc.	
Duration for completion	90 minutes	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO3:** Understand and use Shell features of redirection, pipe, grouping commands, joining commands and running jobs.	
Solution must contain	Command, output & interpretation if asked.	
Nature of submission	Handwritten	
References for solving the problem	Book: ix. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson x. Das S., UNIX aoncepts and Applications, McGraw Hill	
Post Laboratory questions	**18.** *What is the purpose of* ***tr*** command*?* **19.** *List out different options of* ***uniq*** *command.* **20.** *List out different formats of* ***sort*** *command.* *21. How can we remove multiple blanks from a file?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
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Definition:

- Create file “ABC.txt” and “PQR.txt” with at least 10 lines. Apply following on them.

1. Write a command to store contents of file “ABC.txt” and “PQR.txt” into file “New.txt”.
2. Write command for following:
    s. Display first 3 lines.
    t. Display last 7 lines.
    u. Display all lines rather than last 1 line.
    v. Display lines from 6 to 10.
    w. Display last to 3rd line.
    x. Display only second line.
3. Write command to translate all capital characters into small characters and vice versa in file “ABC.txt”.
4. Sort long listing of current directory by “size” column in ascending order.
5. Lists the five largest files in the current directory.
6. How these two commands are similar and different?
   $ Sort –u “Abc.txt”
   $ uniq “Abc.txt”
7. Extract the name of only user from file ***/etc/passwd***.
8. Write command to count total number of words from file without using ***wc*** command.
9. Write sort command to sort long listing of current directories firstly name wise and secondly their size wise using single ***sort*** command.
10. Write command to extract second and third fields from file PQR.txt vertically.
11. Write command to concatenate two file name ABC.txt and PQR.txt vertically.
12. Write command to merge two sorted file in single file.
13. What happen with following commands? Give comments on interpretation of following commands.
    $ tr “AB” “BA” < myfile
    $ cat myfile
14. What happen with following commands? Give comments on interpretation of following commands.
    $ tr ‘[a-z]’ ‘[A-Z]’ < file1
15. What happen with following commands? Give comments on interpretation of following commands.
    $ tr –s ‘ ‘ < file1
16. What happen with following commands? Give comments on interpretation of following commands.
    $ tr –cd ‘[a-zA-Z]’ < file1
17. Write command to add today’s date and time to the end of a given file.

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Practical No : 16	**Enrollment No:**	**Group : D**
Practical Problem	Write a shell script that accepts three digits number as an argument as well as from keyboard and display reverse of it.	
Objective(s)	Student shall be able to apply knowledge of commands to develop shell script.	
Pre-requisite	Purpose and syntax of all commands as well as different shell script constructs.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO3:** Understand an use Shell features of redirection, pipe, grouping commands, joining commands and running jobs. **CO4:** Develop, debug & execute Shell script to carry out routine task.	
Solution must contain	*Shell script code & output.*	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX Concepts and Applications, McGraw Hill	
Post Laboratory questions	*1. What is shell script?* *2. How will you take input from user in shell script?* *3. What is the difference between using if statement for numeric and string values?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

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Practical No : 17	**Enrollment No:**	**Group : D**
Practical Problem	Write shell script that count number of hidden and directory files under current directory.	
Objective(s)	Student shall understand use of different operators used in shell script.	
Pre-requisite	Purpose and syntax of commands & different shell script constructs.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO3:** Understand an use Shell features of redirection, pipe, grouping commands, joining commands and running jobs. **CO4:** Develop, debug & execute Shell script to carry out routine task.	
Solution must contain	*Shell script code & output.*	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX Concepts and Applications, McGraw Hill	
Post Laboratory questions	*1. What are different types of file operators?* *2. What are positional parameters?* *3. What is the purpose of **let** command?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

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Practical No : 18	**Enrollment No:**	**Group : D**
Practical Problem	Write a shell script to input a number and display following pattern up to inputted number. If inputted number is 5 then pattern will be: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	
Objective(s)	Student shall understand use of different looping constructs.	
Pre-requisite	Purpose and syntax different shell script constructs.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO3:** Understand an use Shell features of redirection, pipe, grouping commands, joining commands and running jobs. **CO4:** Develop, debug & execute Shell script to carry out routine task.	
Solution must contain	*Shell script code & output.*	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX Concepts and Applications, McGraw Hill	
Post Laboratory questions	1. *What is a **loop**?* 2. *What are different types of looping constructs?* 3. *What is the difference between **while loop** & **until loop**?* 4. *What is the difference between List controlled loop & Command conrolled loop?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		

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Practical No : 19	**Enrollment No:**	**Group : D**
Practical Problem	Write shell script that accept a filename as argument and display group permission if the file exists and suitable message if it doesn't.	
Objective(s)	Student shall understand use of commands inside shell script and file operations.	
Pre-requisite	Purpose and syntax of all commands as well as different shell script constructs.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO3:** Understand an use Shell features of redirection, pipe, grouping commands, joining commands and running jobs. **CO4:** Develop, debug & execute Shell script to carry out routine task.	
Solution must contain	*Shell script code & output.*	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX Concepts and Applications, McGraw Hill	
Post Laboratory questions	1. *How will you sort files according to modification time?* 2. *What is argument validation?* 3. *What is the purpose of **shift** command?* 4. *What is the use of **$@** and **$*** parameters?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
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Date		

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Practical No : 20	**Enrollment No:**	**Group : D**
Practical Problem	Write menu driven shell script that passed file name as argument and perform following operations as per the user's choice: Display content of a file along with line number, Display first 6 lines of a file, display line number 10 and 11 from a file, Delet all blank lines.	
Objective(s)	Student shall understand use of case and select loop constructs.	
Pre-requisite	Usage of commands inside shell script.	
Duration for completion	1 Hour	
PEO(s) to be achieved	**PEO1**: To provide sound foundation in the fundamentals of computer application along with analytical, problem-solving, design and communication skill for life-long learning in chosen field. **PEO2**: To provide quality practical skill of tools and technologies to solve industry problems.	
PO(s) to be achieved	**PO6**: Ability to use the techniques, skills and modern tools as necessary for software development.	
CO(s) to be achieved	**CO3:** Understand an use Shell features of redirection, pipe, grouping commands, joining commands and running jobs. **CO4:** Develop, debug & execute Shell script to carry out routine task.	
Solution must contain	*Shell script code & output.*	
Nature of submission	Handwritten	
References for solving the problem	Book: i. Forouzan B. A., Gilberg R. R., UNIX and Shell Programming, Thomson ii. Das S., UNIX Concepts and Applications, McGraw Hill	
Post Laboratory questions	*1. Which construct is used to perform multi-way selection?* *2. What is the syntax of **select loop**?* *3. What is the use of **$#** and **$0** parameters?*	

Assessment

	Solution achieves the desired objective(s)	**Viva**
Out of Marks	**10**	**5**
Secured by the student		
Signature		
Date		