

	B.M.S. COLLEGE OF ENGINEERING, BANGALORE-19 (Autonomous Institute, Affiliated to VTU) Department Name: Computer Science & Engineering	
FIRST INTERNALS		
Course Code: 20CS5PCUSP	Course Title: Unix Shell & System Programming	
Semester: 5th A, B, C	Maximum Marks: 40	Date: 01/12/2020
Faculty Handling the Course:	Prof. Vikranth B. M and Prof. Saritha A. N	
Instructions: <i>Internal choice is provided in Part C.</i>		

PART-A

[CO-1, PO-1, BL -2]

Total 5 Marks (No choice)

Q. No	Question	Marks
1	<p>List and explain any 5 wildcards available in Shell</p> <p>Scheme + Solution: Any 5 - 5M</p> <ul style="list-style-type: none"> • An asterisk (*) – matches one or more occurrences of any character, including no character. • A plus (+) 0- matches one or more occurrences of any character • A dot (.) - matches a single character • Question mark (?) – represents or matches a single occurrence of any character. • Bracketed characters ([]) – matches any occurrence of character enclosed in the square brackets. It is possible to use different types of characters (alphanumeric characters): numbers, letters, other special characters etc. 	5

PART-B

[CO-2, PO-2, BL -4]

Total 15 Marks (No Choice)

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Q. No	Question	Marks								
2a)	Analyze the differences between hard link and symbolic link with an example for each' Scheme + Solution - 1m *5= 5M	5								
<table><tr><th>Hard link</th><th>Soft link</th></tr><tr><td>Files that are hard linked take the same inode number.</td><td>Files that are soft linked take a different inode number.</td></tr><tr><td>Hard links are not allowed for directories. (Only a superuser* can do it)</td><td>Soft links can be used for linking directories.</td></tr><tr><td>It cannot be used</td><td>It can be used</td></tr></table>			Hard link	Soft link	Files that are hard linked take the same inode number.	Files that are soft linked take a different inode number.	Hard links are not allowed for directories. (Only a superuser* can do it)	Soft links can be used for linking directories.	It cannot be used	It can be used
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	<p>across file systems.</p> <p>Data present in the original file will still be available in the hard links.</p> <p>If the original file is removed, the link will still work as it accesses the data the original was having access to.</p> <p>Hard links are comparatively faster.</p>	<p>across file systems.</p> <p>Soft links only point to the file name, it does not retain data of the file.</p> <p>If the original file is removed, the link will not work as it doesn't access the original file's data.</p> <p>Soft links are comparatively slower.</p>		
2b)	<p>Identify the errors in the given script and rewrite the correct script</p> <pre>read f t=expr \$f - 32 read basic da="expr basic * 10 / 100" read ch case \$ch in a A) vowel=`ex pr \$v owel + 1`</pre> <p>Scheme: Identify errors - 2M Writing correct program -3M</p> <ol style="list-style-type: none"> t=expr \$f - 32 , backtick is missing da="expr basic * 10 / 100", supposed to be backquotes \$ch , should be enclosed in single quote the command is expr in last line <p>Rewrite the correct program using the above.</p>			5
2c)	<p>Identify the command with options, that performs the following task. Also write the syntax of the corresponding commands</p> <p>Scheme: 1 * 5= 5M</p> <ol style="list-style-type: none"> The command is used for preparing a file for printing. But the headers and footers should not be set Pr -t abc.txt The command used for searching for a pattern "shell" in a file "UNIX" Grep "shell" UNIX Command used to convert the alphabets from lowercase to uppercase in a file PQR Echo PQR tr '[a-z]' '[A-Z]' Command to display unique content from a file ABC Uniq ABC Command to sort the content of a file XYZ in reverse order Sort -r XYZ 			5

PART- C

[CO-3, PO-3, BL - 6]

Total 20 marks (Answer any one question in Q.no 3 and 4)

Q. No	Question	Marks
3a	<p>Write a shell script to read a number and to reverse a read number. Also check the number is a palindrome or not</p> <p>Scheme: logic to reverse number -5M Remaining instructions -5M num=545</p> <pre># Storing the remainder s=0 # Store number in reverse # order rev=" " # Store original number # in another variable temp=\$num while [\$num -gt 0] do # Get Remainder s=\$((\$num % 10)) # Get next digit num=\$((\$num / 10)) # Store previous number and # current digit in reverse rev=\$(echo \${rev}\${s}) done if [\$temp -eq \$rev]; then echo "Number is palindrome" else echo "Number is NOT palindrome" fi</pre>	10
	OR	
3b	<p>Write a shell script to find sum of digits of a given number</p> <p>Scheme: read a static no + calculating sum of digits = remaining instructions = 1 +5 =4</p> <pre># Static input of the # number Num=123</pre>	10

	<pre> g=\$Num # store the sum of # digits s=0 # use while loop to # calculate the sum # of all digits while [\$Num -gt 0] do # get Remainder k=\$((\$Num % 10)) # get next digit Num=\$((\$Num / 10)) # calculate sum of # digit s=\$((\$s + \$k)) done echo "sum of digits of \$g is : \$s" </pre>	
4a	<p>Write a shell script to print the following patterns using for loop Scheme: 5 + 5</p> <p>(a) *</p> <pre> * * * * * * * * * * </pre> <pre> rows=4 for((i=1; i<=rows; i++)) do for((j=1; j<=i; j++)) do echo -n "*" done echo done </pre> <p>(b)</p> <pre> 1 2 3 4 5 6 7 8 9 10 </pre> <pre> rows=4 num=1 for((i=1; i<=row;i++)) </pre>	10

	<pre> do for((j=1; j< row-i; j++)) do echo -n " " for((j=1;j<=2*i-1;j++) do echo -n "*" done echo done done </pre>	
	OR	
4b	<p>Write a Shell Script to replace the word engineering with gnireenigne for each occurrence the word engineering that appears in the file Systems.txt. Replace all occurrences of the word engineering using for loop.</p> <p style="text-align: center;">Systems.txt</p> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p>There are many engineering colleges in Bangalore. B.M.S College of engineering is one of the Top engineering college in the private sector in Bangalore.</p> </div> <p>Scheme: 6 + 4</p> <pre> #!/bin/sh Echo "Enter a Filename" read file //file read is Systems.txt k="engineering" r= "gnireenigne" for file1 in `cat \$file` do If [\$file1 == \$k] Then Echo \$r Fi Done Cat \$file1 </pre>	10

***** ALL THE BEST*****