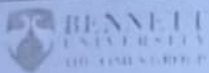


Enrolment No.: <u>S24CSEU2160</u>
 School: School of Computer Science Engineering & Technology

MID-TERM EXAMINATION, ODD SEMESTER OCTOBER 2025

Programme: B.Tech. (CSE-Cyber Security)	Semester: III
Course Code: CSET213	Course Name: Linux and Shell Programming
Time: 01 Hour	Max. Marks: 20

Instructions:

1. Attempt all the sections.
2. Do not write anything on the question paper except enrolment number.
3. Assume missing data suitably, if any.

CO No.	Course Outcome Statements	Bloom's Taxonomy Level
CO1	Articulate Linux commands that are used to manipulate system operations at an admin level.	Remembering (Level 1) Understanding (Level 2)
CO2	Write Shell Programming using Linux commands.	Applying (Level 3)
CO3	Design and write applications to manipulate internal kernel-level Linux File systems.	Evaluating (Level 5)
CO4	Utilize threat and vulnerability tools to identify security aspects of Linux	Applying (Level 3)

SECTION A

(3Q x 2M = 06 Marks)

ALL QUESTIONS ARE COMPULSORY

S. No.	Approximate time to attempt Sections: Section A: 3 Questions: 10 min Section B: 2 Questions: 20 min Section C: 2 Question: 30 min	Marks	Course Outcome	BTL Level
Q1	Interpret the following positional parameters: \$#, \$*, \$? and \$@.	2	CO1	L1
Q2	Define the bootstrapping process in Linux and analyze the function of the <code>init</code> process in the system's startup sequence.	2	CO1	L1
Q3	Write a bash script to find longest word in a file and returns such a longest word whose length is greater than n. An integer n and the filename is taken as input through command line arguments.	2	CO2	L3

SECTION B

(2Q x 3M = 06 Marks)

ATTEMPT ANY TWO QUESTIONS

Q6	Write a bash script to store 100 random numbers in a file through command line input and find the largest and smallest number in the list.	3	CO2	L3
Q7	Identify the utility of the following search string meta characters in a regular expression: (i) ^ (ii) \$ (iii) [abc] (iv) [^abc] (v) [a-z] (vi) .	3	CO1	L1

Q8	Explain an inode, specifying the key metadata it contains. Illustrate the mechanism by which a file system leverages the inode to reference data blocks on a storage medium.	3	CO1	L2
SECTION-C (2Q x 4M = 08 Marks)				
ATTEMPT ANY TWO QUESTIONS				
Q9	<p>In cryptography, a Caesar cipher is a very simple encryption techniques in which each letter in the plain text is replaced by a letter some fixed number of positions down the alphabet. For example, with a shift of 3, A would be replaced by D, B would become E, and so on. The method is named after Julius Caesar, who used it to communicate with his generals. ROT-13 ("rotate by 13 places") is a widely used example of a Caesar cipher where the shift is 13. The key for ROT-13 may be represented by means of the following dictionary:</p> <p>key = {'a':'n', 'b':'o', 'c':'p', 'd':'q', 'e':'r', 'f':'s', 'g':'t', 'h':'u', 'i':'v', 'j':'w', 'k':'x', 'l':'y', 'm':'z', 'n':'a', 'o':'b', 'p':'c', 'q':'d', 'r':'e', 's':'f', 't':'g', 'u':'h', 'v':'i', 'w':'j', 'x':'k', 'y':'l', 'z':'m', 'A':'N', 'B':'O', 'C':'P', 'D':'Q', 'E':'R', 'F':'S', 'G':'T', 'H':'U', 'I':'V', 'J':'W', 'K':'X', 'L':'Y', 'M':'Z', 'N':'A', 'O':'B', 'P':'C', 'Q':'D', 'R':'E', 'S':'F', 'T':'G', 'U':'H', 'V':'I', 'W':'J', 'X':'K', 'Y':'L', 'Z':'M'}</p> <p>Write a shell script to implement an encoder/decoder of ROT-13. Once you are done, you will be able to read the following secret message:</p> <p>Pnrfne pvcure? V zhpu cersre Pnrfne fnynq!</p> <p>Note that since English has 26 characters, your ROT-13 program will be able to both encode and decode texts/written in English.</p>	4	CO2	L3
Q10	Draw the Linux architecture and discuss the function of each component in detail.	4	CO1	L2
Q11	<p>Write a bash shell program that asks the user how many days are in a particular month, and what day of the week the month begins on (0 for Monday, 1 for Tuesday, etc), and then prints a calendar for that month. The input is taken from command line arguments. For example, here is the output for a 30-day month that begins on day 4 (Thursday):</p> <pre> S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 </pre>	4	CO2	L3