Semester:5	Department of Computer Science and Engineering	AY: 2026-27
Course Code: BCS515C	Course Name: Unix System Programming	

Question Bank

Q.	Module-01	M	L	C
1.	Explain with a figure, the kernel and shell relationship in Unix Operating System.	8	2	1
2.	Explain the usage of following commands in UNIX: echo, ls, who.	6	2	1
3.	List and explain the salient features of Unix Operating System.	8	2	1
4.	Explain the use of following commands: printf, passwd, cal.	6	2	1
5.	Differentiate between internal & external commands in unix with suitable examples.	8	2	1
6.	Briefly explain HOME, PATH, wc, pwd.	6	2	1
7.	Explain the usage of following commands in UNIX. Cat, cp, rm, mv	8	2	1
8.	How an ordinary user can become a super user and vice versa? Explain with suitable commands.	4	2	1
9.	What is a file? Explain the three categories of files in Unix operating system.	8	2	2
10.	Explain the ls command with options.	6	2	2
11.	Explain the following command with syntax, option & example: mkdir, rmdir, od, mv.	6	2	2
12.	What is parent child relationship? Explain with figure, the Unix File System.	6	2	2
	Module-02			
13.	Explain the three different forms of if conditional statement.	6	2	3
14.	Write a menu driven shell script using case statement to perform all arithmetic operations.	8	2	3
15.	Write and explain the syntax of 'while' and 'for' loops in shell programming.	8	2	3
16.	Explain the concept of Escaping and Quoting with suitable example.	4	2	3
17.	Explain shell interpretive cycle.	4	2	3
18.	With example, explain the logical operators in shell programming.	5	2	3

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19.	Write a note on directory permissions with example.	4	2	3
20.	Name the command used for creating, deleting, and change directory. Explain with the syntax and example.	8	2	3
21.	Assume that a file's current permissions are r w – r – x r - - specify the chmod expression (using both relative and absolute) required to change them to: i) r w x r w x r w x ii) r - - r - - - - - iii) - - - r - - r - -	8	2	3
	Module-03			
22.	Explain the following API's along with their prototype definition and possible cause for failure: 1. open 2. write 3. fcntl 4. stat	12	2	2
23.	Describe the device file APIs along with a simple program.	8	2	2
24.	Explain symbolic link file API's	8	2	2
25.	Outline the environment structure of a process and mention any Four environment variables.	6	2	5
26.	Draw and explain the summary of starting and terminating a C program.	6	2	5
27.	What are the different ways in which a process can terminate normally.	8	2	5
28.	With a neat sketch, explain the memory layout of a C program.	8	2	5
29.	Explain in detail with prototypes the C function for memory allocation.	7	2	5
30.	Give reasons as to why shared libraries are better with an example.	6	2	5
31.	What is fork and vfork? Explain with an example program for each.	8	2	5
32.	Explain the fork and vfork system call. How fork system call differs from vfork? Write a program to demonstrate fork and vfork system calls.	10	2	5
	Module-04			
33.	Explain the following functions with their prototypes: i)open () ii) creat () iii) read () iv) write v) close ()	12	2	4
34.	Explain the memory layout of a C program with a neat diagram.	8	2	4
35.	Discuss the various UNIX system implementation.	8	2	4

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36.	Explain Setjmp and longjmp, getrlimit and setrlimit function with examples.	8	2	4
37.	Explain how a C program is started and terminated with a neat diagram.	8	2	4
38.	Explain setjmp and longjmp API's with examples.	8	2	4
39.	Explain the General File API's open(), read(),write(),close() with their prototype.	8	2	4
40.	Explain the following system calls with examples.i) fork () ii) vfork ()	8	2	4
41.	Explain briefly with an example two system V IPC mechanism. i)Message Queues ii) Semaphores.	8	2	4
42.	Explain pipes and its limitations upon developing a program to send data from parent to child over a pipe.	7	2	4
43.	Define FIFO. Explain Client server communication using FIFO with a neat diagram.	8	2	4
44.	Explain fork and vfork function with an example program.	8	2	4
45.	Explain popen and pclose functions with examples.	8	2	4
	Module-05			
46.	Define Signal. Explain prototypes of following APIs: i)signal ii) kill iii) alarm iv) sigaction.	8	2	5
47.	Explain Daemon characteristics and coding rules.	8	2	5
48.	Define Signal. Explain sigprocmask function with a program.	8	2	5
49.	Define daemon process. Explain coding rules with program.	8	2	4
50.	Explain sigsetjmp and siglongjmp APIs with example.	8	2	5
51.	What are daemon processes? List their characteristics. Write a program to transform a normal user process into a daemon process. Explain every step in the program.	10	2	4
52.	Explain error handling for daemon process with a neat block diagram. Write the system library functions associated with error logging.	8	2	4
53.	What are daemon process? Explain with a neat diagram the error logging facility for daemon process.	10	2	4

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***Note:**

1. All modules should contain a minimum of **10** questions each and the total number of questions must be **50**.
2. Questions can carry marks of 06, 07, 08, 09, 10 and for problems: 04 or 05.
3. Follow the RBTL as per the keywords used to frame the questions.
4. Maintain the Course Outcomes (COs) as per the syllabus.
5. M: Marks, L: RBTL, C: COs.

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