

UNIX & Shell Programming

P. Pages : 2

Time : Three Hours



NKT/KS/17/7628

Max. Marks : 80

- Notes :
1. All questions carry marks as indicated.
 2. Solve Question 1 OR Questions No. 2.
 3. Solve Question 3 OR Questions No. 4.
 4. Solve Question 5 OR Questions No. 6.
 5. Solve Question 7 OR Questions No. 8.
 6. Solve Question 9 OR Questions No. 10.
 7. Solve Question 11 OR Questions No. 12.
 8. Assume suitable data whenever necessary.
 9. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) Explain UNIX operating system from user perspective point of view. **6**
- b) Explain the following UNIX commands: **7**
- | | | |
|-----------|-----------|------------|
| i) chmod | ii) umask | iii) touch |
| iv) ls-l | v) sort | vi) rmdir |
| vii) grep | | |

OR

2. a) Draw and explain architecture of UNIX operating system. **5**
- b) Write a shell script to display the following O/P **5**
- ```
1
1 2
1 2 3
```
- c) Explain if-else structure of UNIX. **3**
3. a) Draw and explain the kernel structure. **8**
- b) Explain : **6**
- i) Buffer Headers
  - ii) Structure of buffer pool.

**OR**

4. a) List the scenarios for retrieval of a buffer. **3**
- b) Write the algorithm for buffer allocation. Also explain what will happen when the kernel can not find the block on the hash queue & the free list of buffer is empty. **8**
- c) Explain kernel data structure in brief. **3**
5. a) How does UNIX operating system assign Inode to a newly created file ? Explain with algorithm. **7**

- b) Explain : 6  
 i) Inode ii) In-Core Inode
- OR**
6. a) Draw and explain the structure of regular file with direct and indirect blocks in Inode. 8  
 b) Explain super block. 2  
 c) How path name to an INODE is converted. 3
7. a) Explain how special files are created in UNIX. 6  
 b) Explain the following system calls : 4  
 i) Read ii) Write  
 c) Explain the algorithm for mounting a file system. 3
- OR**
8. a) Explain 8  
 i) File system maintenance. ii) Inconsistencies in file system  
 b) Explain close system call. 3  
 c) Explain pipe in brief. 2
9. a) Explain process states and transitions in detail. 10  
 b) Explain fork system call. 4
- OR**
10. a) Explain U-area in detail. 6  
 b) Write short notes on **any two**. 8  
 i) Process control.  
 ii) Process termination.  
 iii) UID of a process.
11. Write short note on **any three**. 13  
 i) System V IPC  
 ii) Network communication.  
 iii) Process tracing.  
 iv) Trouble-shooting network problems.
- OR**
12. a) What is socket ? Explain socket model. 7  
 b) Explain how resources are monitored in Ubuntu. 6

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