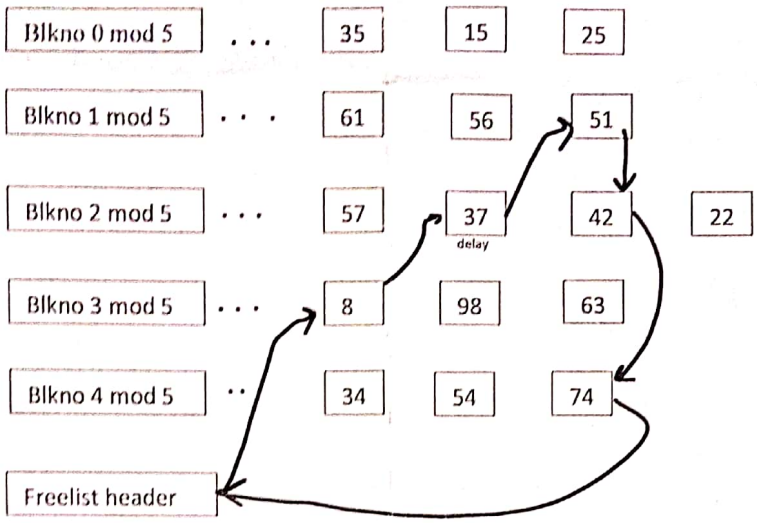
Roll number: 01

Master of Computer Applications
MCAC403: Advanced Operating Systems
Semester-IV
Minor Exam-March, 2023

Time: One Hour **Max. marks: 25**

Instruction: All questions are compulsory.

1. Consider the following buffer cache structure. (6)



Explain the steps and draw the state of buffer cache when kernel search for the following block numbers sequentially:

a. 52
b. 37
c. 54

2. List the information content stored in the Mount Table data structures with their relevance. Show the Mount Table data structure with other data structures (if required) after the execution of the following statement: (4+2)

```
mount /dev/dsk1 /usr
```

3. What is the significance of super block while allocating a new inode. Also, write an algorithm for freeing an inode. (2+4)

4. Consider the following program named 'demo.c' with demo as object file. What is the purpose of the program. Show the effect of each system call on the kernel data structure after execution of the following statement: (2+5)

```
demo 1
```

```
#include <fcntl.h>
char string[] = "hello";
main(argc, argv)
        int argc;
        char *argv[];
{
        int fd;
        char buf[256];


        mknod("fifo", 010777, 0);
        if (argc == 2)
                fd = open("fifo", O_WRONLY);
        else
                fd = open("fifo", O_RDONLY);
        for (;;)
                if (argc == 2)
                        write(fd, string, 6);
                else
                        read(fd, buf, 6);
}
```