Q-1

This was a simple pattern question. Three threads were initialized and given three different function to run Pattern1, Pattern2 and Pattern3 after which the condition and mutex were used together. After a single output of Pattern 1 is printed, the signal is sent to cond2 and after a single character of pattern 2 is printed the signal is sent to cond3 and this system is followed to print the whole series.

Q-2

The buddy system can simply be explained as the memory management system where power of 2 are used for segmentation. When a allotment needs to be done the main memory is divided into 2 called as buddies and it keeps on dividing till smallest amount that can hold the allocation in question is left after which the allocation is done. Once that slot is deallocated again and the earlier buddy is also free the coalese together again to form a combined block.Example in code

Q-3. Producer Consumer is a Unique Problem where there is a fixed buffer and there are many producer consumers at a time only one of them can access the buffer at a time. Producer adds item to the buffer where as consumer takes them. Producer cant add items to full buffer and consumer cant take items from empty buffer. So to solve the problem mutexes, semaphores and threads are used as shown in the program.