CS3402 Practice 8 Solutions:

1.

512/8 = 64 blocks
Sequential search = 64/2 = 32
Binary search = $\log_2 64 = \log_2 2^6 = 6$

2.

(a) Static hashing with 5 buckets, each of which contains at most 3 records

Bucket 0

3760	
7115	
	NULL

Bucket 1

4871	
1821	
	NULL

Bucket 2

4692	
	NULL

Bucket 3

	NULL

Bucket 4

2369	
5659	
1074	
	NULL

(b) Overflow handling

Bucket 0

3760	
7115	
1620	

Overflow buckets

3945		
4759		NULL
6975		NULL

9206		NULL

Bucket 1

4871	
1821	
4981	

Bucket 2

4692	
	NULL

Bucket 3

2428	
	NULL

Bucket 4

2369	
5659	
1074	

3. 8 hash codes (000, 001, 010, 100, 011, 110, 101, 111)

a) R = 40+8+4+65+8+8+1+7+6+2+1 = 150 bytes.
b) The blocking factor: brf=floor(1024/150)=6 records
c) The file will occupy ceil (1000 / brf)= ceil (1000/6)=167 blocks