

Suggestive Questions on module 3 (Hashing)

Question No.	Question	Marks
1	Define Universal Hash Function.	2
2	Find the expected number of probes for Unsuccessful search in an open-addressed hash table with load factor α .	4
3	What is the average cost of insertion operation in an open-addressed hash table with load factor α assuming uniform hashing.	2
4	<p>A family H of hash functions from a finite set U to finite set B is called ϵ universal if for all pairs of distinct elements k and l in U,</p> $\Pr [h(k)=h(l)] \leq \epsilon$ <p>Where the probability over the choice of hash function h drawn at random from hash family H.</p> <p>Show that an ϵ universal family of hash functions must have $\epsilon \geq \frac{1}{ B } - \frac{1}{ U }$</p>	6
5	What is the expected number of probes for unsuccessful search in an open addressed hash table with load factor α ?	2
6	<p>(i) Define perfect hashing.</p> <p>(ii) Show that you can define perfect hashing in a way such that expected combine size of all secondary is less than $2n$, where n is the number of keys.</p>	2+8
7	<p>(i) Define quadratic probing.</p> <p>(ii) Give an example of quadratic probing for a hash table of size m, which generates a permutation of 0 to $m-1$.</p> <p>(iii) Show that, this quadratic probing indeed</p>	1+2+3

	probes all slots.	
8	Define simple uniform hash function, universal class of hash function and uniform hashing.	3