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BE CMAA
19/18/2027

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BDA Module 4 Test.

Question 1

① Stream

1 3 2 1 2 3 4 3 1 2 3 1

$$h(x) = (2x + 1) \bmod 5$$

$$= 3, 2, 0, 3, 0, 2, 4, 2, 3, 0, 2, 3$$

Binary

011, 010, 000, 011, 000, 010, 100,
010, 011, 000, 010, 011,

$$r(x) = 0, 1, 0, 0, 0, 1, 2, 1, 0, 0, 1, 0$$

$$\max r(x) = 2$$

$$\therefore R = 2^2 = 4 \text{ distinct elements.}$$

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Question 3

1 1 1 0 1 1 0 1 0 0 1 1 0 1 0 1

a) What is the largest possible bucket size of $N=16$

Ans:- 8 is largest possible bucket size

b) Show one way of how the initial stream will be divided into buckets.

1 1 1 0 1, 1 0 1 0 0 1 1 0 1 0 1
One bucket of size 4 2 buckets of size 2 2 buckets of size 1.

c) If a stream 1011 what is the

1 1 0 1 1 0 1 0 0 1 1 0 1 1 0 1 1

d) $k=14$

1 1 1 0 1 1 0 1 0 0 1 1 0 1 1
 $k=14$

count of 1's = 4 + 2 + 1 + 1 = 10