

**Sylhet Cadet College**  
**Model Test Examination - 2023**  
**Class: HSC**

**Subject: Statistics Second Paper (Creative)**

**Time: 2 hour & 35 minutes**

**Subject Code: 130**

**Full Marks: 50**

Answer FIVE questions taking at least two (2) from each group. Figures in the right indicate full marks.

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**Group A**

**1. An unbiased coin is tossed 10 times.**

- (a) If a coin is flung 3 times, how many outcomes are generated? 1
- (b) If a coin is flung n times, show how many outcomes are generated. 2
- (c) What is the probability of getting a) at least 3 heads, b) at most 3 heads? 3
- (d) Are these probabilities equal? a) Getting at least 2 heads & b) Getting at least 2 tails. Also justify logically. 4

**2. The probability density function of a continuous random variable X is given as:**

$$f(x) = \frac{1}{b-a}; a \leq x \leq b$$

- (a) In this distribution, what is P(a)? 1
- (b) What is the shape of the distribution? 2
- (c) Find  $P(a \leq x \leq b)$ . 3
- (d) Find and explain the median of the distribution. 4

**3. The probability distributions of demand of mobile phones of two operating systems (OS) Android (X) and iPhone (Y) are:**

Demand	100	200	300	400	500
P(X)	0.1	0.4	m	0.15	0.1
P(X)	0.09	0.45	0.32	0.11	0.03

- (a) What is Expectation? 1
- (b) Can Expectation be negative? 2
- (c) Find m from the table. 3
- (d) Which OS has higher demand? Analyze. 4

**Group B**