MA8402 – PROBABILITY AND QUEUEING THEORY

(REGULATION 2017)

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UNIT 1 – PROBABILITY AND RANDOM VARIABLES

- The theory of probability has its origin in gambling and games of chance.
- It owes much to the curiosity of gamblers who prestered their friends in the mathematical world with all sorts of questions.
- Laplace said " we see that the theory of probability is at bottom only common sense reduced to calculation, it makes us appreciate with exactitude what reasonable minds fell by a sort of instinct, often without being able to account for it…

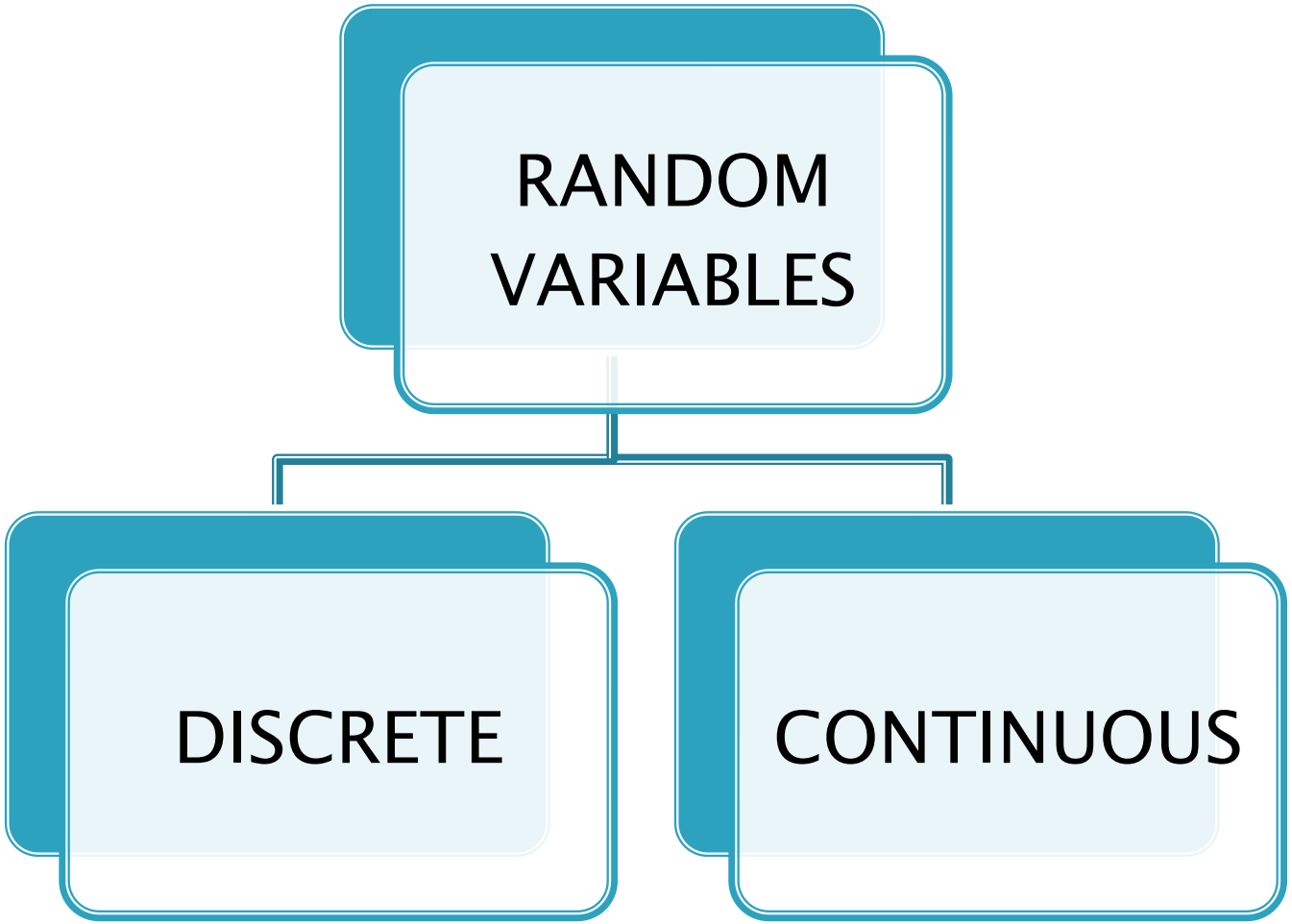
AXIOMS OF PROBABILITY

- $0 \leq P(E) \leq 1$
- $P(S) = 1$
- For any sequence of mutually exclusive events E1,E2,E3,…(i.e., events for which $EiEj=\phi$ when $i \neq j$),

$$P(\bigcup_{i=1}^{\infty} E_i) = \sum_{i=1}^{\infty} P(E_i)$$

We refer to P(E) as the probability of the event E

RANDOM VARIABLES



DISCRETE RANDOM VARIABLES

A random variable X is discrete if it takes only discrete or countably finite values.

CONTINUOUS RANDOM VARIABLE

A random variable X is said to be continuous if it takes all possible values between certain limits or in an interval which may be finite or infinite.

DISCRETE RANDOM VARIABLES

1. BINOMIAL DISTRIBUTION
2. POISSON DISTRIBUTION
3. GEOMETRIC DISTRIBUTION

CONTINUOUS RANDOM VARIABLES

1. UNIFORM DISTRIBUTION
2. EXPONENTIAL DISTRIBUTION
3. NORMAL DISTRIBUTION

THANK YOU