OCTOBER PART-B

UNIT-3 MATHS FOR AI (Statistics & Probability)

I Answer the following:

1. What is probability in statistics?

Ans: Probability is a branch of statistics that deals with the likelihood or chance of different outcomes occuring in a given situation.

2. Define the term "Statistics".

Ans: Statistics is used for collecting exploring and analysing the data. It also helps in drawing conclusions from data.

3. What is an impossible event? Provide an example

Ans: An impossible event has no chance of occuring such as rolling a number greater than 6 on a pair six sided dice.

4. How do you calculate Probability?

Ans: The formula for probability is given as follows:

$$P(A) = \frac{\text{No. of Favourable Outcomes}}{\text{Total No. of possible outcomes}}$$

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5. Mention the areas of applications of statistics

Ans: The following are the areas of applications of statistics.

- → Sports
- → Education
- → Disaster Management
- → Weather forecast
- → Disease prediction
- → opinion of voters.

II Long Answer Questions:

1. How can probability help in the field of medicine?

Ans: Probability helps in understanding how diseases spread and how well treatments work. For example, by estimating the chance of disease transmission in different situations we can plan public health measures.

Probability is used to determine the effectiveness of new treatments or drugs. For example researchers calculate the probability that observed treatment effects are due to the drug rather than random chance.

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2. If you have 10 red dresses and 3 white dresses. what is the probability of wearing white dress?

Ans: The probability of wearing a white dress is $\frac{3}{13}$

Step-by-Step Breakdown.

White dresses : 3
Red dresses : 10
Total dresses : 13

$$\text{Probability} = \frac{\text{No. of favourable outcomes}}{\text{Total no. of outcome}}$$

$$\text{Probability} = \frac{3}{13} \approx 0.2308.$$

3. Give one use of Statistics in disaster management.

Ans: Risk Mapping and Prediction:

→ By Analyzing historical data on the frequency, intensity, and locations of past natural disasters like earthquakes, floods or hurricanes, authorities can identify

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high zones and build better infrastructure or evacuation plans.

4. Give one use of probability in finance.

Ans Risk Management and Asset Pricing:

Inventors and financial analysts use probability distributions to calculate the likelihood of a stock's price falling or a borrower defaulting on a loan, helping them minimize financial losses.

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