Annexure-1

Admission Test Syllabus for LLM in Data Science & Data Protection Law

Covers logical reasoning, legal aptitude, data science fundamentals, basic mathematical knowledge and IT law

1 Mathematics

1.1 Arithmetic

1. Fractions, Decimals, and Percentages

- **Fraction**: Represents parts of a whole.
- **Decimal**: Base-10 representation of fractions.
- **Percentage**: Fractions scaled to 100.
- **Real-World Application**: Calculate discounts.

2. Ratios and Proportions

- **Ratio**: Compares quantities.
- **Proportion**: Equality of ratios.

3. Profit and Loss

- **Cost Price (CP)**: Original price of an item.
- **Selling Price (SP)**: Final price after profit/loss.
- **Profit**: $SP - CP$; **Loss**: $CP - SP$.

4. Simple and Compound Interest

- **Simple Interest (SI)**: $SI = \frac{P \times R \times T}{100}$.
- **Compound Interest (CI)**: Interest on interest.

1.2 Algebra

1. Linear Equations

- **Definition**: Equations like $2x + 5 = 13$.

2. Quadratic Equations

- **Definition**: $ax^2 + bx + c = 0$. Solved by factorization or quadratic formula.

1.3 Set Theory

1. Sets and Venn Diagrams

- **Set**: Collection of unique objects.
- **Venn Diagram**: Visual representation of sets. Example: Overlap between sets A and B shows $A \cap B$.

1.4 Basic Calculus

1. Derivatives

- **Concept**: Rate of change. Example: Velocity is the derivative of position.
- **Example**: $f(x) = 3x^2 \rightarrow f'(x) = 6x$.

2 Statistics

2.1 Descriptive Statistics

1. Central Tendency

- **Mean**: Average. Sensitive to outliers.
- **Median**: Middle value. Resistant to outliers.
- **Mode**: Most frequent value.

2. Dispersion

- **Range**: Max - Min.
- **Variance**: Average of squared deviations.
- **Standard Deviation**: $\sqrt{\text{Variance}}$.

2.2 Probability

1. Basic Rules

- **Independent Events**: $P(A \cap B) = P(A) \times P(B)$.
- **Dependent Events**: $P(A \cap B) = P(A) \times P(B|A)$.

3 Logical Reasoning

3.1 Pattern Recognition

1. Number/Letter Series

- **Number Series**: Identify the rule. Example: 2, 6, 18, 54, ? (Multiply by 3 $\rightarrow$ 162).
- **Letter Series**: Example: A, D, G, J, ? (Skip 2 letters $\rightarrow$ M).

3.2 Data Interpretation

1. Case Studies

- **Example**:

Month	Revenue (₹)	Expenses (₹)
Jan	50,000	30,000
Feb	60,000	35,000
Mar	70,000	40,000

Question: Calculate profit for March.
Answer: ₹ 70,000 - ₹ 40,000 = ₹ 30,000.

4 Legal Aptitude

4.1 Principles of Law

1. Legal Maxims

- **Examples**:
  - *Actus reus non facit reum nisi mens sit rea* (The act is not guilty unless the mind is guilty).
  - *Ignorantia juris non excusat* (Ignorance of the law is no excuse).

2. Landmark Judgments

- **Data Protection**:
  - *Justice K.S. Puttaswamy (Retd.) vs Union of India* (Right to Privacy as a Fundamental Right).
  - *Schrems II* (EU-US Data Transfers).

4.2 Case Analysis

1. Hypothetical Scenarios

- **Example**: A company leaks user data. Analyze liability under IT Act, 2000 and GDPR.

5 Data Science Fundamentals

5.1 Basic Concepts

1. Data Types

- **Structured**: Tables (SQL databases).
- **Unstructured**: Text, images, videos.

2. Data Lifecycle

- Collection → Storage → Processing → Analysis → Visualization.

5.2 Machine Learning Basics

1. Supervised vs. Unsupervised Learning

- **Supervised**: Labeled data (e.g., spam detection).
- **Unsupervised**: Unlabeled data (e.g., clustering).

2. Bias and Fairness

- **Example**: Algorithmic bias in hiring tools.

6 IT Law

6.1 Data Protection Laws

1. GDPR (General Data Protection Regulation)

- **Key Principles**: Lawfulness, transparency, purpose limitation, data minimization.
- **Rights**: Right to access, right to erasure ("right to be forgotten").

2. Indian IT Act, 2000 and DPDP Act, 2023

- **Section 43A**: Compensation for data negligence.
- **DPDP Act**: Consent, data localization, penalties.

6.2 Cybersecurity

1. Cyber Crimes

- **Examples**: Phishing, hacking, identity theft.
- **Legal Provisions**: IT Act Sections 66 (hacking), 66C (identity theft).

7 Sample Questions

7.1 Mathematics

1. What is 15% of ₹ 2,000?
   (a) ₹ 100 (b) ₹ 300 (c) ₹ 200 (d) ₹ 250
   Answer: (b) ₹ 300

2. Solve $3(x - 4) = 21$.
   (a) 11 (b) 9 (c) 10 (d) 12
   Answer: (a) 11

3. If the ratio of boys to girls is 3:5 and there are 24 boys, how many girls are there?
   (a) 30 (b) 40 (c) 50 (d) 60
   Answer: (b) 40

7.2 Statistics

1. Which graph is best for showing trends over time?
   (a) Bar chart (b) Line graph (c) Pie chart (d) Histogram
   Answer: (b) Line graph

2. If the mean of [5, 7, 9, 11] is 8, what is the variance?
   (a) 5 (b) 6 (c) 7 (d) 8
   Answer: (a) 5

7.3 Logical Reasoning

1. Next in series: Z, X, V, T, ?
   (a) R (b) S (c) Q (d) P
   Answer: (a) R (skip 1 letter backward)

2. If "PENCIL" is coded as "RKPMGN", code "PAPER".
   (a) RCRGT (b) RCQGT (c) RCPGU (d) RCRGU
   Answer: (a) RCRGT (shift +2 letters)

7.4 Legal Aptitude

1. Which case recognized privacy as a fundamental right in India? (a) Aadhaar Case (b) Puttaswamy Case (c) Shreya Singhal Case (d) Naz Foundation Case **Answer**: (b) Puttaswamy Case

7.5 Data Science

1. Which is NOT a supervised learning algorithm? (a) Linear Regression (b) K-Means (c) Decision Tree (d) SVM **Answer**: (b) K-Means

7.6 IT Law

1. Which section of the IT Act, 2000 penalizes unauthorized access to a computer system? (a) Section 43A (b) Section 66 (c) Section 72 (d) Section 69

   Answer: (b) Section 66

2. The DPDP Act, 2023 mandates:
   (a) Data localization (b) Mandatory Aadhaar linking (c) No consent requirement (d) 10-year data retention
   Answer: (a) Data localization

3. Under GDPR, the "Right to be Forgotten" allows:
   (a) Data portability (b) Data deletion (c) Freezing processing (d) Opt-out of marketing
   Answer: (b) Data deletion