AIIP Aptitude Test

Domain Syllabus & Exam Pattern

Exam Format

Total Questions	50 MCQs — all domain-specific, no general aptitude section
Test Duration	45 minutes (timed online exam)
Marking Scheme	+1 for correct · –0.25 for wrong · 0 for skipped
Mode	Online MCQ — laptop or desktop recommended
Results	Within 24 hours, with a personalized skill-gap report
Test Fee	■100 one-time (internship itself is 100% free)
Retake Policy	One retake available for the next batch window only

Question Pattern

All 50 questions are drawn exclusively from the internship domain you select at the time of registration. There is no general aptitude, verbal, or quantitative section. Each domain has five topic areas with questions distributed across them. The test is adaptive to your chosen role.

Available Internship Domains

Select your domain at registration. Your entire test will be drawn from that domain only.

No.	Domain	Key Technologies Covered	Questions
01	**Frontend Development**	HTML · CSS · JavaScript · React	50
02	**Backend Development**	REST APIs · Databases · Node.js / Python	50
03	**AI / Machine Learning**	Python · ML Algorithms · Deep Learning	50
04	**Data Science & Analytics**	SQL · Pandas · Statistics · Visualization	50
05	**Android Development**	Kotlin · Java · Android SDK · Jetpack	50
06	**UI / UX Design**	Figma · UX Research · Prototyping · Accessibility	50
07	**QA / Software Testing**	Manual Testing · Selenium · Postman · CI/CD	50
08	**Cloud / DevOps**	AWS · Docker · Kubernetes · GitHub Actions	50

Important Notes

1. Questions are auto-assigned based on your chosen internship domain at registration. Choose carefully — you cannot change your domain after payment.
2. The test is conducted online. Use a laptop or desktop with a stable internet connection. Mobile devices are not recommended.
3. Negative marking applies: +1 for correct, –0.25 for wrong. Unanswered questions carry zero marks. Skip questions you are unsure about.
4. Results are declared within 24 hours of test completion, along with a domain skill-gap report highlighting your strong and weak topic areas.
5. The test fee is ■100 (one-time, non-refundable). The internship program itself is completely free with no hidden charges.
6. A retake is available for the next batch window only. Your skill-gap report will guide your improvement areas before retaking.

50 Questions · 45 Minutes

Domain 01 — Frontend Development

HTML · CSS · JavaScript · React

Topic Area	Syllabus Points Covered
1. HTML5 & Semantics	• Semantic tags & document structure • Forms, inputs & validation attributes • HTML5 APIs (Canvas, LocalStorage, Geolocation) • SEO best practices & meta tags
2. CSS3 & Layouts	• Box model, specificity & cascade rules • Flexbox & CSS Grid layout systems • Responsive design & media queries • CSS variables, animations & transitions
3. JavaScript ES6+	• Data types, scope, hoisting & closures • Arrow functions, destructuring & spread operator • Promises, async/await & the event loop • DOM manipulation & event handling
4. React.js	• JSX, components, props & state basics • Hooks: useState, useEffect, useContext • React Router & client-side navigation • Context API & component composition patterns
5. Performance & Tooling	• Browser DevTools & debugging techniques • Web vitals: LCP, FID, CLS explained • npm/yarn, Webpack & Vite fundamentals • Git workflow for frontend projects

50 Questions · 45 Minutes

Domain 02 — Backend Development

REST APIs · Databases · Node.js / Python

Topic Area	Syllabus Points Covered
1. REST API Design	• HTTP methods, status codes & headers • RESTful resource design principles • Authentication: JWT, OAuth 2.0 & sessions • API versioning, pagination & rate limiting
2. Node.js / Python	• Event-driven architecture & non-blocking I/O • Express.js middleware & routing patterns • Python Flask/FastAPI request handling • Error handling, logging & debugging strategies
3. Databases & SQL	• Relational schema design & normalization • SQL: joins, subqueries & aggregation functions • Indexing, transactions & ACID properties • NoSQL fundamentals: MongoDB & Redis
4. Server Architecture	• MVC pattern & separation of concerns • Caching strategies: Redis & in-memory cache • Environment config & secrets management • Load balancing & horizontal scaling basics
5. Security Basics	• OWASP Top 10 vulnerabilities overview • Input validation & SQL injection prevention • HTTPS, CORS & security response headers • Docker basics & containerization concepts

50 Questions · 45 Minutes

Domain 03 — AI / Machine Learning

Python · ML Algorithms · Deep Learning

Topic Area	Syllabus Points Covered
1. Python for ML	• NumPy arrays, broadcasting & vectorization • Pandas: DataFrames, groupby & merge operations • Matplotlib & Seaborn for data visualization • Scikit-learn pipeline & preprocessing steps
2. ML Fundamentals	• Supervised vs unsupervised learning paradigms • Regression, classification & clustering algorithms • Bias-variance tradeoff & overfitting control • Cross-validation & hyperparameter tuning
3. Deep Learning	• Neural network architecture & layer types • Activation functions & backpropagation • CNNs for image tasks, RNNs for sequences • Transfer learning & fine-tuning pre-trained models
4. Model Evaluation	• Confusion matrix, precision, recall & F1-score • ROC-AUC curve interpretation • Loss functions: MSE, Cross-entropy, Huber • Feature importance & model explainability (SHAP)
5. Tools & Deployment	• TensorFlow / PyTorch fundamentals • Model serialization: pickle, joblib, ONNX • REST API model deployment with Flask/FastAPI • ML experiment tracking with MLflow basics

50 Questions · 45 Minutes

Domain 04 — Data Science & Analytics

SQL · Pandas · Statistics · Visualization

Topic Area	Syllabus Points Covered
1. Data Wrangling	• Handling missing values, duplicates & outliers • Data type conversions & feature engineering • Merging, grouping & aggregating DataFrames • String operations & datetime parsing in Pandas
2. SQL & Databases	• SELECT, WHERE, GROUP BY & HAVING clauses • JOINs: inner, left, right & full outer join • Window functions: RANK, ROW_NUMBER, LAG/LEAD • Subqueries & CTEs for complex analysis
3. Statistics	• Descriptive stats: mean, median, std, IQR • Probability distributions & central limit theorem • Hypothesis testing: t-test, chi-square, ANOVA • Correlation vs causation, p-values & significance
4. Visualization & BI	• Chart selection: bar, line, scatter, heatmap, box • Storytelling with data & dashboard design • Power BI / Tableau fundamentals • Matplotlib, Seaborn & Plotly in Python
5. Predictive Modelling	• Linear & logistic regression in depth • Decision trees, Random Forest & XGBoost • Dimensionality reduction: PCA & t-SNE • Time series decomposition & forecasting basics

50 Questions · 45 Minutes

Domain 05 — Android Development

Kotlin · Java · Android SDK · Jetpack

Topic Area	Syllabus Points Covered
1. Kotlin Fundamentals	• Null safety, data classes & extension functions • Coroutines & structured concurrency patterns • Lambda functions & higher-order functions • Sealed classes & when expressions
2. Android Architecture	• Activity & Fragment lifecycle in detail • ViewModel, LiveData & StateFlow patterns • Navigation component & back stack management • MVVM & Clean Architecture principles
3. UI Development	• XML layouts vs Jetpack Compose comparison • RecyclerView, adapters & DiffUtil callback • Material Design 3 components & theming • Handling configuration changes & state restoration
4. Data & Networking	• Room database, DAOs & database migrations • Retrofit & OkHttp for REST API calls • SharedPreferences vs Jetpack DataStore • JSON parsing with Gson & Moshi
5. Publishing & Tooling	• Gradle build system & dependency management • ProGuard, R8 & app size optimization • Android Profiler & memory leak detection • Play Store deployment & release checklist

50 Questions · 45 Minutes

Domain 06 — UI / UX Design

Figma · UX Research · Prototyping · Accessibility

Topic Area	Syllabus Points Covered
1. UX Research	• User interviews, surveys & research planning • Personas, empathy maps & user journey mapping • Usability testing methods & success metrics • Competitive analysis & benchmarking
2. Information Architecture	• Card sorting, tree testing & IA validation • Sitemap design & navigation structure • Mental models, user flows & task analysis • Content hierarchy & labeling systems
3. Figma & Prototyping	• Components, variants, auto-layout & constraints • Prototyping interactions, flows & transitions • Design tokens, style guides & design systems • Dev handoff: specs, redlines & assets export
4. Visual Design	• Typography scale, pairing & readability rules • Color theory & accessible contrast (WCAG ratios) • Grid systems, spacing & visual consistency • Micro-interactions & motion design principles
5. Testing & Accessibility	• WCAG 2.1 AA guidelines & compliance checklist • A/B testing & multivariate testing basics • Heuristic evaluation — Nielsen's 10 principles • Design critique framework & iteration cycles

50 Questions · 45 Minutes

Domain 07 — QA / Software Testing

Manual Testing · Selenium · Postman · CI/CD

Topic Area	Syllabus Points Covered
1. Testing Fundamentals	• SDLC vs STLC & types of software testing • Test planning, test cases & traceability matrix • Defect lifecycle, severity vs priority classification • BVA, equivalence partitioning & decision tables
2. Manual Testing	• Functional, regression, smoke & sanity testing • Writing clear, reproducible bug reports • Exploratory testing strategies & techniques • UAT process & sign-off criteria
3. Automation (Selenium)	• Selenium WebDriver setup & browser drivers • Locators: ID, name, XPath & CSS selectors • Page Object Model (POM) design pattern • TestNG / JUnit annotations & assertion methods
4. API & Performance	• REST API testing with Postman & collections • Writing automated API test scripts • Performance testing concepts with JMeter • Load, stress, spike & endurance testing types
5. CI/CD & Agile QA	• Jenkins pipeline integration for automated tests • Agile ceremonies & the QA role in sprints • Git for testers: branches, PRs & code reviews • Test coverage metrics, reports & dashboards

50 Questions · 45 Minutes

Domain 08 — Cloud / DevOps

AWS · Docker · Kubernetes · GitHub Actions

Topic Area	Syllabus Points Covered
1. Cloud Fundamentals	• IaaS, PaaS & SaaS service model comparison • AWS core services: EC2, S3, RDS, Lambda, IAM • VPC, subnets, security groups & routing tables • Cloud pricing models & cost optimization strategies
2. Docker & Containers	• Docker architecture: images, containers & registry • Dockerfile best practices & multi-stage builds • Docker Compose for multi-service application stacks • Container networking, volumes & persistent storage
3. Kubernetes Basics	• Pods, deployments, services & namespaces • ConfigMaps, Secrets & environment configuration • Horizontal Pod Autoscaling (HPA) & resource limits • kubectl commands & cluster management basics
4. CI/CD Pipelines	• GitHub Actions workflow & YAML syntax • Pipeline stages: build, test, lint & deploy • Blue-green, canary & rolling deployment strategies • Rollback procedures & health check configuration
5. Monitoring & Linux	• Linux commands: filesystem, permissions & processes • Shell scripting for task automation • Prometheus & Grafana monitoring & alerting stack • Log aggregation: ELK stack & CloudWatch basics