

SYLLABUS

The syllabus shall include questions on General Knowledge, General Intelligence, General Aptitude, English etc. and questions on professional/subject knowledge as given below :

1. Deputy Company Secretary

1. Company Law
2. Secretarial Practice
3. Corporate Governance
4. Contract Act
5. Drafting.

2. Deputy General Manager (Commercial)

- i. Public Premises (Eviction of Unauthorized Occupants) Act 1971.
- ii. AAI Act 1994 (no.55 of 1994) as amended by AAI Act 2003- Rules and Regulations and Chapter VA (Eviction of Unauthorized occupants of Airport Premises)
- iii. Indian Contract Act 1872
- iv. Arbitration and Conciliation Act 1996
- v. Contract labour (Regulations and Abolition Act 1970)
- vi. Minimum Wages Act 1948
- vii. Payment of wages Act 1936
- viii. Land Acquisition Act
- ix. Negotiable Instruments to Act
- x. Foreign Money Exchange Act
- xi. Weights & Measurement Act
- xii. Food & Safety Regulations

Other aspects:

- Principles and procedures for fixations of space and land rent
- Fixation of landing parking Usage charges
- Passengers service fee/User Development Fee

- The scope of techniques for enhancing traffic revenue at AAI airports
- Basics of marketing (need want demand value of passengers and users at airport)
- Customer satisfaction
- Marketing orientation and customer value
- Marketing and commercial environment at airports analyzing needs and trends and concepts of market potential and market share
- Marketing organization
- Social responsibility of marketing organization

Marketing Management

- New product development.
- Price determination concept and role in marketing (advertising sales promotion public relation)

Problem Identification and formulation

- Integrated marketing communications (sales promotion advertizing publicity event management corporate communications)

Business policy and strategic Management

- Strategy and Quest for competitive advantages
- Capital Budget as a tool for management and performance management
- Management control system introduction to audit functions in marketing and commercial management.
- Consumer and organizational buying behaviours influences on the consumer/passengers.
- Consumer/passenger decision making Post Purchase behavior organizational influences on buying behavior.

International logistics and supply chain management

- Supply chain strategy transportation
- Logistic service provider
- Customer/passenger service
- Global trade environment

Product and Brand Management

- i. Developing product strategic marketing potential and sales forecasting

Domestic and International

- Risk insurance management – Assets and Properties
- Strategic financial management

Common Engineering Stream

- Time Management
- Quality Assessment and Control
- Performance Evaluation Project Review Techniques
- Contract and Financial Management.

3. Deputy General Manager (Human Resource)

TOPIC	
<u>PAPER-I (Objective)</u>	
(A)	Subject Knowledge
	<ul style="list-style-type: none">• Performance Management & Reward Systems• Recruitment & Selection• Industrial Relations – Trade Unionism• Organizational Theory, Structure & Design• Compensation & Benefits- Strategy & Plan• Strategic Business Processes Outsourcing• Human Resource Information System• Training & Development• Accounting and Finance for Managers• Management of Public Enterprises• Business Ethics & Corporate Social Responsibility• Wage & Salary Administration• Behavioural Communication and Relationship Management• Conflicts and Negotiations• Leadership Power & Politics• Knowledge Management• Emotional Intelligence & Managerial Effectiveness• Right to Information Act• Management of Contract Labour• Constitution of India• Contemporary issues in HRM• Organizational Development & Team Building• HR Metrics for Organizational Value Addition• Innovation Management• Personality Development & Business Communications• Labour Laws:- Minimum Wages Act, Payment of Bonus Act, Payment of Wages Act, Maternity Benefit Act, Workmen’s Compensation Act, Industrial Employment Standing Order Act, Provident Fund Act, Inter State Migrant Labour Act, Contract Labour (Regulation and Abolition) Act, Conciliation Act, Industrial Disputes Act, Factories Act, Payment of Gratuity Act, Trade Union Act.• Disciplinary Proceedings
	<u>PAPER-II (Descriptive)</u>
(B)	Comprehension & Essay Writing

4. Deputy General Manager (Information Technology)

- **Digital Logic:** Logic functions, Minimization, Design and synthesis of combinational and sequential circuits; Number representation and computer arithmetic (fixed and floating point).
- **Computer Organization and Architecture:** Machine instructions and addressing modes, ALU and data-path, CPU control design, Memory interface, I/O interface (Interrupt and DMA mode), Instruction pipelining, Cache and main memory, Secondary storage.
- **Programming and Data Structures:** Programming in C; Functions, Recursion, Parameter passing, Scope, Binding; Abstract data types, Arrays, Stacks, Queues, Linked Lists, Trees, Binary search trees, Binary heaps.
- **Algorithms:** Analysis, Asymptotic notation, Notions of space and time complexity, Worst and average case analysis; Design: Greedy approach, Dynamic programming, Divide-and-conquer; Tree and graph traversals, Connected components, Spanning trees, Shortest paths; Hashing, Sorting, Searching. Asymptotic analysis (best, worst, average cases) of time and space, upper and lower bounds, Basic concepts of complexity classes P, NP, NP-hard, NP-complete.
- **Theory of Computation:** Regular languages and finite automata, Context free languages and Push-down automata, Recursively enumerable sets and Turing machines, Undecidability.
- **Compiler Design:** Lexical analysis, Parsing, Syntax directed translation, Runtime environments, Intermediate and target code generation, Basics of code optimization.
- **Operating System:** Processes, Threads, Inter-process communication, Concurrency, Synchronization, Deadlock, CPU scheduling, Memory management and virtual memory, File systems, I/O systems, Protection and security.
- **Databases:** ER-model, Relational model (relational algebra, tuple calculus), Database design (integrity constraints, normal forms), Query languages (SQL), File structures (sequential files, indexing, B and B+ trees) Transactions and concurrency control.
- **Information Systems and Software Engineering:** Information gathering, requirement and feasibility analysis, data flow diagrams, process specifications, input/output design, process life cycle, planning and managing the project, design, coding , testing, implementation, maintenance, e-business, e-governance and Information security- risks and protection.
- **Computer Networks:** ISO/OSI stack, LAN technologies (Ethernet, Token ring), Flow and error control techniques, Routing algorithms, Congestion control, TCP/UDP and sockets, IP (v4 & v6), Application layer protocols (ICMP, DNS, SMTP, POP, FTP, HTTP); Basic concepts of hubs, switches, gateways, routers, Network security basic concepts of public key and private key cryptography, digital signature, firewalls.
- **Web technologies:** HTML, XML, basic concepts of client server computing.

5. Deputy General Manager (Fire Services)

1. Applied Chemistry
2. Applied Mechanics
3. Strength of Materials
4. Fire Service Hydraulics
5. Pumping Machinery & Accessories
6. Fire Prevention & Protection
7. Fire Fighting Equipments
8. Fixed Fire Fighting Installations
9. Structural Fires & Building Fire Safety
10. Rescue Equipment & Techniques
11. Communication & Detection System
12. Heavy Vehicles & Automobile Engg.
13. Heat Combustion & Explosives
14. Special Fire Hazards
15. Electrical Fires
16. Aircraft Fires
17. Hazardous Materials
18. Fire Codes & Standards.

6. Deputy General Manager (Airport Operations)

1. Basic knowledge of Annex 9 (Facilitation)
2. Terminal Design Concept and Passenger flow.
3. Aesthetics and Good House Keeping
4. Airport as an operational System
5. Terminal Building Civil Installations-drainage/water supply etc.
6. Terminal Building-Electrical Systems-Power Supply, Electrical installation & Air conditioning etc.
7. Terminal Building Electronic Systems/IT Systems/FIDS etc.

8. City Side Management
9. Role of Airline
10. Role of Customs
11. Customs Act.
12. Role of Immigrations
13. Role of Security services (BCAS, CISF, State Police)
14. APHO/Medical Services
15. Handling of Terminal Building Emergencies
16. Terminal Building Inspection procedures and maintenance
17. Duties & Responsibilities of Operations Executives

Knowledge of following legislations

1. Indian Aircraft Act 1934
2. Indian Aircraft Rules 1937
3. National Regulations – Government of India Statutory orders, Civil Aviation Requirements, AAI Operational Circulars
4. Multilaterals and Bilateral Agreements

Knowledge of HR Management vis-à-vis AAI Rules and Regulations

1. AAI Act 1994 and amendments.
2. Man Management-Payment of Wages Act 1936, Minimum Wages Act 1948
3. RTI Act, 2005
4. Official Language
5. Management of Airport Regulations, 2003
6. Public Dealing and Customer Care, VIP Handling
7. Motivation and Leadership

Knowledge of Finance and Commercial Management

1. Knowledge of AAI's Commercial Manual
2. AAI (Contracts) Regulations, 2003, ESS/MESS Contracts (Role of Operations)
3. Airport Charges (Aeronautical & Non-Aeronautical)

Knowledge of Air Traffic Services Management

1. Air Traffic Services Management, CAR Series E Part –II
2. Annex 15, CAR Series X, Pt II (Aeronautical Information Publication)

3. Annex 4, CAR Series X Pt III (Aeronautical Charts)
4. Overview of Annex 5, Units of Measurement
5. Overview of Annex 2, Rules of the Air
6. Overview of Annex 7, Aircraft Nationality and Registration
7. SMGCS (DOC 9476)
8. Advanced SMGCS (DOC 9830)
9. S.O. 84 (E)

Knowledge of Airside Management

Part – I

1. CAR Series B Part –t (Aerodrome Design and Operation)/ Annex 14 (Chapter 1, 2 &3)
2. Aerodrome Reference Code
3. Aerodrome Data
4. Strength of Pavements
5. Physical Characteristics of Runways
6. Physical Characteristics- RWY Shoulders, RWY strips, turn pads, RESA.
7. Physical Characteristics –CWY, SWY, Radio altimeter operating area
8. Physical Characteristics of TWY, Taxiway minimum separation distances, Rapid Exist TWY's.
9. Physical Characteristics of TWY Shoulder, TWY Strips, Holding Bays, Apron, Isolated aircraft parking position
10. Number Siting and Orientation of runways.
11. Calculation of Declared distances

Part-II

1. Apron Management Services Airfield Driving and follow me service
2. Regulating traffic-Air and Vehicular, Doc 9137-Part 8
3. Apron Rules and Regulations
4. ADP, AVP Driver's training program.
5. Aircraft operation-aircraft hazard, blast ingestion, propellers
6. Standard of vehicle maintenance, Refueling practices
7. Aerodrome cleaning and sweeping program, Doc 9137-Part 9
8. Fuel spillage cleaning, FOD removal
9. Work permits, contractor's briefing, NOTAM

10. Log Book Writing, Incident Accident Report writing

11. RT Theory

12. RT Practice

13. Fencing, Security Lighting

14. Aerodrome Maintenance (Annex14-Chapter10)

Part-III

1. Friction-Characteristics, determination of friction level, DOC 9137-II
2. Friction Operation Circular

Part-IV

1. CAR Series B Part-I/Annex 14 (Chapter 4) Obstacle Restriction and Removal

Part-V

1. CAR Series B Part-I/Annex14(Chapter 5,6 & 7) Visual Aids for Navigation- Markings
2. Visual Aids for Navigation-Lighting
3. Visual Aids for Navigation-Lighting-Electrical Systems (Chapter 8)
4. Visual Aids for Navigation -Signs
5. Visual Aids for Navigation-Markers
6. Visual Aids for Denoting Obstacles (Chapter 6)
7. Visual Aids for Denoting Restricted use area (Chapter 7)

Part-VI

1. Wild Life Strike Hazard Reduction Assessment
2. Recording, Reporting and Data Collection Annex 15, Annex 14 (Chapter 9)
3. ICAO Bird Strike Information System (IBIS)
4. Airport Service manual (DOC 9137)
5. Garbage disposal
6. Committees-NBCC, AEMC etc.
7. Overview Environment Noise pollution, Air pollution (Annex 16)

Knowledge of Airport Emergency Planning, Annex 14 (Chapter 9)

1. Type of Emergencies
2. Contingency Plans
3. Rescue Fire Services
4. Visit to FTC
5. Disabled Aircraft Removal, DOC 9137 Part 5 and Annex 13
6. Role of Medical services in Air Emergencies
7. Overview regarding handling of dangerous goods Annex -18

MET and LVP

1. Aviation meteorology
2. MET-Danger of Lightning Strikes & Safety Procedures
3. Low Visibility Procedure-CAR Series D Pt I
4. Low Visibility Procedure
5. OFZ and ILS Sensitive and Critical Areas

Knowledge of Airport Security

1. Annex-17 (Airport Security)

Knowledge of Aviation Safety & Licensing of Airports

1. SMS DOC 9859
2. AAI, CSMS
3. Safety Audits
4. SSMM Safety Risk Management Change Management
5. DATA Collection, inspection, auditing, Safety performance Monitoring
6. CAR Series X Part-IV Runway Safety Programme
7. Licensing of Airport, CAR Series F Pt I(Requirement for issue of Aerodrome License)
8. CAR Service “B’ Part IV (Exemption procedure for non compliance at Aerodromes),
Surveillance Inspection and compliance Report.

7. Manager (Corporate Affairs)

1. Company Law
2. Secretarial Practice
3. Corporate Governance
4. Contract Act

8. Manager (Fire Services)

Sl.No.	Name of Topic
1.	Physics related to Fire Engineering Science
2.	Chemistry of combustion
3.	Electricity & Fire risk
4.	Design & Construction of Fire Engines
5.	Design & Construction of IC & CI Engines
6.	Explosive & radio Activity

7.	Hydraulics related to Fire Engineering calculation
8.	Planning & Construction of the buildings
9.	Structural Fire Protection
10.	Air conditioning, Heating & Ventilation System
11.	Automatic Fire Detection & Alarm System
12.	Means of Escape
13.	Fire protection measures at Hanger, Cargo & Airport Terminal Buildings & Warehouses
14.	Fire Safety Legislation
15.	Disaster Management
16.	Protection Measures at Oil depot
17.	Extinguishing Media

9. Manager (Finance)

1. Financial Accounting/Corporate Accounting
2. Business Laws/Corporate Laws with emphasis on Companies Act 2013
3. Business Organization and Management
4. Income Tax Law and Practice/Corporate Tax Planning/Indirect Taxes
5. Cost Accounting
6. Financial Management with emphasis on evaluation of Projects, fund raising options, working capital management, risk mitigation, strategies in general.
7. Auditing with special emphasis on accounting standards
8. E-commerce
9. Financial Markets, Institutions and financial services
10. Fundamentals of investment
 - Preparation of salary and staff related payment
 - Processing the proposal of procurement (Capital/Revenue Nature)Opening of LC/Payment of Engineering/works bills
 - GOI Guidelines on approval of project and investment in Joint Venture Cos. By CPSE
 - Working knowledge of Tendering procedures
 - Business Communication
 - Knowledge of SAP.

10 Manager (Human Resource)

<u>TOPIC</u>
<u>PAPER-I (Objective)</u>
(A) Subject Knowledge
• Performance Management & Reward Systems
• Recruitment & Selection
• Industrial Relations – Trade Unionism
• Organizational Theory, Structure & Design
• Compensation & Benefits- Strategy & Plan
• Strategic Business Processes Outsourcing
• Human Resource Information System
• Training & Development
• Accounting and Finance for Managers
• Management of Public Enterprises
• Business Ethics & Corporate Social Responsibility
• Wage & Salary Administration
• Behavioural Communication and Relationship Management
• Conflicts and Negotiations
• Leadership Power & Politics
• Knowledge Management
• Emotional Intelligence & Managerial Effectiveness
• Right to Information Act
• Management of Contract Labour
• Constitution of India
• Contemporary issues in HRM
• Organizational Development & Team Building
• HR Metrics for Organizational Value Addition
• Innovation Management
• Personality Development & Business Communications
• Labour Laws:- Minimum Wages Act, Payment of Bonus Act, Payment of Wages Act, Maternity Benefit Act, Workmen’s Compensation Act, Industrial Employment Standing Order Act, Provident Fund Act, Inter State Migrant Labour Act, Contract Labour (Regulation and Abolition) Act, Conciliation Act, Industrial Disputes Act, Factories Act, Payment of Gratuity Act, Trade Union Act.
• Disciplinary Proceedings
<u>PAPER-II (Descriptive)</u>
(B) Comprehension & Essay Writing

11 Manager (Information Technology)

- **Digital Logic:** Logic functions, Minimization, Design and synthesis of combinational and sequential circuits; Number representation and computer arithmetic (fixed and floating point).
- **Computer Organization and Architecture:** Machine instructions and addressing modes, ALU and data-path, CPU control design, Memory/Bus Architecture, I/O interface (Interrupt and DMA mode), Instruction pipelining, Cache and main memory, Organization of Data in Secondary storage, BIOS.

- **Programming and Data Structures:** Programming in C, C++; Functions, Recursion, Parameter passing, Scope, Binding; Abstract data types, Arrays, Stacks, Queues, Linked Lists, Trees, Binary search trees, Binary heaps, Pointers and Concepts of Object Oriented Programming.
- **Algorithms:** Analysis, Asymptotic notation, Notions of space and time complexity, Worst and average case analysis; Design: Greedy approach, Dynamic programming, Divide-and-conquer; Tree and graph traversals, Connected components, Spanning trees, Shortest paths; Hashing, Sorting, Searching. Asymptotic analysis (best, worst, average cases) of time and space, upper and lower bounds, Basic concepts of complexity classes - P, NP, NP-hard, NP-complete.
- **Operating System:** Processes, Threads, Inter-process communication, Concurrency, Synchronization, Deadlock, Parallel Processing and CPU scheduling, Memory management and virtual memory, File systems, I/O systems, Protection and security, Memory Organization, Paging, RAID, Secondary Storage, Storage Area Network (SAN), Network Attached Storage (NAS).
- **Databases:** ER-model, Relational model (relational algebra, tuple calculus), Database design (integrity constraints, normalization), Query languages (SQL), File structures (sequential files, indexing, B and B+ trees) Transactions and concurrency control Segmentation, Instance Creation, Pivot Tables in Oracle.
- **Information Systems and Software Engineering:** Information gathering, requirement and feasibility analysis, data flow diagrams, process specifications, input/output design, planning and managing the project, design, coding, testing, implementation, process life cycle maintenance.

12. Manager (Technical)

1. APPLIED MECHANICS AND DESIGN

- **Engineering Mechanics:** Free body diagrams and equilibrium trusses and frames; virtual work; kinematics and dynamics of particles and of rigid bodies in plane motion, including impulse and momentum (linear and angular) and energy formulations; impact.
- **Strength of Materials:** Stress and strain, stress-strain relationship and elastic constants, Mohr's circle for plane stress and plane strain, thin cylinders; shear force and bending moment diagrams; bending and shear stresses; deflection of beams; torsion of circular shafts; Euler's theory of columns; strain energy methods; thermal stresses.
- **Theory of Machines:** Displacement, velocity and acceleration analysis of plane mechanisms; dynamic analysis of slider-crank mechanism; gear trains; flywheels.
- **Vibrations:** Free and forced vibration of single degree of freedom systems; effect of damping; vibration isolation, resonance, critical speeds of shafts.
- **Design:** Design of static and dynamic loading; failure theories; fatigue strength and the S-N diagram: principles of design of machine elements such as bolted riveted and welded joints, shafts, spur gears, rolling and sliding contact bearings, brakes and clutches.

2. FLUID MECHANICS AND THERMAL SCIENCES

- **Fluid Mechanics:** Fluid properties; fluid statics, manometry, buoyancy; control-volume analysis of mass, momentum and energy; fluid acceleration; differential equations of continuity and momentum; Bernoulli's equation; viscous flow of incompressible fluids; boundary layer; elementary turbulent flow; flow through pipes, head losses in pipes, bends, etc.
- **Heat Transfer:** Modes of heat transfer; one dimensional heat conduction, resistance concept, electrical analogy, unsteady heat conduction, fins; dimensionless parameters in free and forced convective heat transfer, various correlations for heat transfer in flow over flat plates and through pipes; thermal boundary layer; effect of turbulence; radiative heat transfer, black and grey surfaces, shape factors, network analysis; heat exchanger performance, LMTD and NTU methods.
- **Thermodynamics:** Zeroth, First and Second laws of thermodynamics; thermodynamic system and processes; Carnot cycle, irreversibility and availability; behavior of ideal and real gases; properties of pure substances, calculation of work and heat in ideal processes; analysis of thermodynamic cycles related to energy conversion.
- **Applications:** Power Engineering: Steam Tables, Rankine, Brayton cycles with regeneration and reheat; I.C. Engines: air-standard Otto, Diesel cycles. Refrigeration and air-conditioning: Vapour refrigeration cycle, heat pumps, gas refrigeration, Reverse Brayton cycle; moist air psychrometric chart, basic psychrometric process, petrol and diesel engines, automatic transmission, centrifugal pumps, application of IT in automobiles.

MANUFACTURING AND INDUSTRIAL ENGINEERING

- **Engineering Materials:** Structure and properties of engineering materials, heat treatment, stress-strain diagrams for engineering materials.
- **Metal Casting:** Design of patterns, moulds and cores; solidification and cooling; riser and gating design, design considerations.
- **Joining:** Physics of welding, brazing and soldering; adhesive bonding; design considerations in welding.
- **Machining and Machine Tool Operations:** Mechanics of machining, single and multi-point cutting tools, tool geometry and materials, tool life and wear; economics of machining; principles of non-traditional machining processes; principles of work holding, principles of design of jigs and fixtures.
- **Metrology and Inspection:** Limits, fits and tolerances, linear and angular measurements; comparators; gauge design; interferometry; form and finish measurement; alignment and testing methods; tolerance analysis in manufacturing and assembly.
- **Inventory Control:** Deterministic and probabilistic models; safety stock inventory control systems.
- Maintenance Management

13. Manager (Official Language)

1. अंग्रेजी से हिन्दी अनुवाद (300 शब्द)
2. हिन्दी से अंग्रेजी अनुवाद (300 शब्द)
3. अंग्रेजी से हिन्दी सार अनुवाद
(300 शब्दों के पैराग्राफ का 100 शब्दों में सार अनुवाद)
4. राजभाषा अधिनियम, नियम संबंधी प्रश्न
5. किसी एक विषय पर टिप्पणी (150 शब्द)

14. Manager (COMMERCIAL)

Part-I

- (i) Public Premises (Eviction of unauthorised occupants) Act 1971
- (ii) Indian Contract Act 1872
- (iii) Arbitration and Conciliation Act 1996
- (iv) Land Acquisition Act

Other aspects:

- Principles and procedures for fixations of space and land rent.
- The scope of techniques for enhancing traffic revenue at AAI Airports.

Part-II Marketing Management

- (i) Basic Marketing
- (ii) Marketing Concept
- (iii) Business Strategy
- (iv) Consumer Behaviour
- (v) New Product Development
- (vi) Price determination concept and role in marketing (advertising sales promotion public relation).

Product and Brand Management

- (i) Developing product strategic marketing potential and sales forecasting/Budget Preparation.

Others

- Risk insurance management-Assets and Properties.

15. Manager (Cargo)

1. Significance of an ideal Cargo Terminal or primary requirement to establish a Cargo Terminal.
2. Import / Export cargo clearance procedures and documentation involved thereof.
3. Disposal procedures.
4. Bonded Truck operations and its advantage & disadvantage.
5. Role of AAI as Terminal Operator
 - AAI Act, 1994-to establish, manage and develop cargo terminal at Airport
 - As a Custodian under Section 45 of Customs Act, 1962
 - Airlines related functions on behalf of Airlines (Import / Export / TP)
 - Service Provider to the Export / Import community
6. Coding and de-coding of airlines.
7. Currency Codes (e.g. INR, USD etc.)
8. Abbreviation used in cargo operations.
9. Customs Act 1962 and its provision for handling /storage / disposal / clearance of cargo.
10. Role & Functions of Regulatory and Facilitating Agencies.
11. Cargo Handling Equipments (Airlines, Custodian / GHA)
12. Trans-shipments and its types (Dom-Int'l, Int'l-Dom, Intl-Intl) & documents involved.
13. Airway Bill and its significance.
14. Types of Aircrafts
15. Handling & Storage procedure of Special cargo vis-à-vis handling instructions
16. Role of functions of International agencies in Air Cargo
 - International Air Transport Association (IATA)
 - International Civil Aviation Organisation (ICAO)
 - World Trade Organisation (WTO)
 - Airport Council International (ACI)
17. Functions of
 - Inland Container Depot (ICD)
 - Container Freight Station (CFS)
 - Air Freight Station (AFS)
18. Various types of ULDs their specifications / weight carrying capacity and utilities.
19. Multi-model transport and its advantages.
20. Functions of Special Economic Zone (SEZ) / Export Promotion Zone (EPZ).

16. Manager (Law)

- The Constitution of India
- Law of Contract
- Law related to tenders
- Law of Bailment
- Law relating to Arbitration and Conciliation Act, 1996
- Laws relating to injunctions
- Transfer of Property Act
- Law of limitation
- Carriage by Air Act.
- Public International law in comparison to Law of India
- All labour laws.
- Code of Civil Procedure.
- Administrative Law.

17. Manager (Economic Planning)

Part-I SYLLABUS FOR STATISTICS

1. **Frequency distribution and Measures of Location & Dispersion**, calculation of standard deviation and moments, knowledge of skewness (Beta and Gama coefficients)
2. **Probability:** Definitions based on the set theory) of probability outcome, sample space and events, law of probability, definitions of random variables, definition of probability distribution- discrete and continuous.
1. **Distributions:** Only definitions, mathematical expression of binomial, Poission, Normal, Exponential, Beta, Gamma, Negative, Binomial, Geometric, Multinomial, Rectangular and Cauchy Distributions. Examples of practical events, failing about distribution in day to day life. How to find out first, second and third moments of above distribution. Definition of Central Limit Theorem.
2. **Correlation and Regression:** Definitions of correlation and regression coefficient, their limits, linear regression (definition), equations to the lines of Regression, Linearity and Homoscedasticity of regression in bivariate normal distribution, Numerical based on correlation and regression. Definitions and limits of Intra class correlation, multiple correlation, partial correlation, R square (coefficient of determination)
3. **Sampling Distribution:** Definitions of t, Chi-square, F and Z distribution, situations where these are used, simple numerical illustration, Test of signigance, based on above distributions.
4. **Sampling and Survey:**
 - a) Sampling theory, Sampling error, Non-samplings, Error, Frame, Random or Probability sample, Simple Random Sample (with replacement and without replacement), complete enumerations, versus Sampling, Method of Controlling Non Sampling Error, interpenetrating sub samples, Planning Sample Surveys, Definitions of Adhoc Surveys, Repetitive surveys, Questionnaires, Schedule, Distinction between sampling error and Standard Error, Mean Square Error and definitions of Multistage samples, Multiphase sampling, their distinction, the principal steps in a sample survey role of sampling theory.
 - b) **Simple Random Sampling** (with and without replacement from finite or infinite population., variance of estimation.
 - c) **Sampling Proportions and Percentages**
 - d) **Estimation of Sample Size.**
 - e) Knowledge of important terms in stratified, systematic and cluster sampling, variance of estimates; Role of Interclass correlation co-efficient in sampling; Definitions of Ratio and Regression estimates.
5. **Time Series Analysis and its components:-** Trend analysis, Seasonal analysis, cyclic analysis, Random or Error Term, Simple problems

6. **Demand Analysis**:- Law of Demand & Supply, Price elasticity of supply, Partial & Cross elasticity of demand, Engel's Law & Engel's curve, Pareto's law of income distribution, Utility Function.
7. **Forecasting Techniques**: Need for Forecasting, Techniques/methods involved in forecasting, problems encounters while forecasting and the solutions.
8. **Interpretation of Data**
9. **Statistics relating to Indian economy.**

Part-II SYLLABUS FOR ECONOMICS

1. **Micro Economics**:- Demand & Supply Curve, Determination of Price & Quantity, Budget Line & Consumer Choice, Individual & Market Demand, Production & Cost of Production, Profit Maximization, Monopoly & Oligopoly (Price & Output determination)
2. **Macro Economics**:- National Income & Product, Measurement of National Product & Problems in measurement of National Product, Aggregate Demand & Supply, Equilibrium income & output-two sector economy, Change in income & output – investment multiplier, Income-consumption relationship, Determinants of consumption, Theory of income, output & employment.
3. **Managerial Economics**:- Demand Forecasting, Forecasting with econometric model, Economic applications of differential calculus- Simple Problems, Economic forecasting for business – Users of Economic Forecasting and Methods of Economic Forecasting.
4. **International Economics**: Nature & importance of international economics, Salient features of International Trade, Balance of Payment, Devaluation, Foreign Trade Multiplier.

18. Manager (Architecture)

Computer Aided Design: Application of computers in architecture and planning; understanding elements of hardware and software; computer graphics and usage of packages such as AutoCAD, building information management system.

Building Construction and Management: Building construction techniques, methods and details; estimation, specification, valuation, professional practice, project management techniques e.g., PERT, CPM etc.

Energy Conservation and green buildings: Climate responsive design; energy efficient building design; Green buildings and rating system, thermal comfort, solar architecture, principles of lighting and styles for illumination, basic principles of architectural acoustics, environmental pollution, their control & abatement, ECBC and terms such as SHGC, U-value etc.

Building Services: Water supply, sewerage and drainage systems, sanitary fittings and fixtures; plumbing systems, principles of internal & external drainage systems, principles of electrification of buildings; elevators & escalators, their standards and uses; air-conditioning systems; fire fighting systems, building safety and security systems.

Contemporary Technology: Building Automation and intelligent buildings, Pre fabricated structures, Earthquake resistant buildings, Alternative building materials such as hollow concrete blocks, stabilised earth blocks, Fly ash bricks etc.

Landscape Design: Principles of landscape design and site planning, history of landscape styles, landscape elements and materials, plant characteristics & planting design; environmental considerations in landscape planning.

Materials and Structural Systems: Behavioural characteristics of all types of building materials e.g., mud, timber, bamboo, brick, concrete, steel, glass, FRP, different polymers, composites, principles of strength of materials, design of structural elements. Pre-engineered buildings, steel structures, complex structural systems, principles of pre-stressing; tall buildings, principles of disaster resistant structures.

General awareness and aptitude in civil aviation: Master planning concepts, Terminal building designs with associated facilities, Terms related to airport planning and design.

19. Manager (Public Relations)

1. Creative writing, story writing, article writing and script writing for various corporate related issues/items
2. PR related subjects i.e., PR Tools, media for PR, corporate relations, content development for PR, printing & production of publications, Marketing, Economics, Statistics, collection and analysis of data

20. Manager (Airport Operations)

Airside Definition

- Runway
- Taxiway
- Threshold
- Aerodrome Beacon
- Aerodrome Reference Point
- Clearway
- Stopway
- Apron
- Movement area
- Manoeuvring area
- Instrument Runway
- Non Instrument Runway
- Runway end safety area
- Touchdown zone.

Abbreviations

- FOD
- ACN
- PCN

- TORA
- TODA
- LDA
- ASDA
- RESA
- RVR
- NDB
- VOR
- VMC
- OCA
- OFZ
- ILS
- NOTAM

-122-

Aircraft (types and versions)



Parts of Aircraft

- Rudder
- - Slats
- - Flaps
- - Aileron
- - Horizontal stabilizer

Navigational Aids

- Aerodrome Beacon
- ILS
- NDB
- DVOR

PAPI and its function

Runway marking and lighting

Taxiway marking and lighting

Legislation

- Aircraft Act 1934
- Aircraft Rules 1937
- AAI (Management of Airports) Regulation 2003.

Airside Driving Rules

1. Fire Safety Service Vehicles and other vehicles used for aircraft emergency shall have the right of the way over others.
2. Maximum speed limit 30KMPH on service road 15KMPH on apron.
3. Vehicles should not be parked within 15 mts of the aircraft (50ft).
4. No smoking inside/outside the vehicle within the operational area.
5. Runway crossing is allowed only with the permission of the Control Tower and also look out for light/flag signal at ATC.
6. Vehicle will enter runway with two way R/T communication at all time with ATC.
 - I. Before entering/crossing the runway, driver of the vehicle shall visually ensure that no aircraft is approaching or departing from the runway.
 - II. When the vehicle has instruction to clear off the runway, the driver of the vehicle should take immediate action to clear the runway under intimation to the tower.
 - III. In the event of communication failure, ATC shall switch on and off the runway lights thrice to indicate the runway should be cleared. Then the vehicle should clear the runway immediately and inform the Control Tower by the quickest means. The vehicle operator shall position his vehicle facing towards the ATC and flash its headlights thrice to indicate that he has cleared the runway.
7. Use vehicular lanes on apron, away from the parking aircraft.

8. Vehicle should not be parked on vehicular lanes.
9. Vehicle should not be left unattended.
10. Vehicles should only be parked in the Parking Area with brakes on.
11. Vehicle operator should carry driving license/entry permit for inspection.
12. Vehicle operator shall give way to aircraft at all times.
13. Maintain distance of at least 15 meters from the parked aircraft, which is being refueled.
14. While moving in the taxiway and service roads, follow the rule of the road, i.e., keep left. If two vehicles are approaching head on, each shall turn to left.
15. Vehicle operator can over-take the other vehicles from right only.
16. Use perimeter road wherever it is provided instead of crossing runways.
17. Vehicles shall operate in the movement area to a speed less than 30 KMPH. However, such speed restriction shall not apply to vehicles attending to aircraft emergencies.
18. Give way to embarking/disembarking passengers on the apron.
19. While driving on apron and service road, dip the headlights.
20. Shall not interfere with the movement of the aircraft.
21. Shall not over-take or cross the path of the moving aircraft.
22. Shall not operate in the vicinity of aerobridges.
23. During the hours of darkness or when the visibility is less than 2000mtres vehicles should be equipped with atleast two front lights-white, and two rear lights-red and obstruction lights.
24. Shall not drive the vehicle under influence of intoxication.
25. All vehicles must have valid entry permits and shall have obstruction lights installed on the top of the vehicles.
26. Vehicle operator must determine that his vehicle is operating satisfactorily. If he notices any defect, shall inform immediately MT section for remedial action.
27. Aircraft will always have right of way, as such, the vehicle operator before entering the movement area shall always visually check and ensure that the aircraft is approaching/departing.
28. Vehicles shall be parked only in designated parking areas.
29. Vehicle operators shall familiarize themselves with the layout of the airport including apron, taxiways, runways and maneuvering area signs like runway designator signs, directional signs, information signs.
30. If vehicle operator notices foreign objects, if any, or in aircraft movement surface, he will immediately report to duty officer for removal of such obstruction immediately.
31. Speed shall not exceed 10kmph near the vicinity of aircraft.

Aircraft Emergencies

Local Stand BY

Local Standby will be declared by Aerodrome Control Tower when an aircraft approaching the airport is known or is suspected to have developed some defect but the trouble is not such as would normally involve any serious difficulty in effecting a safe landing.

Full Emergency

Full Emergency will be declared by Aerodrome Control Tower when it is known that an aircraft approaching the airport has or is suspected to have such a problem that there is a possibility of an accident.

Aircraft Crash

This emergency will be declared by Aerodrome Control Tower in the event of an aircraft Accident/Crash inside or in the vicinity of IGI Airport.

Special Service Calls

All calls to the Airport Fire Services in the event of situations other than specified above will be treated as special service calls e.g.

- a. Aircraft fire or other fires on ground, within the Airport.
- b. Fuel Spillage
- c. Defueling operations
- d. LVP stand by for ILS CAT-II/CAT-III A/CAT-III B operations when CFTs are to be positioned at pre-determined points.
- e. Bomb Threat to Aircraft on Ground or terminal buildings and Cargo complex.

Potential hazards on the apron

- Vehicles
- Pedestrians
- Weather
- Dangerous Goods
- F.O.D
- Runway incursions
- Fuel spillages

Safety Management System

- Identity hazards
- Analysis Risk
- Risk assessment
- Treat Risk

TERMINAL MANAGEMENT

- Knowledge on Provision of facilities as per ICAO doc Annex-9 (FACILITATION)
- Knowledge on the functioning of various facilities in Terminal Building like Trolley Retrieving, Air-conditions, Toilet cleaning, Escalators, Lifts, PA system, FIDS, Conveyor Belts, Lighting, Ample Car Parking et.
- Knowledge of AAI (Lost Property) Regulation 2003.
- Knowledge of BCAS circulars with respect to Airport Entry Pass/permit
- Co-ordinate with local State Protocol Officers for VIP/VVIP movements.
- Knowledge of contingency plan like building evacuation, structural fire, disaster management and Bomb threat.
- Knowledge on Functions of Airport FAL Committee defined in ICAO Annex-9.
- Knowledge on MoCA orders/circular regarding handling of VVIP
- Knowledge on MoCA instructions with respect to entitle of VIP Lounges at airport.

21. Junior Executive (Corporate Affairs)

1. Company Law
2. Secretarial Practice
3. Corporate Governance
4. Contract Act

22. Junior Executive (Finance)

1. Financial Accounting/Corporate Accounting
2. Business Laws/Corporate Laws with Emphasis on Companies Act, 2013.
3. Business Organization and Management
4. Income Tax Law and Practice/Corporate Tax Planning/Indirect Taxes
5. Cost Accounting
6. Financial Management with emphasis on evaluation of Projects, fund raising options, working capital management, risk mitigation, strategies in general.
7. Auditing with special emphasis on accounting standards
8. E-commerce
9. Financial Markets, Institutions and financial services
10. Fundamentals of investment
11. Working knowledge of computers.

ENGINEERING MATHEMATICS

Linear Algebra: Matrix algebra, Systems of linear equations, Eigen values and Eigen vectors

Calculus: Functions of single variable, Limit, continuity and differentiability, Mean value theorems, Evaluation of definite and improper integrals, Partial derivatives, Total derivative, Maxima and minima, Gradient, Divergence and Curl, Vector identities, Directional derivatives, Line, Surface and Volume integrals, Stokes, Gauss and Green's theorems.

Differential equations: First order equations (linear and nonlinear), Higher order linear differential equations with constant coefficients, Cauchy's and Euler's equations, Initial and boundary value problems, Laplace transforms, Solutions of one dimensional heat and wave equations and Laplace equation.

Complex variables: Analytic functions, Cauchy's integral theorem, Taylor and Laurent series.

Probability and Statistics: Definitions of probability and sampling theorems, Conditional probability, Mean, median, mode and standard deviation, Random variables, Poisson, Normal and Binomial distributions.

Numerical Methods: Numerical solutions of linear and non-linear algebraic equations Integration by trapezoidal and Simpson's rule, single and multistep methods for differential equations.

APPLIED MECHANICS AND DESIGN

Engineering Mechanics: Free body diagrams and equilibrium; trusses and frames, virtual work; kinematics and dynamics of particles and of rigid bodies in plane motion, including impulse and momentum (linear and angular) and energy formulations; impact.

Strength of Materials: Stress and strain, stress-strain relationship and elastic constants, Mohr's circle for plane stress and plane strain, thin cylinders; Shear force and bending moment diagrams bending and shear stresses; deflection of beams; torsion of circular shaft; Euler's theory of columns; strain energy methods; thermal stresses.

Theory of Machines: Displacement, velocity and acceleration analysis of plane mechanisms; dynamic analysis of slider-crank mechanism; gear trains; flywheels.

Vibrations: Stress and forced vibration of single degree of freedom systems; effect of damping; vibration isolation; resonance, critical speeds of shafts.

Design: Design for static and dynamic loading; failure theories; fatigue strength and the S-N diagram; *principles* of the design of machine elements such as bolted, riveted and welded joints, shafts, spur gears, rolling and sliding contact bearings, brakes and clutches.

FLUID MECHANICS AND THERMAL SCIENCES

Fluid Mechanics: Fluid properties, fluid statics, manometry, buoyancy; control-volume analysis of mass; momentum and energy; fluid acceleration; differential equations of continuity and momentum; Bernoulli's equation; viscous flow of incompressible fluids; boundary layer; elementary turbulent flow; flow through pipes, head losses in pipes, bends etc.

Heat-Transfer: Modes of heat transfer; one dimensional heat conduction, resistance concept, electrical analogy, unsteady heat conduction, fins; dimensionless parameters in free and forced convective heat transfer, various correlations for heat transfer in flow over flat plates and through pipes; thermal boundary layer; effect of turbulence; radiative heat transfer, black and grey surfaces, shape factors, network analysis; heat exchanger performance, LMTD and NTU methods.

Thermodynamics: Zeroth, First and Second laws of thermodynamics; thermodynamic system and processes; Carnot cycle irreversibility and availability; behaviour of ideal and real gases; properties of pure substances, calculation of work and heat in ideal processes; analysis of thermodynamic cycles related to energy conversion.

Applications: Power engineering: Steam Tables, Rankine, Brayton cycles with regeneration and reheat; I.C. Engines: air-standard Otto, Diesel cycles, *Refrigeration and air-conditioning:* Vapour refrigeration cycle, heat pumps, gas refrigeration, Reverse Brayton cycle; moist air; psychrometric chart, basic psychrometric processes. *Turbomachinery:* Pelton-wheel, Francis and Kaplan turbines- impulse and reaction principles, velocity diagrams.

MANUFACTURING AND INDUSTRIAL ENGINEERING

Engineering Materials: Structure and properties of engineering materials, heat treatment, stress-strain diagrams for engineering materials.

Metal Casting: Design of patterns, moulds and cores; solidification and cooling; riser and gating design, design considerations.

Forming: Plastic deformation and yield criteria; fundamentals of hot and cold working processes, load estimation for bulk (forging, rolling, extrusion, drawing) and sheet (shearing, deep drawing, bending) metal forming processes; principles of powder metallurgy.

Joining: Physics of welding, brazing and soldering; adhesive bonding; design considerations in welding.

Machining and Machine Tool Operations: Mechanics of machining, single and multi-point cutting tools, tool geometry and materials, tool life and wear; economics of machining; principles of non-traditional machining processes; principles of work holding, principles of design of jigs and fixtures.

Metrology and Inspection: Limits, fits and tolerances, linear and angular measurements; comparators; gauge design; interferometry; form and finish measurement; alignment and testing methods; tolerance analysis in manufacturing and assembly.

Computer Integrated Manufacturing: Basic concepts of CAD/CAM and their integration tools.

Production Planning and Control: Forecasting models, aggregate production planning, scheduling, materials requirement planning.

Inventory Control: Deterministic and probabilistic models; safety stock inventory control systems.

Operations Research: Linear programming, simplex and duplex method, transportation, assignment, network flow models, simple queuing models, PERT and CPM.

24. Junior Executive (Cargo)

1. AAI Act 1994
2. Customs Act 1962
3. Concept of e-Commerce and its benefits.
4. Cargo Terminology (viz. Bulk Cargo, Demurrage Charges, Freighter, Wet Cargo etc)
 - Abbreviations (FOB, AS&RS, BAR, APEDA, CHA, NVD etc.)
 - Airlines code (Alphabetical / Numerical codes)
 - Currency codes (e.g. INR, USD)
 - City codes (e.g. DEL, MAA, NYC etc.)
5. Benefits & future of Air Cargo
6. Role of
 - Clearing & Forwarding Agents (C&F)
 - Air Cargo Agents Association of India (ACAAI)
 - International Federation of Freight Forwarders Association (FIATA)
 - Federation of Freight Forwarders Association of India (FFFAI)
7. Role of Regulatory Bodies in India (Exports Promoting Agencies)
 - Ministry of Commerce (MOC)
 - Export Import Bank of India (EXIM)
 - Export Credit & Guarantee Corporation of India (ECGC)
 - Director General of Foreign Trade (DGFT)
 - Federation of Indian Export Organisation (FIEO)
8. Role of Govt. Regulatory Agencies in India
 - Customs Authorities (CBEC)
 - Assistant Drug Controller (ADC)
 - Plant Quarantine (PQ)
 - Animal Quarantine (AQ)
 - Textile Committee (TC)
 - Apparel Export Promotion Council (AEPC)
9. Major International & Domestic Airports of India

- 10 Cargo Handling Equipments
- Transportation Equipments (Dolly, Tractor, Hydraulic-Pallets, Power Pallet etc.)
 - Weighing equipments (Weigh Bridge, Weighing scale etc.)
 - Material handling equipments (ETV, Fork Lifts, Scissor Lifts, Two/Four wheel trolley, Lazy Bed Roller for ULDs, Cargo offloading ramp, X-ray machine, AS&RS etc.)
- 11 Role of facilitating agencies at Cargo Terminals
- Airlines
 - Banks
 - Airport Health Office (APHO)
 - Bureau of Civil Aviation Security (BCAS)
 - Central Industrial Security Force (CISF)
 - Transit Mail Office (TMO)
 - Customs House Agents (CHA)
- 12 Functions of Special Economic Zone (SEZ) / Export Promotion Zone (EPZ)

25. Junior Executive (Human Resource)

<u>TOPIC</u>
<u>PAPER-I (Objective)</u>
(A)
• Organizational theory, Structure & Design
• Recruitment & Selection
• Performance Management System
• Compensation Management, Reward & Punishment
• Human Resource Information System
• Training & Development
• Accounting and Finance for Managers
• Management of Public Enterprises
• Business Ethics & Corporate Social Responsibility
• Wage & Salary Administration
• Behavioural Communication and Relationship Management
• Conflicts & Negotiations
• Leadership Power & Politics
• Labour Laws:-Minimum Wages Act, Payment of Bonus Act, Payment of wages Act, Maternity Benefit Act, Workmen’s Compensation Act, Industrial Employment Standing Order Act, Provident Fund Act, Inter State Migrant Labour Act, Contract Labour (Regulation and Abolition) Act, Conciliation Act, Industrial Disputes Act, Factories Act, Payment of Gratuity Act, Trade Union Act.
• Industrial Relations – Trade Unionism
• Emotional Intelligence & Managerial Effectiveness
• Right to Information Act
• Constitution of India
• Personality Development & Business Communications
<u>PAPER-II (Descriptive)</u>
(B) Comprehension & Essay Writing

26. Junior Executive (Commercial)

Part-I

- i. Public Premises (Eviction of unauthorised occupants) Act 1971
- ii. Indian Contract Act 1872
- iii. Arbitration and Conciliation Act 1996
- iv. Land Acquisition Act

Other aspects:

- Principles and procedures for fixations of space and land rent.
- The scope of techniques for enhancing traffic revenue at AAI Airports.

Part-II Marketing Management

- i. Basic Marketing
- ii. Marketing Concept
- iii. Business Strategy
- iv. Consumer Behaviour
- v. New Product Development
- vi. Price determination concept and role in marketing (advertising sales promotion public relation).

Product and Brand Management

- (ii) Developing product strategic marketing potential and sales forecasting/Budget Preparation.

Others

- Risk insurance management-Assets and Properties.

27. Junior Executive (Law)

- The Constitution of India
- Law of Contract
- Law related to tenders
- Law of Bailment
- Law relating to Arbitration and Conciliation Act, 1996
- Laws relating to injunctions
- Transfer of Property Act
- Law of limitation
- Carriage by Air Act.
- Public International law in comparison to Law of India
- All labour laws.
- Code of Civil Procedure.
- Administrative Law.

28. Junior Executive (Official Language)

1. अंग्रेजी से हिन्दी अनुवाद (300 शब्द)
2. हिन्दी से अंग्रेजी अनुवाद (300 शब्द)
3. अंग्रेजी से हिन्दी सार अनुवाद
(300 शब्दों के पैराग्राफ का 100
शब्दों में सार अनुवाद)
4. राजभाषा अधिनियम, नियम संबंधी प्रश्न
5. प्रशासनिक शब्दावली के अंग्रेजी शब्दों
का हिन्दी पर्याय
6. प्रशासनिक शब्दावली के हिन्दी शब्दों
का अंग्रेजी पर्याय ।
7. अंग्रेजी शब्दों के अंग्रेजी पर्याय
8. किसी एक विषय पर टिप्पणी

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