

SJM School of Management, IIT Bombay

Admissions for Ph D programme for AY 2023-24

"The date of the Ph.D. admission test and interview is 3rd May 2023. If interviews are not completed on 3rd May, they may get extended to 4th or 5th May."

ELIGIBILITY FOR ADMISSION

A. Educational qualifications

At least one of the following criteria must be met:

- (i) B.E/B.Tech or equivalent degree with 60% marks/6.5 CPI (55% marks/6.0 CPI for SC/ST) and at least two years of work experience.
- (ii) Master of Management /ME / M.Tech / M.Pharm/ M.Phil/2 years MBA or 2 year PG Diploma in Management from any institute recognized by a Government body (AICTE / UGC/AIU) with 60% marks/ 6.5 CPI (55% marks/ 6.0 CPI for SC/ST).
- (iii) Executive MBA of at least one year duration from IITs/IIMs or any institute recognized by a Government body (AICTE/ UGC / AIU) with 60% marks/6.5 CPI (55% marks/ 6.0 CPI for SC/ST)
- (iv) M.Sc/M.A/ M.Com/LLM/MCA or equivalent degree with 60% marks/6.5 CPI (55% marks/6.0 CPI for SC/ST) at postgraduation level.
- (v) Chartered Accountants and Company Secretaries with 60% marks/ 6.5 CPI (55% marks/ 6.0 CPI for SC/ST) in the preceding degree/Bachelor's Degree (B.Com/ BA/B.Sc).

B. Aptitude test scores

- i) Should have qualified in: UGC-JRF/UGC-NET/ CSIR-JRF/ CSIR-NET during last 5 years.

OR

- ii) Should have taken GATE/CAT/GMAT/GRE during last 5 years and scored minimum percentiles /marks as specified below:

GATE:75 percentile overall; CAT: 75 percentile (overall), GMAT:600 marks, GRE:300 marks.

Note: Applicants with MBA/PGDM/M Tech from the institutes of national importance awarded in the last 5 years will be exempted from the requirements under B.

C. Research proposal

A research proposal (1500 words) on a topic of applicants' interest in place of Statement of Purpose. It should contain a) problem identification, b) brief review of literature, and c) methodology.

Applications without research proposal will not be considered.

RESEARCH AREAS

1. Decision Sciences & Quantitative Methods
2. Finance & Accounting
3. Information Systems/Information Technology
4. Marketing
5. Entrepreneurship
6. Operations & Supply Chain Management
7. Technology & Innovation Management
8. Strategic Management & competitiveness
9. International Business

Note: Applicant required to choose only of the above areas in the application. In case of more than one area is chosen, the first option will be considered for the area-based test which will be conducted as part of selection process.

The following areas are not available in the current admission cycle.

1. Economics and Policy
2. Organizational Behaviour & Human Resource Management

FINANCIAL SUPPORT

Teaching Assistantship (TA) [Financial support as per MHRD norm]

A candidate, selected for the Ph.D. Programme, at IIT Bombay will be eligible for the financial support under the TA category subject to the fulfilment of any one of the following three criteria.

- (i) M.Tech./M.E. or an equivalent degree as the qualifying degree,
- (ii) M.B.A (with B.Tech./ B.E. or an equivalent as degree) as the qualifying degree,
- (iii) B.Tech./B.E./M.Sc./M.A./M.Com. or an equivalent degree as the qualifying degree

AND

a valid GATE/JEST (for Physics) score or a valid Junior Research fellowship (JRF) award letter from UGC/CSIR/NBHM/DBT/ or a national eligibility test /UGC NET including lectureship (assistant professorship)

A B.Tech./B.S./B.E. (or equivalent) degree from any Indian Institute of Technology (IIT) with a CGPA/ CPI score of 8.00 (on 0-10 scale) and above is exempted from the mandatory requirement of a valid GATE score.

The assistantship is payable for a maximum duration of 5 years or up to the thesis submission, whichever is earlier. The monthly rate of assistantship is Rs. 31,000/ for the first 2 years and enhanced rate of Rs. 35,000/ for the remaining period.

The continuation of assistantship under TA category will be subject to serving as a teaching assistant in a course / laboratory for 8 hours per week as assigned by the concerned academic unit as well as satisfactory academic performance. The assistantship will be paid on the basis of monthly attendance.

As per MHRD directives, the employees on the rolls (with or without pay) of any organization are not eligible for admission under TA category.

Selection Process: All eligible candidates will be required to take area-based screening test. Candidates will be shortlisted for personal interview based on their performance in the test. Final selection will be based on the performance in the interview.

Link for brochure and application portal:

<https://www.iitb.ac.in/newacadhome/phd.jsp>

In case of any queries/help pl contact Mr. Narendra at 25767782 or email: phdcoord@som.iitb.ac.in

Syllabus for Area-wise test for Ph D Admissions 2023-24

Note:

- 1. Durations of the test: 60 minutes**
 - 2. Test will be based on Multiple Choice Questions and/or brief essay writing/case analysis which may vary from area to area**
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Area: Decision Sciences and Quantitative Methods

(A) Data Interpretation and Quantitative Aptitude (CAT style)

(B) Decision area syllabus:

Applied Operations Research, Data Driven Decision Making, Multi-Criteria Decision Making, Linear Programming and Integer Programming, Optimization Techniques- Elementary Concepts of Inventory Management, Logistics & Supply Chain Management, Forecasting-Introduction to Statistics, Random variables and distribution functions, Sampling Distributions, Confidence Intervals, Tests of Hypothesis-Emerging topics in Machine Learning, Supervised Learning techniques and their applications in Classification and Regression problems, Unsupervised Learning, Bootstrap and Cross Validation, Dimensionality Reduction

Disclaimer: List of topics is not exhaustive

Suggested Reference Textbooks:

- Hiller & Lieberman, Introduction to Operations Research, McGraw Hill, 11th Edition, 2021.*
- T. A. S. Vijayaraghavan, Supply Chain Analytics, Willey, 2021*
- D. Levine et al., Business Statistics: A first course, Pearson Education India, 7th Edition, 2017*
- James et. al., An Introduction to Statistical Learning, Second Edition, Springer, 2021.*

Area: Entrepreneurship

India's entrepreneurship ecosystem- Entrepreneurship and intrapreneurship- Entrepreneurial mindset and behaviour- Entrepreneurship basics: team, idea, opportunity, market sizing, market segmentation, business plan- Entrepreneurial finance: venture capital, angel investing

Entrepreneurial support organizations: technology business incubators, accelerators, science parks, maker spaces, co-working spaces- Entrepreneurial education and learning- Startup competitiveness- Legal matters in entrepreneurship: intellectual property, legal agreements and term sheets- Science and technology-based entrepreneurship- Indigenous/ethnic entrepreneurship- International entrepreneurship- Cooperative strategies for financing, talent, customers

Suggested Reference Books:

1. Entrepreneurship: Creating and leading an entrepreneurial organization, by Arya Kumar, 2012. Pearson Education India. ISBN-13: 978-8131765784.
2. Shifting Orbits: Decoding the Trajectory of the Indian Start-up Ecosystem, Edited by Thillai Rajan A, Srivardhini K Jha, Joffi Thomas and Rohan Chinchwadkar, 2021. Orient Blackswan (Universities Press). ISBN-13: 978-9389211955.
3. Funding your startup and other nightmares, by Dhruv Nath and Sushanto Mitra, 2020. Penguin Portfolio. ISBN-13: 978-0143450382

Area: Accounting & Finance

Basic Statistics

Basics of Statistics – Measures of Central Tendency, and Dispersion –Probability Distributions-Testing of Hypotheses-Basics of Correlation and Regression-Non-Parametric Methods.

Financial and Managerial Accounting

Introduction and Scope of Accounting, Financial Statements – Balance Sheet, Income Statement-Cash flow Statement-Funds Flow Statement-Recording of Financial Transactions-Evolution of Accounting- Financial Statement Analysis-Ratio analysis.

Cost concepts-Types of Costs-Decision-making using costs-Marginal Costing-Cost-Volume-Profit (CVP) Analysis-Methods and Techniques of Cost Accounting-Variance analysis.

Corporate Finance

Financial planning-Working capital management-Capital Budgeting Techniques (NPV, IRR, etc)-Risk-Return-Portfolio-Capital Structure-Cash and Stock Dividend-

Mergers and Acquisitions-Valuation Methods for M&A-Theories of M&A-Takeover Defenses-Financial System: Institutions-Instruments and Markets-Stock Market Operations-Investment Management-Corporate Governance.

Other Topics

Banking and Financial Services-Financial Derivatives and Risk Management-Fixed Income Securities- Private market investing (private equity, venture capital, angel investing)-Money (new money in the modern financial system, digital money, cryptocurrency, etc.)

Suggested Reference Books:

1. Statistics for Management by Richard I. Levin, and David S. Rubin (Pearson)
2. Introduction to Financial Accounting by Charles T. Horngren and Gary L. Sundern (Pearson)
3. Introduction to Management Accounting by Charles T. Horngren and Gary L. Sundern (Pearson)
4. Principles of Corporate Finance by Richard A. Brealey and Stewart C. Myers (McGraw-Hill)
5. Financial Management by I.M. Pandey (Pearson)
6. Financial Institutions and Markets: Structure, Growth & Innovation by L.M. Bhole (McGraw-Hill)
7. Basics of Money & Finance in a Modern World by Dr Armin Eckermann (Kindle Edition)
8. Options, Futures & Other Derivatives by John C Hull (10th Edition)
9. Fixed Income Analysis (CFA Institute Investment Series) by Barbara S. Petitt, Jerald E. Pinto, Wendy L. Pirie, Bob Kopprasch
10. Commercial Banking: The Management of Risk by Benton E Gup & James W. Kolari
11. Investment Analysis and Portfolio Management by Prasanna Chandra (McGrawHill)

Area: Information Systems/Technology

A. Introduction to Information Systems:

This section will test applicants' understanding of fundamental concepts in the domain of information systems/IT. Suggested are mentioned below:

Fundamentals of IT/IS-Organizations and business ecosystems and role of IT/IS-How successful organizations leverage IS/IT?-Evolution of computing infrastructure-Internet and cloud computing-Evolution of data and data management technologies-Introduction to software and software ecosystem-Programming languages and platforms-APIs, micro-services and web-services-Business intelligence/Analytics-Decision support and Knowledge management-Basic knowledge on Artificial Intelligence, Machine Learning and Natural Language Processing-Introduction to IOT, AR/VR and Digital twins-Basics of computer/Cyber security-Managing privacy

and identity-Security technologies (encryption, PKI, block-chain)-What are IT investments?

Suggested Reference Book:

Management Information Systems: Managing the Digital Firm, 16th or older Edition, Kenneth C. Laudon & Jane P. Laudon, New York University [PDF version available]

B. Research topics in Information Systems:

This section will test applicants' understanding on research areas in information system and technology area such as technology frameworks, technology adoption models, impact of technology on business models and ecosystems, new business models using technology, design and implementations of information systems and their applications in various domains and verticals.

Suggested Secondary Sources:

University websites, articles and papers on information systems/technology using various journal websites (Elsevier, Springer, etc.), Google Scholar, ResearchGate, Academia, etc.

Area: Marketing

A. Introduction to Marketing:

This section will test applicants' understanding of fundamental concepts in the domain of marketing. Suggested concepts and topics are mentioned below:

Segmentation, Targeting and Positioning-Consumer and Industrial Buying Behaviour: Theories and Models of Consumer Behaviour-Brand Management: Role of Brands, Brand Value, Brand Equity, Equity Models, Developing a Branding Strategy; Brand Name Decisions, Brand Extensions and Loyalty -Product and Services Marketing-Pricing Strategies and Sales Promotion-Channels of Distribution: Logistics and Supply Chain Management, Drivers, Value Creation, Supply Chain Design, Designing and Managing Sales Force, Personal Selling-Marketing Communications: Role and Theories of Integrated Marketing Communications-Advertising, Concepts of marketing budgets and return on advertising spend (ROAS), Social Media, Public Relations (PR), Direct Marketing-Measuring Market Demand: Forecasting Demand-Retail Marketing: Recent Trends in India, Types of Retail Outlets-International Marketing: Entry Mode Decisions, Planning Marketing Mix for International Markets, International markets, challenges and opportunity-Marketing Research-Challenges and opportunities in Rural marketing-Emerging Trends in Marketing: Online Marketing, Digital Marketing and Green Marketing, Machine Learning in Marketing

Suggested Reference Book:

Marketing Management | Indian Case Studies Included | 16th Edition | By Pearson by Philip Kotler, Kevin Lane Keller, Alexander Chernev, Jagdish N. Sheth, and G. Shainesh.

B. Basic Statistics and Research Methods:

This section will test applicants' understanding on fundamentals of research methods and basic statistics. Suggested topics are mentioned below:

Measures of Central Tendency and Dispersion, Probability Distributions - Binominal, Poison, Normal and Exponential, Various Research Designs, Sampling - Concept, Process and Techniques, Hypothesis Testing, Univariate and Bivariate Analysis.

Suggested Reference Books:

1. Statistics for Management, 8/e. Author(s) Richard I. Levin, Masood Husain Siddiqui, Sanjay Rastogi and David S. Rubin. ISBN 9789332581180.
2. Marketing Research: An Applied Orientation | Seventh Edition | By Pearson. by Naresh K. Malhotra and Satyabhusan Das.

Area: Operations Management

Part A: Management aptitude test. Syllabus includes three sections: Verbal Ability & Reading Comprehension, Quantitative Ability, and Logical Reasoning.

Suggested preparation: The test will be similar to CAT conducted by IIMs in level and content and applicants can accordingly prepare.

Part B: Essay-type subject knowledge question. The syllabus includes knowledge of one or more of the areas of OM, covered under the Departments of POM Journal: <https://www.poms.org/journal/departments/>

Candidates are expected to possess knowledge of these areas commensurate with their qualifications (e.g. BTech, MBA, MTech), beside contemporary developments in business. A few suggested important topics (non-exhaustive) are: inventory management-supply chain strategy-quality engineering & management-innovations in supply chains-warehouse operations management-sustainable manufacturing and logistics-OM interfaces with other management fields.

Area: Technology -Strategic Management -International Business

A. Technology Management

Technology and competition-Management of Technology: Technology selection, transfer and absorption, exploitation-Technology strategy formulation and implementation: Technology development and deployment (product / service)-Intellectual property (IP) management: IP creation, protection and exploitation

B. Strategy

Competitive advantage-Strategy formulation: intent, organizational appraisal, business-level strategies,..-Implementation: Deployment, Balanced score card-Diversification: scope of the firm-Alliances -Managing multi-business firms-International business: comparative advantage, global strategies, arbitrage, MNC management

C. Competitiveness: Indicative suggested concepts and topics (not exhaustive) of this growing field are:

Context of competitiveness: Need, levels, definitions-Concepts: Value chain, value curve, factors and criteria, productivity-Frameworks and Models: Diamond and extensions, Competitiveness Assets-Processes-Performance framework-Corporate competitiveness: Benchmarking, capability maturity models-Cooperative strategies: Licensing Out, JVs, Alliances

Suggested Reference books

- 1.Cho D S and Moon H C (2022), The Competitiveness of Nations, World Scientific.
- 2.Khalil T. M. and Shankar R. (2019) [Management of technology: The key to competitiveness and wealth creation, McGraw-Hill.](#)
- 3.Momaya, K. S. (2001). *International competitiveness: Evaluation and enhancement*. New Delhi: Hindustan Publishing Corporation.
- 4.Saloner, G., Shepard, A., & Podolny, J. (2005). [Strategic management](#). John Wiley & Sons.
- 5.Schilling, M. A. and Shankar R. (2020). Strategic Management of Technological Innovation, McGraw-Hill.