### Discipline wise Syllabi of Screening Test for the post of Assistant Professors advertised vide Advt. No. F.DTU/Rectt./Asso. Prof./ Asst. Prof./2019 dated 01.07.2019.

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Name of Discipline</th>
<th>Syllabus</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Software Engineering</td>
<td>Same as for GATE 2019 for Computer Science and Information Technology</td>
</tr>
<tr>
<td>2</td>
<td>Computer Engineering</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Information Technology</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Applied Physics</td>
<td>Same as for GATE 2019 for Physics</td>
</tr>
<tr>
<td>5</td>
<td>Engineering Physics</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Bio Technology</td>
<td>Same as for GATE 2019 for Bio Technology</td>
</tr>
<tr>
<td>7</td>
<td>Electronics &amp; Communication Engineering</td>
<td>Same as for GATE 2019 for Electronics and Communication Engineering</td>
</tr>
<tr>
<td>8</td>
<td>Electrical Engineering</td>
<td>Same as for GATE 2019 for Electrical Engineering</td>
</tr>
<tr>
<td>9</td>
<td>Management (DSM)</td>
<td><strong>Unit-I</strong></td>
</tr>
</tbody>
</table>

**Unit-II**

The concept and significance of organizational behaviour-Skills and roles in an organization-Classical, Neo-classical and modern theories of organizational structure-Organizational design-Understanding and Managing individual behaviour personality-Perception-Values-Attitudes-Learning-Motivation. Understanding and managing group behaviour, Processes-Inter-personal and group dynamics-Communication-Leadership-Managing change-Managing conflicts. Organizational development

**Unit-III**

Relations and Trade Unions, Dispute resolution and Grievance management, Labour Welfare and Social security measures

Unit-IV


Unit-V

Marketing environment and Environment scannmg., Marketing Information, Systems and Marketing research; Understanding consumer and industrial markets; Demand Measurement and Forecasting; Market Segmentatton-= Targeting and Positioning; Product decisions, Product mix, Product Life Cycle; New product development; Branding and Packaging; Pricing methods and strategies, Promotion decisions-Promotion mix; Advertising; Personal selling; Channel management; Vertical marketing systems; Evaluation and control of marketing effort: Marketing of services; Customer relation management; Uses of internet as a marketing medium-other related issues like branding, market development, Advertising and retailing on the net. New issues in Marketing.

Unit-VI

Role and scope of production management; Facility location; Layout planning and analysis; Production planning and control-production process analysis; Demand forecasting for operations; Determinants of product mix; Production scheduling; Work measurement; Time and motion study; Statistical Quality Control. Role and scope of Operations Research; Linear Programming; Sensitivity analysis; Duality; Transportation model; Inventory control; Queueing theory; Decision theory; Markov analysis; PERT/CPM.

Unit-VII

Probability theory: Probability distributions-Binomial. Poisson, Normal and Exponential; Correlation and Regression analysis; Sampling theory; Sampling distributions; Tests of Hypothesis; Large and small samples; t; z, F, Chi-square tests. Use of Computers in Managerial applications; Technology issues and
Data processing in organizations; Information systems: MIS and Decision making; System analysis and design; Trends in Information Technology; Internet and Internet-based applications.

**Unit-VIII**

Concept of corporate strategy; Components of strategy formulation; Ansoff's growth vector; BCG Model; Porter's generic strategies: Competitor analysis; Strategic dimensions and group mapping; Industry analysis; Strategies in industry evolution, fragmentation, maturity and decline; Competitive strategy and corporate strategy; Transnationalization of world economy; Managing cultural diversity; Global Entry strategies; Globalisation of financial system and services; Managing international business; Competitive advantage of nations: R""FP and WFO.

**Unit-IX**

Concepts-Types, Characteristics; Motivation; Competencies and its development; Innovation and Entrepreneurship; Small business=Government policy for promotion of small tiny enterprises; Process of business opportunity identification; Detailed business plan preparation; Managing small enterprises; Planning for growth; Sickness in Small Enterprises; Rehabilitation of sick enterprises; Intrapreneurship (organisational entrepreneurship).

**Unit-X**

Ethics and Management system; Ethical issues and analysis in management; Value based organisations; Personal framework for ethical choices; Ethical pressure on individual in organisations, Gender issues; Ecological consciousness; Environmental ethics; Social responsibilities of business; Corporate governance and ethics.

<table>
<thead>
<tr>
<th>11</th>
<th>Economics (USME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Micro – Economic Analysis</td>
<td></td>
</tr>
<tr>
<td>• Demand Analysis – Marshallian, Hicksian and Revealed preference approaches.</td>
<td></td>
</tr>
<tr>
<td>• Theory of Production and Costs.</td>
<td></td>
</tr>
<tr>
<td>• Pricing and output under different forms of market structure.</td>
<td></td>
</tr>
<tr>
<td>• Factor Pricing analysis.</td>
<td></td>
</tr>
<tr>
<td>• Elements of general equilibrium and new welfare</td>
<td></td>
</tr>
</tbody>
</table>
2. Macro – Economic Analysis

- Determination of output and employment – Classical approach, Keynesian approach, Consumption hypotheses.
- Demand for Money – Fisher and Cambridge versions, Approaches of Keynesian, Friedman, Patinkin, Baumol and Tobin.
- Supply of Money, Determinants of money supply, High – powered money, Money multiplier.
- Phillips Curve analysis.
- Business cycles – Models of Samuelson, Hicks and Kaldor.
- Macro – economic Equilibrium – Relative roles of monetary and fiscal policies

3. Development and Planning

- Indicators and measurement of poverty.
- Importance of agriculture and industry in economic development – choice of techniques and appropriate technology – Investment criteria – Elementary idea of cost – benefit analysis.
- Trade and Aid – International trade as ‘engine of growth’ – Globalization and LDC’s Objectives and role of monetary and fiscal policies in economic development Techniques of planning; Plan Models in
India; planning in a market – oriented economy.

4. Public Finance

- Role of the Government in Economic activity – Allocation, distribution and stabilization functions; Private, Public and Merit goods.
- The Public Budgets – Kinds of Budgets, Zero – base budgeting, different concepts of budget deficits; Budgets of the Union Government in India Public Expenditure – Hypotheses; effects and evaluation.
- Public Revenue – Different approaches to the division of tax burden, incidence and effects of taxation; elasticity and buoyancy; taxable capacity
- Public Debt – Sources, effects, burden and its management.
- Fiscal Federalism – Theory and problems; Problems of Centre – State Financial relations in India.
- Fiscal Policy – Neutral and compensatory and functional finance; balanced budget multiplier.

5. International Economics

- Theories of International Trade : Empirical verification and Relevance International Trade under Imperfect competition Terms of Trade and Economic Growth – Secular Deterioration of Terms of Trade Hypothesis – a critical review.
- Equilibrium / disequilibrium in Balance of Payment – Traditional, Absorption and Monetary approaches for adjustment in the Balance of Payments, Foreign Trade multiplier.
- Impact of Tariffs, Partial and general equilibrium analysis; Political economy of Non-Tariff Barriers.
- Monetary reforms.
- Trade Policy and Reforms in India.
6. Indian Economy

- Basic Economic indicators – National income, performance of different sectors Trends in prices and money supply.
- Money and banking – Concepts of money supply, inflation, monetary policy and financial sector reforms.
- Public finance – Trends in revenue and expenditures of the Central and State Governments, Public debt; analysis of the Union Budget.
- Foreign trade – Trends, Balance of payments and trade reforms.
- Poverty, unemployment, migration and environment.

7. Statistical Methods

- Measures of Central tendency, dispersion, skewness and kurtosis.
- Elementary theory of probability – Binomial, Poisson and Normal distributions.
- Simple correlation and regression analysis.
- Statistical inferences – Applications, sampling distributions (t, \( x^2 \) and F tests) sampling of attributes, testing of Hypothesis.
- Index numbers and time series analysis.
- Sampling and census methods, types of sampling and errors.

12 Mathematics & Computing


equations, Lagrange’s equation, Charpit’s method, wave equation, heat equation. Differential and Integral vector calculus. Functions of complex variables, analytic function, conformal mapping, complex integration, Taylor series, Laurent series and the Residue theorem.


Operating system: Types, system structure, process management, CPU scheduling, deadlocks, memory management, I/O management, disk scheduling, file systems.

Computer graphics: Line, circle, ellipse drawing algorithms, line and polygon dipping, arc filling, curves and surfaces, transformations, projections. Logic and Graphs: Propositional and predicate logic, Normal forms, theory of inference, Lattice and Boolean algebra. Basic concepts of graphs, connectivity, path and circuits, shortest path algorithms, tree, Spanning tree, planar graph and coloring, cut vertices and edges.