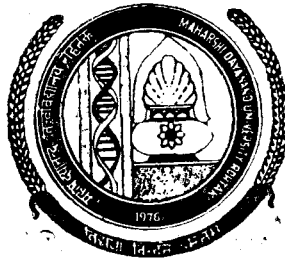


Maharshi Dayanand University Rohtak



Ordinances, Syllabus and Courses of Reading for Economics M. A. (Final) Examination

Session—1997-98

Available from :

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Rohtak-124001 (Haryana)

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ORDINANCE--MASTER OF ARTS EXAMINATION FOR--1997--98

1. **The Master of Arts Examination shall be held in two Parts, Part-I examination shall be held at the end of the first year and Part-II examination at the end of the second year.**
2. **The examination in Part-I and Part-II shall be held once a year ordinarily in the month of April/May, on such dates as may be fixed by the Vice-Chancellor.**

A supplementary examination in Part-II of M.A. will be held in December or on such dates as may be fixed by the Vice-Chancellor for those candidates who have passed all the Papers of Part-I exam, but have got 're-appear' or have failed or want to improve their score in Paper(s) of Part-II examination. However, total number of chances will not exceed as given in the Ordinance.

3. **The last date for the receipt of admission form and fee without late fee as fixed by the Vice-Chancellor, shall be notified to the Heads of the University Teaching Departments. P.G. Regional Centre Rewari and the colleges concerned.**
4. **A candidate's admission form and fee may be accepted after the last date on payment of late fee of Rs 105/- upto the date notified by the University.**

Note: No late fee shall be charged if the admission form and fee are received within three working days of grace after the last date for the receipt of the same without late fee.

5. **A person who has passed one of the following Examinations, shall be eligible to join the first year (Part-I) class of Master of Arts course: (except Master of Physical Education).**
 - i) **B.A./B.Sc./B.Com. (Hons.) Examination in the subject of Post-graduate Course.**
 - ii) **B.A./B.Sc./B.Com. (Hons.) in a subject other than the subject of Post-graduate Course with atleast 50% marks in the aggregate.**
 - iii) **Ist Bachelor's degree with atleast 50% marks in aggregate or 45% marks in the subject of P.G. Course in which the candidate wishes to seek admission.**
 - iv) **Shastri Examination (New scheme) of this University in the manner prescribed in (i) and (ii) above.**
 - v) **Master's degree examination in another subject.**
 - vi) **An examination of any other University recognised by this University as equivalent to (i) or (ii) or (iii) or (iv) or (v) above.**

Provided that :

- a) A candidate who has passed B.Com. Examination with atleast 45% marks in the subject(s)/paper(s) related to Economics including Statistics shall also be eligible to take up M.A. Economics course.
- b) A candidate who has passed B.Sc. (Agri.) with Agricultural Economics as one of the paper/subjects shall also be eligible to join M.A. Economics course.
- c) A candidates who has passed B.A. examination with atleast 45% marks in Public Administration or Sociology shall be eligible to take up M.A. Political Science.
- d) A candidate getting atleast 55% marks in Hindi (Compulsory) subject may also be considered eligible for admission to M.A. Hindi.
- e) A candidate who has passed B.A. (Hons.) in Sanskrit with atleast 45% marks or B.A. Examination with atleast 45% in Sanskrit (Elective) may also be considered eligible to take up M.A. (Hindi), if the candidates who have passed B A.(Hons.) Hindi or B.A. with Hindi (Elective) obtaining 45% marks are not available.
- f) A candidate who has passed Bachelors Degree Examination In Music (B.Mus.) from any Indian University shall be eligible for admission to M A. course without any condition of minimum percentage of marks but no one who did not take up Music as one of his subject for the B A. Examination shall be eligible to take up M.A. Music provided he is working as a teacher of Music in a college admitted to the privileges of this University or in a recognised Higher Secondary School within the jurisdiction of the University or in addition to passing B.A./B.Sc. he has passed one of the following examination :

Sangeet Visharad : From Bhatkhande Sangeet Vidyapeeth Lucknow or from Gandharva Mahavidyalaya, Bambah.

Sangeet Prabhakar : From Prayag Sangeet Smiti, Allahabad or from Rajasthan Sangeet Sansthan, Jaipur.

Sangeet Visharad From Prachin Kala Kender Chandigarh.

g) A candidate who has passed B.A. Examination with Sociology or an allied subject such as Psychology, Political Science, Economics, History and Geography as one of the subjects with 45% marks in aggregate and 45% marks in Sociology or Allied subject mentioned above shall be eligible to take up M.A. Sociology.

h) A candidate who has passed B.A. Examination with History or in any other subject listed in the Faculty of Social Sciences (i.e. Political Science, Sociology, Public Administration, Geography, Psychology etc.) obtaining atleast 45% marks in the subject shall be eligible to take up M.A. History.

i) A candidate who has not passed B.A./B.Sc. (Pass or Hons.) with Mathematics as one of the subjects shall not be eligible to join M.A. Mathematics Course.

) A candidate who has studied the subject of Sanskrit at B.A. level, whether elective or compulsory, for a full span of three years shall be eligible to seek admission to M.A. Sanskrit Course. The minimum percentage of marks for those who have studied Sanskrit Compulsory should be 55% in the subject.

k) For admission to M.A. (Rural Development) a candidate must have passed B.Sc. (Agriculture) with Agricultural Economics as one of the papers/ subjects obtaining 50% marks in aggregate or B.A. with 45% marks in any subject of Social Sciences.

FOR M.A. PHYSICAL EDUCATION

Eligibility condition for admission to M.A. Physical Education:—

NOTE:— A person who has passed one of the following examinations shall be eligible to join the 1st year (Part-I) of the Master of Arts (Physical Education) course ;—

- A**
- i) A Bachelors's Degree examination in Humanities of the M.D. University, Rohtak or an examination recognised as equivalent thereto with atleast 45% marks in the aggregate with English as one of the subjects at the under-graduate level or B.Com./B.Sc./B.Sc. (Home Science) B.Sc. (Agri.) with 45% marks.
 - ii) B.P. Ed./D.P. Ed. one year course after graduation with atleast 50% marks.
 - iii) B. A./B. Sc. with Health and Physical Education as one of the subjects in three years degree course with atleast 50% marks.
 - iv) Bachelor of Physical Education (B.P.E.) three year degree course with atleast 50% marks.
 - v) B.S.H. and P.E. five years course with atleast 50% marks.

AND

- B)** The candidate has taken part in the Inter-University or Inter state or National Tournament in the games and sports recognised by the Inter-University Sports Board. Provided that the candidate qualified in the standard efficiency test at the time of Examination to the first year course.

- 6** A candidate who has failed in one or more paper(s) or fails to appear in M.A. Examination shall be allowed two additional subsequent chances only to pass the M.A examination. This is however, subjects to the provision in Clause-8 below.
- 7** A candidate who fails to pass the M.A. Examination within a period of four years of his admission to the course shall be deemed to be unfit for Post-graduate Studies in the subject concerned.
- 8** A person who has passed the following Examinations shall be eligible to join the M.A. Part-II :-
- a) M.A. Part-I Examination from M.D. University, in the subject concerned. This is however, subject to Clause-7. However, the candidates who have passed atleast two theory papers out of four or five theory papers or atleast three theory papers out of six or seven theory papers of Part-I exam. of the University will be promoted to Part-II class, provisionally

- b) M.A. Part-I Examination of the subject offered from the Kurukshetra University or Panjab University or Punjabi University, or Guru Nanak Dev University or Himachal Pradesh University, provided that the Head of the University Departments/Principal of the college concerned is satisfied that the contents of papers already passed by him are almost the same as in the M.A. Part-I Examination of this University; in this case the marks obtained in M.A. Part-I of the course at any of these Universities shall be counted towards division of successful candidates by increasing or reducing the marks obtained in accordance with maximum marks prescribed for M.A. Part-I Examination of this University.
9. The M.A. Examination in Part-I/Part-II shall be open to a student who:—
- a) has passed the requisite qualifying Exam. or is covered under Clause-5 and 9 and
 - b) has his name submitted to the Controller of Examinations by the Head of the University Teaching Dept./Principal of the college he has most recently attended and produces the following certificates, signed by him:—
 - i) of possessing good character
 - ii) of having remained on the rolls of Department/College during the year preceding the Examination and of having attended not less than 65% of the full course of lectures and tutorials separately and 75% of practicals (the courses to be counted upto the last day when the classes break up for the preparatory holidays).
10. Every candidate shall be examined according to the scheme of examination and syllabus as approved by the Academic Council from time to time.
11. The amount of Examination fee to be paid by a candidate for each year shall be as follows:—

Regular

Ex-Student

Rs. 100/-

Rs. 125/-

(Plus Rs. 20/- per practical subject)

12. A candidate who re-appears in one or more paper(s)/practical(s) for the purpose of passing/improvement of score of marks/result shall pay fee as for the whole Examination.
- i) The medium of instruction shall be :—
 - a) Hindi in case of Hindi and English in case of English
 - b) English or Hindi or Sanskrit in case of Sanskrit and
 - c) English/Hindi in case of other subjects.
 - ii) The question papers will be set :—
 - a) in Hindi in case of Hindi, Sanskrit and Music and
 - b) in English and Hindi in case of other subjects.
 - iii) The candidate shall write their answer as under :—
 - a) in Hindi in case of Hindi;
 - b) in English or Hindi or Sanskrit in case of Sanskrit
 - c) in English in case of English and Mathematics and
 - d) in English/Hindi in case of other subjects,
- 13.1 The minimum number of marks required to pass the Examination shall be as under :
- A) In all subjects except Physical Education
 - i) 33% in each paper (written and practical separately);
 - ii) 40% in each practical in the case of Music;
 - iii) 40% in Dissertation/Viva-Voce, where prescribed;
 - iv) 40% in aggregate.
 - B) In Physical Education
 - i) 35% in each theory paper;
 - ii) 40% in practical; and
 - iii) 40% in aggregate
- 13.2 A candidate who has completed the prescribed course of instructions in College/University Teaching Department for previous/final examination but has not appeared in it or having appeared fails may be allowed on the recommendation of the Principal of the College/Head of University Teaching Department concerned to appear in the subsequent year in the examination paper(s) as the case may be without attending a fresh course of Instruction. While reappearing in the examinations the candidate shall be exempted from reappearing in paper(s) and/or practical(s) in which he has obtained atleast 40% marks.
- 14.1 A candidate who has passed M.A. Part-I Examination obtaining at least 55% marks in aggregate may offer dissertation wherever prescribed in the Scheme of Examination for the course. The subject of the dissertation shall be approved

by the Head of the Department concerned. A candidate shall submit to the Head of the Department an application for the approval of the topic for the dissertation along with a synopsis within one month of his admission to M.A. Part-II.

- 15.2 Every candidate who offers dissertation shall be required to submit three copies of his dissertation along with a brief abstract of the same giving an account of the investigation/research conducted and its main findings (which will not exceed 500 words). The dissertation shall be examined by one external Examiner only.
- 15.3 The last date for receipt of the dissertation in the office of the Controller of Exams shall be one month before the commencement of the Theory Examination, provided that in exceptional cases, Vice-Chancellor shall have the power, to extend, on the recommendation of the Head of the Department, the last date for receipt of the dissertation upto three months. If a candidate fails to submit his dissertation even during the extended period he will be considered to have absented in the dissertation paper and his result shall be declared accordingly.
- 15.4 A candidate who has submitted a dissertation as a part of the Examination may withdraw the same before it has been examined but once it is examined and candidate obtains the minimum pass marks he shall not be permitted to withdraw it or submit another dissertation in lieu thereof. The marks obtained by him for the dissertation shall be taken in to account when he appears in any future examination for the purpose of passing therein or for improving the score of marks/result.
16. As soon as possible, after the termination of the examination the Registrar/Controller of Examinations shall publish the result of candidates and issue detailed Marks Card.
17. The result of candidates who have passed the M.A. examination shall be classified into division as under, the division obtained by the candidate will be stated in his degree :—
- | | |
|---|-----------------|
| a) Those who obtain 60 percent or more marks | First Division |
| b) Those who obtain 50 percent or more but less than 60 percent marks | Second Division |
| c) All below 50 percent | Third Division |

18. A candidate who has already passed the Master of Arts Examination from this University, in a subject in which different optional papers are permitted, may appear in one or more other optional papers of that subject, at any subsequent examination when held, without attending a regular course of study on payment of fee as prescribed for the whole exam. Provided that if there is any corresponding Practical work involved he must attend the prescribed number of practicals etc. in the Department. Such a candidate shall, in order to pass, be required to obtain atleast 40 percent marks in each paper.
19. A candidate who has passed Part-I of M.A. Examination of this University, will be allowed to appear for improvement of his result as an ex-student in one or more theory papers of M.A. Part-I Examination once within a period of three years of his passing the Part-I Examination. A candidate who has passed Part-II of M.A. Examination of this University will be allowed to appear for improvement of his result as an ex-student in one or more theory paper(s) of the M.A. Part-II Examination once within a period of two years of his passing the Part-II Examination.

The candidates may however, appear for improvement of Part-I Examination simultaneously with Part-II Examination while appearing in Part-II Examination for passing or for Improvement.

The result of such a candidate shall be declared only if he improves his score of marks by taking into account the marks obtained by him in the paper(s) in which he reappeared and the marks obtained by him earlier in the remaining paper(s) etc. The fact that the candidate has improved shall be mentioned in the Detailed-Marks Card.

Provided further that the candidate will take the Examination according to syllabus in force for the regular student for that examination.

20. Notwithstanding the integrated nature of this course which is spread over more than one academic year, the Ordinance in force at the time a student joins the course shall hold good only for the examination held during or at the end of the academic year and nothing in this Ordinance shall be deemed to debar the University from amending the ordinance and the amended Ordinance, if any shall apply to all students, whether old or new.

Syllabus for M.A. IInd Year 1997-98

Note : Students will have to offer any four of the following optional Papers.

Paper	Nomenclature	Max. Marks	Time
Optional (i)	Welfare Economics	100	3 Hours
Optional (ii)	Development Economics	100	3 Hours
Optional (iii)	Econometric Theory	100	3 Hours
Optional (iv)	Econometric Methods and Applications	100	3 Hours
Optional (v)	Optimization Techniques	100	3 Hours
Optional (vi)	Mathematical Economics	100	3 Hours
Optional (vii)	Money and Banking	100	3 Hours
Optional (viii)	Public Economics	100	3 Hours
Optional (ix)	International Economics	100	3 Hours
Optional (x)	Industrial Economics	100	3 Hours
Optional (xi)	Agricultural Economics	100	3 Hours
Optional (xii)	Computer Applications in Economics	100	3 Hours
		(Theory-50 Practical-50)	3 Hours 3 Hours

OPTIONAL PAPER (i) WELFARE ECONOMICS

Max. Marks : 100

Time : 3 Hours

Unit-I Measurement of Economic Welfare

Economic Welfare and general welfare-Utilitarian Economics-Value judgements-Interpersonal comparison of utility-Consumer Surplus measures of Economic Welfare-Recent developments in Consumer Choice Theory-indirect utility function, compensating and equivalent variations, money-metric-Index numbers and Consumer surplus-index numbers and money-metric-Extension of Consumer Choice Theory to include inter-temporal choice, uncertainty, quantity constraints.

Unit-II Welfare Economics and General Equilibrium

(Note : Familiarity with General Equilibrium Theory is a pre-requisite)

Pareto optimality and Market Equilibrium-Fundamental theorems of Welfare Economics-Compensation Principles-Extending the fundamental theorems to inter-temporal and uncertain setting. Market failure-imperfections, externalities, public goods, informational asymmetries-Theory of second-best.

Unit-III Social Welfare Function

Arrow Impossibility Theorems-Welfare Economics and Social Choice Theory.- Voting systems-Implications of Rawls' Theory of Justice for Welfare Economics.- Political process and Welfare Economics-Democracy and Welfare Economics-Down's Model-Pressure groups-Politico-Economy interactions (Political Business Cycles)-Bureaucracy and Economic welfare.

Unit-IV Applied Welfare Economics

Taxation and Economic Efficiency-Distortionary effects of taxes. Deadweight losses-measurement of deadweight losses-Lump-Sum taxes versus distortionary taxes-Optimal redistributive taxation-redistribution through commodity taxes.

Unit-V

Cost Benefit Analysis-Evaluation of benefits-choice of social Discount Rates-Out-put and price policy of public enterprises-welfare implications of marginal cost pricing-Natural resources, environmental problems and welfare.

Note : Ten questions will be set in all, atleast two questions from each Unit. candidates shall be required to attempt five questions in all, selecting atleast one from each Unit.

REFERENCES

- Boadway, R.W. and N.Bruce (1984), *Welfare Economics*, Basil Blackwell, Oxford.
- Deaton,....and J. Muellbauer (1980), *Economics and Consumer Behaviour*, Cambridge University Press, Cambridge.
- Just, R.E. D.L. Hueth and A Schmitz (1982), *Applied Welfare Economics and Public Policy*, Prentice Hall Inc. Englewood Cliffs.
- Mckenzie, G.W. (1983), *Measuring Economic: Welfare-New Methods*, Cambridge University Press, Cambridge.

Nishan, E.J. (1969), *Welfare Economics : An Assessment*, North Holland, Amsterdam.

Quirk, J. and R. Saposnik (1968), *Introduction to General Equilibrium Theory and Welfare Economics*, Mc Graw-Hill, New York.

Stiglitz, J.E. (1986), *Economics of the Public Sector*, W.W. Norton, New York, 1986.

Arrow, K.J. (1951), *Social Choice and Individual Values*, Yale University Press, New Haven.

Doel, H. (1979), *Democracy and Welfare Economics*, Cambridge University Press, Cambridge, 1979.

Downs, A. (1956), *An Economic Theory of Democracy*, Harper, New York.

Fieldman, A.M. (1980), *Welfare Economics and Social Choice Theory*, Martinus Nijhoff, Boston.

Frey, B. (1978), *Modern Political Economy*, Martin Robertson, Oxford.

Mueller, D.C. (1979), *Public Choice*, Cambridge University Press, Cambridge.

Sen, A.K. (1970), *Collective Choice and Social Welfare*, Holden-Day, San Francisco.

Atkinson, A.B. and J.E. Stiglitz (1980), *Lectures on Public Economics*, Mc Graw-Hill, New York.

Baumol, W.J. and W. E. Oates (1975), *The Theory of Environmental Policy*, Prentice Hall, Englewood Cliffs.

Desgupta, P. (1982), *The Control of Resources*, Basil Blackwell, Oxford.

Nelson, J.K., (ed.), (1964), *Marginal Cost Pricing in Practice*, Prentice Hall, Englewood Cliffs.

Turvey, R. (1971), *Economic Analysis and Public Enterprises*, George Allen and Unwin London.

OPTIONAL PAPER (ii) **DEVELOPMENT ECONOMICS** Max. Marks : 100
Time : 3 Hours

Unit-I

Grand Theories of Economics Development: Adam Smith-division of labour, capital accumulation process Stationary State. David Ricardo: determination of relative shares of land, labour and capital, capital accumulation process, stationary State. Karl Marx : theory of social evolution, theory of surplus value, dynamics of capitalist development.

Joseph Schumpeter: Process of production, Nature of Entrepreneur, Role of Innovation, dynamics of economic development, business cycles.

Unit-II

Development and Underdevelopment: the meaning of economic development, world development gaps, measurement of development, stages of development, Rostow's stages of growth.

Obstacles of Development: Dualism, centre-periphery models and the process of cumulative causation, population and development; role of population growth in development, low level equilibrium trap.

The production function approach to the study of the causes of growth.

Unit-III

Factors in the Development Process: Land, Labour in relation to Agriculture-Agriculture and economic development, the interdependence of agriculture and industry; rural-urban migration and urban unemployment; disguised unemployment: type and measurement; capital and technical progress.

Financing Economic Development: Financing economic development from domestic resources, savings approach-Keynesian approach, the quantity theory approach; inflation and growth.

Foreign Assistance, Debt and Development : Dual gap analysis, Models of capital import and growth; the balance of payments, foreign borrowings and the debt burden; private investment and multinational corporations; international assistance to the developing countries: multilateral and bi-lateral.

Unit-IV

Planning, Allocation of Resources and the Choice of techniques: Issues in development plan models, the allocation of resources, balanced v/s unbalanced growth, investment criteria, social cost benefit analysis, debate regarding choice of techniques.

Unit-V

Theories of economic Growth: the Harrod-Domar Models of Economic Growth, the Neo-classical one sector model of economic growth, Cambridge criticism, the capital controversy, the reswitching of techniques, differential saving by income groups and social classes: Kaldor and Passinetti.

Simple conception of technical Progress: classification, measurement and weaknesses.

Note : Ten questions will be set in all, atleast two questions from each unit. Candidates shall be required to attempt five questions in all, selecting at least one from each unit.

References

- Adelman, I, *Theories of Growth and Development*, Stanford University Press.
- Thirlwall, A.P. *Growth and Development*, Mac Millan
- Meier, G.M. (ed.) *Leading Issues in development economics*, Oxford University Press.
- Jones, H.G. *An Introduction to The Modern Theories of Economic Growth*, Mc Millan.

Higgins, B. *Economic Development*, North Pvt. Ltd.

Meier and Baldwin, *Economic Development*

Ghatak, S., *An Introduction to Development Economics*, Allen and Unwin.

Todaro, M.P. *Economics of Developing World*, Longman.

Sen. A.K., *Growth Economics*, Penguin.

Note: Further specialised material may be recommended by the teacher concerned.

OPTIONAL PAPER (iii) **ECONOMETRIC THEORY** Max. Marks : 100
Time : 3 Hours

Unit-I Probability Theory

Calculus of probability-Sample space and events-probability as a set function-Borel field and extension of probability measure-notion of a random variable (r.v.) and distribution function multidimensional r.v. conditional probability and statistical independence-conditional distribution of a r.v.-Mathematical Expectation and moments of r.v.'s conditional expectation-characteristic function inversion theorems-Limit Theorems Different modes of Stochastic-Convergence Laws of large numbers-Central limit theorems. Sampling distributions: Distribution of Quadratic forms non-central X^2 , t and F distributions-large-sample theory.

Estimation theory : Criteria for point estimation-unbiasedness, minimum variance unbiasedness, sufficiency, consistency and asymptotic efficiency-Cramer-Rao inequality-Rao-Blackwell theorem-maximum likelihood method and its properties-interval estimation. Hypothesis Testing: Neyman-Pearson Lemma. Likelihood ratio tests-Wald Tests and Lagrange Multiplier Tests-Elements of Statistical decision theory;

Unit-II Multivariate Analysis

Multivariate normal distribution-conditional and marginal distributions-regression planes-Estimation of the Mean Vector and Covariance Matrix-Multivariate Analysis-Principal Components. Canonical Correlations.-Discriminant analysis-Factor analysis.

Least squares Theory : Estimable functions, uniqueness and efficiency-reparameterization-test of linear hypothesis-The Regression Model. The variance components model. Unified theory of Linear Estimation.

Unit-III The Regression Model

Classical Linear Regression Model and the theory of least squares. Gauss-Markov Theorem-Maximum likelihood estimation-Cramer-Rao Lower bound-regression model under linear restrictions, estimation and testing. Prediction-Consistency and asymptotic normality of LS estimator-Some issues in linear Regression : Selection of Regressors. Statistical decision theory-Bayesian solution-Theil's corrected R^2 .-Prediction criterion-optimal significance level-Ridge regression and Stein's estimator-Robus Regression. Generalized

Least Squares theory : Aitken's generalization of Gauss-Markov theorems-Feasible GLS-Serial correlation-tests and solutions Heteroscedasticity-tests and solutions-SURE model.

Stationary time-series-spectral density and its estimation. Auto-regressive models-auto-regressive models with moving-average residuals-Asymptotic properties of LS and ML estimator in the AR model-prediction-Introduction to Box-Jenkins techniques-Concept and tests of causality-Recursive Least Squares-Distributed lag models.

Unit-IV Non-Linear Estimation

Numerical optimization techniques-Newton-Raphson and Gauss-Newton Methods-two-step estimators-tests of hypothesis and confidence regions.

Probit and logit models-ML estimation of logit models-limited dependent variables.

Unit-V Simultaneous Equation Models

Identification Criteria-Limited Information Method of Estimation-OLS 2 SLS, IV and LIML method-Full information Methods- 3 SLS and FIML Non-linear models. Non-linear 2 SLS-Non-linear Liml-Non-linear 3 SLS and non-linear FIML.

Tests for non-nested Regression models-IM and related tests-the C criterion-the information criterion-post-sample predictive testing-Strategies for model selection.

References

- Amemiya, T. (1985), *Advanced Econometrics*, Harvard University Press, Harvard.
- Griliches Z. and M.D. Interligator (Eds.) (1983), *Handbook of Econometrics, Volume I*, North-Holland, Amsterdam.
- Rao, C.R.(1965), *Linear Statistical Inference and its Applications*, John wiley, New York.
- Wilks, S.S. (1982), *Mathematical Statistics*, John Wiley, New York.
- Anderson, T.W. (1958), *Introduction to Multivariate Statistical Analysis*, Clapman and Hall, London.
- Chatified, C. and A.J. Collins, (1980), *Introduction to Multivariate Analysis*, Clapman and Hall, London.
- Maddala, G.S. (1977), *Econometrics*, McGraw-Hill, New York.
- Chow, G.C.(1983), *Econometrics*, McGraw-Hill, New York.
- Harvey, A.C.(1981), *Econometric Analysis of Time Series*, Phillip Allen, London.
- Pindyck, R.S. and D.L. Rubinfeld (1976), *Econometric Models and Economic Forecasts*, Mc Graw-Hill Kogakusha, Tokyo.

OPTIONAL PAPER (iv) ECONOMETRIC METHODS AND APPLICATIONS Max. Marks : 100
Time : 3 Hours

Unit-I

General Linear Regression Model-Least Squares and maximum likelihood estimation-Properties, forecasting, hypothesis testing and interpretation. Dummy explanatory variables, Qualitative dependent variables-Logit model.

Unit-II

Aitken's theorem on Generalised Least Squares-Properties, Heteroscedasticity and Auto-correlation-test, consequences and solutions. Multicollinearity-test consequences and solutions.

Unit-III

Concept of distributed lag Model. Koyck model, partial adjustment and adaptive expectation models. Estimation of Koyck and polynomial distributed lag models. Rational distributed lag model and its estimation.

Unit-IV

Structural form, reduced form and final form, concept of identification, order and rank condition of identification identification through restrictions (homogeneous) on parameters and covariance matrix of structural disturbances, recursive model. Methods of estimation-OLS, ILS, 2SLS, IV, 3 SLS and FIML with properties.

Unit-V

Estimation of system of demand equations-Almost Ideal Demand system (AIDS) Estimation of flexible forms of production and cost functions-transcendental Logarithmic (TL). Estimation of Macro-econometric Models.

Note : Ten questions will be set in all, atleast two questions from each unit. Candidates shall be required to attempt five questions, selecting atleast one from each unit.

OPTIONAL PAPER (v) OPTIMIZATION TECHNIQUES Max. Marks : 100
Time : 3 Hours

Unit-I Linear Programming

Standard concepts-The basic theorem of linear programming the simplex method-Completeness of the algorithm-Convergence properties-Sensitivity analysis-Duality-The dual problem and its economic interpretation some duality theorems-Dual simplex algorithm. Additional and tighter constraints. Upper bounded variables.

Basic definitions and classifications-Strategies and the payoff matrix. The evaluation of strategies-The worth of a game-Strictly determined games.-Maximin and minimax strategies-Chance and expected values. Mixed strategies and games without saddle-points-The minimax theorem-Non constant sum and many person games-Inter-relationship between game theory and linear programming Games in Extensive, strategic and cooperative (or

coalitional) form-Continuum of strategies, time, goods and players- Cooperative solutions-The shapley value.- Non Cooperative solutions-Non cooperative equilibrium points.

Unit-II Input-Output Analysis

Basic concepts-A linear programming interpretation-The Hawkins-Simon condition-Solving an input output system²The non substitution theorem-Prices in the Leontief system-Open and closed Leontief systems-The Leontief dynamic system-Casual indeterminacy in the dynamic Leontief model-Balanced growth and intertemporal efficiency-The problem of dual instability.

Preliminary concepts-Linear inequalities and theorems of the alternative.-Farkas' theorem-Convex sets and separation theorems for convex sets-Hahn-Banach theorem-Gordon's theorem-Saddlepoint optimality criteria of nonlinear programming, the Kuhn Tucker optimality conditions-Rationale, interpretation and sufficiency of the Kuhn Tucker conditions-Duality in non-linear programming-Optimality and duality in the presence of nonlinear equality constraints.

Unit-III Dynamic Programming

Analysis of dynamic phenomena-Structure of multistage decisions-Bellman's principle of optimality-applicability of dynamic programming-Numerical solutions-Computational feasibility-Sensitivity analysis-Models with an infinite horizon-Discrete dynamic programming-Probabilistic dynamic programming-Dynamic programming in Markov chain.

The notion of a system-State and system equivalence-State space theory of linear time varying systems-Linear systems-The standard form Transfer function of the standard form. Theory of systems governed by non-linear functional equations-The nonlinear feedback system stability theory. Stability of systems of direct control-the method of virtual linearization. Decomposition of large scale systems: Hierarchical control.

Unit-IV The calculus of variations

Functionals and their variations-A necessary condition: The Euler equation-Variational Problems with constraints. Fixed end point and natural boundary problems. Variable end points-Broken extremals and the Weierstrass Adman corner conditions-Variations of functionals-The Legendre condition-The Jacobi condition-The Weierstrass condition for strong-extrema-The Legendre Clebsch condition-Sufficient conditions.

Unit-V Theory of Optimal Control

The dynamic optimization problem-The control problem-The state of the dynamic system-The control variables-Controllability and Observability-An objective functional-From the calculus of variations to optimal control-Pontryagin's maximum principle-Transversality conditions-Optimal control with equality and inequality constraints-Dynamic programming, Hamilton Jacobi equation and the Euler equation. Bang bang control and time minimum problems. Singular control-Linear regulator problems-Linear tracking problem. Sensitivity analysis-Cross sensitivity-Objective functional sensitivity. Stability and sensitivity-Robustness analysis-The optimum linear discrete filter-The general discrete Kalman Filter.

Note :Ten questions will be set in all, atleast two questions from each unit. Candidates shall be required to attempt five questions in all, selecting atleast one from each unit.

References

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- Smith, D.R. (1974), *Variational Methods in Optimisation*, Prentice Hall, Englewood Cliffs.
- Chow, G.C. (1975), *Analysis and Control of Dynamic Economic Systems*, John Wiley, New York.
- Sage, A.P. and J.L. Melsa, (1971), *Estimation Theory with applications to Communications and Control*, McGraw-Hill, New York.
- Tu, P.N.V. (1984), *Introductory Optimisation Dynamics*, Springer-Verlag, Berlin.

OPTIONAL PAPER (vi) **MATHEMATICAL
ECONOMICS**

Max. Marks : 100
Time : 3 Hours

Unit-I Theory of Consumer Behaviour

The nature of utility function, indifference curves, concept of diminishing marginal rate of commodity substitution utility; maximization subject to budget constraint, income and substitution effects, Slutsky's equation and Giffen paradox, market demand curves. Revealed preference approach to the theory of consumer behaviour.

Unit-II Theory of the firm

Concept of production function, diminishing marginal rate of factor substitution, profit maximization, returns to scale, elasticity of substitution, Cobb-Douglas and C.E.S. production Functions with their associated properties, Cost functions, long and short run market supply.

Unit-III Theory of Pricing

Monopoly, the discriminating monopolist, the multi-plant monopolist, Taxation and Monopoly output, the Revenue-maximizing monopolist, Duopoly and oligopoly; the cournot solution, The collusion solution, The stackelberg solution, Product Differentiation, the market-Shares solution, The kinked-demand-curve solution-Monopolistic competition.

Unit-IV Market Equilibrium

Market equilibrium in the long run and short run, Walrasian Marshallian definitions of Stability, dynamic stability in a single market. Walras Law and the existence of general equilibrium. Pareto optimality, the efficiency of perfectly competitive markets.

Unit-V Economic Models

- i) Market equilibrium: Cobweb model
- ii) Static and Dynamic multiplier and accelerator, Samuelson-Hicks trade cycle model.
- iii) Growth models: Harrod and Domar, Neo-classical models-Solow, Meade; Kaldor's model with technological progress.

Note : Ten questions will be set in all, atleast two questions from each unit. Candidates shall be required to attempt five questions in all, selecting atleast one from each unit.

References

Henderson and Richard E Quendt : Micro Economics

Chiang, A.C. : Fundamental methods of Mathematical Economics, Mc-Graw Hills, New York.

Arroco, K.J. and M. Interiligator, eds; (1982), *Handbook of Mathematical Economics*, Volume-II

Allen, R.G.D., : Mathematical Economics, Mcmillan, London

Baumol, W.J., : Economic Theory and Operations Analysis

Dernourg and Dernburg, : Macro Economic Analysis, Mc Graw-Hill, New York.

Jones, H.G. (1976), *An Introduction to the Modern Theories of Economic Growth*, Mc Graw-Hill, Tokyo.

Scarfe, B.L. (1977), *Cycles, Growth and Inflation*, Mc Graw-Hill, New York.

OPTIONAL PAPER (vii) MONEY AND BANKING Max. Marks : 100
Time : 3 Hours

Unit-I Basic Concepts

Money and the Payments System-Function of money-Kinds of Money-Measure of money supply-Inside Money and Outside Money-The Neutrality of Money-Patinkin's Intergration of Money & Value theories.

Monetary, Theory : Overview-The Traditional Quantity Theory-Fisher's Equation of Exchange-The Cambridge cash balances approach-The Keynesian Theory-The Modern Quantity Theory: Friedman's approach-constancy of Velocity-Determinants of money Supply.

Unit-II Banks, Non-Banks and the Capital Market.

Credit and the Financial System-Financial Markets: Money Markets and Capital Markets-Commercial Banks-Theories of Commercial Banking-Concept of Credit-creation-Co-operative Banks and their Structure-NonBank Financial Intermediaries (NBFIs)-Types of NBFIs-Unregulated Credit Markets & Credit Agencies.

Unit-III The Central Banking System

Concept of Central Banking-Objectives, Guides and Measures of Central Banks-Role of Central Banks in Developing Countries: Regulatory and Promotional roles-The currency and the credit Schools-Real Bills Doctrine-Qualitative versus Quantitative Controls-Radcliffe Committee Viewpoint-The Reserve Bank of India (RBI): Role, and working and performance.

Unit-IV The Theory of Money Supply

The 'H' Theory of Money Supply-the Money Multiplier Process-Determinants of the Money-multiplier-Commercial Banks and the Money Multiplier-Factors affecting H-RBI's Analysis of Money Supply-Control of the Money Stock. General Instruments-Government's instruments of control: Deficit Financing-RBI's Instruments of control : Open Market Operations-Role of the Bank Rate-Variable Reserve Requirements-General versus Selective Credit.

Unit-V Principles of Monetary Policy

Monetary Policy: Framework, Objectives and Characteristics-Goals, Targets and Indicators of Monetary Policy-Transmission Mechanism of Monetary Policy-Restrictive Vs. Accommodating Monetary Policy-Discriminatory Effects of Monetary Policy-Lags in Monetary Policy Current Issues in Monetary Policy-Growth without inflation-Appropriate Monetary Policy for External Stability.

Note : Ten questions will be set in all, atleast two questions from each unit. Candidates shall be required to attempt five questions, selecting atleast one from each unit.

OPTIONAL PAPER (viii) PUBLIC ECONOMICS

Max. Marks : 100

Time : 3 Hours

Unit-I

Role of Government in an Organised Society, Fiscal Functions, the theory of Social Goods, the theory of Optimal Distribution, Public Choice.

Unit-II

Public Expenditure : Wagner's law of increasing State Activity, structure and Growth, Principles of Public Expenditure evaluation, some case studies of public expenditure evaluation.

Tax Structure : Development and composition (India and USA), Individual Income Tax, Corporate Income Tax, Sales Tax, Property and Wealth Tax, Death Duty.

Unit-III

Fiscal Federalism: Principles of multi-unit finance, Fiscal Federalism in USA, Indian Fiscal Federalism.

Fiscal Stabilisation: Stabilisation Policies, Output, Employment and Inflation, Fiscal Policy and Economic Development.

Public Debt: Economic Issues in Public Debt, Burden of Public Debt, Management of Public Debt with special reference to developing countries.

Unit-IV

Public Pricing and Environmental Policy, International Public Finance, Development Finance.

Unit-V

Indian Public Finance : Finances of the Union Government, Finances of the State Governments Finances of the Local Self Government, Enquiry Committee Reports on Indian Taxation, Finance Commissions in India, Indian Public Debt, India's Fiscal Deficit and Financial Crisis.

References

Masgrave R.A. and Musgrave P.B. *Public Finance in theory and Practice*, Mc Graw Hill.

Brown C.V. and Jackson P.M. *Public Sector Economics*, Martin Roberson, Oxford.

Singh, S.K. *Public Finance in Theory and Practice*, S. Chand & Co.

Government of India, *Economic Survey* various issues.

Due J.F. and Friedlaender, A.F. *Government Finance Economics of the Public Sector*, A.I.T.B.S. Publishers, Delhi.

Further specialised reading material may be recommended by the teacher concerned.

OPTIONAL PAPER (ix) INTERNATIONAL ECONOMICS

Max. Marks : 100
Time : 3 Hours

Unit-I Pure Theory of International Trade

Classical theory: absolute cost advantage-comparative cost advantage-modifications and extension of comparative cost theory-Neo-classical theory : Opportunity cost and comparative advantage-derivation of trade offer curves from trade indifference curves-trade equilibrium with offer curves; Uniqueness and stability of the equilibrium-Modern Theory: factor prices, factor intensities and factor reversal-The Heckscher-Ohlin model-Factor price equalisation theorem-Leontief Paradox-Product life cycle theory of trade.

Unit-II Commercial Policy

Free trade versus protection-economic effects of tariff under partial and general equilibrium-Tariffs and Income Distribution : The Stolper-Samuelson Theorem-the Metzler Paradox-Optimum tariff-effective rate of protection-quotas, Non-tariff restrictions on trade: quotas, dumping, cartels, state trading, counter-veiling duties and voluntary export restraints-trade subsidies-Theory of custom union; trade-creation and trade diversion effects-Welfare effects of custom union; The cooper-Massell argument.

Unit-III Trade, Development and Welfare

Foreign trade and national income : foreign trade multiplier-foreign income repercussions-Trade bias of growth-Factor quantity increases, growth and terms of trade-RYBCZYNSKI THEOREM trade effect of neutral and biased technical progress-Immiserizing growth-the terms of trade effect of growth in developing countries-effect of trade on welfare.

Unit-IV International Monetary Economics

Analytical structure of balance of payments (bop)-equilibrium and disequilibrium in bop-fixed versus floating exchange rates-determination of floating exchange rate-the purchasing power Parity Theory-Automatic adjustment in bop-expenditure changing and expenditure-switching policies for bop adjustment-Monetary approach to bop-Policy of internal and external balance: the Sulter-Swan approach-Factors of international portfolio and direct investment-International capital movements and b.o.p.

Unit-V International Economic Problems and Institutions

Trade problems of less developed countries-Problems of international liquidity-Problem of International debt-International Monetary System-The World Bank System-UNCTAD-GATT and WTO-International Economic Order.

Note : Ten questions will be set in all, atleast two questions from each unit. Candidates shall be required to attempt five questions in all, selecting atleast one from each unit.

REFERENCES

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- Johnson, H.G. (1964), *Money, Trade and Economic Growth*, Allen and Unwin, London.
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Scamell, W.M. (1975), *International Monetary Policy: Bretton woods, and After*, Macmillan, London.

Brahmananda, P.R. and V.R. Panchamukhi, Eds. (1987), *The Development Process of The Indian Economy*, Himalaya Publishing House, Bombay.

Nayyar, C. (1976), *India's Exports and Export Policies in the 1960's*, Cambridge University Press, Cambridge.

Panchamukhi, V.R. (1978), *Trade Policies of India, A Quantitative Analysis*, Concepts publishing company, New Delhi.

Reserve Bank of India, (1985), *Foreign Collaborations in Indian Industry*, RBI, Bombay.

OPTIONAL PAPER (x) **INDUSTRIAL ECONOMICS** Max. Marks : 100
Time : 3 Hours

Unit-I Basic Concepts and Industrial Development of India

Concepts : Plant, Firm, Conglomerate, Cartel, Industry, Industrial Sector, and Industrial Structure-Small and Cottage Industries and their Importance in the Indian Economy-Problems-Case for small Industry-Technology: Meaning of Choice of Techniques-Issues and Areas of choice-Traditional, Latest, Intermediate and Appropriate Technologies-Industrial Growth and Policy: Industrial Policy Resolutions : Principal Objectives-Industry in the Plans-Industrial Development (and Regulation) Act, 1951,-Performance of Indian Industry in the context of the Objectives of Growth, Efficiency and other social objectives-Problems and Prospects of Indian Industry.

Theory of Firm and Pricing : Objectives of the Firm-Growth of Firms-Marginal Cost Pricing Vs. Full Cost Pricing-Depreciation-Allocation of Common Costs among Individual Products-administered Prices-Price-fixation in Indian Industry-Investment Decision: conventional and Modern Methods-Risks and Uncertainty-Sensitivity Analysis-OECD and UNIDO Approaches.

Unit-II Industrial Organization

Market structure, Market conduct and Market performance-Interrelations-Conditions of Entry-Relevance of Industry Studies of Public Policy-Monopoly and Concentration: Measures of Monopoly and concentration-Extent of Monopoly and Concentration in India-Non-legislative and Legislative measures of Control in India, Legislation-The Indian MRTP Act, 1969.

Unit-III Corporate Form of Organization

Features-Methods of control-'The Divergence Problem'-Traditional Vs. Present day capitalism-Growth and Structure of the Indian Corporate sector-Financial Statements : Ratio Analysis and Interpretation-Industrial Finance: Types of Finance-money and capital markets-Commercial and Development Banks-Industrial Development Bank-Objectives and Functioning-impact of these institutions on the supply of long and medium term finance for the industrial sector and on the Financial Structure of the Corporate Sector-Its Implication.

Unit-IV Location and Regional Development

Industrial Location : Theories and Factors-Measures of Localisation-Regional Growth of Industry in India-Tools of Public Policy-Indian Policy on Backward Areas.

Industrialization and Economic Development : Theory and Evidence-Patterns and Phases of Industrial Growth and changes in Industrial Structure-International Comparisons.

Unit-V Some Issues in Indian Industry

Public Sector, Rationale Organization-Pricing Policies-The question of Efficiency in the context of Special constraints-Performance of Public Sector in India-The concept of Joint Sector-Other Problems: Industrial Sickness, capacity Utilization, Foreign Collaboration, Multinationals in India, The Recent Liberalization Trends, Industrial Labour : Problems and Policies.

Note : Ten questions will be set in all, atleast two questions from each unit. Candidates shall be required to attempt five questions in all, selecting atleast one from each unit.

Reference

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- Barthwal, R. (1984), *Industrial Economics*, 2e, Wiley Eastern Limited, New Delhi.
- Devine, P.J. et al (1978), *An Introduction to Industrial Economics*, 3e George Allen and Unwin, London.
- Dhar, P.N. and H.F. Lydall (1961) *The Role of Small Enterprises in Indian Economic Development*, Asia Publishing House Bombay.
- Hay, D.A. and D.J. Morris (1979), *Industrial Economics: Theory and Evidence*, Oxford University Press, Oxford.
- Sandesara, J.C. (1980), *Small Industry in India-Evidence and Interpretation*, Lala Lajpat Rai College, Bombay.
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- Das, N. (1969), *The Public Sector in India*, Vora & Company Bombay.
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OPTIONAL PAPER (xi) **AGRICULTURAL
ECONOMICS**

Max. Marks : 100
Time : 3 Hours

Unit-I Agriculture in a Growing Economy

Agriculture in a growing economy-Changing importance of agriculture-subsistence (traditional) agriculture and its modernization-Interdependence between agriculture and industry: Some empirical evidence-Institutional change and technological change-Farming systems-traditional, subsistence, commercial, co-operative collective, state farming.

Unit-II The Economics of Agricultural Production

Production functions in agriculture-Resource use efficiency-Farm size and productivity relationship in Indian agriculture-Form budgeting concept of cost-Supply of individual crops and aggregate supply-Supply-Price relationship-Technical change and Labour Absorption.

Unit-III Agricultural Factor-Markets

Production factors-characteristics of factor markets-interlinkages between land, labour produce and capital markets in traditional and developing agriculture-Tenancy and crop sharing-Mobility of labour and segmentation in labour markets-Extent of employment and unemployment-Forced Commerce-Role of capital and agriculture credit-organized and unorganized capital market-Characterization of Indian agriculture-Mode of production debate-Agrarian structure-Uncertainty and crop insurance- Agricultural markets and marketing efficiency.

Unit-IV Determination and Behaviour of Agricultural Prices

Behaviour of agricultural prices-Demand and supply of agricultural products and cob-web cycles-Price and income stability-Marketed and marketables surpluses-Role of Public price and distribution policies-stabilization and support policies-Terms of trade between agriculture and non-agriculture-Agricultural Price policy in India.

Unit-V Factors Affecting Agricultural Growth and Productivity

Agricultural growth in India-Inter-regional variations in growth of output and of productivity-Agricultural growth in the State-Cropping pattern changes in India-Institutional changes-land reform, credit structure, marketing etc. Supply of inputs-irrigation, power, seed and fertilizer-Pricing of inputs-Problem of mobilization of resources from agriculture-Social Forestry and Environment.

Note : Ten questions will be set in all, atleast two questions from each unit. Candidates shall be required to attempt five questions in all, selecting atleast one from each unit.

Optional Paper (xii) **COMPUTER APPLICATIONS IN ECONOMICS**

Max. Marks : 100

Theory : 50 Time : 3 Hrs.

Practical : 50 Time : 3 Hrs.

A: THEORY

Unit-I

Introduction to computer and its components, bits, bytes and words; computer Memories-RAM, ROM, input-output devices, secondary storage media-magnetic tapes and discs.

Software and Hardware concepts; personal, macro, mini and main frame systems; computer as a tool for data-processing; fields, records and files; data analysis and data-processing activities.

Unit-II

Basic concept of system software and application software. Operating system, compiler, interpreter; popular operating systems for personal computer, such as MS DOS, DOS functions, DOS environment, directory management, file management and disc management.

Unit-III Introduction to word-processing

Files : File name conventions, save, retrieve, rename, print, listing files.

Features : Centering, bold, underline, indent, footnotes and end notes, reveal codes, block move copy.

Formatting the Document : Line, Page, Document.

Unit: IV

Data analysis software packages, spreadsheets; planning and creating spread Sheets, Salient Features, application to economic Problems, spreadsheet as a tool for decision-making.

Unit : V

Introduction to popular statistical packages of interest to economists, Statistical Package for Social Scientists (SPSS), Running SPSS; SPSS/PC+System, Cases, variables and values; identifying important variables, recording data, coding the variables, data entry, the data file.

Defining Data: Locating the data, variable names, type of variables, indicating decimal places, variable and value labels, missing values, active file, listing data, cleaning data.

Recording values of variables; computing new variables; selecting cases.

SPSS Statistics:Data tabulation, descriptive statistics, crosstabulation and measures of association, procedure t-test, correlation, regression, analysis of variance.

B: PRACTICAL

- | | | |
|-------|----------------------|-----------|
| (i) | MS WORD | -10 marks |
| (ii) | MS DOS | -10 marks |
| (iii) | Lotus 1-2-3 | -10 marks |
| (iv) | Getting on with SPSS | -10 marks |
| (v) | SPSS statistics | -10 marks |

Note : 1. *Teaching-time per week will be three hours for theory and six hours for practical. In addition, there will be commensurate tutorials.*

2. *Ten questions will be set in all, atleast two questions from each unit. Candidates shall be required to attempt five questions in all, selecting atleast one from each unit.*

References

Roger Hunt and John Shelley, (1995). *Computers and Common Sense*, prentice-Hall of India, New Delhi.

Donald H.Sanders (1995). *Computer Concepts and Applications*, Tata-McGraw Hill Publishing Company, New Delhi.

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Ravi Kant Taxali (1995) *P.C. Software Made Simple*, Tata Mc Graw Hill Publishing Company, New Delhi.

Manuals of the Prescribed Software.