



## TAMIL NADU PUBLIC SERVICE COMMISSION

NOTIFICATION NO: 21 /2015  
ADVERTISEMENT NO.:426

DATED: 16.12.2015

Applications are invited only through online mode upto 14.01.2016 for Direct Recruitment to the vacancies in the following post:-

Candidates have to Register their basic particulars through One - Time Registration which is mandatory on payment of Rs.50/- towards registration fee.

Name of the Post and Post Code	Name of the Service and Code No.	Number of vacancies	Scale of pay
<b>RESEARCH ASSISTANT</b> in Evaluation and Applied Research Department (2014 - 2015) (Post Code. 1861)	Tamil Nadu General Subordinate Service (Code No.036)	14	Rs.9,300-34,800/- (PB2) + 4,400/- Grade Pay

### DISTRIBUTION OF VACANCIES:-

Category	G	W	G - PSTM	W - PSTM	Total Vacancies
GT	2	1	1	-	4
BC	2	1	1	-	4
MBC/DC	2	1	-	-	3
SC	1	1	-	-	2
SC (A)	-	-	-	1	1
Total	7	4	2	1	14

**Abbreviations:** GT (G) General Turn (General), GT(W) General Turn (Woman), GT(G)- PSTM - General Turn (General) Persons Studied in Tamil Medium, BC - Backward Class, BC (W)- Backward Class (Woman), BC (G) PSTM- Backward Class General Persons Studied in Tamil Medium MBC/DC - Most Backward Class / Denotified Community, MBC/DC (W)- Most Backward Class / Denotified Community (Woman), SC - Scheduled Caste, SC(W) Scheduled Caste (Woman), SC (A) (W) - Scheduled Caste Arunthathiyar Woman.

### 2. FEES:-

One - Time Registration fee	Examination fee
Rs.50/-	Rs.100/-

Candidates who have already registered in one time Registration System it is enough to pay the Examination Fee.

**EXAMINATION FEE CONCESSION:-**

Category	Concession	Condition
Scheduled castes / Scheduled Caste (Arunthathiyars)	Full Exemption	--
Scheduled Tribes	Full Exemption	--
Most Backward Class / Denotified Communities	Three free Chances	For Degree Holders
Backward Classes(Other than Muslim) / Backward Classes (Muslim)	Three free Chances	For Degree Holders
Ex-Servicemen	Two free Chances	Minimum General Educational Qualification
Differently Abled Persons	Full Exemption	--
Destitute Widow	Full Exemption	--

- The three / two free chances allowed are not for **EACH POST** but for **ANY THREE /TWO APPLICATIONS ONLY**. The claim for exemption from payment of fee made in any application which is rejected / admitted or withdrawn will be counted as a free chance.

(Further details regarding Fee Concession is mentioned at para 12 of "Instructions to the Candidates")

**3. IMPORTANT DATES:-**

A	Date of Notification	16. 12. 2015
B	Last date for submission of applications and for uploading of the prescribed qualification Certificate (P.G. Degree Certificate)	14. 01. 2016
C	Last date for payment of Fee	19. 01. 2016
<b>Date and Time of Written Examination (OMR Method)</b>		
D	Paper - I (Subject Paper Covering all the subjects)	06.03. 2016 FN 10.00 A.M. to 01.00 P.M.
	Paper - II (General Studies)	06.03.2016 AN 02.30 P.M. to 04.30 P.M.

#### 4. **QUALIFICATIONS:-**

##### (A) **AGE (as on 01.07.2015)**

Sl. No.	Category of Candidates	Minimum Age (Should have completed)	Maximum Age
1	SCs, SC(A)s, STs, MBCs/DCs, BCs (OBCM)s, BCMs and DWs of all castes	18 Years	No Maximum Age Limit
2	"Others" [i.e. Candidates not belonging to SCs, SC(A)s, STs, MBCs/DCs, BCs and BCMs]	18 Years	30 Years (Should not have completed)

##### **Note:-**

"Others" [i.e. Candidates not belonging to SCs, SC(A)s, STs, MBCs/DCs, BCs and BCMs] who have put in 5 years and more of service in the State / Central Government are not eligible even if they are within the age limit.

##### (B) **EDUCATIONAL QUALIFICATION: (as on 16.12. 2015) :-**

Candidates should possess the following or its equivalent qualification on the date of Notification viz. 16.12. 2015.

**Must possess a First Class Post-Graduate degree in Economics or Econometrics or Statistics or Business Administration or Mathematics or Social Work or Sociology or Anthropology or Agricultural Economics or Public Administration**

##### **Note:-**

- (i) The Qualification mentioned above should have been obtained in the order of studies viz. SSLC, HSC (or its equivalent), U.G. Degree and P.G. Degree
- (ii) The qualification ordered to be equivalent to the prescribed qualification are indicated in Annexure -I to this Notification (Refer also to the Disclaimer annexed to the Notification)
- (iii) Candidates claiming equivalence of qualification should upload evidence for such claim in the form of Government Order (G.O.) issued prior to the date of this Notification. The G.O. issued after the date of Notification will not be accepted.

(For further details are at paragraph 10 of the "Instructions to the Candidates")

##### (C) **KNOWLEDGE OF TAMIL :-**

Candidates should possess adequate knowledge of Tamil on the date of this Notification viz. 16.12.2015.

(Further details are at para 11 of the 'Instructions to the candidates')

**5. GENERAL INFORMATION:-**

- A. The rule of reservation of appointments applies to this post.
- B. In G.O.Ms.No.145, Personnel and Administrative Reforms (S) Department, dated 30.09.2010, the Government have ordered that "twenty percent of all vacancies in the appointment in the service under, the State which are to be filled by direct recruitment shall be set apart on preferential basis to persons studied in Tamil Medium and the said Tamil Medium reservation applies to this recruitment. In G.O. (Ms.) No.40, Personnel and Administrative Reforms (S) Department, dated 30.04.2014, Government have issued orders substituting the turns already earmarked to PSTM. (Candidates claiming this reservation should have studied the above prescribed qualification for the post in Tamil Medium and should have the certificate for the same. Having written the examinations in Tamil language alone will not qualify for claiming this reservation). If the candidates with PSTM are not available for selection for appointment against reserved turn such turn shall be filled up by Non-PSTM candidates but belonging to the respective communal category.  
(Further details are at para 29 (xix) of the 'Instructions to candidates')
- C. The number of vacancies advertised is only approximate and is liable for modification including reduction with reference to the vacancy position at any time before finalisation of selection.
- D. If no qualified and suitable women candidates are available for selection against the vacancies reserved for them, those vacancies will be filled by male candidates belonging to the respective communal categories.

**E. CERTIFICATE OF PHYSICAL FITNESS:-**

Candidates selected for appointment to the post will be required to produce a certificate of physical fitness in the form prescribed below:

<b>Form of Certificate of Physical Fitness</b>	<b>Standard of Vision Prescribed</b>
Other than Executive and Ministerial	Standard-III or Better

Candidates with defective vision should produce Eye Fitness Certificate from a qualified Eye Specialist.

- F. In G.O.(Ms.) No.53, Social Welfare and Nutritious Meal Programme (SW.4) Department, dated 11.4.2005, the Government have identified 117 posts, most suitable for the disabled persons under Group A&B Groups and also directed that reservation of 3% of vacancies in direct recruitment for the identified post of A & B groups where the rule of reservation is

applicable for the disabled persons. As far as the post of Research Assistant in Evaluation and Applied Research Department is concerned, it is identified as suitable for Differently Abled person in the above said G.O. Hence reservation to differently abled person will apply for this post. The Differently Abled person turn does not arise in this recruitment. However, they can apply and should send the documents referred to in para 14 (f) of the Commission's 'Instructions to the Candidates' when called for.

- G. Even after filling up of the posts reserved for SC Arunthathiyars on preferential basis, if more number of qualified Arunthathiyars are available, they shall be entitled to compete with the Scheduled Castes other than Arunthathiyars in the inter-se merit among them and if any posts reserved for Arunthathiyars remain unfilled for want of adequate number of qualified candidates, it shall be filled up by Scheduled Castes other than Arunthathiyars.
- H. Any claim relating to the selection (not related to candidature or / and claims made in the application) should be received on the date when called for original certificate verification prior to selection. Any claim received thereafter will receive no attention.
- I. Correct and true Information regarding arrest, convictions/debarment/disqualification by any recruiting agency, criminal or any disciplinary proceedings initiated or finalized, participation in agitation or any Political Organization, candidature in election for Parliament/State Legislature/Local Bodies etc., if any, should also be furnished to the Commission at the time of application i.e. the details thereof, originals of the Judgement of Acquittals, order/or G.O. dropping further action in Departmental proceedings or any document that may prove the suitability of such candidates for a Government appointment must be produced at the stage/time of Certificate Verification without fail.
- J. The selection for appointment to the above said post is purely provisional subject to final Orders on pending Writ Petitions, if any, filed in Madras High Court and Madurai Bench of Madras High Court.
- K. **Applications containing wrong claims relating to other basic qualifications / eligibility criteria / age / communal categories/ educational qualification will be liable for rejection.**

**6. SCHEME OF EXAMINATION (OBJECTIVE TYPE) AND ORAL TEST(OMR METHOD):-**

Subject	Duration of Examination	Maximum Marks	Minimum Qualifying Marks for Selection	
			SCs, STs, BCs and BCMs.	SC(A)s, MBCs/DCs, Others
<b><u>PAPER I (200 Questions)</u></b> <b><u>P.G. Degree Standard</u></b> Subjects comprising Economics, Econometrics, Statistics, Mathematics, Business Administration, Social Work, Sociology, Anthropology, Agricultural Economics and Public Administration. (Code : 213)	3 Hours	300	171	228
<b><u>PAPER II (100 Questions)</u></b> <b><u>General Studies</u></b> (Degree Standard)	2 Hours	200		
<b><u>Interview and Record</u></b>		70		
<b>Total</b>		570		

**Note:**

- The question paper for the above subjects in Paper -I will be set in English only and Paper II will be set both in English and Tamil.
- The syllabi for the subjects mentioned in paper I & II are available in the Commission's Website '[www.tnpsc.gov.in](http://www.tnpsc.gov.in)' and also furnished at Annexure-IIA and IIB to this Notification.**

**Note:-**

- To use either blue or black ink Ball Point pen only.
- Answer sheet will be invalidated if shaded in pencil.
- The answer sheet will be invalidated if the box provided for booklet series mentioned in the Question Paper is not shaded / incorrectly shaded.
- Answer sheet answered in a subject other than the subject opted by the candidates in his application/ specified in the Hall Ticket will be invalidated.
- Each one mark will be deducted for incorrect or absence of shading Register Number.

**7. CENTRE FOR EXAMINATION:-**

Examination will be held at **Chennai Centre** (Code No.0100) only.

**Note:-**

- Candidates should appear for the examination/ Certificate Verification and Counselling at their own expenses.
- Request for change of venue will not be complied with.
- The Commission reserves the right to increase or decrease the number of examination venues and to re - allot the candidates

### **8. MODE OF PAYMENT OF EXAMINATION FEE:-**

- Examination fee Rs.100/- (Rupees One Hundred only)
- Candidates have to register their basic particulars through One-Time Registration which is mandatory on payment of Rs.50/- towards registration fee. The registration shall be valid for a period of five years from the date of one-time registration.
- Candidates should also to pay the service charges applicable to the Bank.
- Candidates can avail exemption from paying Examination Fees as per eligibility criteria.
- **Offline mode of payment in the form of DD/Postal Order etc., will not be accepted and the applications forwarded with such modes of payment will be summarily rejected.**
- Those who have already registered in the **one time** registration system and paid the registration fee of Rs.50/- and received the registration ID **need not pay** the application fee i.e. Rs.50/- and it is enough to pay the Examination Fee of Rs.100/- alone.
- Candidates who have made **one time registration must apply for this post also.** One time registration is only to avail exemption for application fee for a period of 5 years from the date of registration.

### **9 . PROCEDURE OF SELECTION:-**

Selection will be made in two successive stages i.e., (i) Written Examination and (ii) Oral Test in the form of an interview. Final selection will be made on the basis of total marks obtained by the candidates at the Written Examination and Oral Test taken together and subject to the rule of reservation of appointments. Appearance in both the papers of the Written Examination and Oral Test is compulsory. A candidate who has not appeared in any one of the papers in Written Examination or Oral Test will not be considered for selection, even if he/she secures qualifying marks in the Written Examination or Oral Test.

(Further details are at paragraph 23(b) of the 'Instructions to the candidates').

### **10. NO OBJECTION CERTIFICATE:-**

For details refer para 15 (g) of the Commission's 'Instructions to the candidates'. Any violation of the instructions will be liable for or end in rejection of his / her candidature.

### **11. CONCESSIONS:-**

Concessions in the matter of age and / or fees allowed to SCs, SC(A)s, STs, MBCs/DCs, BCs, BCMs, Destitute Widows, Ex-servicemen and Differently Abled persons, other categories of persons etc. are given in paragraphs 12 to 14 of the 'Instructions to the candidates'.

**12. HOW TO APPLY:**

Click here [www.tnpscexams.net](http://www.tnpscexams.net) / [www.tnpscexams.in](http://www.tnpscexams.in)

**13. OTHER IMPORTANT INSTRUCTIONS:-**

- a. **Candidates should ensure their eligibility for examination:** The candidates applying for the examination should ensure that they fulfil all eligibility conditions for admission to examination. **Their admission to all stages of the examination will be purely provisional subject to satisfying of the eligibility conditions.** Mere issue of memo of admission to the candidate will not imply that his/her candidature has been fully cleared by the Commission.
- b. The Hall Tickets for eligible candidates will be made available in the Commission's website [www.tnpsc.gov.in](http://www.tnpsc.gov.in) or [www.tnpscexams.net](http://www.tnpscexams.net) for downloading by candidates. No Hall Tickets will be sent by post. So the candidates / applicants should watch Tamil Nadu Public Service Commission website since ahead/ before the scheduled date of examinations.
- c. **Facilitation Counter for guidance of candidates:** In case of any guidance/ information / clarification of their applications, candidature, etc. candidates can contact Tamil Nadu Public Service Commission's Office in person or over Telephone No.044-25332833/ 25332855 or the Commission's Office Toll-Free No.1800 425 1002 on all working days between 10.00 a.m. and 05.45 p.m.
- d. **Mobile phones and other articles banned:-**
  - i. Candidates are not allowed to bring to the venue of the Examination Cellular phone, Calculator, memory notes and books etc. or any other Electronic device or Recording device either as separate piece or part of something used by the candidate such as Watch or Ring.
  - ii. If they are found to be in possession of any such thing or instrument they will not be allowed to attend the examination further, besides invalidation of answer paper and / or debarment. If it is considered necessary they will be subjected to thorough physical search including frisking on the spot.
  - iii. Do not bring into the Examination Hall any article such as books, notes, loose sheets, mathematical and drawing instruments, Log Tables, stencils of maps, slide rules, Text Books, rough sheets etc. except the permitted writing material i.e. pen. No colour pen or pencil must be used.



- e. Candidates are not required to submit along with their application any certificates in support of their claims regarding age, educational qualifications, community certificates and certificates regarding their physical disability, etc., They should be submitted when called for by the Tamil Nadu Public Service Commission. The candidates applying for the examination should ensure that they fulfil all the eligibility conditions for admission to the examination. Their admission at all the stages of examination for which they are admitted by the Commission viz. Written Examination will be purely provisional, subject to their satisfying the prescribed eligibility conditions. If on verification at any time before or after the Written Examination and Certificate Verification, it is found that they do not fulfil any of the eligibility conditions, their candidature for the examination will be cancelled by the Commission.
- f. If any of their claims is found to be incorrect, or false it will lead to rejection / debarment
- g. **Unfair means strictly prohibited:** No candidate shall copy from any other candidate nor permit to be copied nor give nor attempt to give nor obtain nor attempt to obtain irregular assistance of any description.
- h. **Conduct in examination hall:** No candidate should misbehave in any manner or create a disorderly scene in the examination hall or harass the staff employed by the Commission for the conduct of the examination. Any such misconduct will be severely viewed and penalized.

**The on-line application can be submitted upto 14.01.2016 till 11.59 p.m., after which the link will be disabled.**

*(For detailed information the candidates may refer Commission's "Instructions to the candidates" at the Commission's website [www.tnpsc.gov.in](http://www.tnpsc.gov.in) )*

**Secretary**

**ANNEXURE-I****G.Os relating to equivalence of qualification for the subjects Economics, Statistics, Mathematics, Social Work, Public Administration**

Sl. No	Degree	Equivalence Degree	G.O.
1.	திருச்சிராப்பள்ளி, பிஆப் ஈபர் கல்லூரியால் வழங்கப்படும் முதுநிலை சமூகப்பணி பட்ட மேற்படிப்பு (Master of Social Work)	திருச்சிராப்பள்ளி பிஆப் ஈபர் கல்லூரியால் வழங்கப்படும் M.A., (Social Work)	அரசாணை நிலை எண்.2, பணியாளர் மற்றும் நிர்வாகச் சீர்திருத்தத் (ஆர்) துறை, நாள் 3.1.2000
2	M.A., Applied Economics (Five Years Integrated Course) awarded by Annamalai University	M.A., (Economics)	G.O. (1D) No.268, Higher Education (H1) Department, dated 20.09.2012
3.	M.Sc., Applied Mathematics awarded by Bharathidasan University	M.Sc., (Mathematics)	G.O.Ms.No.58, Higher Education (K2) Department, dated 15.04.2013
4.	M.Sc., Applicable Mathematics and Computer Science awarded by Bharathidasan University	M.Sc., (Mathematics)	
5.	M.Sc., Mathematics with Computer Application	M.Sc., (Mathematics)	G.O.Ms.No.72, Higher Education (K2) Department, dated 30.04.2013
6.	M.A., Business Economics	M.A., (Economics) Gandhigram University / Annamalai University / Bharathiar University	
7.	M.A., (Applied Economics)	M.A., Economics	
8.	M.Sc., Mathematical Economics)	M.A., (Economics)	
9.	M.Sc., (Tech) (Industrial Mathematics with Computer Application), Gandhigram University	M.Sc., Mathematics	G.O.(Ms.) No.117, Higher Education (K2) Department, dated 27.09.2013
10.	M.Sc., Economics 5 years Integrated course awarded by Avinashilingam Institute of Home Science and Higher Education for Women Deemed University	M.A., (Economics)	

11.	M.A., Public Management awarded by Madras University	Post Graduate Degree in Public Administration	G.O.Ms.No.228, Higher Education (K2) Department, dated 04.11.2013
12.	M.A., Development Administration (5 years Integrated) awarded by Gandhigram / Rural University	M.A., (Public Administration)	
13.	M.A., (Applied Economics) awarded by Bharathidasan University	M.A., (Economics)	G.O.Ms.No.27, Higher Education (K) Department, dated 13.02.2014
14.	M.A., (Business Economics) offered by Ethiraj College for Women, Chennai affiliated to University of Madras	M.A., (Economics)	G.O.Ms.No.116, Higher Education (K) Department, dated 22.07.2014
15.	M.A., Indian Economics awarded by University of Madras	M.A., Economics	
16.	M.Sc., Statistics with Computer Application awarded by Manonmaniam Sundaranar University / Periyar University/ Bharathiar University	M.Sc., (Statistics)	
17.	M.Sc., Statistics with Computer Application (5 years Integrated Programme) awarded by Annamalai University	3 years UG in Statistics and 2 years PG in Statistics	
18.	M.Sc., Applied Mathematics (Operation Research) awarded by Bharathidasan University	M.Sc., (Mathematics)	G.O.Ms.No.212, Higher Education (K2) Department, dated 17.12.2014
19.	M.Sc., Mathematics (Applicable Mathematics) awarded by Periyar University	M.Sc., (Mathematics)	
20.	M.Sc., Mathematics with Computer Application and Five Year integrated M.Sc., Mathematics with Computer Application awarded by Annamalai University	M.Sc., (Mathematics)	G.O.Ms.No.260 Higher Education (H1) Department, dated 15.09.2012

**DISCLAIMER**

“ The Government orders relating to Equivalence of qualification have been hosted in the Tamil Nadu Public Service Commission website. However, the candidates while applying for the examination should upload the equivalence of qualification in the form of Government order, if any, which are not mentioned in the Annexure-I to the Notification and produce the same when called for by Tamil Nadu Public Service Commission”.

Secretary

# ANNEXURE - II A

1

**Subject Code: 213**

**TAMIL NADU PUBLIC SERVICE COMMISSION**  
**POST OF RESEARCH ASSISTANT IN EVALUATION AND**  
**APPLIED RESEARCH DEPARTMENT**  
**(POST GRADUATE DEGREE STANDARD COVERING ALL THE SUBJECTS**  
**REFERRED IN THE RULES)**

**Unit - I:**

Indian Economy – Growth and development: Agriculture: Area, Yield, Production, marketing and sales. Rural Development – Industry: Input and output – Service Sector : Types of service sector, skilled labour, semi skilled labour and unskilled labour – Changing Sectoral contributions – Industrial Policy Changes – FDI – Infrastructure: Public Health – Education – drinking water – sanitation – Public transport – Banking and financial services – housing facilities – Nutrition – Investment – Public Private Participation – Inclusive growth. Human Development: Concepts, Trends and Issues – Employment, unemployment, under employment and disguised unemployment – concepts, measurement and Trends – Employment in Organized and unorganized sector – Strategies for Employment Generation. Poverty: Concepts, measurement and Trends, Fiscal Policy – FRBM Act – Goods and Service Tax (VAT) – Fiscal Federalism – Parallel economy in India – Inflation: Definition, trends, estimates, consequences and remedies – RBI – Monetary and Fiscal policy – Banking Sector Reforms – India's foreign trade, composition, direction and recent changes in trade policy – Balance of payments – India and WTO requirements – Global Financial Crisis and its Impact on India. Index number: Consumer price index – Wholesale price Index. Time series analyses – Moving average Method

**Unit - II:**

Primary data collection – Field Investigation – Census method – Sampling Method – Direct personal observation – Interview method – Indirect oral interview – Information through agencies – Mailed Questionnaires and scheduled sent through enumerator. Secondary data collection – Books – Journals – Government (Ministry) Records and reports from government agencies – Bibliography – Autography – Web site – News Paper – Periodicals, etc Evaluation and preparation of the report and components of evaluation Report: Executive summary – background and purpose – statement of the problem – objectives and Hypotheses – evaluation methods (Statistical methods used in the study) – result and discussion of the result – conclusion and recommendation – reference or bibliography – appendices.

**Unit – III:**

Econometrics - definition, methodology, Data – meaning and types of data such as cross-section, time-series and panel data, primary & secondary data – advantages & disadvantages, Variables – meaning and types such as quantitative and qualitative variables, measurement scales of variables such as ratio, interval, ordinal and nominal-

simple examples. Correlation – simple and multiple correlation, properties of correlation coefficients, Karl Pearson's and Spearman's rank correlation coefficients, Simple numerical problems - Simple & multiple linear regression model – introduction, assumptions, least squares principle, least squares estimators, properties of regression coefficients (Gauss-Markov theorem), interpretation of regression output -  $R^2$  & adjusted  $R^2$ , regression coefficients with t-values and level of significance, Simple numerical problems - advantages of regression analysis over correlation analysis, Functional forms of regression models – log-linear, log-lin and lin-log models and computation of elasticity, computation of simple and compound growth rates - simple numerical examples.

#### **Unit - IV:**

Econometric Problems: heteroscedasticity, multicollinearity and autocorrelation – definition and consequences. Dummy variables: definition, generation of dummy variables, problem of dummy variable trap, cautions in using dummy variables, inclusion and interpretation of dummy variables in the regression. Qualitative response regression models – linear probability, logit and probit models – an introduction. Basics of time-series: additive and multiplicative models, determination of trend by free drawing, moving average methods, and seasonal indices, definition of stationarity, tests for stationarity and transformation of non-stationary series into stationary series.

#### **Unit - V :**

Compilation and Tabulation of data Collected - Classification – Types of Classification – Formulation of discrete and continuous frequency distribution ( uni-variate and Bi-variate ). Pictorial Representation of data: Bar diagrams – Pie diagrams – Histogram – Ogives and Lawrence Curve Measures of Location – Mean , Median, Mode, Harmonic Mean and Geometric Mean – Quartiles - Measures of variation : Range, Quartile deviation , Mean deviation, Variance and Standard deviation. Coefficient of variation , skewness and Kurtosis.( All the calculation of measures are for both grouped and ungrouped data ) Probability and Distribution: Introduction to probability: Random Experiments, Sample Space and events, Definition of probability. Classical, Empirical and Axiomatic approach to probability; Addition and Multiplication Theorem, Conditional probability and Baye's Theorem. Random Variables and Distribution function – Mathematical Expectation and conditional Expectation. Convergence in Probability – Weak Law of large Numbers and strong law of large Number – Central limit Theorem – Discrete distributions: Binomial, Poisson. Continuous Distributions: Normal Distribution Chi-Square, t and F distributions and their properties.

#### **Unit - VI:**

Application of Statistical Methods - Sampling Theory: Introduction to the theory of Sampling: Sampling designs – Simple Random Sampling with and without replacement - Systematic, Stratified, Ratio and Regression Sampling methods , Sampling and non – sampling errors – Cluster sampling, Purposive Sampling Quota Sampling. Testing of Hypothesis: Introduction to Testing of Hypothesis: Simple, Null and Alternative hypotheses, composite hypothesis, two kinds of Errors – Critical Region – Power

function. Testing of significance using chi-square, t and F tests.(simple problems) ANOVA- One way and Two way classifications. Application of Statistical Methods through MS-Excel – Language : Over view of MS-Excel: Construction of charts and diagrams – Sorting – Filtering – Removing duplicates – Calculation of Measures of Central tendency, Measures of dispersion, correlation Regression and curve fitting using – Excel.

### **UNIT - VII:**

Theory of Consumer Behavior - Utility and its measurement - Indifference curve analysis and Consumer's surplus. Demand and supply functions - Elasticity of demand and supply - Factors affecting demand and supply. National Income - Concepts and measurement. Classical and modern theories of Employment. Consumption function - Investment and savings. Concept of Multiplier and Accelerator. Inflation - Nature, Effects and controlling mechanisms. Monetary policy and Fiscal policies and Role of RBI. Types of Market Structure - perfect competition, monopoly, monopolistic competition, oligopoly and price determination. Agricultural marketing - Characteristics of Agricultural products and constraints in marketing agricultural produce. Marketable and Marketed surplus estimation. Estimation of price spread and Marketing Efficiency. Market integration, Marketing Intelligence and Marketing Acts. Institutions in Agricultural Marketing - Regulated Markets, Cooperatives, Commodity Boards, Contract Farming, Commodity Exchanges, Farmers' Markets and Farmers Producers Organizations. Commission on Agricultural Costs and Prices - Agricultural Price fixation and price support programs and policies. Price forecasting. Supply chain Management and logistics. Development planning in India - Agriculture in five year plans. Land tenure and reforms. Unemployment, Poverty and inequality. Food and nutritional security. Population policies. Income distribution - Social Choice Theory - Public goods - Welfare economics. Rural Indebtedness. Financial Institutions and Credit Flow to Rural/ Priority Sector. Agricultural Lending - Direct and Indirect Financing - Financing through Co- operatives, Commercial Banks and RRBs - Role of Lead Bank and NABARD - District Credit Plan. Credit linked Rural Development Programs - RIDF. Micro- Financing - Role of MFI's, NGO's, and SHG's. Credit Inclusion–Credit Widening - Credit Deepening. Risk in agriculture and different Crop Insurance Programs - Agricultural project preparation - project cycle - Costs and benefit analysis – Discounted and Undiscounted Measures – Sensitivity analysis. Technical feasibility of economic viability of projects. Use of Network techniques – Project monitoring and evaluation. Forms of production functions – Returns to scale vs Economies of scale. Cost of cultivation vs Cost of Production – Cost concepts – Fixed Cost, Variable cost, Average Cost and Marginal cost. Efficiency Measures – Technical and Economic Efficiency. Financial statements and ratio analysis. Partial and complete budgeting and their applications.

### **UNIT - VIII:**

Concepts, Classification and Problems of Natural Resource Economics. Economy and Environment interaction. Resource scarcity – Limits to Growth – Measuring and mitigating natural resource scarcity–scarcity indices. Malthusian and Ricardian Scarcity.

Theory of optimal extraction of exhaustible and renewable resources. Property rights – Issues in natural resource management – private property, common property and open access resources – Collective action in common property resource management. Land use planning – optimal management of land, water, forests and fisheries. Resource mapping – GIS and remote sensing applications. Environmental problems and quality of environment – Economics of the environment – Theory of externality. Sources and types of pollution – air, water, solid waste, land degradation – Environmental and economic impacts. Economics of pollution control – efficient reduction in environmental pollution. Environmental regulation – Economics instruments and indirect instruments (command and control policies). Environmental legislations in India. Concept of sustainable development – Indicators of sustainability. Environmental Accounting – resource accounting methods. Climate change and its impacts – mitigation efforts and international treaties. International Trade and Comparative Advantage. Terms of Trade and Instruments of Trade Policy – Tariffs and Non tariffs. Balance of Trade vs Balance of payments. Exchange Rates. International Organizations – IMF, IBRD, IDA, IFC. WTO. Fundamental vs. Applied Research – Qualitative vs Quantitative Research. Research Prioritization – Identification of Research Problems and Prioritization. Research Process. Trade-off between scope and cost of the study. Research Design and Techniques. Hypothesis – Meaning – Characteristics – Types of Hypothesis and Testing. Setting of Objectives and Hypothesis. Sampling Theory and Sampling Design. Sampling Error. Sampling methods – Probability and Non-Probability methods. Interviewing Techniques – Questionnaire vs Interview schedules and Field Problems – Methods of Conducting Survey. Types of data – Primary and Secondary data. Sources of Secondary Data and Data collection techniques. Types of questions in interview schedule – Structured, Unstructured, Open Ended and Closed-Ended Questions. Data coding and data entry. Data Tabulation and Validation of Data. Data Processing. Application of Analytical tools to data – Simple and Multiple regression and problems in estimation – Multicollinearity, Heteroscedasticity and Autocorrelation. Optimization Models – Linear Programming: Concepts and theories. Problem formulation – Minimization and Maximization problem (Primal and Dual solutions). Sensitivity analysis. LP in farm planning and regional planning. Risk Programming and dynamic programming techniques.

### **Unit - IX:**

Nature and Scope of Sociology, Sociology as a Science. Individual and Society. Social Process: Competition, conflict, Co- operation, Accommodation, Assimilation, Social control. Social Institutions: Family and Marriage. Theoretical Perspectives:- Structural Functional Perspective: August Comte, Herbert Spencer, Max Weber, Emile Durkheim, R.K. Merton. Conflict Perspective: Karl Marx, Ralf Dahrendorf and L. A. Coser. Caste System in India: Origin of the caste system; cultural and structural views about caste; mobility in caste; change and persistence of caste in modern India; views of Gandhi and Ambedkar about caste system. Class Structure in India: Agrarian and industrial class structure; emergence of middle class. Rural Social Structure: Village Social Structure and Importance of Village Studies. Peasant society and agrarian systems; land tenure systems, social consequences of land reforms and green revolution. Agrarian unrest and movements in India. Rural social problems in India: poverty, unemployment,



indebtedness, farmer's suicide and bonded labour. Strategies of rural development programmes. Tribal Societies in India: Type and distinctive features of tribal communities in India and their geographical spread. Problems of tribal communities: land alienation, poverty, indebtedness, health and nutrition, education, Integration and issues of tribal identity. Tribal development policies after independence.

### **Unit - X:**

Socio- religious reform movements: Bhakthi Movements, Arya Samaj, and Ram Krishna Mission. Backward Class Movements: Satya Sadhak Samaj, Sri Narayanguru Dharma Paripalana Movement (SNDP), Self-respect movement, Dalit Movements, Political Mobilization of Backward Classes. Women in Indian society: Socio-cultural interpretation of women in India. Demographic profile of women. Problems of Women in India: dowry, domestic violence, discrimination, female infanticide, honor killing, sexual harassment. Women empowerment programmes and SHGs. Social Research: Meaning of Social Research, Scope and Importance of Social Research. Types of Research, Research Process: Identification and formulation of research problem. Methods of Research: Descriptive and Explorative methods. Sampling Methods, Methods of Data Collection. Tools of Data Analysis: Univariate and Bivariate Statistics, Chi-square Test. Application of ICT in Social Research. Evaluation Research: Meaning and aims of evaluation research. Types of evaluation and their purpose. Levels of measurement: population-based vs. program-based. Sources of data. Study designs. Impact Assessment Research: Programmes and policy evaluation research. Environmental impact assessment research. Research Report Writing: Organization of a research report: Title, Abstract, Introduction, Experimental Details or Theoretical Analysis, Results, Discussion, Conclusions and Summary, References. Quality of good research report. Significance of research report.

### **Unit – XI:**

Public Administration Theory and Principles - Public Administration: Meaning and scope and significance – Public vs Private Administration – Approaches to the study of Public Administration-Comparative Public Administration – Development Administration - New Public Administration – New Public Management - Principles of Organization and Administration – Classical theories – Human Relation theories – Modern theories of administration – Bureaucratic culture-Administrative Responsibility and Ethics.

### **Unit – XII:**

Public Administration in Practice - Public Financial Administration: Budgetary process and accountability, Union – State financial relations in India – Good Governance: Social welfare schemes in Tamil Nadu, Women Empowerment schemes in Tamil Nadu, Health care Policy in Tamil Nadu – E. Governance : ICT application in government – IT parks in Tamil Nadu – District administration: e-governance in Districts, THAI scheme, Pudhuvazhvu scheme – Special Economic Zones – Panchayat Raj: Rural Development programmes in Tamil Nadu, Environmental protection in Tamil Nadu – Administrative reforms: Personnel and Administrative Reforms, Urban Governance: Urban Local bodies in Tamil Nadu, Jawaharlal Nehru National Urban Renewal Mission (JNNURM) in Tamil Nadu – Tamil Nadu Urban Development Project – Human Rights governance:

the Tamil Nadu State Human Rights Commission- Social Science Research: Meaning, nature and scope of social science research- Qualities of good researcher-Types of social science research:Historical-Descriptive-Empirical-Experimental-Qualitative-Quantitative-Hypothesis-Variables-Sampling: Probability and Non-Probability sampling – Methods of Data Collection: Primary and Secondary data- Observation-Schedule-Survey-Interview-Questionnaire-Measurement- Data Analysis-Tabulation-Inferences-Research Design and Report.

### **Unit – XIII:**

Social work research - Scientific Method: Objectivity, Scientific attitude, Ethics in research; Types of Research: Applied and Pure, Quantitative and Qualitative, Mixed methods, Participatory, Action research, Evaluative, Field based research. Research as a method in Social Work. Research process: Classification of Variables, Concepts, Constructs, identifying and formulating research problem, research questions, defining objectives, hypotheses. Research Designs: Exploratory, Descriptive, Diagnostic, Experimental, Evaluative and Participatory. Sampling Methods : Probability and Non-probability sampling techniques. Data Collection: Types of data, data collection methods, Questionnaire, Interview Schedule, Interview Guide, Observation (Participatory and non participatory) Qualitative Research techniques: FGDs, In-depth interview, Transcription, Themes, Illustrative quotes. Appreciative inquiry technique. Photo voice technique. Social Audits. Triangulation and Iteration.

### **Unit – XIV:**

Project evaluation - Project identification and formulation – Classification of projects, Project objectives, Project life cycle and phases, Project Planning and Organization. Project feasibility analysis (Financial, Technical) Market Survey, Demand analysis, Forecasting and Projection. Terms of reference: Area of study, documents needed, process, time frame, Team members. Evaluation design; Types of Evaluation; Project design: Time management, sequencing and scheduling, Network Analysis, CPM and PERT, Logical Framework Approach (LFA), Problem Analysis and Problem Tree. Log Frame Matrix, Social Cost – Benefit analysis, Environmental Impact Assessment, Legal aspects and clearance. Factors such as efficiency, effectiveness and sustainability of the project. Project appraisal and Implementation: Project Appraisal methods: (Financial, Technical) Project Financing, Project Resource mobilization, Negotiation, Decision making, Project control and Monitoring techniques, Project evaluation: Tools of Evaluation: Ladder of Life (UN tool). Community impact assessment, Holistic World View Analysis, Vulnerability Assessment, Impoverishment assessment, FGDs and Reporting on Evaluation.

### **UNIT - XV:**

Basics and Major areas of Management - Concept and Foundations of Management – Managerial Functions – Planning and decision making, Organizing, co-ordination and control – Role of Manager – Managerial skills – Management of innovation –Personality Theories and Determinants – Meaning and Process of perception – Motivation Concepts, Theories and Applications. Leadership – Theories and Styles – Quality of Work Life (QWL) – Quality Circles (QC) –Management of Conflicts in Organizations –

Demand analysis and forecasting – cost functions – Break-Even-Analysis - Theory of firm-profit maximization and sales maximization – Pricing decisions under different market structures. National income- GNP, GDP, Gross Domestic savings – Monetary and Fiscal policies – Business cycle. Fundamentals of operations management – Aggregate production planning, capacity planning – plant design – process planning – plant size and scale of operations – Management of facilities –Production control – Supply chain management - Quality management – statistical process control-role and importance of material management – Modern production concepts – JIT, Kaizen, Japanese 5's framework. Nature and scope of financial management – finance function-valuation concepts and Valuation of securities- financing decisions- sources of finance-cost of capital and capital structure – Investment decisions – Capital budgeting – Working capital management – Dividend decisions. Marketing Management – evolution and scope – Marketing strategy formulation and components of marketing plan – Segmenting and targeting the market – Positioning and differentiating of the market – Analyzing competition – Analyzing consumer markets – Industrial buyer behavior – Marketing research – Product strategy – Pricing strategies – Designing and managing Marketing channels – Building customer satisfaction –Ethics in marketing – Consumer protection - Concepts and policies of HRM – HRM functions – Future challenges of HRM-Human resource planning – Job analysis – Job evaluation – Recruitment and selection – Training and development – Promotion and transfer – compensation – performance appraisal and 360 degree feedback – HR audit – Handling of sexual harassment in the work place-current trends and issues in HRM. Nature and scope of strategic management – Strategic intent, vision, objectives and policies – Process of strategic planning and implementation – Environmental analysis and internal analysis – SWOT analysis – Tools and techniques for strategic analysis – Impact matrix – The experience curve – BCG matrix – Balanced Score Card - Du Pont's control model.

### **UNIT - XVI:**

Research methodology and management information system - Research – meaning, scope and objectives-types of research – research design-Data collection and Tabulation – Questionnaire design – Scaling technique – sources of secondary data– Sampling – Probability – Correlation and Regression Analysis – Tests of Significance – Normal distribution, Chi-square, F and t tests, ANOVA, time series and forecasting decision theory, index numbers – Multi-Variant analysis, Factor analysis – Discriminate analysis – report writing – Types of Report – structure of the Report – Guidelines for Report writing . Conceptual foundations of information systems – Types of information systems - Element of information system – Data Vs. Information – information requirement at various levels – data processing – data base – Data Entry -Development and Management – Systems analysis and design – Trends in information technology – Flexibility in information systems – User involvement – Evaluation of information systems – Security and ethical challenges.

### **Unit – XVII :**

Algebra and Differential Equations - Groups: Groups – Sub groups – Normal subgroups and quotient subgroups – Homomorphisms – Automorphisms – Cayley's Theorem – Rings: Rings - Special class sub rings - Homomorphisms – Ideals and Quotient Rings – Vector Spaces: Basic Concepts – Linear Independent and Bases – Inner Product

Spaces – ODE: ODE with constant coefficients – ODE with variable coefficients – Higher order ODEs – PDE: First order PDE - Second order PDE – Elliptic, parabolic, and hyperbolic PDEs.

### **Unit – XVIII :**

Analysis - Real Analysis: Properties of monotonic functions - Functions of bounded variations – Total variations – Additive property of total variation – Total variation on  $[a,x]$  as a function of  $x$  - Continuous functions of bounded variations – Infinite Series: Absolute and conditional convergence – Dirichlet's test and Abel's test Rearrangement of series – Riemann's theorem on conditionally convergent series.– Complex Analysis: Differentiability and Cauchy-Riemann Equations – Harmonic Functions – Power Series as an Analytic Function – Complex Integrations – Cauchy Integral Formula – Morera's Theorem – Existence of Harmonic Conjugate – Taylor's Theorem – Conformal mappings – Functional Analysis: Metric Spaces – Convergence, completeness and Baire's Theorem - Continuous mappings - Space of continuous functions - Euclidean and Unitary spaces - Topological Spaces: Basis for a Topology – The Product Topology – The Metric Topology – Connected Spaces – Connected Subspaces of the Real Line – Components and Local Connectedness. Decision Making: Basic Statistics: Moments – Mean – Variance – Standard deviations – Linear regression – Rank correlations – Attributes – Index Numbers. Linear Programming Problem: Graphical Methods – Travelling Salesman Problem – Assignment Problem – Simplex Methods.

### **Unit - XIX:**

Anthropology, meaning scope and relationship with other disciplines particularly social sciences, humanities etc. Main branches, their scope, The nature of culture, The nature of society: concept of society, society and culture, social institutions, social stratification Marriage: Definition and universality, Family, Kinship, Economic organization: meaning, scope, and relevance of economic anthropology, Religion Research methods in Anthropology - Field work tradition in Anthropology - Distinction between techniques, methods, methodology - Tools of data collection, observation, interview, schedules, case study, genealogy etc.

### **Unit - XX:**

Evolution of the Indian culture and civilization: Palaeolithic, Neolithic, Harrappan cultures; Tribal cultures of India, Brief ethnographic details of Tribes of Tamil Nadu. Caste system in India: Structure and characteristics, theories of origin of caste, Dominant caste. Indian village: Indian village as a social system, peasant cultures. Cultural change in Indian Society: Sanskritization, Westernization, Modernization, Post – Modernism, Globalization ; Problems of the tribal communities a) poverty b) low literacy c) health Development of forest policy and Tribals Constitutional safe guards for ST/SC, Role of Anthropology in Tribal and Rural development. Demographic profile of India – Ethnic and Linguistic elements in the Indian population and their distribution. Gender issues in Tamil Nadu.

# ANNEXURE - II B

## ALL TECHNICAL POST MAIN EXAMINATION

### General Studies

### Degree Standard

### Topics for Objective Type

#### Unit-I General science :

**Physics** Universe-General Scientific laws-Scientific instruments-Inventions and discoveries-National scientific laboratories-Science glossary-Mechanics and properties of matter-Physical quantities, standards and units-Force, motion and energy-Electricity and Magnetism, Electronics and Communication -Heat, light and sound-Atomic and nuclear physics-Solid State Physics – Spectroscopy- Geophysics - Astronomy and space science

**Chemistry** Elements and Compounds-Acids, bases and salts-Oxidation and reduction-Chemistry of ores and metals-Carbon, nitrogen and their compounds-Fertilizers, pesticides, insecticides-Biochemistry and biotechnology-Electrochemistry-Polymers and plastics

**Botany**-Main Concepts of life science-The cell-basic unit of life-Classification of living organism-Nutrition and dietetics-Respiration-Excretion of metabolic waste-Bio-communication

**Zoology**-Blood and blood circulation-Endocrine system-Reproductive system-Genetics the science of heredity-Environment, ecology, health and hygiene, Bio- diversity and its conservation-Human diseases-Communicable diseases and non- communicable diseases- prevention and remedies- Alcoholism and drug abuse-Animals, plants and human life

#### Unit- II. Current Events

**History**--Latest diary of events – National--National symbols-Profile of States-Defence, national security and terrorism-World organizations-pacts and summits-Eminent persons & places in news-Sports & games-Books & authors -Awards & honours-Cultural panorama-Latest historical events-- India and its neighbours-- Latest terminology-Appointments-who is who?

**Political Science**-1. India's foreign policy-2. Latest court verdicts – public opinion-3. Problems in conduct of public elections-4. Political parties and political system in India-5. Public awareness & General administration-6. Role of Voluntary organizations & Govt.,-7. Welfare oriented govt. schemes, their utility

**Geography** Geographical landmarks-Policy on environment and ecology—

**Economics**--Current socio-economic problems-New economic policy & govt. sector

**Science**-Latest inventions on science & technology-Latest discoveries in Health Science-Mass media & communication

#### Unit-III. Geography

Earth and Universe-Solar system-Atmosphere hydrosphere, lithosphere-Monsoon, rainfall, weather and climate-Water resources --- rivers in India-Soil, minerals & natural resources-Natural vegetation-Forest & wildlife-Agricultural pattern, livestock & fisheries-Transport including Surface transport & communication-Social geography –

population-density and distribution-Natural calamities – disaster management-Climate change - impact and consequences - mitigation measures-Pollution Control

#### **Unit-IV. History and culture of India**

Pre-historic events--Indus valley civilization-Vedic, Aryan and Sangam age-Maurya dynasty-Buddhism and Jainism-Guptas, Delhi Sultans, Mughals and Marathas-Age of Vijayanagaram and the bahmanis-South Indian history-Culture and Heritage of Tamil people-Advent of European invasion-Expansion and consolidation of British rule-Effect of British rule on socio-economic factors-Social reforms and religious movements-India since independence-Characteristics of Indian culture-Unity in diversity –race, colour, language, custom-India-as secular state-Organizations for fine arts, dance, drama, music-Growth of rationalist, Dravidian movement in TN-Political parties and populist schemes-Prominent personalities in the various spheres – Arts, Science, literature and Philosophy – Mother Teresa, Swami Vivekananda, Pandit Ravishankar , M.S.Subbulakshmi, Rukmani Arundel and J.Krishnamoorthy etc.

#### **Unit-V INDIAN POLITY**

Constitution of India-. Preamble to the constitution- Salient features of constitution- Union, State and territory- Citizenship-rights amend duties- Fundamental rights-Fundamental duties- Human rights charter- Union legislature – Parliament- State executive- State Legislature – assembly- Status of Jammu & Kashmir- Local government – panchayat raj – Tamil Nadu- Judiciary in India – Rule of law/Due process of law-Indian federalism – center – state relations-. Emergency provisions- Civil services in India- Administrative challenges in a welfare state- Complexities of district administration- Elections - Election Commission Union and State. Official language and Schedule-VIII- Amendments to constitution- Schedules to constitution-. Administrative reforms & tribunals- Corruption in public life- Anti-corruption measures – Central Vigilance Commission, lok-adalats, Ombudsman, – Comptroller and Auditor General of India- Right to information - Central and State Commission- Empowerment of women- Voluntary organizations and public grievances Redressal- Consumer protection forms

#### **Unit- VI. Indian economy**

Nature of Indian economy-Need for economic planning-Five-year plan models-an assessment-Land reforms & agriculture-Application of science in agriculture-Industrial growth-Capital formation and investment-Role of public sector & disinvestment-Development of infrastructure- National income- Public finance & fiscal policy- Price policy & public distribution- Banking, money & monetary policy- Role of Foreign Direct Investment (FDI)- WTO-globalization & privatization- Rural welfare oriented programmes- Social sector problems – population, education, health, employment, poverty-HRD – sustainable economic growth- Economic trends in Tamil Nadu -Energy Different sources and development- Finance Commission -Planning Commission-National Development Council

#### **Unit-VI. Indian national movement**

National renaissance-Early uprising against British rule-1857 Revolt- Indian National Congress-Emergence of national leaders-Gandhi, Nehru, Tagore, Nethaji -Growth of militant movements -Different modes of agitations-Era of different Acts & Pacts-World war & final phase struggle-Communalism led to partition-Role of Tamil Nadu in freedom struggle - Rajaji, VOC, Periyar, Bharathiar & Others-Birth of political parties /political system in India since independence-

## Unit-VII. APTITUDE & MENTAL ABILITY TESTS

Conversion of information to data-Collection, compilation and presentation of data - Tables, graphs, diagrams-Parametric representation of data-Analytical interpretation of data -Simplification-Percentage-Highest Common Factor (HCF)-Lowest Common Multiple (LCM)-Ratio and Proportion-Simple interest-Compound interest-Area-Volume-Time and Work-Behavioral ability -Basic terms, Communications in information technology-Application of Information and Communication Technology (ICT)- Decision making and problem solving-Logical Reasoning-Puzzles-Dice-Visual Reasoning-Alpha numeric Reasoning-Number Series-Logical Number/Alphabetical/Diagrammatic Sequences-

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