



# TAMIL NADU PUBLIC SERVICE COMMISSION

Advertisement No. 533  
Notification No. 06/ 2019

DATED: 24.01.2019

As per the orders of the Hon'ble High Court of Judicature at Madras in W.P.No.2937 of 2018, Cont.P.No.1773 of 2015 and W.M.P.No.3599 of 2018, applications are invited from eligible candidates belonging only to the Scheduled Castes / Scheduled Caste (Arunthathiyars), categories through online mode upto 24.02.2019 for direct recruitment to the post of Curator in Tamil Nadu General Subordinate Service against the following shortfall vacancies;

Name of the Post and Code No.	Name of the Service and Code No.	No. of vacancies	Scale of Pay
Curator in Museum Department (Code No. 2129)	Tamil Nadu General Subordinate Service (Code No.036)	04 (SC) (Shortfall Vacancies)	Rs.36700-116200/- (Level-17)

## Note:

The selection against shortfall vacancies will be made from among Scheduled Castes / Scheduled Caste (Arunthathiyars) applicants only. The reservation for Women, Ex-serviceman and Differently Abled Persons will not be applicable for the recruitment of shortfall vacancies. [Section 27(h) of the Tamil Nadu Government Servants (Conditions of Service) Act, 2016]. Further, the reservation of vacancies to Persons Studied in Tamil Medium (PSTM) also will not apply for this recruitment.

It is mandatory for the applicants to register their basic particulars through One-Time online Registration system on payment of Rs.150/- (Rupees One Hundred and Fifty only) towards registration fee and then should apply online for this recruitment. [The One-Time Registration will be valid for 5 years from the date of registration. Thereafter, the registration should be renewed by paying the prescribed fee.]

## 2. IMPORTANT DATES AND TIME

Date of Notification	24.01.2019	
Last date for submission of application	24.02.2019	
<b>Date of Written Examination</b>		
Paper – I (Subject Paper)	19.05.2019 FN	10.00 A.M. to 01.00 P.M
Paper – II (General Studies)	19.05.2019 AN	02.30 P.M. to 04.30 P.M

## 3. FEES

a)	<b>Registration Fee</b> For One Time Registration (Revised with effect from 01.03.2017 vide G.O.(Ms).No. 32, Personnel and Administrative Reforms Department, dated 01.03.2017)	Rs.150/-
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<b>Note</b> Applicants who have already registered in One-Time Registration system paying Rs.50/- before 01.03.2017 and those who have registered for One-Time Registration on or after 01.03.2017 by paying Rs.150/- are exempted from paying the registration fee for this recruitment.	
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**EXAMINATION FEE CONCESSION**

Category	Concession	Condition
Scheduled Castes / Scheduled Caste (Arunthathiyars),	Full Exemption	--

**4. QUALIFICATIONS****(A) AGE LIMIT (as on 01.07.2019)**

Category of Applicants	Minimum Age (Should have completed)	Maximum Age
SCs/ SC(A)s	18 years	No Maximum Age limit

**Explanation:** No maximum age limit shall mean that the applicants should not have completed 58 years of age either on the date of notification or at the time of selection / appointment to the post.

(For further details, refer para 5 [of "Instructions to Applicants"](#)).

**(B) EDUCATIONAL QUALIFICATION: (as on 24.01.2019)**

Applicants should possess the following or its equivalent qualification:-

**A Master's or Honour's degree in Zoology or Botany or Geology or Anthropology or Indian Archaeology or Sanskrit or History.**

**Note:**

- (i) The educational qualification prescribed for this post should have been obtained by passing the required qualification in the order of studies viz. 10<sup>th</sup> + HSC/Diploma + U.G. degree + P.G. degree or its equivalent as stipulated in Section 25 of Tamil Nadu Government Servants (Conditions of Service) Act 2016. The results of exam should have been declared on or before the date of Notification.
- (ii) Applicants claiming equivalence of qualification to the prescribed qualification should upload and submit evidence for equivalence of qualification in the form of G.O. issued prior to the date of this notification, when called for, failing which, their application will be summarily rejected. The G.Os issued regarding equivalence of prescribed qualification after the date of this notification will not be accepted. A list of Equivalence of qualification in the related subjects is available in **Annexure - I**.

(Refer [para 10 of the "Instructions to Applicants"](#))

**(C) CERTIFICATE OF PHYSICAL FITNESS**

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

Standard of Vision Prescribed	Form of Certificate of Physical Fitness
Standard III or Better	Form prescribed for other than Executive and Ministerial Posts.

\*The applicants with defective vision should produce eye fitness certificate from qualified eye specialist.

#### (D) KNOWLEDGE IN TAMIL

Applicants should possess adequate knowledge in Tamil on the date of this Notification.

(For details refer [para 11 of the Commission's 'Instructions to Applicants'](#)).

#### 5. CONCESSIONS

- (i) Concessions in the matter of age and/or fees allowed to SCs, SC(A)s are given in [para 12 to 14 of "Instructions to Applicants"](#).
- (ii) Persons claiming concessions referred to above and other claims made in the application have to produce evidence for such claim when called for, otherwise his/her application will be liable for rejection.

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

Subject	Duration	Maximum Marks	Minimum Qualifying Marks for selection
<b>I. Paper - I</b> <b>(200 Questions)</b> <b>(P.G. Degree Standard)</b> <u>Any one of the following subjects, in which the candidate acquired the qualification.</u> <ol style="list-style-type: none"> <li>(i) Geology (Code No.240)</li> <li>(ii) Botany (Code No. 269)</li> <li>(iii) Zoology (Code No.271)</li> <li>(iv) Anthropology (Code No.312)</li> <li>(v) Ancient History and Archaeology (Code No.314)</li> <li>(vi) History (Code No.317)</li> <li>(vii) Sanskrit (Code No.319)</li> </ol>	3 hours	300	171
<b>II. Paper- II</b> <b>(100 Questions)</b> <b>GENERAL STUDIES</b> <b>(Code No.003)</b> General Studies (Degree Standard) – 75 Questions and Aptitude and Mental Ability Test (SSLC Standard) – 25 Questions	2 hours	200	
<b>III. Interview and Records</b>		70	
<b>Total</b>		<b>570</b>	

**Note**

- (i) The Question Paper in Paper-I for the subjects Botany, Zoology and History and Paper - II will be set in both English and Tamil. The question paper for the subjects Geology, Anthropology and Ancient History & Archaeology will be set only in English.
- (ii) The question paper in the language subject Sanskrit will be set in the respective language.
- (iii) Candidates should choose and specify in the application, only the prescribed subject in which they have obtained the educational qualification for appearing to the examination.
- (iv) Refer [para 22 of "Instructions to Applicants"](#) in regard to instructions to be followed while appearing for competitive examinations conducted by the Commission.
- (v) The Syllabus for Examination is furnished in the [Annexure II](#) of this notification.

**7. CENTRE FOR EXAMINATION**

Examination will be held in the following 3 Centres:-

Sl. No.	Name of the Centre	Centre Code
1.	Chennai	0100
2.	Madurai	1000
3.	Coimbatore	0200

**Note**

- (i) Applicants will be required to appear for the Written Examination/ Certificate Verification / Oral Test at their own expenses.
- (ii) The Commission reserves the right to increase/decrease the number of Examination Centres and to re-allot the Applicants.

**8. SELECTION PROCEDURE**

**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. 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.

(For further details refer [paragraph 23 \(b\) of "Instructions to Applicants"](#))

**Note :**

The selection against shortfall vacancies will be made from among SC/SC(A) applicants only. The reservation for Women, Ex-serviceman and Differently Abled Persons will not be applicable for the recruitment of shortfall vacancies. [Section 27(h) of the Tamil Nadu Government Servants (Conditions of Service) Act, 2016]. Further, the reservation of vacancies to Persons Studied in Tamil Medium (PSTM) also will not apply for this recruitment.

(For further details refer [paragraph 23 \(b\) of the 'Instructions to the candidates'](#))

**9. NO OBJECTION CERTIFICATE / INFORMATION TO THE EMPLOYER**

No Objection Certificate obtained from appropriate authority shall be produced at the time of Certificate Verification, failing which, the application will be rejected.

For details refer [Para 15 \(g\) of Commission's 'Instructions to Applicants'](#). - Any violation of this instruction will be liable for / end in rejection of application and forfeiture of his/her candidature.

## 10. GENERAL INFORMATION

- A. The rule of reservation of appointments is **not applicable** to this recruitment including **PSTM** reservation.
- B. **The number of vacancies advertised is only approximate and is liable to modification with reference to vacancy position at any time including reduction before finalization of selection.**
- C. The selection for appointment to the above said post is purely provisional subject to final Orders on pending Writ Petitions, if any, filed at Madras High Court and Madurai Bench of Madras High Court.
- D. If number of qualified Arunthathiyars are available, they shall be entitled to compete with the Scheduled Castes.
- E. Any subsequent claim made thereafter on submission of online application will not be entertained. Evidence for claims made in the online application should be uploaded / submitted in time, when called for. Failure to submit the documents within the stipulated time limit **will entail rejection of the Application.**
- F. Correct and True information regarding arrest, convictions / debarment / disqualification by any recruiting agency, criminal or any disciplinary proceedings initiated / pending 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, order or G.O dropping further action in Departmental proceedings or any document that may prove the suitability of such Applicants for a Government appointment in such cases must be produced at the stage / time of Certificate Verification without fail.
- G. **Incomplete applications and applications containing wrong claims or incorrect particulars relating to category of reservation / other basic qualification / eligibility wise / age / communal categories / educational qualification / physical qualification and other basic eligibility criteria will be liable for rejection.**
- H. **One-Time Registration is not an application for any Post/Recruitment. Though the details/particulars were furnished in the One-Time Registration by the applicants, the details/particulars furnished in the online application submitted for this recruitment alone will be taken into consideration. Tamil Nadu Public Service Commission will not be responsible for any consequences arising out of furnishing of incorrect and incomplete details in the application or omission to provide the required details in the application for this recruitment.**

## 11. OTHER IMPORTANT INSTRUCTIONS

- a) **Applicants should ensure their eligibility for examination:** The applicants applying for the examination should go through all instructions carefully and 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 satisfaction of the eligibility conditions.** Mere issue of memo of admission to the applicant will not imply that his/her candidature has been fully accepted by the Commission.
- b) The **Hall Tickets** for eligible applicants 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) or [www.tnpscexams.in](http://www.tnpscexams.in) for downloading the same by applicants. No Hall Tickets will be sent by post. So the applicants should watch TNPSC website before the scheduled date of examination. The Applicants must comply with each and every instruction given in the Hall Ticket.

**c) Communication to Applicants:**

**Individual communication regarding the date and time of certificate verification, Oral Test and counselling will not be sent to the applicants by post. The details will be made available on the Commission's website. Applicants will be informed of the above fact only through SMS and e-mail.**

d) Grievance Redressal Cell for guidance of applicants:- In case of any guidance/ information / clarification of their applications, candidature etc., applicants 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 from 10.00 a.m. to 05.45 p.m or Commission's mail id [contactnpsc@gmail.com](mailto:contactnpsc@gmail.com)

**e) Mobile Phones and other Articles Banned:**

- i. Applicants are not allowed to bring Cellular Phone, Watches and Ring with Inbuilt Memory Notes etc., or any other Electronic device and Non Electronic devices such as P&G Design Data Book, Books, Notes, Hand Bags and Recording Device either as separate piece or part of something used by the applicants such as Watch or Ring etc., to the examination hall / room on the date of examination.
  - ii. If they are found to be in possession of any such thing or instrument, they will not be allowed to write 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. (For further details refer '[Instructions to Applicants](#)').
  - iii. Applicants must not bring into the Examination Hall any article such as books, notes, loose sheets, electronic or any other type of calculators, mathematical and drawing instruments, Log Tables, stencils of maps, slide rules, Text Books, rough sheets etc., except the permitted writing material (i.e. Ball point pen). No colour pen or Pencil must be used.
  - iv. Applicants are advised in their own interest not to bring any of the banned items including Mobile Phones to the venue of the examination, as arrangements for safekeeping cannot be assured.
- f) Unless specific instruction is given, applicants are not required to submit along with their online application any certificates in support of their claims regarding age, educational qualifications, practising / service, physical qualification, community certificates and certificates regarding their physical disability etc., which should be submitted when called for by the Tamil Nadu Public Service Commission. The applicants applying for the examination should ensure that they fulfil all the eligibility conditions for admission to the Examination. Their admission at all the stages for which they are admitted by the Commission viz. Written Examination, Certificate verification and Oral Test will be purely provisional, subject to their satisfying the prescribed eligibility conditions. If on verification at any time, it is found that they do not fulfil any of the eligibility conditions, their candidature for the recruitment will be liable for rejection / cancellation by the Commission. ([For further details refer Instructions to Applicants](#)).
- g) If any of their claims is found to be incorrect, it will lead to rejection of their candidature and suitable penal action including debarment.
- h) **Unfair means strictly prohibited:** No applicants shall copy from the papers of any other candidate or permit his papers to be copied or give or attempt to give or obtain or attempt to obtain irregular assistance of any description. ([For further details refer Instructions to Applicants](#)).

- i) **Conduct in Examination Hall:** No applicant 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 penalised. [\(For further details refer Instructions to Applicants\).](#)
- j) For violation of “Instructions to Applicants” in any manner, suitable penalty will be imposed as per the Instructions to Applicants or as deemed fit by the Commission.

## 12. HOW TO APPLY

1. Applicants should apply only through online mode in the Commission’s Websites [www.tnpsc.gov.in](http://www.tnpsc.gov.in) / [www.tnpscexams.net](http://www.tnpscexams.net) / [www.tnpscexams.in](http://www.tnpscexams.in)
2. One -Time Registration (OTR) and applicant Dashboard are mandatory before applying for any post. Applicant should register only once in the One -Time Registration by paying Rs.150/- as Registration fee. Successfully registered One - Time Registration is valid for 5 years from the date of Registration. All the applications should be submitted using the One Time Registration ID and password registered by the applicant.
3. For applying in One-Time Registration, the applicants should have scanned image of their photograph, certificate wherever insisted and signature in CD/DVD/Pen Drive to upload the photo, certificate and signature.
4. Applicants who have already registered in One -Time Registration on or before 29.09.2015 shall use their existing user ID and Password to create applicant Dashboard in the new One Time Registration system. No applicant is permitted to create more than one registration ID in One -Time Registration.
5. Applicants should enter the Unique ID and password to view the already available information and update them. They shall not share the ID with any other person or agency.
6. One -Time Registration is not an application for any post. It is just a collection of information from the applicants and giving a separate dashboard to each applicant to facilitate them to maintain their own profile. Applicant who wishes to apply for any post shall click “[Apply](#)” against the post notified in the Commission’s Website and use the same USER ID and PASSWORD given for ONE-TIME REGISTRATION.
7. Applicants should select the name of the post or service for which they wish to apply.
8. Applicants are required to upload their photograph and signature as per the specifications given in the Guidelines for Scanning and Upload of Photograph and Signature.
9. An Online application uploaded without the photograph, specified documents and signature will be rejected.
10. All the particulars mentioned in the online application including name of the Candidate, Post applied, educational qualifications, Communal Category, Date of Birth, Address, Email ID, Centre of Examination etc. will be considered as final and no modifications will be allowed after the last date specified for applying online. Since certain fields are firm and fixed and cannot be edited, applicants are requested to fill in the online application form with the utmost care and caution as no correspondence regarding change of details will be entertained.
11. Print Option
  - a) After submitting the application, applicants can print / save their application in PDF format.
  - b) On entering user ID and password, applicants can download their application and print, if required.

- c) Need not send the printout of the online application or any other supporting documents to the Commission. The certificates will be verified only when the applicants come up for next stage of selection.

**12. One - Time Registration will not be considered as an application for any post.**

### **13. UPLOAD OF DOCUMENTS**

The applicants must upload / submit the documents whenever called for specifically.

### **14. LAST DATE FOR SUBMITTING APPLICATION**

The Online Application can be submitted upto 24.02.2019 till 11.59 p.m., after which the link will be disabled.

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



### 17. Warning

- All the Recruitments by Tamil Nadu Public Service Commission are purely merit based.
- Tamil Nadu Public Service Commission hereby cautions the candidates against touts and agents cheating by making false promises of securing job through unfair means.
- Tamil Nadu Public Service Commission shall not be responsible or liable for any loss that may be caused to any candidate on account of indulging into any sort of actions with such unscrupulous persons.

### எச்சரிக்கை

- தேர்வாணையத்தின் தெரிவுகள் அனைத்தும் விண்ணப்பதாரர்களின் தர வரிசைப்படியே மேற்கொள்ளப்படுகின்றன.
- பொய்யான வாக்குறுதிகளை சொல்லி, தவறான வழியில் வேலை வாங்கி தருவதாக கூறும் இடைத்தரக்களிடம் விண்ணப்பதாரர்கள் மிகவும் கவனமாக இருக்குமாறு எச்சரிக்கப்படுகிறார்கள்.
- இதுபோன்ற தவறான மற்றும் நேர்மையற்ற நடபர்களால் விண்ணப்பதாரர்களுக்கு ஏற்படும் எந்தவொரு இழப்புக்கும் தேர்வாணையம் எந்தவிதத்திலும் பொறுப்பல்ல.

Secretary

**DISCLAIMER**

“The Government orders relating to Equivalence of qualification have been hosted in the Tamil Nadu Public Service Commission’s website. However the applicants while applying for the examination should furnish the details of equivalence of qualification declared in the form of Government order issued prior to the date of this notification, if any, which are not mentioned in Annexure-I to the notification and produce the same when called for by Tamil Nadu Public Service Commission, failing which their application will be rejected. The Government Orders issued regarding equivalence of prescribed qualification after the date of this notification will not be accepted.”

**Secretary**

**ANNEXURE-I**

<b>Sl. No.</b>	<b>Qualification considered as Equivalent to the Degree without considering the Ancillary subjects as prescribed in the Rule.</b>	<b>G.O. in which ordered</b>
1.	M.Sc., Plant Science Degree Course awarded by Bharathiyar University is equivalent to M.Sc., Botany. M.Sc., Animal Science awarded by Bharathiyar University is equivalent to M.Sc., Zoology.	G.O.(Ms) No.254, Personnel and Administrative Reforms (R) Department, dated 22.10.1998.
2.	M.Sc., Botany (Five year Integrated) awarded by Annamalai University is equivalent to M.Sc., Botany.	G.O.(Ms) No.171, Higher Education (K2) Department, dated 30.09.2014
3.	M.Sc., Plant Science Degree course awarded by University of Madras is equivalent to M.Sc Botany.	G.O.(Ms) No.185, Higher Education (K2) Department, dated 26.09.2013.
4.	M.A., Historical Studies awarded by University of Madras is equivalent to M.A. History. M.Sc., Applied Plant Science awarded by University of Madras is equivalent to M.Sc., Botany.	G.O.(Ms) No.270, Higher Education (K2) Department, dated 31.12.2013.
5.	M.Sc., Zoology (Specialization in Bio-Technology) awarded by Lady Doak College affiliated to Madurai Kamaraj University is equivalent to M.Sc., Zoology.	G.O.(Ms) No.27, Higher Education (K2) Department, dated 13.02.2014
6.	M.Sc., Applied Geology and Geomatics awarded by Gandhigram Rural Institute (Deemed University) is equivalent to M.Sc., Geology.	G.O.(Ms) No. 212, Higher Education (K2) Department, dated 17.12.2014.
7.	M.Sc., Applied Botany awarded by Periyar University is equivalent to M.Sc., Botany.	G.O.(Ms) No.72, Higher Education (K2) Department, dated 20.04.2015.
8.	M.A Applied History awarded by Loyola college of Autonomous affiliated to University of Madras is equivalent to M.A History.	G.O.(Ms) No.2, Higher Education (K2) Department, dated 05.01.2016
9.	M.Sc., (Applied Geology) awarded by any University recognized by UGC is equivalent to M.Sc., Geology.	G.O.(Ms) No.156, Industries (E.1) Department, dated 28.12.2016
10.	M.Sc., Applied Geology awarded by Periyar University is equivalent to M.Sc., Geology.	G.O.(Ms) No.232, Higher Education (K2) Department, dated 18.11.2016.
11.	M.Sc., Life Science five year integrated course offered by Bharathidasan University is equivalent to M.Sc., (Botany) / M.Sc., (Zoology).	G.O.(Ms) No.232, Personnel and Administrative Reforms (R) Department, dated 22.09.1998.
	<b>Five year M.Sc., (Life Science) with following Specialization</b>	<b>Equivalent to the Post Graduate Degree.</b>
	1. Plant Science 2. Micro-Biology 3. Bio-Technology	M.Sc., (Botany)
	4. Animal Science	M.Sc., (Zoology)

**ANNEXURE-II**  
**TAMIL NADU PUBLIC SERVICE COMMISSION**  
**CURATOR**  
**PAPER-I**  
**GEOLOGY (POST GRADUATE DEGREE STANDARD)**  
**OBJECTIVE TYPE**

**Code No.240**

**UNIT I - GENERAL GEOLOGY AND GEOMORPHOLOGY**

Origin and age of the Earth - Interior of the Earth - Isostasy – Continental drift – Seafloor spreading – Plate tectonics - Volcanoes and earthquakes - Effects and causes – Seismic zonation of India.

Landforms - their types and developments - Classification of shorelines and their evolution – submarine canyons - Geosynclines - Island arcs.

**UNIT II - STRATIGRAPHY**

Modern methods of stratigraphic correlation - Cretaceous - Tertiary (K/T) boundary problem with special reference to Tamil Nadu - Nature and age of the Deccan Traps - Cretaceous of Trichy - Classification and economic importance of Dharwar, Cuddapah, Vindhyan, Gondwana group – Palaeozoic formations - Jurassic of Kutch – Siwaliks.

**UNIT III - PALEONTOLOGY**

Evolution and stratigraphic importance of Ammonoids, Trilobites and Graptolites - Gondwana flora - their significance and paleoclimatic conditions - Field and laboratory techniques of micropaleontology - Application of micropaleontology in oil exploration.

**UNIT IV - STRUCTURAL GEOLOGY**

Mechanical properties of rocks - Mechanics and causes of folding and faulting - Classification of folds and faults - Recognition of folds and faults in the field - Joints Types of unconformity and their recognition in the field.

**UNIT V - MINERALOGY AND CRYSTALLOGRAPHY**

Physical, chemical and optical properties of Feldspars, Feldspathoids, Pyroxene, Amphibole, Olivine and Mica groups - Stereographic and Gnomonic projections of natural crystals of normal classes - Derivation of 32 classes of symmetry - Napier's theorem - Equations of a normal - Bragg's law - X-ray diffraction method.

**UNIT VI - IGNEOUS PETROLOGY**

Classification of Igneous rocks - Petrography and petrogenesis of Granites, Alkaline rocks, Anorthosites, Carbonatite, Ultramafics - Study of binary and ternary system of crystallisation - Bowen's reaction principle - Diversity of Igneous rocks - variation diagrams - Crystallisation of Basaltic magma.

**UNIT VII – SEDIMENTARY AND METAMORPHIC PETROLOGY**

Sedimentary depositional environments – Important clastic and non-clastic rocks – Lithification and Diagenesis – heavy minerals and provenance – Tectonics and sedimentation – Sedimentary basins of India – Paleocurrents and Basin Analysis.

Classification of metamorphic rocks – Metamorphic grades and depth zones – Metamorphic facies – Metamorphic differentiation – Thermal – Cataclastic and Regional Metamorphism – Origin of Eclogites – Charnockitisation – Granitisation - Metasomatism.

### UNIT VIII - ECONOMIC GEOLOGY

Classification of ore minerals - Geological thermometry - processes of ore formation - minerals used in cement, refractory and ceramic industries.

Origin, occurrence, distribution and uses ores of Iron, Manganese, Copper, Lead, Zinc and Aluminum - Barite, Graphite, Asbestos and Quartz - occurrence and origin of coal and petroleum in India - Beach placers.

### UNIT IX - HYDROGEOLOGY

Hydrologic cycle - origin and vertical distribution of Groundwater – Aquifers – Porosity – specific yield and retention - Hydrological properties of important deposits and rocks - Groundwater provinces of India -- Groundwater flow- Hydraulic conductivity - Darcy's Law – Tracer techniques – permeameter - pumping tests – Drilling methods -Estimates of groundwater recharge – Managed aquifer recharge – Seawater intrusion – Groundwater quality and pollution – Electrical methods of groundwater exploration

### UNIT X - APPLIED GEOLOGY

Electrical, magnetic, gravity and seismic methods of prospecting - Prospecting for radioactive minerals - Geochemical cycle - Geochemical prospecting – geochemical classification of elements and anomaly - Geological investigation pertaining to Dam foundation, tunnels and roads - Engineering properties of rocks - Types of sampling - ore reserve estimation - Mining methods - Environmental impacts due to mining and mineral processes - Renewable and non-renewable resources – Landslides – Geological hazards including tsunami – Remote sensing, GIS and GPS applications.

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**PAPER-I**  
**BOTANY (POST GRADUATE DEGREE STANDARD)**  
**OBJECTIVE TYPE**

**Code No: 269**

**UNIT- I**

**PLANT DIVERSITY – I, PLANT DIVERSITY – II AND ECONOMIC BOTANY**

**Plant Diversity – I** Classification, structure and reproduction of Algae, Fungi, Lichens, Bryophytes, Pteridophytes and Gymnosperms, Ecology and Evolutionary trends.

**Plant Diversity – II** Taxonomy of Angiosperms - classifications of Bentham and Hookers, Engle & Prantl, Hutchinson and Takhtajan. Numerical Taxonomy and Chemotaxonomy.

**Economic Botany-** Study of plants as sources of food, (cereals, millets, pulses, oil seeds) fodder, forage, fatty acids, essential oils, wood, timber, fiber, paper, rubber, beverages, spices and condiments, drugs, narcotics, resins, gums, dyes and tannins, insecticides and pesticides, ornamental and medicinal – plants as indigenous medicine system (Siddha, Ayurveda & Unani) Bioactive compounds.

**UNIT- II**

**CELL BIOLOGY AND SEED BIOLOGY**

**Cell Biology** - Cell as a unit structure and function - cell Theory. Organization of Prokaryotic and Eukaryotic Cells ultra Structure and Chemistry of plant Cell walls. Cell Organelles: Ultrastructural details and functions, including Cytoplasmic Membranes. Organization of Chromosomes and special types of Chromosomes. Cell division: Mitosis and Meiosis Chromosomal behaviour and their cytological significance.

**Seed Biology** - Definition – scope – Importance of seed as source of enriched nutrients – Chemical composition of cereals, millets, Common pulses and common oil – seeds. Seed development, phases of growth. Synthesis and accumulation of food reserves (storage proteins, carbohydrates, lipids, oils) Physiology of seed dormancy and germination. Methods to overcome seed dormancy. Early physiological events of seed germination. Hydrolysis and mobilization of reserve food materials from storage organ tissues to the germinating embryonic axis. Seed certification and quarantine.

**UNIT: III**

**ANATOMY AND EMBRYOLOGY**

Plant Anatomy – Wood Anatomy; Anomalous Secondary Growth – Anatomy of C<sub>3</sub> – C<sub>4</sub> leaves; stomata types – Nodal Anatomy. Angiosperm Embryology – Incompatibility (Gametophytic and Saprophytic) barriers to sexual incompatibility.

**UNIT: IV**

**GENETICS AND PLANT BREEDING**

**Genetics** - Mendelian Genetics - Development of Genetics and gene concept. Sex chromosomes and sex - linked inheritance, Cytoplasmic inheritance. Chromosome theory of inheritance, linkage, Chromosome mapping and Karyotype analysis. Male sterility and its significance. Population Genetics - Non random mating; Genetic Drift Hardy Weinberg law. Molecular Genetics: Nucleic Acids as genetic material – Structure and role of Nucleic acids in protein synthesis and replication. Modern concept of the gene – Cistron, Recon and Muton. Genetic code and regulation of Gene expression; Gene amplification – Transposons, modifiers of gene expression. Meiotic Drive. DNA replication in Prokaryotic (E.coil) and Eukaryotic. Semi conservative model of DNA replication. Rolling circle replication. Transcription in Prokaryotic and Eukaryotic polarity effect. Splicing. Genetic switch-Ribo switch. Wobble gene. Multiple factor interactions.

**Plant Breeding** – Objectives of Plant Breeding. Breeding methods for self – pollinated and cross pollinated plants. Selection Methods including distant hybridization method. Role of Polyploidy and induced mutations in crop improvement. Heterosis and Inbreeding Depression.

#### **UNIT: V**

#### **PLANT PHYSIOLOGY AND BIOCHEMISTRY**

**Plant Physiology** - Water relations of plants. Ion transport - Photosynthesis: mechanism and importance. Photo - Chemical reactions. Photo - Phosphorylation - Photolysis of water. Quantum efficiency - Carbon fixation in  $C_3$ - $C_4$  cycles. CAM pathway Photo - respiration. Respiration and Fermentation - Respiratory Metabolism- Glycolysis TCA cycle (Kreb's) Electron Transport chain - Oxidative Phosphorylation - Pentose Phosphate Pathway -  $C_6/C_1$  ratio; Pyruvate metabolism. Respiratory control and uncouplers. Nitrogen Metabolism. Biological Nitrogen fixation - Nitrate and sulphate Reduction - Ammonia assimilation GS/GOGAJ Pathways. Biosynthesis of Amino-acids- Reductive amination and Transamination - Role of ureides and amides. Plant growth Regulator Phytochrome and its role. Calcium – calmodulin concept – Agrochemicals – Stress physiology (Abiotic and Biotic Stress). Physiology of fruit development.

**Biochemistry** – Biopolymers – Structure and Chemistry of Carbohydrates, lipids, proteins and their monomers. Mechanism of Action. Enzyme kinetics-Michaelis-Menten constant. Regulation and modulation of enzyme action. Isoenzymes, Enzyme Catalysis and Ramachandran's curve. Fatty Acids and Lipid Biosynthesis and Metabolism – Gluconeogenesis and  $\beta$ -oxidation. Secondary Metabolites – Alkaloids. Steroids. Terpenoids. Phenolics. Glycosides – their chemical nature and role.

#### **Unit: VI**

#### **BIOPHYSICS AND BIostatISTICS**

**Bio Physics** – Bioenergetics, Energy and work. Laws of Thermodynamics, Energy transduction in biological systems. Redox potential. Redox couples. ATP bioenergetics. Order of reaction. Photobiology: Dual nature of light. Characteristics of solar radiation, Solar energy, efficacy of atoms – Absorption spectra in molecules, energy states, De-excitation.

**Bio Statistics** – Sampling techniques, Central values (mean, mode, median). Dispersion: absolute Relative Probability: Binominal properties, problems, fitting Positions, Normal, Skewness, Kurtosis Correlations and Regressions – Simple Linear Testing – Large Sample. T-test, Chi square Test – Two way ANOVA. Experimental Design – Principles. CRD, RBD, LSD, Missing plots.

#### **Unit: VII**

#### **MICROBIOLOGY AND PLANT PATHOLOGY**

**Microbiology** – Structure, Classification, mode of nutrition, reproduction of viruses, Mycoplasma, Bacteria and Protozoa, Microbes in air, soil and water. Pollution control using Micro – organisms – Role of microbes in waste water treatment. Biofertilizer. Food Microbiology – Agricultural Microbiology and Industrial Microbiology.

**Plant Pathology** – Important plant diseases in Tamil Nadu caused by Bacteria, Mycoplasma, Virus, Fungi and Nematodes. Modes of infection and dissemination, Physiology of Host-Parasite interaction- Host-in-built-defense mechanisms and methods of control-Biocontrol agents. Mechanism of action of microbes in higher plants. Role of Biocides. Integrated pest/pathogen Management.

#### **Unit: VIII**

#### **MORPHOGENESIS, PLANT TISSUE CULTURE, BIOTECHNOLOGY AND APPLICATIONS**

**Morphogenesis** – Polarity, Symmetry and Totipotency, Morphogenetic Centres of origin and organization. Differentiations de- differentiations and re-differentiation of cells and organs. Morphogenetic factors.

**Plant Tissue Culture** – Methodology and application of cell, tissue, organ and protoplast culture from vegetative and reproductive parts – Meristem culture and its significance. Somatic hybrid and Cybrids. Synthetic seeds and their application.

**Biotechnology** – Definition – Historical account – Scope and importance of Biotechnology – Genetic Engineering and Gene cloning strategies. Vectors in gene cloning – Plasmids, Cosmids, Bacteriophages – Role in gene – transfer technology – Recombinant DNA Technology – Isolation and purification of DNA – DNA – sequencing; DNA – engineering through cutting and joining; Restriction Endonucleases and Ligases. Methods of Direct gene transfer; Hybridoma Technology – potentialities and limitations of Biotechnology. Transfer of novel gene including nif – genes. Expression of plant genes in Bacteria.

**Applications of Biotechnology** - Monoclonal antibody production; interferon production – Insulin Production – Humulin Production. Application of Biotechnology in Agriculture - Crop improvement and evolving of transgenic plants to combat diseases, insect, pest and abiotic stresses – (salt, heat, drought and frost). Bacillus thuringiensis and biocide production. Microbial Biotechnology – fermentation technology – fermentation as a biochemical process – Bioconversion – alcoholic beverages production. Antibiotics, fermentation Production of amino acids and vitamins organic acids. Microbial Single Cell Protein (SCP) production.

### **Unit: IX**

#### **ENVIRONMENTAL BOTANY**

Definition – History – scope and relationship of Environmental Botany to other Sciences. Modern concept of Ecosystem – Synecology – Modern concept of Biotic – Community. Major and minor communities. Method of studying plant communities, Principles of Phytogeography. Major ecosystems of the world. Their distribution and centres of accurence. Vegetation types of India. Willis age and Area Hypothesis, Wegener's continental Drift hypothesis, Endemism. Modern concept of ecosystem: Components and functions – Ecological Pyramids – Ecological Niche Speciation – Population Ecology – Population growth – Biotic interactions – Succession and its types- Ecological compression (Lotka-Voltra model). Biogeochemical cycles. Plant indicators. Environmental pollution and abatement – water, air, land, radiation, noise, acid, rain green house effect. Ozone depletion, Brand outline of marine ecosystem and management, soil fertility and reclamation. Land application of sewage sludge. Advantages and disadvantages of sludge control and recommendation. Environmental management and legislation – Environmental conservation strategies. Environmental management and legislation Ecotechnology – formal and non-formal environmental education. Afforestation; Green – jobs, creating awareness among target-site people (Villages, tribal's, students, intellectuals, legislators/Policy makers). Inculcating environmental education is curriculum of School, College and University levels.

### **Unit: X**

#### **BIORESOURCES, BIODIVERSITY CONSERVATION AND ETHANOBOTANY**

**Bio-resources** – Definition – scope - enumeration and documentation of Bio-resources. Energy plantation, Hydrocarbons, Agroforestry, Social Forestry. Conventional fossil – fuel energy. Non-conventional energy sources (solar, wind, tidal, atomic) - Biophotolysis and hydrogen photo-production. Utilization and degradation of cellulose and lignin (litter) sewage and Garbage disposal. Bio-degradable and non-biodegradable garbage for waste. Utilization – conversion into manure (vermicompost) Non-biodegradable substances disposal by incineration. Biogas from Biomass. Methanogenesis.

**Biodiversity Conservation** – The need and necessity, Rio de Jeneiro Earth, Summit(1992) Leipzig(W.Germany) Earth Summit(1995) Problems in patenting and trade related intellectual property rights(TRIPS). General Agreement of Trade and Tariff (GATT). World Trade Organization (WTO). Prevention of Bio-Piracy. Role of wild – life sanctuaries, National Parks, Sacred Groves in



Biodiversity Conservation. Red Data Book – Information on endangered threatened and extinct plants and animals. Strategies for Biodiversity Conservation – in situ and ex situ conservation. Role of World Wild Life Fund(WWF).

[Ethnobotany](#) - Definition – scope – Tribes of Tamil Nadu – Their Socio-economic status Demography and distribution Folk- Ethano Medicines Linkages with other Sciences. Ethno-food – linkages with other Sciences. Ethno politics. Tribal involvement in Biodiversity conservation. Policies and programmes for upliftment of the various tribes in Tamil Nadu.

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**PAPER-I**  
**ZOOLOGY (POST GRADUATE DEGREE STANDARD)**  
**OBJECTIVE TYPE**

**Code No: 271**

**UNIT I**

Non-chordate: General Organization - classification upto class level, Modern taxonomy. Shelled Protozoans, Economic Importance, Fossil Protozoans and their importance, Neuromotor system in ciliates. Origin of Metazoa - Theories and Evolution, Economic importance of Porifera, Polymorphism in Hydrozoa. Coral reefs – structure, formation and theories. Origin and evolution of Coelenterates. Origin and types of coelom in Bilateria. Effects of parasitism on the parasites and hosts in Helminthes and larval forms. Coelom and metamerism in Annelida, Mode of life in polychaetes. Larval forms and parasitism in Crustacea. Adaptive radiation in Gastropods. Larval forms of Echinodermata and their Significance. Retrogressive Metamorphosis, Neotony and affinities of Ascidian.

**UNIT II**

Chordate: Migration in Fishes, Accessory respiration in fishes. Adaptation in deep sea fishes. Electric Organs and electro-receptors in fishes. Origin and evolution of Amphibia. Conquest of Land - Adaptations to live on land – evolutionary significance of crocodiles. Adaptive radiation in birds - Migration in Birds.

Evolution: Origin of life - Bio-chemical evolution - cultural evolution. Present status of Natural Selection. Adaptation and evolution in mammals.

Wild life mammals in India and Conservation measures. Endanger species and current status. Wild life Act.

**UNIT III**

Cell and Molecular Biology: Cellular organization-Membrane, intercellular-structure and function-cellular organelles. Chromosomes, types and Organization of genes. Cell division, cell cycle and regulation. Cell communication and cell signaling. Structure of DNA and RNA. Genetic code, Replication and protein synthesis.

Bio-Chemistry: Structure of carbohydrates, amino acids, proteins, lipids - Glycolysis and Krebs's cycle - oxidation, reduction - oxidative phosphorylation energy conservation and release - cyclic AMP-ATP - saturated and unsaturated fatty acids - cholesterol – enzymes, mechanism, action and kinetics. Vitamins, trace elements and micronutrients and coenzymes. Antioxidant enzymes. Hormones-classification, biosynthesis and functions.

**UNIT IV**

Bio-Physics: Microscopy-Principles of Phase, Electron Microscope, Polarising, Fluorescent, Interference Microscope. Photo – Electric Calorimetry, Freeze drying - freezing, Microtome, Fixation, staining techniques. X-ray - Diffraction, Ultra - Violet and infra red, Spectroscopy and Autoradiography. Instrumentation methods: Centrifugation, Electrophoretic and Chromatographic techniques. PCR, DNA finger printing, RFLP, RAPD, AFLP, FISH and GISH.

**UNIT V**

Genetics: Gene concept, one Gene - one polypeptide - concept, Enzyme regulation - Operon concept - GAL and LAC - Operon System. Population Genetics - Hardy - Weinberg Law Genetic Equilibrium. Radiation Genetics - mechanisms of Chromosomal breakage - Mutagens and Mutagenesis - Carcinogens and carcinogenesis - Human Genetics. Karyotype - Variation in Karyotypes with special reference to syndromes, Genetic counseling. Genetic Engineering - Present Status and its uses. Human genome project.

## UNIT VI

Bio-Statics: Collection of data. Primary and secondary - compiling and sampling methods - frequency distribution, frequency tables - diagrammatic representation - variables - measures of control tendency. Standard deviation, Standard error – Correlation, regression, regression analysis – student's "*t*" test and *chi*-square test. Bio-informatics: DNA and Protein sequence analysis, Prediction functional structure, protein folding, Molecular docking, Metabolic and regulatory networks, General challenges and applications. SwissProt, NCBI: GENBANK, BLAST; Multiple Sequence Alignments.

## UNIT VII

Physiology: With reference to mammals digestion, role of salivary gland liver, pancreas and intestinal glands in digestion, nutrition, balanced diet in man-assimilation, intermediary metabolism. Composition of blood- coagulation - Transport of oxygen, carbon dioxide, blood pigments-mechanism of respiration. Muscles, mechanism of muscle contraction, temperature regulation, acid, base balance and homeostasis. Nerve impulse conduction, neurotransmitters - receptors, photo, phono and chemo reception. Nephron and urine formation. Kidney stone formation. Comparison of excretion in fish, reptiles and mammals. Endocrine glands-testis, ovary and hypothalamo-hypophyseal gonadal relationship. Pheromones and reproduction. Bioluminescence, biological rhythms.

## UNIT VIII

Immuno-Biology: Immune responses - Primary, Secondary and Theories. Immunity types – Innate - Acquired- cell mediated and Humoral immunity-Autoimmunity, Types of Antigens and immuno globulins. Vaccinations – ELISA, RIA Techniques. Developmental Biology: Gametogenesis, Fertilization: Significance, polyspermy Gynogenesis, Androgenesis, Parthenogenesis, Polarity, Symmetry, Radiant, Embryonic fields, Differentiation - Nuclear and Chemical factors, Inductors and organisers, Genes and organizers, Regeneration - Polarity and Gradient in regeneration. ART. Stem cell biology-sources, types and applications.

## UNIT IX

Resource Ecology and Management, Renewable and Non-Renewable natural resources. Energy resources - conventional and non-conventional. Bioremediation. Habitat ecology. Wild Life conservation, Management and Acts. Air, Water, Soil, Sound pollutions. Laws related to Environment and Environmental Protection Act. Space ecology and Radiation ecology. Climate changes and Global warming.

## UNIT X

Economic Zoology: Parasitism and commensalism - protozoan parasites and diseases - helminthes parasites and diseases on man and domestic animals; Beneficial and harmful insects - insect pests on crops and stored products. Control methods. Pheromones and IPM. Sericulture, apiculture, lac culture, sea weed culture, poultry, pisciculture and induced breeding. Shell fisheries - fin and shells. Aqua culture practices in Tamil Nadu and their impact on the environment and on agriculture.

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**PAPER-I**  
**ANTHROPOLOGY (POST GRADUATE DEGREE STANDARD)**  
**OBJECTIVE TYPE**

**Code No. 312**

**UNIT- I: FOUNDATIONS OF ANTHROPOLOGY**

Meaning and scope of Anthropology - Major branches of Anthropology - and Contemporary divisions. The relevance of holistic perspective and its interrelations with other disciplines. Indian Anthropologists and their contribution to the society and cultures of India.

**UNIT -II: PHYSICAL ANTHROPOLOGY**

Branches of physical anthropology, Organic Evolution, Human Evolution, Human Variations, Race & Ethnicity, Ethnology and Biology, Biological and Physiological Anthropology, Anthropometry, Forensic Anthropology, DNA techniques and the prevention of genetic diseases.

**UNIT- III: ARCHEOLOGICAL ANTHROPOLOGY**

Broad outlines of pre-historic cultures (India and Europe), Palaeolithic - Mesolithic - Neolithic - Chalcolithic - Iron age - Geological time scale - A brief account of stone tool Typology and Technology and methods of problems of dating, Prehistoric and excavated sites in Tamil Nadu and recent findings: *Athrampattinam, Adhichanallur, and Keezhadi*.

**UNIT- IV: BASIC THEORIES OF ANTHROPOLOGY**

Evolutionary School of Thought, Diffusion School of Thought, Functionalism, Structure Functionalism, Structuralism, Symbolism, Culture and Personality, Postmodernism.

**UNIT- V: BASIC CONCEPTS OF ANTHROPOLOGY**

Family: Universality of family - structure, organization, and functions of family - changes in Indian family, Hindu joint family system and its transition.

Marriage: Definition of Marriage, Problems in Universal definition of Marriage - Marriage Regulations Exogamy and Endogamy - Types of Marriages - Preferential and Prescribed forms of marriage - Functions of Marriage - ways of Acquiring Mates, Marriage payments, Divorce, Marriage patterns in Hindu, Muslims and Christians.

Kinship and Descent: Definition, Kinship in social structure, Terminology, types of kinship systems, Rules of Descent, Descent groups, kinship usages and Analysis of kinship.

Culture: Definition, sub-culture, ethnocentrism, acculturation, assimilation, culture shock, culture loss, enculturation, patterns and configuration.

**UNIT -VI: ECONOMIC AND POLITICAL ANTHROPOLOGY**

Meaning, scope and Relevance of Economic Anthropology; Principles governing production, distribution and consumption in communities subsisting on Hunting and gathering, Fishing, Pastoralism, Horticulture Agriculture and Industrial Society. Modes of exchange, barter, ceremonial exchange, reciprocity, and redistribution, market and trade in tribal communities. Substantivism Vs. Formalism.

Meaning and scope of Political Anthropology, power, leadership, Legitimacy - differences between State and Stateless societies. Social control system, Law and Justice in simple and contemporary societies, New States, Nation building.

### UNIT – VII: RESEARCH METHODS AND FIELD WORK TECHNIQUES

Fieldwork tradition in Anthropology, Participant Observation , Case Study, Focus Groups, Key informant interview, questionnaire and schedule, Genealogical method, Ethnographic approach, Visual Ethnography, , Life histories and personal documents. Qualitative and Quantitative Research Methods, Basic statistics; graphical representation of data and sampling methods. Qualitative data analysis techniques: Content analysis, Narrative analysis and Discourse analysis. Writing culture and postmodernism.

### UNIT -VIII: SOCIAL STRATIFICATION AND RELIGION

Principles of social stratification, Caste, Class and Power systems, The basis of Indian social System: *varna, purushartha, karma and rebirth*.

Religion: Definition and functions of religion - Theories of origin of Religion - Religion and its forms, Animism, Animatism, Totemism, Naturalism, Monotheism, Polytheism- Different strands of religion, Folk, Popular and Classical- Religious Functionaries: Cult formation- Religion, Magic and Science, Totem and Taboo and their ritual significance- Religion and world view - Religion, Economy and political system.

### UNIT- IX: TRIBE AND THEIR CONTEMPORARY ISSUES IN INDIA

Definition of Tribe, Education, Health, Poverty, Land alienation, Issues of identity: Different Committees and their recommendations, island communities, PVTGs, Tribe and State conflict and compromise, Non-Scheduled Tribes, TRIs and their role in Tribal Development.

Constitutional Safeguards for Scheduled Caste and Scheduled Tribes, Tribal Movements in India.

### UNIT –X: DEVELOPMENT ANTHROPOLOGY

Anthropology of Development and Developmental Anthropology, Applied Anthropology, Action Anthropology, Engaged Anthropology, Business Anthropology, Development Projects and Anthropological Contributions, Top down vs. Bottom up models, Participatory Approaches, Rapid Research Appraisals and other recent trends.

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**PAPER-I**  
**ANCIENT HISTORY AND ARCHAEOLOGY**  
**(POST GRADUATE DEGREE STANDARD)**  
**OBJECTIVE TYPE**

**Code No. 314**

**UNIT – I: CULTURAL HISTORY OF TAMIL NADU UPTO 1565 AD**

Importance of Archaeology – Contributions during Sangam Age, Pallavas, Cholas, Cheras, Pandyas – Religion - Society - Material life - Monuments of Pallavas – Cholas – Pandyas – Vijayanagaras – Nayaks.

**UNIT- II: HISTORY OF ARCHAEOLOGY**

Definition - Development of Archaeology in India – 15<sup>th</sup> to 19<sup>th</sup> centuries – 20<sup>th</sup> century – Archaeological Theories – New Archaeology – Contributions of Alexander Cunningham – Robert Bruce Foote – Burgess – Lord Curzon – Mortimer Wheeler – Relation between History and Archaeology, Geology and Archaeology, Anthropology and Archaeology - Contributions of Archaeological Survey of India, State Department of Archaeology - University Departments : University of Madras and Tamil University.

**UNIT – III: FIELD ARCHAEOLOGY**

Exploration techniques – Exploration tools – Excavation methods – Horizontal and Vertical Excavations – Stratigraphical Analysis - Excavation equipments - Staffs – Documentation and Interpretation – Preparation of Excavation Report – Dating methods – Remote sensing in Archaeology – Digital Archaeology.

**UNIT- IV: PRE AND PROTO HISTORY OF INDIA**

History of Indian Prehistory – Relation between Prehistory and Geology – Lower, Middle and Upper Palaeolithic periods – its distribution – Mesolithic period – its distribution – Neolithic period – its distribution – Stone tool industries – its functions – tool making technology – Chalcolithic culture – Harappan culture – OCP culture – Painting grey ware – Iron Age culture – Burial types in South India– NBP ware culture.

**UNIT- V: EPIGRAPHY AND PALAEOGRAPHY**

Importance of Epigraphy – Asokan Brahmi and Kharosti scripts - Asokan Edicts – Development of Epigraphical studies in Tamil Nadu – Origin and Development of Tamil-Brahmi and Vatteluttu - Recent developments in fixing chronology of Brahmi – Detail Study of inscriptions at: Pullimankombai, Mangulam, Vikramangalam, Velvikkudi and Leiden grants Copper plates, Uttiramerur – Hero stone inscriptions - Irulapatti inscription – Inscribed sherds - *Prasasti/Meykirti* - Structure of an inscription.

**UNIT- VI : NUMISMATICS**

Importance of Numismatics – Punch marked coins – Tribal coins – Coins of Indo-Greeks – Roman coins – Gupta coins – South Indian coinage – Sangam coinage – Satavahana coins - Pallava coins – Chola coins – Pandya coins – Chalukya and Rastrakuta coins – Hoysala coins – Vijayanagara coins – Symbols and Legends – Techniques - Mints.

**UNIT- VII: ART AND ARCHITECTURE**

Harappan Art – Mauryan Art and Architecture – Stupa, Chaitya and Vihara architecture – Art and Architecture of Deccan – Sathavahanas, Chalukyas, Rastrakutas, Hoysalas, Vijayanagaras and Nayaks –Monolithic and Structural temples of Tamil Nadu - Rock cuts of Early Pandyas and Pallavas – Sculptural art of Pallavas, Early Pandyas and Cholas – Temples at Mamallapuram,

Kanchipuram, Nartanmalai, Thanjavur, Gangaikonda Cholapuram, Vettuvankoil, Srirangam, Madurai and Krishnapuram.

### UNIT- VIII: ICONOGRAPHY AND PAINTING

Mudras – Asanas – Vahanas - Saiva Iconography – Vaishnava Iconography – Iconography of Devis, Minor deities, Jaina and Buddhist iconography – Bronzes – Ornaments – Pallava and Pandya paintings – Chola paintings – Vijaya Nagara paintings – Nayaks paintings – Maratha paintings.

### UNIT - IX: CONSERVATION AND MUSEOLOGY

Importance of conservation – Conservation of Organic and Inorganic materials – Structural conservation – Archaeological code – Legal aspects relating to conservation and preservation – Origin of Museums in India - Types of Museum – Role of National Museum, State Museum, District Museum and Local Museum – Principles of Display – Documentation – Museum Architecture – Museum administration and establishment.

### UNIT- X: EARLY HISTORICAL ARCHAEOLOGY

Importance of early historical archaeology – Potteries of North India and South India – Excavations at Kodumanal, Sanur, Mangudi, Azhagankulam, Arikamedu, Kaveripumpattinam, Korkai, Uraiyur and Keeladi – Urbanisation during Sangam age – Excavations at Kausambi, Sisupalgarh, Sravasti, Mathura, Taxila, Lothal and Dolavira – Maritime trade with other countries.

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**PAPER-I**  
**HISTORY (POST GRADUATE DEGREE STANDARD)**  
**OBJECTIVE TYPE**

**Code No. 317**

**Section – A - India Through Ages**

**UNIT - I : INDIAN RACES AND GEOGRAPHY**

Influence of geography on Indian History - Pluri-culturalism – Unity in Diversity - Sources of Indian History - Beginning of historic period - Indus Valley Civilization – Area - features - Rig Vedic and - Later Vedic cultures - Challenges to Vedic religion and society – Rise of Jainism and Buddhism – Results.

**UNIT- II: ANCIENT INDIAN POLITY (UP TO 7<sup>TH</sup> CENTURY AD)**

Persian and Greek invasions – Impact - Age of ancient Indian empires - Rise of Magada and The Mauryas - Asoka - His wars - Services to Buddhism - Deal of Kingship - Mauryan administration and art - The Kushans in the north – west - Kanishka's achievements. The Guptas – Chandra Gupta I - Samudra Gupta - Chandra Gupta II - Hindu revivalism -Popular devotion as an alternative to puritan faith – Religious Art - Rigidity of Caste system – Accounts of Fahien.- The Vardhana Kingdom – Harsh Vardhana as the last great ruler of ancient India.

**UNIT- III: ANCIENT AND PRE-MEDIEVAL TAMIL CULTURE**

Sangam Age - Archaeological sites - Adicha Nallur - Pallavaram - Arikamedu - Keeladi - Sangam polity- The Kalabhras –The new findings on their importance - The Pallavas - Politics - society and culture - Relations with neighbours - The first Pandyan kingdom - The Greater Cholas and the Second Pandyan Kingdom – Their contribution to religion, art and literature – Spread of Tamil culture abroad.

**UNIT-IV: MEDIEVAL INDIA - RISE OF THE CRESCENT OVER THE SUB-CONTINENT**

i) A result less episode-The Arab conquest of Sindh- Turkish invasions and the aftermath - Pathfinders - Mahmud of Ghazni - Muhammad of Ghore - The foundation of Delhi Sultanate- The Slave Rulers- Qutb-ud-din Aibak to Balban - The Khilji imperialism - Ala-ud-din Khilji - Tughluq Dynasty - Mohammad –bin-Tughluq - Feroz Tughluq - The Sayyids and Lodis - Delhi Sultanate – Administration – Society – economy - Religion and culture under them.

ii) Medieval Deccan-Cultures at conflict -Bhamini Kingdom- Muhammed Gawan- Hindus reaction to the Muslim might in Deccan- Foundation of Vijaya Nagar - Krishna Deva Raya – His achievements - Society and culture under Vijaya Nagar - Fall of Vjaya Nagar - Battle of Talikota ( 1665)- Impact of Vijayanagar on Tamil Nadu - The Nayak rulers of Tamil Nadu - their cultural contributions - Bakti Movement- Sankara - Ramanuja - Madhwa – Kabr - Guru Nanak - Chaitanya - Ramananda - Vallabha – others.

**UNIT-V :THE SECOND PHASE OF ISLAMIC INDIA**

i) The Greater Moghals - Babur- Humayun - Sur interregnum – Shershah – Akbar to Aurangzeb – Moghal policies of the North West - Rajputs- Hindus and Deccan- Shivaji the Deccan Ulcer – Religion and Society - Art and literature.

ii) Declining phase of the Moghals- Reasons – Advent of the Europeans - Trade settlements - Laying foundation of the British colonial empire in India – Anglo - French rivalry - Carnatic Wars in the Peninsula – Bengal Affairs - Battle of Plassey (1757) and after.



## UNIT-VI : BRITISH EMPIRE- EXPANSION AND CONSOLIDATION

- i) Policies of conquests - Subsidiary Alliance- Lapse Doctrine - Wars with Mysore - Marathas - Sikhs, Burma - others - British East India Company's rule up to 1857 – Robert Clive - Warren Hastings - up to Dalhousie - Social and administrative and judicial reforms – Mahalwari- Ryotwari Permanent and other revenue settlements.
- ii) Early Resistance to British Exploitation - Puli Tevan – Veera Pandia Katta Bomman In the far South - South Indian Rebellion(1800-1801) –The first organized anti - British uprising – Vellore Mutiny ( 1806)- Sepoy Mutiny ( 1857) - Results - End of the Company's rule – Queen's Proclamation.
- iii) The Crown's Administration – Development of modern India - From Lord Canning to Lord Mount Batten -- Local self government - Public Services - Bureaucracy- Growth of Education - Press - Transport and Communication.

## UNIT-VII: PRE AND POST INDEPENDENT INDIA

- i) Indian National Movement - Causes for national awakening – Socio-religious reform movements of the 19<sup>th</sup> and 20<sup>th</sup> centuries with special reference to Tamil Nadu - Early national associations – Indian National Congress - Causes for its birth - The Moderates and the Extremists of the INC- Gandhian Era - Role of Tamil Nadu in the Freedom Struggle - E.V.Ramasamy and Dravidian Movement- Self Respect Movement- Justice Party and its reforms - Temple entry movement - Devadasi abolition - Upper garment agitation - Role of religious minorities in the Freedom Struggle.
- ii) India Post Independence - The Congress Regime - Jawaharlal Nehru- Lal Bahadur Sashtri - Indira Gandhi – Emergency - Coalition Politics - Morarj Desai - V.P.Singh - I.K.Gujral - Five Year Plans - India in world affairs - Non- Alignment - Peace keeping role - Panch Sheel- Assistance to the UNO- SAARC- BRICS- Nuclear and Space research- Human rights issues in India – Bhopal Tragedy- Narmada Pachao Andolan - Keela Venmani – Reservation – Issue of OBCs.- Media and its role.

### Section –B –World Through Ages

## UNIT-VIII : ANCIENT AND MEDIEVAL WORLD

- i) Ancient civilizations – Egypt – Mesopotamia - Classical cultures of Greece and Rome - Christianity - Principles and spread- Monasticism .
- ii) Medieval World - Islam -Rise and escalation - Legacy - Medieval European culture - Towns, guilds and Universities.

## UNIT- IX : MODERN GLOBAL TRENDS

- i) Dawn of Modern Age - Fall of Constantinople – Impact- Renaissance- Maritime discoveries - Reformation - Counter Reformation - Rise of Nation States.
- ii) People Vs. Rulers – Age of Revolutions - The Glorious Revolution - French Revolution - Russian Revolution - The Chinese Revolution - The Meiji Restoration - The American War of Independence - Unification of Italy and Germany.
- iii) Science and Modernism – Industrial and Agricultural Revolutions – Course –Results.

## UNIT –X : END OF AFRO-ASIAN COLONIAL EMPIRES AND GLOBAL PEACE

First World War - The League of Nations - Rise and fall of Japan in Asia – World War II - Emergence of People's Republic of China( 1949)- UNO and its achievements.

**PAPER-I**  
**SANSKRIT(POST GRADUATE DEGREE STANDARD)**  
**OBJECTIVE TYPE**

**Code No.319**

**Unit- I: Vedas and Vedāṅgas**

Vedic and Classical periods – Vedas - classification of the Deities glorified in the Vedas, Vedic Texts –Saḥhitā, Brāhmaṇa, Āraṅyaka portions, the recession of the four Vedas – Upaniṣads- Major and minor – Vedāṅgas – The Six supplements çikṅā, Vyākaraṇa, Chandas, Nirukta, Jyotiṅa and Kalpa – Vedic Indices.

**Unit-II: Epics and Purānas**

**Epics** - Rāmāyaṇa – Features of the epic literature- Authorship of the Rāmāyaṇa – date – Influence of Rāmāyaṇa on later Sanskrit Literature; Mahābhārata– Three Stages in the development of the Epic – Date –Critical Estimate – as a Dharma çāstra - Harivaṅga– Upākhyānas – Influence of Mahābhārata on later Sanskrit Literature - Rāmāyaṇa and Mahābhārata as the National epics of India.

**Purāṇas**– Definition – Authorship – Date – Importance – Classification – Brief account of the Purāṇas – Upapurāṇas.

**Unit –III: Pre Kālidāsa Kāvya Period – Kālidāsa – Post Kālidāsa Kāvya**

Definition of Kāvya – Characteristic Features of the Mahākāvya- Vālmēki –Vararuci –Piṅgala.

Kālidāsa – Date of Kālidāsa – Raghuvāṅga, Kumārasambhava.

Post Kālidāsa Kāvya

Açvaghōṅa – Renaissance theory – Inscriptions – Sethubandha – Janaké Haraṇa – Kirātārjunyam – Çiçupālavadhāna - Naiṅadēyacaritam.

**Unit –IV: Lyric – Gnostic and Didactic Poetry – Didactic fable Anthology – Popular tale - Prose – Campū Literature**

Features of the lyrics – Erotic Lyrics – Meghasandēça – Amaruçataka - Gétagovindaand others - Devotional Lyrics- General Features – works of Çaikara, Rāmānuja and Vedāntadeçika - Nārāyaṇēyam - Karuṇālaharē

Gnostic and Didactic – General Features – Origin and development – works of Bhatāhari and Kṅemendra – Anyāpadāçça,

**Anthology** : Features –Gātāsaptasati - Sadukti karṇmāta

**Didactic fable** – General Features – Paīcatantra and Hitopadeçça

**Prose** - Definition - Kathā and ākhyāyikā - Origin – Kādambaré, Vāsavadatta, Daçakumāracarita, Kathāsaritsāgara.

**Campū**- definition Rāmāyaṇacampū Bhāratacampū.

**Popular tale** - General features - Bāhatkathā- language - form-contents and date - abridgements- Buddhist tales- stories of Vikramāditya and others.

**Unit-V: Sanskrit Drama- Origin- Characteristics - Types, Bhāṅa and Kālidāsa- Post Kālidāsa Dramatists**

Traditional view about the origin of Drama - early beginning – Greek origin – Definition and Characteristic Features – Types of Rūpaka and Uparūpaka.

**Bhāsa and Kālidāsa**– Trivandrum plays – their authorship – Abhijānaçakuntala.

**Post Kälidāsa Dramatists** – çüdraka - Dinnāga - Viçākadatta - Harñavardhana- Bhaöönärāyaēa - Bhavabhüti- Murāri - Rājaçekhara and others - Allegorical lays of kãñēamiçra and Vedānta Deçika.

**History** – Paucity of works on history discussed –Harñacarita - Rājatharaigēē– and others.

### **Unit – VI: Theories of Poetry and Drama**

**Sāhitya Alaikāra** - Theories main and subsidiary. Bharata – Daëöin - Bhāmaha – Vāmana – ānandavardhana – Abhinavagupta – Rājaçekhara - Dhanaijaya - Bhoja- Kñemendra - Mammaöa - Ruyyaka- Appayadéknīta - Jagannātha Paëöita-Jayadeva- Their works on Alaäkāraçāstra and theories formulated by them.

### **Unit –VII: Grammar - Texts and Concepts**

**Grammar** - Pāëini -Kātyāyanas - Patañjali - Bhartāhari- Bhaööojidékñīta - Nāgeçaand others. Sphoṭa theory. (Concepts: Sañjiā, Paribhāñā, Sandhi, Samāsa, and Kāraka) Taddhita Kādanta Strépratyaya from Siddhānta Kaumudé.

### **Unit- VIII: Prosody and Lexicography ,Astronomy, Dharmaçāstra,**

**Upaveda-** āyurveda- Gāndharvaveda Dhanurveda Arthaçāstra and Ancillary Sciences.

**Prosody** – Vāṭta and jāti. Lexicons on Homonyms and Synonyms.

**Astronomy** – General Features – Early Treatises – Five Siddhāntas— Indian Mathematics; Varāhamihira - āryabhaööa - Brahmagupta –Bhāskarāçārya.

**Scope of the Upavedas** - āyurveda – General Principles, Nature of treatment – Caraka – çuñruta - Vāgbhaöa - Kāmaçāstra -Gāndharvaveda  
- Dance and music – Dhanurveda, Arthaçāstra-Architecture – Painting.

### **Unit - IX: Bhāratéya Darçanas(Indian Philosophy, Religion – General Principles**

Explanation and Scope of Philosophy – Nāstika and Āstika systems -

**Nāstika** – Cārvāka, Buddhism, Jainism; **Āstika-** Nyāya- Vaiçēñika, Sāākhyā, Yoga, Mémāāsā - Pūrva and Uttaramémāāsā on later Sanskrit Literature a- sūtra texts and Commentaries – Independent treatises of these systems.

### **Unit -X: Epigraphy – Manuscriptology**

Inscriptions,Scripts used in Ancient Texts – Grantha, Tamil, Devanāgaré, Nandināgaré, Brāhmi and çāradā Scripts – Editing of Sanskrit Texts from manuscripts – Preservation of manuscripts – materials used, Deciphering of scripts – Textual Errors: Omissions , Deletions, additions. Use of modern Technology to edit texts.

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**Paper - II**  
**GENERAL STUDIES (Degree Standard)**  
**Objective Type**

**Code No.003**

**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 & communications - 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, prevention and remedies-Communicable diseases and non- communicable diseases- 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** - India's foreign policy - Latest court verdicts – public opinion - Problems in conduct of public elections- Political parties and political system in India- Public awareness & General administration- Role of Voluntary organizations & Govt.,- 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 & 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 - 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 – VII INDIAN NATIONAL MOVEMENT

National renaissance- Early uprising against British rule-1857 Revolt- Indian National Congress - Emergence of national leaders- Gandhi, Nehru, Tagore, Netaji -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 – VIII APTITUDE & MENTAL ABILITY TESTS ( SSLC STANDARD )

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.

**Annexure III**  
**Tentative Timeline for the Recruitment Process for the**  
**post of Curator (Shortfall vacancies)**

<b>Sl. No.</b>	<b>Process</b>	<b>Timeline</b>
1.	Publication of Written Examination results	June 2019
2.	Certificate Verification	July 2019
3.	Oral Test	July 2019
4.	Final Result	July 2019

**Secretary**