

**TELANGANA STATE POWER GENERATION CORPORATION LIMITED VIDYUT
SOUNDHA ::: HYDERABAD-500 082**

Notification No.03 /CGM(Adm,IS & ERP)/Dt:23.05.2016

DIRECT RECRUITMENT FOR THE POST OF CHEMIST

Telangana State Power Generation Corporation Limited (TSGENCO) is one of the pivotal organizations of Telangana State, engaged in the generation of power with an installed capacity of 5045.6 MW. It has also taken-up vast expansion of existing Power Generating Stations and also undertaken new Power Projects to supply quality and quantity power at an affordable cost, invites applications from the eligible and qualified candidates for the post of “**Chemist**”

PARA-I :

1. Applications are invited On-line from qualified candidates in the proforma Application made available on TSGENCO WEBSITE www.tsgenco.co.in and <http://tsgenco.cgg.gov.in> to the post of Chemist.
 - i) Submission of On-line Applications from date: 30.05.2016.
 - ii) Last date of submission of On-line Applications date: 25.06.2016 @13.00 hrs
 - iii) Hall-tickets can be downloaded 07 days before commencement of Examination.
2. The examination is scheduled to be held on 10.07.2016.
3. The candidates who possess requisite qualification may apply On-line by satisfying themselves about the terms and conditions of this recruitment.
4. (The details of vacancies .,Zone wise, Community wise and gender wise (General/ Women) may be seen at ANNEXURE-I.)

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IMPORTANT NOTE: The numbers of vacancies are subject to variation based on the necessity and shall be filled-up as per the Rules & Regulations in vogue, duly following the Rule of Reservation.

4. EDUCATIONAL QUALIFICATIONS: Applicants must possess the qualifications, from a recognized University established or incorporated under a State Act or Central Act, as detailed below or equivalent thereto as specified in the relevant Service Rules, intended by TSGENCO as on the date of Notification.

Chemist	M.Sc First class with Chemistry or Environmental Sciences preceded by B.Sc with Chemistry as one of the subjects from a recognized university.
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NOTE: The TSGENCO employees who are fully qualified for appointment to the post of Chemist under "Direct Recruitment " not exceeding the age of 45 years as on date last date of submission of application for the post of Chemist are eligible to be considered for direct recruitment along with other open candidates. They will have to appear at the common examination. They will be eligible for protection of pay only if selected and for all purpose including seniority in the category of chemist they should be treated as "direct recruitee".

5) AGE: Minimum 18 years & Maximum 44 years. The age is reckoned as on 01/07/2015 (Rule- 12(1)(a)(v) of State and Subordinate Service Rules).

* As per G.O. Ms. No. 329 GA (Ser.A) Dept., Dt. 27/07/2015 and as adopted by TSGENCO Vide T.G.O.O No.218, dated.31-8-2015,the upper age limit raised up to 10 years i.e., from 34 years to 44 years.

N.B.: No person shall be eligible if he/she is less than 18 years of age.

N.B.: No person shall be eligible if he/she has crossed 58 years of age (Superannuation age).

Age Relaxations: The upper age limit prescribed above is however relaxable in the following cases:

Sl. No.	Category of candidates	Relaxation of age permissible
1.	SC/ST and BCs	5 years
2.	Physically Handicapped persons	10 years

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6.(a)FEE: (Remittance of fee) Each applicant must pay Rs.100/- (Rupees One Hundred only) towards Online Application Processing Fee. This apart, the applicants have to pay Rs.120/- (Rupees One hundred and twenty only) towards Examination Fee. However, the Applicants belonging to SC/ST/BC Communities and PH are exempted from payment of examination fee.

(b) Mode of Payment of fee : The fee mentioned at para- I(6)(a) is to be paid online through Bill Desk Payment Gateway/Atom payment Gateway by following online instructions.

(c) After payment of Fee, the Candidate has to logon to the website <http://www.tsgenco.co.in> and click on **APPLY ONLINE** link or directly visit <http://tsgenco.cgg.gov.in> to view the detailed notification, User Guide and Application Form. The applicants have to invariably fill all the relevant fields in the Application. Immediately on submission of application the Applicant will get an acknowledgment in the form of a downloadable pdf document.

The fee once remitted shall not be refunded or adjusted under any circumstances. Failure to pay the examination fee, application fee wherever applicable will entail the total rejection of application.

Starting date for Payment of Fee and Application submission is: 30.05.2016.

Last date for payment of Fee at Online is : 25.06.2016@13.00hrs.

Last date for submission of Application is: 25.06.2016@23.59hrs.

PARA-II :

CENTRES FOR THE WRITTEN EXAMINATION.

The written examination for recruitment of Chemists will be held at different centers located only in Hyderabad and Secunderabad.

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PARA-III : HOW TO APPLY

A. HOW TO UPLOAD THE APPLICATION FORM:

The Applicants have to read the **User Guide** for Online Submission of Applications and then proceed further.

I Step:- Payment of Fee: The Applicant should pay the prescribed Fee as per the notification through Bill Desk Payment Gateway/Atom payment Gateway and obtain Fee paid receipt with Journal Number (12 digit) in the first instance.

II Step:- Submission of Application: After payment of Fee, the Candidate has to logon to the website [http:// www.tsgenco.co.in](http://www.tsgenco.co.in) and click on **APPLY ONLINE** link or directly visit <http://tsgenco.cgg.gov.in> to view the detailed notification, User Guide and Application Form. The applicants have to provide payment details (journal number and date) and upload the scanned copy of passport size photograph with signature (see instructions for scanning and uploading photograph with signature) and then invariably fill all the relevant fields in the Application. Immediately on submission of application, applicant will get an acknowledgment in the form of a downloadable pdf document.

NOTE:

1. The applicants are required to go through the detailed notification and decide themselves as to their eligibility for this recruitment carefully before applying and enter the particulars completely online.
2. Candidates are required to retain a photocopy of application form with Reference ID for future reference.
3. Candidates have to submit application only through online mode well in advance of the last date to avoid last day rush.
4. Hand written/ Typed/ Photostat copies/ Outside printed Application Form will not be accepted and liable for rejection.
5. Only applicants willing to serve anywhere in the Telangana should apply.
6. For any problems related to Online submission and downloading of Hall-Tickets please contact **Help Desk No.040--23120303** (Call Time:10:30 A.M to 1:00 P.M & 2:00 P.M to 5:00 P.M) or log on to <http://tsgenco.cgg.gov.in> click on to complaint box.

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PARA –IV : General Provisions :

1. Applicants must compulsorily fill up all relevant columns of application and submit the application through website only. The particulars made available in the website shall be processed through Computer and the eligibility decided in terms of notification.
2. The Applications received online in the prescribed proforma available in the website and within the time shall only be considered and TSGENCO will not be held responsible for any kind of discrepancy.
3. Applicants must upload his / her own scanned photo and signature through jpg format in the following steps :

Instructions for Scanning of Photograph with Signature

Photo width= 3.5cm

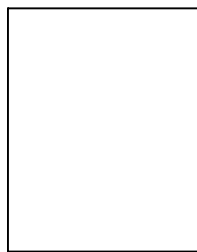


Photo Height= 4.5cm

Signature Space = 1.5 cm

- i) Paste the Photo on any white paper as per the above required dimensions. Sign in the Signature Space provided. Ensure that the signature is within the box.
- ii) Scan the above required size containing photograph and signature. Please do not scan the complete page.
- iii) The entire image (of size 3.5 cm by 6.0 cm) consisting of the photo along with the signature is required to be scanned and stored in ***.jpg** format on local machine.
- iv) Ensure that the size of the scanned image is not more than 50KB.
- v) If the size of the file is more than 50 KB, then adjust the settings of the scanner such as the dpi resolution, no. of colors etc., during the process of scanning.
- vi) The candidate has to sign in full in the box provided. Since the signature is proof of identity, it must be genuine and in full; initials are not sufficient. Signature in CAPITAL LETTERS is not permitted.
- vii) The signature must be signed only by the candidate and not by any other person.
- viii) The signature will be used to put on the Hall Ticket and wherever necessary. If the candidate's signature on the answer script, at the time of the examination, does not match the signature on the Hall Ticket, the candidate will be disqualified.

Sample Photo and Signature



e.g. The Technical Specifications of the sample scanned image shown above are:

- Size of the file < 50 KB
- Dpi setting = 200 dpi
- True Colour

The candidate has to upload his/her **Photo with Signature** in the prescribed format by clicking on the **browse** button at the time of submission of application form.

4. The applicants should not furnish any particulars that are false, tampered, fabricated or suppress any material information while making an application through website.

5. All the essential certificates issued by the competent authority of Telangana State shall compulsorily be kept with the applicants to produce as and when required to do so. Failure to produce the required certificates on the day of verification will lead to disqualification.

6. **Important** : The claim of the candidates with regard to the date of birth, educational / technical qualifications and community are accepted only provisionally on the information furnished by them in their application form and is subject to the verification and satisfaction of TSGENCO. Mere admission to any test or inclusion of the name of a candidate in a merit list will not confer on the candidate any right for appointment. The candidature is therefore provisional at all the stages and TSGENCO reserves the right to reject candidature at any stage of the selection even after the advice has been made.

7. TSGENCO is not responsible, for any discrepancy in submitting through Online. The applicants are therefore, advised to strictly follow the instructions and User guide in their own interest.

8. Applicant must compulsorily fill-up all relevant fields of application and submit application through website only.

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9. Incomplete/incorrect application form will be summarily rejected. TSGENCO under any circumstances will not entertain the information if any furnished by the candidate subsequently. Applicants should be careful in filling-up of the application form at the time of submission. If any lapse is detected during the scrutiny, the candidature will be rejected even though he/she comes through the final stage of recruitment process or even at a later stage.

10. Before payment of fee, submission of application form, the candidates should carefully ensure his/her eligibility for this notification. No relevant column of the application form should be left blank; otherwise application form will not be accepted.

11. The applications received online in the prescribed proforma available in the website and within the time shall only be considered and the TSGENCO will not be held responsible for any kind of discrepancy.

12. Applicants must compulsorily upload his/her own scanned photo with signature in jpg format only.

The following certificates must be kept ready by the candidates for the purpose of verification.

- i) Date of Birth Certificate
- ii) School Study Certificate

The following Certificates should be obtained from Govt. of Telangana State in prescribed proforma for the purpose of verification.

- iii) Community Certificate
- iv) Non Creamy layer certificate
- v) Certificate of Residence / Nativity
- vi) No objection certificate from the Employer(If employed any where)

The following certificates (whichever is applicable) should be obtained from Competent Medical Authority for the purpose of verification

- vii
 - a) Medical certificate for the Blind
 - b) Certificate of hearing disability and hearing assessment
 - c) Medical certificate in respect of Orthopedically Handicapped

The PH reservation will be applicable only to persons whose disability is 40% and above

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13. Candidates will be required to appear for written test as and when conducted at their own cost.
14. Admission for written test or calling the qualified candidates to the written test to furnish documentary proof does not confer any right for appointment.
15. The degrees awarded by the Universities/institutions that are recognized by the U.G.C, D.E.C (Under IGNOU) and AICTE as the case may be considered.
16. The decision of the Selection Committee/TS GENCO is final in selection and allotment of candidates.

PARA-V : Important provisions governing the Recruitment Process :

1. **Vacancies** : The Recruitment will be made to the vacancies notified before the examination only. There shall be no waiting list as per G.O.Ms.No.81, General Administration (Ser.A) Department, dt.22.02.1997.
2. **Recruitment** : The Recruitment will be processed as per this notification and also as per the rules and regulations of TSGENCO existing as on date.
3. **Rules** : All are informed that various conditions and criterion described herein are governed by the Rules and Regulations existing in TSGENCO.
4. **Recruitment and Selection** :The whole recruitment and selection process is carried out with utmost regard to maintain secrecy and confidentiality so as to ensure that the principle of merit is followed. A candidate shall be disqualified for appointment, if he himself / she herself or through relations or friends or any others has canvassed or endeavored to enlist for his candidature, extraneous support, whether from official or non-official sources for appointment to this service.
5. **Zonal/Local** : The Zonal and Local reservations shall be made following the Reservation prescribed to the "Local Candidates" and also to the posts to be filled up by "Open Competition" of the two zones mentioned below confined to the State of Telangana as per the Regulations inforce.

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Zones	Districts covered
1	Adilabad, karimnagar, Warangal and Khammam
2	Hyderabad, Ranga Reddy, Nizamabad, Medak, Mahabubnagar and Nalgonda

The Zonal and Local Reservations shall be followed as per the Para -8 of A.P. Public Employment (Organization of Local Cadres and Regulation of Direct Recruitment) Order, 1975 (G.O.P. No. 674, G.A. (SPF-A) Dept., Dated: 20/10/1975) read with G.O. Ms. No. 124, General Administration (SPF-A) Department, dated: 07/03/2002 and other orders issued by the Government and within the meaning of Sections 3 and 97 of A.P. State Reorganization Act 06/2014 .

The candidates recruited on the zonal basis shall be transferred within the respective zones only.

The select list will be drawn into two parts. The first part will comprise 40% of the posts consisting of combined merit list of local as well as non-locals confined to the state of Telangana and the remaining second part will comprise the balance 60% of the posts consisting of locals only and the posts will be filled only following the rule of reservation.

- a) The candidates will be selected and allotted to Zones as per their Rank in the merit list and as per zonal preferences for allotment of non-local candidates against vacancies available. Selection shall be made on State Wide merit, in respect of non-local candidates and allotment of Zones shall be made as per the preference given by candidates against the actual vacancies.
- b) While the Corporation calls for preference of candidates in respect of zones in the application form, it is hereby clarified that the said preferences are only indicative for being considered to the extent possible but not binding. Therefore, the TSGENCO has the power to assign a successful candidate to any of the notified posts in the Zone in respect of non-local candidates, for which he/she is considered to be qualified and eligible, subject to fulfilling the selection criteria. Mere claim of preference for any zone for allotment against vacancy does not confer a right to selection for that Zone in particular or any Zone in general.

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6. **Percentage of reservation:** The following percentage of reservations are applicable subject to the orders of the Government from time to time.

BC-25% + 4%

Reservation to BC-E group will be subject to the adjudication of the litigation before the Hon'ble Courts including final orders in Civil Appeal No. (a) 2628-2637 of 2010 in SLP.No.7388-97 of 2010 dated 25.03.2010 and orders from the Government.

SC- 15%,

ST- 6%,

PH- 3%

Women- 33 1/3 % reservation is applicable as per rules.

7. **Creamy Layer** : In terms of G.O.Ms.No.8, Backward Classes Welfare (OP) Department, dt.13.11.2014, as adopted by TSGENCO , In terms of G.O. Ms. No. 8 Backward Classes Welfare(OP) Department, Dated 13.11.2014, Govt., of Telangana, the candidates claiming to be belonging to Backward Classes have to produce a Certificate regarding their exclusion from the Creamy Layer from the competent authority (Tahasildar). The Certificate excluding from Creamy Layer has to be produced at an appropriate time. In case of failure to produce the same on the day of verification of certificates, the Candidature will be rejected without further correspondence.

8.**Education through Open University** : The Candidates who have acquired Degrees through Open Universities are required to have recognition by the University Grants Commission / A.I.C.T.E. / Distance Education Council as the case may be. Unless such degrees had been recognized by the relevant Statutory Authority, they cannot be accepted for the purpose of Educational Qualifications. The onus of Proof of recognition by the relevant Statutory Authority that their Degrees / Universities have been recognized, rests with the candidate.

PARA-VI: RESERVATION TO LOCAL CANDIDATES: Reservation to the Local candidates is applicable as provided in the Rules and as amended from time to time as in force on the date of notification. The candidates claiming reservation as Local candidates should obtain the required Study certificates (from IV Class to X Class or SSC) (OR) Residence Certificate in the Proforma only for those candidates who have not studied in any Educational Institutions as the case may be. The relevant certificates may be got ready with authorized signature and kept with the candidates to produce as and when required.

DEFINITION OF LOCAL CANDIDATE:- "LOCAL CANDIDATE" means a candidate for direct recruitment to any post in relation to that Local areas where he/she has studied in Educational Institution(s) for not less than four consecutive academic years prior to and including the year in which he/she appeared for S.S.C or its equivalent examination. If however, he/she has not studied in any educational institution and obtained SSC or its equivalent qualification or Open School, Private Study basis, he/she has to produce residential certificate issued by the Tahsildar.

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- i) In case any Candidate who does not fall within the scope of above then, if he/she has studied for a period of not less than seven years prior to and inclusive of the year in which he/she has studied SSC or its equivalent qualification, he/she will be regarded as local candidate on the basis of the maximum period out of the said period of seven years and where the period of his/her study in two or more local areas or equal such local area where he/she has studied last in such equal periods will be taken for determining the local candidature. Similarly, if he/she has not studied during the above said period in any Educational Institution(s) and obtained private study the place of residence during the above period will be taken into consideration and local candidature determined with reference to the maximum period of residence or in the case of equal period where he/she has resided last in such equal periods.
- ii) If the claim for local candidature is based on study, the candidate is required to produce a certificate from the Educational Institution(s) where he/she has studied during the said 4/7-year period. If, however, it is based on residence, a certificate should be obtained from an officer of the Revenue Department not below the rank of Tahsildar or Deputy Tahsildar in independent charge of Mandal.

If, however, a candidate has resided in more than one Mandal during the relevant four/seven years period but within the same District or Zone as the case may be separate certificates from the Tahsildar exercising jurisdiction have to be obtained in respect of different areas.

NOTE:

- (A) Residence Certificate will not be accepted, if a candidate has studied in any educational institution upto S.S.C. or equivalent examination, such candidates have to produce study certificates invariably. The candidates, who acquired Degree from Open Universities without studying SSC / Matriculation or equivalent in Educational Institutions, have to submit Residence Certificate only. Educational institutions means a recognized institution by the Government / University / Competent Authority.
- (B) Each of the following Zones comprises the Districts mentioned against each Zone.

PARA-VII : Scheme of Examination :

- i)The Scheme and Syllabus for the examination has been shown in Annexure-II
- ii) **Hall Tickets:** The hall tickets will be placed on the website seven days prior to the date of examination. The candidate has to down load the Hall ticket from the website only. Hall tickets will not be sent to the candidates by post.

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iii) **Date of examination:**

The written examination for recruitment of Chemists will be held on **10-07-2016** at **10 AM to 12 Noon.**

iv) **Examination Centers:** The written examination for recruitment of Chemists will be held at different centers located only in Hyderabad and Secunderabad.

v) **Instructions to Candidates at the time of Written Examination:**

1. The test is of two hours duration. The date and time will be indicated on the Hall ticket. Candidates should reach the test center in time. Candidates will be allowed in to the examination hall half an hour before the scheduled starting time. Candidates will not be allowed into the examination hall after the test has started and will not be permitted to leave examination hall before the closure of test time under any circumstances.
2. The test will be of objective type with multiple-choice questions with only one answer being correct among the four alternatives suggested.
3. A separate O M R (Optical mark Reader) answer sheet with the carbon impression paper will be provided to the candidates. The candidate has to indicate his response to each question by darkening the appropriate bubble with a **Black Ball Point pen.** No corrections with **white fluid** will be permitted.
4. The candidate has to bring a good quality **Black Ball point pen** to the examination hall.
5. The candidate has to handover the original OMR Sheet to the invigilators in the examination centre and is however permitted to take away the **duplicate OMR Sheet** (the carbon impression paper) along with question paper after the examination. If any candidate in violation of the above instructions takes away the original OMR Sheet, his/her candidature to the recruitment will be rejected besides invocation of penal provisions including debarment of the candidature for all future recruitments to be conducted by the TSGENCO.
6. The candidate has to follow meticulously all the instructions given on the question paper booklet and OMR Answer Sheet, else his answer sheet may not be valued.
7. Usage of Calculators/mathematical tables is not permitted. Candidates should not bring cell phones or any other electronic gadgets to the examination hall.

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8. The provisional key will be publicized one day after the examination.
9. If any objections on the provisional key, they can be raised in the website .

PARA-VIII : Procedure for Selection:

- i) The selection of candidates for appointment will be made 100% on written examination. The written test comprising of 100 marks consisting of 100 Multiple choice questions and each question is carrying "One" Mark. The Section-A consisting of 80 questions on core subject of discipline; and the Section-B consisting of 20 questions on General awareness and Numerical ability. The duration of Written Examination will be 120 Minutes (2 hours). The Syllabus for the examination is shown in Annexure-II.
- ii) Only those candidates who qualify in the written examination by being ranked high, community wise will be called for verification of Original Certificates in 1:1 ratio.
- (iii) The minimum qualifying marks in the written test for the above selection process shall be as follows:

OC	-	40%
BC	-	35%
SC/ST	-	30%
PH	-	30%

Note: Mere securing minimum qualifying marks doesn't vest, any right to a candidate for being called for verification of original certificates.

PARA-IX. TERMS AND CONDITIONS OF SERVICE:

1. **Scale of Pay:** Rs. 41155-1700-44555-1985-54480-2280-63600.
2. **Training cum Probation:** The candidates appointed to the post shall be placed on Training-cum-Probation for a period **of 2 years**.
3. **Place of posting:** The candidates appointed shall be required to work in the projects initially for a minimum period of 3 years.
4. The candidate will be governed by the rules and regulations applicable or as framed by the TSGENCO and as amended from time to time. The Tripartite Agreement entered into between the APSEB, Govt of A.P and the Employees Associations is not applicable to these candidates and they shall at no stage be entitled to claim any right what so ever arising out of the said Tripartite Agreement.

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PARA-X:DEBARMENT:

- a) Candidates should make sure of their eligibility to the post applied for and that the declaration made by them in the format of application regarding their eligibility is correct in all respects. Any candidate furnishing in-correct information or making false declaration regarding his/her eligibility at any stage or suppressing any information is liable to be debarred for five years from appearing for any of the examinations conducted by the commission, and summarily rejection of their candidature for this recruitment.
- b) The Penal Provisions of Act 25/97 published in the State Gazette No. 35, Part-IV.B Extraordinary dated: 21/08/1997 shall be invoked if malpractice and unfair means are noticed at any stage of the Recruitment.
- c) The Corporation is vested with the powers under regulations for recruitment and selection as per regulations duly maintaining utmost secrecy and confidentiality in this process and any attempt by anyone causing or likely to cause breach of this constitutional duty in such manner or by such action as to violate or likely to violate the fair practices followed and ensured by the Commission will be sufficient cause for rendering such questionable means as ground for debarment and penal consequences as per law and rules and as may be decided by the Corporation.
- d) Any candidate is or has been found impersonating or procuring impersonation by any person or resorting to any other irregular or improper means in connection with his / her candidature for selection or obtaining support of candidature by any means, such a candidate may in addition to rendering himself/ herself liable to criminal prosecution, will be debarred permanently from any exam or selection held by the TSGENCO.

PARA-XI : TSGENCO DECISION TO BE FINAL:

The decision of TSGENCO in all aspects and all respects pertaining to the application and its acceptance or rejection as the case may be, conduct of examination and at all consequent stages culminating in the selection or otherwise of any candidate shall be final in all respects. TSGENCO reserves its right to alter and modify time and conditions laid down in the notification for conducting the various stages up to selection, duly intimating details thereof to all concerned, as warranted by any unforeseen circumstances arising during the course of this process, or as deemed necessary by TSGENCO at any stage.

Place: Hyderabad
Date:23.05.2016

D.PRABHAKAR RAO
Chairman & Managing Director

ANNEXURE-I

Notification No.03/CGM(Adm,IS&ERP)/2016, dt: 23.05.2016

ZONES	OC		BC-A		BC-B		BC-C		BC-D		BC-E		SC		ST		PH		Total
Z-I	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	G	W	
GR																			
Open	4	3	2	-	1	-	-	-	-	-	-	1	1	1	2	-	1 HH	-	16
Local	9	3	1	1	1	1	-	-	2	-	1	-	2	1	-	1	1 OH	-	24
Z-II																			
Open	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Local	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1

GR- General Recruitment

ANNEXURE-II

SYLLABUS FOR THE POST OF CHEMIST IN TSGENCO:

Section -A Total 80 Marks

1) COORDINATION CHEMISTRY:

Metal - ligands bonding - valance bond - crystal field and molecular orbital theories of stability of coordination compounds - its determination - chelate compounds - Applications of magnetic moment data for the determination of oxidation states, bond type and stereochemistry.

2) ORGANOMETALIC CHEMISTRY:

Chemistry of organo metallic compounds of Li, Na, Mg, Zn, Hg, Al, Pb, Sn

3) BIOINORGANIC CHEMISTRY:

Importance of metal ions in biological systems - Oxygen transport and storage - Structure and function of Haemoglobin and Myoglobin - Vitamin B6 catalyzed reactions - Transamination, Decarboxylation and Dealdolation reactions - Role of metal ion in model system studies.

4) Thermal Methods, AAS, AES, ICP-AES:

Thermal methods of analysis: Thermogravimetry - Differential Thermal Analysis and Differential Scanning Calorimetry, instrumentation - Methodology of TG, DTA and DSC.

Atomic Absorption Spectroscopy (AAS): Principles of AAS, Instrumentation - flame AAS and furnace AAS, resonance line sources, sensitivity and detection limits in AAS, interferences - chemical and spectral, evaluation methods in AAS and application in qualitative and quantitative analysis.

Atomic Emission Spectroscopy (AES): Principles of AES, Instrumentation, evaluation methods, Application in quantitative analysis. Inductively Coupled Plasma - Atomic Emission Spectroscopy (ICP-AES): Limitations of AES, Principles of plasma spectroscopy, plasma as an excitation source. Inductively coupled plasma source, ICP-AES - Instrumentation.

5) QUANTUM CHEMISTRY:

Black body radiation - Planks concepts of quantization, wave particle duality and uncertainty principle, Eigen functions and eigen values, operations - operator algebra, commutation of operators well behaved functions, Normalized and orthogonal function. Particle in a box - one-dimensional and three-dimensional - energy and wave functions of particle in a box - degeneracy application to the spectra of conjugated molecules.

6) THERMODYNAMICS:

First law of thermodynamics and its applications - second law of thermodynamics and its applications - definition of free energy - clapeyron and clausius - clapeyron equations -activity and activity coefficient.

7) CHEMICAL KINETICS;

Collision and transition state theory, Unimolecular reactions and Lindamanns theory, opposing , parallel and consecutive reaction chain reaction, H₂ - Br₂ reactions, its rate law General acid catalysis (hydrolysis of ester) general base catalysis (aldol reaction) enzyme kinetics - Michaelis - Minton Kinetics.

8) ELECTROCHEMISTRY:

Theories of strong electrolytes - interionic interaction and their experimental manifestation - Debye Huckel theory of activity coefficients - measurement of activity coefficient and experimental verification of Limiting law - electrochemical cells and Nernst equation. Origin of back e.m.f. in different type of cells

9) SURFACE CHEMISTRY:

Liquid interfaces - stability of the interface - Gibbs Adsorption equation - surface films and Experimental methods for their study - Gas - solid adsorption isotherms and surface area measurements.

10) SPECTROSCOPY:

Microwave spectroscopy - selection rules, reduced mass bond length rotational spectra of diatomic molecules energy equation. IR: Anharmonic nature of vibration spectra - group frequencies - calculations, of force constant of a diatomic molecules from vibrations spectra - group frequencies - identification of functional groups - hydrogen bonding - Cis - Trans isomerisation. NMR: Basic principle Larmor frequency chemical shift including calculations, spin-spin splitting - first order spectra - double resonance - applications of PMR spectroscopy in structure determination

11) STEREOCHEMISTRY:

Symmetry of molecules and criterion for optical activity different configurationally notations asymmetric induction stereo specific reactions - activity of nitrogen compounds - dynamic enantiomerism conformational analysis of cyclic and acyclic molecules - cis, trans isomerism.

12) REACTION MECHANISM:

Electronic effects, addition to $C=C$ and $C=O$. Aliphatic and aromatic nucleophilic and electrophilic substitution reactions. Neighbouring group participation. Different types of Elimination reaction. Various methods of studying the reaction mechanisms. Generation, detection and stability of reactive intermediates.

13) CARBOHYDRATES:

Structure and configuration of monosaccharides - reducing and non reducing disaccharides - polysaccharides.

14) AROMATICITY:

Criteria - different rules molecular orbital approach - annulenes - aromatic cations and anions - metallocenes - nonbenzenoid aromatics.

15) Introduction to analytical chemistry:

Safety in laboratory; Analytical balances - types, care & use, weights and reference mass; Water for lab use - different grades and methods of purification of water; Reagents and Standard solutions - Expression and units of concentrations, Classification of Errors-Systematic & random errors, identification and reduction of these errors; Significant figures; Qualitative and Quantitative analysis; Statistical functions and reliability of results;

16) Gravimetric analysis and titrimetric analysis:

Principles of precipitation gravimetry; Nucleation, precipitation, and growth of precipitates; Particle size and filterability of precipitates; Precipitation from homogeneous solution; Co precipitation - impurities in precipitation, Washing, drying, incineration of precipitates; Use of organic reagents in Gravimetric analysis
Titrimetric Analysis: Principles underlying titrimetric methods: Primary standards & standards solutions; Equivalence point and endpoint; detection of end point; types of titrations.
Redox titrations: Principle and detection of equivalence point by visual & potentiometric methods. Applications - Use of Jones reductor; Karl Fisher reagent for water determination.
Complexometric titrations: Principles of complexometric titrations, stability constants, Use of EDTA for the determination of metals and practical considerations.

17) Water Technology

Hardness of water - Temporary and permanent Hardness- units. Desalination of Brackish water- Reverse Osmosis and Electro dialysis. Industrial treatment of water- Lime soda ash method-Chemical reaction-problems- zeolite and ion exchange process. Boiler troubles- scale and sludge formation - Caustic Embrittlement and boiler corrosion- Internal conditioning methods- phosphate and carbonate conditioning-priming and Foaming.

18) Fuel Technology

Classification of fuels, characteristics of fuels-calorific value units (lower, higher) and its determination-Bomb calorimetric method. Solid fuels - classification of coal, Rank analysis of coal - proximate and ultimate analysis.

19) Environmental Awareness and Analysis of Air & Water Pollutants

Environmental pollution, atmosphere,-Air pollution, Hydrosphere-Water pollution Lithosphere-soil pollution and their health effects. Air quality standards, sampling, analysis of air pollutants-SO₂, H₂S NO-NO_x CO & CO₂ Hydrocarbons, Aromatic hydrocarbons in automobile exhaust, petrol, air, O₃, particulate matter analysis. Objectives of analysis, sampling, preservation and pre-concentration methods, physical analysis - colour, odour, temperature, pH, EC, redox potential, total dissolved solids, Chemical analysis of anions - CN⁻, Cl⁻, F⁻, NO₂⁻, NO₃⁻, SO₄²⁻, PO₄³⁻. Determination of BOD, COD, TOC & DO Analysis of Toxic Metals: Hg, As, Pb, Cd, Be, Al, Cr.

20) Power Plant Engineering:

Steam Power Plant, Combustion Process, various types of power plants, brief introduction to power plant equipment & machineries such as Boiler, Turbine, Pumps, Fans, Condenser, Heat Exchanger etc., Environmental considerations- Effluents from Power Plants and impact of environment, Pollution and pollution standards-Methods of pollution control.

Section -B Total 20 Marks.

General Awareness and Numerical Ability:

- i) Analytical & Numerical Ability
- ii) General Awareness
- iii) English
- iv) Related to Telangana Culture, Movement
- v) Computer Knowledge