STATE LEVEL POLICE RECRUITMENT BOARD
ANDHRA PRADESH, MANGALAGIRI, GUNTUR DIST.

Rc.No.04/R&T/Rect.1/2020 **Date: 02-11-2020**

State Level Police Recruitment Board, Andhra Pradesh (hereinafter referred to as SLPRB, A.P.) invites applications from the eligible candidates through **ONLINE** mode only in the prescribed proforma to be made available on WEBSITE (www.slprb.ap.gov.in) from **'02-11-2020 at 1100 hours to 22-11-2020 at 1700 hours'** for recruitment to the following posts in Forensic Science Laboratory:-

a) Direct Recruitment:

S.No	Post Code	Name of the Post	No of Vacancies
1	11	Scientific Assistant (Physical)	18
2	12	Scientific Assistant(Chemical)	17
3	13	Scientific Assistant (Biology/Serology)	22
Total			**57**

b) Limited Recruitment:

S.No	Post Code	Name of the Post	No of Vacancies
1	12	Scientific Assistant(Chemical)	01
Total			**01**

2) The number of vacancies indicated is only provisional and is liable for change without giving any notice. SLPRB, A.P., reserves the right to notify the modifications with regard to any aspect of recruitment during the process of recruitment.

The candidate will be required to submit (Upload) a copy of photo, signature, community (for BC/SC/ST candidates belonging to Andhra Pradesh) and other certificates while submitting Online Application Form.

3) The desirous eligible Candidates may apply ON-LINE by satisfying themselves with the terms and conditions of this recruitment. The Candidates applying for Scientific Assistants should select **only one appropriate Post** code i.e. 11 or 12 or 13 basing on their eligibility of educational qualifications. **Submission of more than one application form will be taken as disqualification for eligibility. Selecting multiple codes and submitting multiple applications will be taken as disqualification and such application will be rejected and such persons will not be given any hall ticket Number.**

4) Distribution of vacancies for Direct and Limited recruitment, category-wise is given below:-

a) Direct Recruitment vacancies:-

Post Code	OC		Ex.ser.	BC-A		BC-B		BC-C		BC-D		BC-E		SC		ST		Total
	G	W	G	G	W	G	W	G	W	G	W	G	W	G	W	G	W	
11	6	3	1	--	1	--	1	1	--	--	1	--	--	2	1	--	1	18
12	6	3	1	--	1	--	1	1	--	--	--	--	--	2	1	--	1	17
13	7	3	1	1	1	--	1	1	--	--	1	1	--	2	2	--	1	22

G - General W - Women

b) Limited Recruitment vacancy:-

Post Code	SC	
	G	W
12	01	--

The above limited recruitment vacancies will be filled with the local candidates of the respective community only.

5) The recruitment to the posts of Scientific Assistants are being made as per the provisions of the Andhra Pradesh Police (Forensic Science Laboratory) Rules issued by the Government of Andhra Pradesh in G.O. Ms. No 38 Home (Pol.C) Dept. dated 02-02-1994 and subsequent amendments thereto.

6) The rule of Special representation (reservation) i.e. BC-A, BC-B, BC-C, BC-D, BC-E, SC, ST and Ex. Servicemen provided in Rule-22 of Andhra Pradesh State & Subordinate Service Rules, 1996 will be applicable.

7) Relaxation in upper age limit (as given in para 11 (b) of notification and / or reservation to 'BC-E group' or 'any category in BC-E group' will be subject to the adjudication of the litigation pending before the Honourable Courts. However relaxation in upper age limit (as given in para 11 (b) of notification and / or reservation to 'BC-E group' is applicable to Sl.No.first to the fourteen categories of BC-E group as per the interim order on25-03-2010 in Civil Appeal No(s). 2628-2637 of 2010 of Hon'ble Supreme Court of India. As per the G.O.Ms.No.23, Back Ward Class Welfare Dept., dt: 07.07.2007, the castes mentioned in Sl.No.15 are treated as 'OC' category.

8) **Creamy Layer**:- Candidates belonging to Backward Classes shall submit the Community Certificate to claim age relaxation and the latest Certificate of Non Creamy Layer **issued by the competent authority of Andhra Pradesh State at the time of submission of online application, to claim reservation.** The same Non Creamy Layer certificate must be produced at the time of verification of certificates. **In case of failure to submit the Non-Creamy Layer Certificate at the time of Application submission, the candidature of such person will be considered under "Open Competition", even if otherwise eligible, and the status cannot be changed later, at the candidate's will or choice, in any case**.

a) The candidates belonging to Backward Classes should submit the Community certificate in the format given in Annexure - III to avail relaxation in age. The certificate must have been issued by the competent Revenue authority, in terms of G.O.Ms.No.58 SW (J) Dept., dated 12-05-1997.

b) Only those candidates belonging to Backward Classes who do not belong to 'Creamy layer', as defined in G.O.Ms.No.3, Backward Classes Welfare (C2) Department, dated 04-04-2006 and G.O.Ms.No. 26 Backward Classes Welfare (C) Dept., Dtd: 09.12.2013 will be eligible to avail reservation. They should submit the certificate in the format given in Annexure - IV regarding their exclusion from the Creamy Layer from the competent authority (Tahasildar) along with the Community certificate in the format given in Annexure - III.

c) Candidates belonging to Backward Classes who belong to 'Creamy layer' are eligible to avail relaxation in age but not the quota for reservation. They should submit the Community certificate in the format given in Annexure-III.

Note: Caste & Community certificate issued by the competent authority in terms of G.O.Ms.No.58 SW (J) Dept., dated 12-05-1997 must be submitted compulsorily at the time of submission of online application. As per Andhra Pradesh State and Subordinate Service Rules, Rule-2 (28) Explanation: No person who professes a religion different from Hinduism shall be deemed a member of Schedule Caste. **BCs, SCs & STs belonging to Other States are not entitled for reservation.**

9) **SC/ST Reservation: The candidates belonging to Scheduled Castes and Scheduled Tribes should submit the Community certificate issued by the competent authority of A.P. State at the time of submission of online application, to claim reservation and age relaxation**.

10) The requisite educational qualification, age and procedure to be followed for selection are given below. The candidates must read the instructions given in this notification as well as "instructions for filling the application form" (issued along with the application form) carefully in their own interest. SLPRB shall not be responsible for the candidates not reading the instructions given in this notification and later on making different claims.

11) **Eligibility Conditions:**

a) **Age Limit:** A candidate must not have attained the age of 42 years as on 1st July, 2020 i.e., he/she must have been born not earlier than 2nd July, 1978.

b) **The upper age limit prescribed in Para(a) above will be relaxable as under:**

i) Upto a maximum of 5 (five) years if a candidate belongs to a Backward Class or a Scheduled Caste or a Scheduled Tribe; subject to production / **submission of community certificate at the time of submission of application form as detailed above**.

ii) Length of regular service limited upto a maximum of 5 (five) years if a candidate is an employee of A.P. State Government. It is clarified that (Employees of APSEB, APSRTC, Corporations, Municipalities, Local bodies etc., are not entitled for age relaxation). **Service certificate has to be submitted by eligible candidates claiming age relaxation at the time of submission of application form**.

iii) 3 (three) years in addition to the length of service rendered in the Army, Naval or Air Force of the Union for the candidates who served in the Army, Naval or Air Force of the Union. Ex-servicemen certificate has to be submitted by eligible candidates at the time of submission of application form.

Note: Persons serving in the Armed Forces of the Union, who on retirement from Service, would come under the category of Ex-Servicemen, are permitted to apply for re-employment one year before the completion of the specified terms of engagement and avail themselves of all concessions available to Ex-Servicemen, but shall not be permitted to leave the uniform until they completed the Specified Term of Engagement in the Armed Forces of the Union.

iv) 3 (three) years in addition to the length of service rendered as a whole time Cadet Corps Instructor in NCC, provided the candidate rendered a minimum service of 6 months, as a whole time Cadet Corps Instructor in NCC. **Relevant certificate issued by Competent Authority has to be submitted at the time of application form**.

v) upto a maximum of 3 (three) years if a candidate is a retrenched temporary employee in the State Census Department with a minimum service of 6 months during 1991.

Save as provided above, the age limits prescribed can in no case be relaxed.

NOTE:- The date of birth accepted by the SLPRB is that entered in the Secondary School Certificate or Matriculation or an equivalent examination certificate. No other document relating to age like horoscopes, affidavits, birth extracts from Municipal Corporation, service records and the like will be accepted.

c) As per rule-12(1)(a)(iv) of A.P. State and Subordinate Services Rules, 1996 only citizens of India are eligible.

d) Minimum Educational Qualification:

The Applicants must possess the qualification from a recognized University, as detailed below or equivalent thereto, subject to various specifications, in the relevant service rules under as indented by the department as on the date of the notification:

Post Code No	Name of the Post	Educational Qualifications
11	**Scientific Assistant (Physical)**	Must have passed M.Sc. with I (or) II Division with Physics as the subject (or) Forensic Science with Physics as special subject from any University in India established (or) incorporated by or under a Central Act, (or) Provincial Act or State Act or an Institution recognized by the University Grants Commission (or) an equivalent qualification.
12	**Scientific Assistant (Chemical)**	Must have passed M.Sc. with I (or) II Division with Chemistry (or) Bio-Chemistry as the subject (or) Forensic Science with Chemistry or Toxicology as special subject from any University in India established (or) incorporated by or under a Central Act, or Provincial Act (or) State Act or an Institution recognized by the University Grants Commission (or) an equivalent qualification.
13	**Scientific Assistant (Biology/ Serology)**	Must have passed M.Sc. with I (or) II Division with Biology (or) Zoology (or) Botany (or) Microbiology (or) Bio-Technology (or) Forensic Science with Biology as specialization from any University in India established (or) incorporated by or under a Central Act, (or) Provincial Act or State Act or an Institution recognized by the University Grants Commission (or) an equivalent qualification.

Note: The candidates who possess higher qualification than the prescribed one will also be considered for selection on par with the candidates who possess the prescribed qualification.

e) Medical Standards:

a) Eye Sight: Visual Standards required for the above selection shall be as follows:

	Right Eye	Left Eye
Distant Vision	6/6	6/6
Near Vision	0/5 (Snellen)	0/5 (Snellen)

b) Each eye must have a full field of vision.

c) Colour blindness, squint or any morbid condition of the eye or lids of either eye shall be deemed to be a disqualification.

d) The candidate should possess sound health and be free from any bodily defect or infirmity which will render him unfit.

e) Candidates who have the following ailments or defects will not be considered for recruitment to any post specified in this rule:

i) Physically handicapped / Orthopedically handicapped.

ii) Any other medical condition including hearing defect and abnormal psychological behaviour.

NOTE : In order to prevent disappointment, candidates are advised to have themselves examined by a **Civil Surgeon** before applying for the examination to ensure that they meet the prescribed Physical and Medical Standards.

12) **Fee Structure:**

a) Candidates with local candidature of Andhra Pradesh State belonging to OCs and BCs applying for the Post have to pay a fee of Rs.600/- towards processing of application, written examinations etc. Local candidates of Andhra Pradesh State belonging to SCs and STs have to pay only Rs.300/- and all candidates from other states have to pay Rs.600/-.

b) Mode of Payment of Fee:

Step-I: Candidate has to visit SLPRB Website www.slprb.ap.gov.in to pay prescribed Registration Fee by providing his / her Basic personal details like Name, Father's Name, Date of Birth, Mobile Number, Community and SSC Hall Ticket Number or its equivalent through Credit Card, Debit Card, Net Banking or any other mode made available on the SLPRB Website www.slprb.ap.gov.in.

Step-II: After making Payment, the candidate has to visit the website www.slprb.ap.gov.in to submit the Online Application Form. Even after making payment of fee, if the candidate fails to press 'submit' the Online Application Form, such cases shall be rejected without giving any notice and fee once paid will not be refunded in any case.

13) LAST DATE FOR RECEIPT OF APPLICATIONS: Applications submitted after **1700 hrs on 22-11-2020** will not be accepted. **Incomplete applications and applications without prescribed enclosures will not be entertained.**

14) **CANDIDATES SHOULD ENSURE THEIR ELIGIBILITY FOR THE EXAMINATION:** The candidates applying for the examination should ensure that they fulfil all eligibility conditions for admission to the examination. Their admission at all stages of the examination will be purely provisional and subject to satisfying the prescribed eligibility conditions.

15) **Centres for Written Examination:** The applicant may choose the Exam centre with Five preferences **(i.e. Visakhapatnam, Guntur, Kakinada, Tirupati & Kurnool).** However, the SLPRB, reserves the right to allot the applicant to any centre of examination depending on the availability of the resources like centres.

The registered candidates may download their Hall Ticket from the website, (06) days before the date of Written Test.

16) Candidates have to produce Original documents and other particulars on the day of verification date itself for verification or as and when required and called for. If candidate fails to produce the certificates at the time of verification, and the particulars furnished in the Application form do not tally with the Original documents produced by the candidate, the candidature will be rejected/disqualified without any further correspondence. As candidature for the recruitment is processed through Computer/Electronic devices based on the particulars furnished in the Application Form, the candidate is advised to fill in all the relevant particulars carefully.

17) **Selection Procedure/Scheme:** The Selection Procedure/Scheme of the Exam will be as follows:

A) Written Examination:

Candidates will be required to appear for a written examination for 120 marks. The Questions will be objective in nature and it is for two hours duration. The Question Paper will be in English language only for the post code nos. 11, 12 and 13. The syllabus is given in **Annexure-I**. **The tentative date of written examination is 06-12-2020 from 11 AM to 1 PM.**

Post code	Subject	No. of questions	Max. Marks
11	Scientific Assistant (Physical)	120	120
12	Scientific Assistant(Chemical)	120	120
13	Scientific Assistant (Biology/Serology)	120	120

Note: Candidates will have to answer the questions on OMR answer sheet using Blue / Black Ball Point pen only. For this purpose the pens shall be provided at the examination centers / Halls. Candidates must note that the time of examination, following articles are prohibited to be brought in to exam centers / hall:-

(1) Mobile

(2) Calculator

(3) Watches

(4) Rings / Jewellery

(5) Electronic gadgets

(6) Water bottles

(7) Books / News Papers / Note books / Bags etc.

(8) Any article / object which may be prescribed as prohibited by examination Authority/SLPRB.

(9) In addition to above, Covid-19 measures will be adopted to conduct the written examination and candidates shall comply with the preventive measures as per direction of examination Authority/SLPRB.

The minimum marks to be secured by the candidates in order to qualify in the Written examination is 40% for OCs; 35% for BCs; and 30% for SCs/STs/Ex-Servicemen.

Note: Mere securing of minimum qualifying marks does not confer any right to the candidate for being considered to the selection.

B) Selection: The final selection will be strictly on relative merit of the candidates in each category, obtained by them based on their total score in the written examination (120 marks), duly following the special representation as laid down in Rule 22 and sub rule 2 of Rule 22-A of Andhra Pradesh State and Subordinate Service Rules and as per para 7 above.

18) As per the provisions of "The Andhra Pradesh Public Employment (Organisation of Local cadres and regulation of direct recruitment) Order, 1975", the rule of reservation to local candidates is not applicable except communal categories.

19) (a) As per Rule 13 of A.P. State and Subordinate Services Rules, 1996, Every person appointed to a service, shall, within the period of probation, pass the Language test in Telugu, failing which his probation shall be extended and increments in the time scale of pay shall be postponed without cumulative effect till he/she passes the test.

(b) As per G.O. Ms. No 38 Home (Pol.C) Dept. dated: 02-02-1994, the candidates shall pass Accounts Test for Executive Officers within the period of probation.

20) The quota earmarked for Physically handicapped/Orthopedically handicapped shall be filled with General Category.

21) **Reservation to local candidates:** Reservation to 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 enclose the required Study certificates (from VII class to X class (or) from IV class to X class, in case he/she has not studied from VII class to X class in one particular district). Residence Certificate in the proforma only should be enclosed for those candidates who have not studied in any Educational Institutions.

Note:-The Government of India have issued following Gazette Notification on 09.06.2016 vide No. 404.

G.S.R. 775 (E):- In exercise of the powers conferred by clauses (1) and (2) of article 371 D of the Constitution, the President hereby makes the following Order further to amend the Andhra Pradesh Public Employment (Organisation of Local Carders and Regulation of Direct Recruitment) Orders, 1975, namely:-

1.

i) This order may be called the Andhra Pradesh Public Employment (Organisation of Local Cadres and Regulation of Direct Recruitment) Amendment Order, 2016.

ii) It shall come into force at once.

2. In the Andhra Pradesh Public Employment (Organisation of Local Cadres and Regulation of Direct Recruitment) Order, 1975, in paragraph 7, after sub-paragraph (2) and before the Explanation, the following sub-paragraph shall be inserted, namely:-

> "(3) Notwithstanding anything contained in sub-paragraph (1) or (2), candidates who migrate to any part of the State of Andhra Pradesh from the State of Telangana within a period of Seven years from the 2nd day of June, 2014 shall be regarded as the local candidate in the State of Andhra Pradesh at the place of his residence and be treated at par with the local candidates residing in that area, in accordance with such guidelines as may be issued by the Government of Andhra Pradesh for the purpose of employment."

3. Candidates who migrate from Telangana to Andhra Pradesh between 2nd June, 2014 and 1st June, 2021 (in this case till date of notification) as per terms laid down in circular Memo no.4136/SPF & MC/2015-5, Dated.20.11.2017 of Government of Andhra Pradesh shall obtain the Local Status Certificate from the competent authority and produce at the time of verification.

Definition of local candidate:

(i) "Local Candidate" means a candidate for direct recruitment to any post in relation to that Local area 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 SSC or its equivalent examination. If however, he/she has not studied in any educational institution during the above four years period, it is enough if he/she has resided in that area which is claimed as his/her local area during the above said period.

(ii) In case the candidate does not fall within the scope of the above, it will be considered 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 for 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 are equal such local area where he/she has studied last (in such local area) 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) the place of residence during the above period will be taken into consideration and local candidature determined with the reference to the maximum period of residence or in the case of equal period where he/she has resided last.

(iii) 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 years period i.e., from VII class to X class (or) 7 years period i.e., from IV class to X class, in case he/she is not studied from VII class to X class in one particular district in Annexure-II(A). If, however, it is based on residence, a certificate should be submitted as prescribed in Annexure-II (B) obtained from an officer of the Revenue Department not below the rank of a Mandal Revenue Officer in independent charge of a Mandal.

Note:

a) Single certificate, whether of study or residence would suffice for enabling the candidate to apply as a "Local Candidate"

b) Residence certificate will not be accepted, if a candidate has studied in any educational institution upto SSC or equivalent examination. Such candidates have to produce study certificates only invariably. The candidates, who acquired Degree from Open Universities without studying SSC/Matriculation or equivalent in educational institutions, have to submit residence certificate only.

(iv) If, however, a candidate has resided in more than one Mandal during the relevant four/seven years period but within the same District, separate certificates from the Mandal Revenue Officers exercising jurisdiction have to be obtained in respect of different areas.

Other Conditions:-

22) The persons already in Government Service/Autonomous bodies/Government aided institutions etc., whether in permanent or temporary capacity or as work charged employees are however required to inform in writing, their Head of office/Department that they have applied for this recruitment. These Applicants must enclose the required permission from the Concerned / Competent Authority. Application received without the required permission from Concerned / Competent Authority will only be considered under General category.

23) Candidates who claim reservation as Ex.Servicemen should satisfy the conditions mentioned in Rule 2 (16) of A.P. State and Subordinate Service Rules and having the necessary certificate from the competent authority. These Applicants must enclose the required permission from the Concerned / Competent Authority. Application received without the required permission from Concerned / Competent Authority will only be considered under General category.

24) Incomplete / incorrect application form will be summarily rejected. Applicants should be careful in filling-up the application form and 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.

25) The selection of the candidates will be provisional and subject to verification of the original certificates, antecedents and medically fit in the appropriate medical classification.

26) Board will take finger prints of both left and right thumb of the candidates and photo at the time of written examination.

27) Mere admission to any test or inclusion of a Candidate's name in a Merit List shall not confer on him / her any right for selection / appointment to such service, class or category. The provisional selection of the Candidates to the Posts mentioned in this Notification is subject to several other requirements described below.

28) **Antecedents verification:** As per Rule 12 (1) (a) of A.P. State and Subordinate Services Rules, 1996, No person shall be eligible for appointment to any service by direct recruitment unless he satisfies the selection authority as well as the appointing authority that his character and antecedents are such as to qualify him for such service.

29) **Disqualification for appointment:** The candidates falling under the following categories shall be disqualified for selection/appointment, under the rules.

i) Suppression of material facts (either in the application form or in the attestation form). Suppression of Material fact includes juvenile act, etc.

ii) If the candidate himself or through his relatives or friends or any other has canvassed or endeavoured to enlist extraneous support whether from official or non-official sources for his candidature.

iii) A person (a) who has entered into or contracted a marriage with a person having a spouse living, or (b) who, having a spouse living, has entered into or contracted a marriage with any other person. Provided that the State Government may, if satisfied that such marriage is permissible under the personal law applicable to such person, exempt any person from the operation of this rule.

iv) A person who has been dismissed from the services of a State or Central Government or from the service of any Central or State Government undertaking or local body or other authority.

v) A person who has been convicted for any offence in any court of law.

vi) A person who is involved in an offence involving moral turpitude.

30) In the event of any information being found false or incorrect or ineligibility being detected at any time even after appointment, he / she will be discharged from service forthwith by the appointing authority without giving any notice.

31) **Scale of Pay:** Scientific Assistants (Physical, Chemical and Biology/Serology): Rs.28940 to 78910 **(RPS.2015)**

The employees who are appointed on or after 01-09-2004 are covered by the Contributory Pension Scheme. The existing Pension Scheme as per A.P. Revised Pension Rules, 1980 **will not be applicable to them.**

This office will not entertain any correspondence from any candidate.

32) Check List

a) The candidates are requested to check their eligibility carefully and fill in all the relevant columns in the application form.

b) Copies of the following documents must be enclosed in support of the information given in the application form where necessary. Failure to enclose the same will lead to rejection of the application form.

i) Secondary School/Matriculation certificate or equivalent certificate in support of the date of birth.

ii) Educational Qualification.

iii) Study certificate issued by the school authorities or Residence certificate issued by M.R.O. (Annexure II(A) or Annexure - II (B))

iv) Community/Caste Certificate for BCs: The candidates who wish to claim concession in age and also reservation specified for the Backward Classes should submit the Community certificate in the format given in Annexure - III and also Annexure - IV and the certificate(s) must have been issued by the competent Revenue authority.

v) Community/Caste Certificate for SCs/STs: Community/Caste Certificate in the format given in Annexure - III, if the candidate claims reservation and/ or age concession as SC or ST and the certificate must have been issued by the competent Revenue authority.

vi) Certificate from the competent authority in respect of State Government employees/those who worked in the Army, Naval or Air Force of the Union/ NCC Instructors retrenched temporary employee in the State Census Department claiming age concession.

33) The SLPRB, A.P. reserves the right to take decision regarding conduct of examination and selecting candidates as per rules. The decision of the SLPRB, A.P. shall be final in all respects. Further, SLPRB, A.P. may modify and reschedule the Examination/Test due to unforeseen circumstances. All efforts will be made to intimate any such change to the candidates. However, candidates are also requested to regularly visit the web site and see notifications issued through News papers, TV and other media.

Harish 02/11/20

CHAIRMAN,
STATE LEVEL POLICE RECRUITMENT BOARD,
ANDHRA PRADESH, MANGALAGIRI.

ANNEXURE - I

SYLLABUS FOR WRITTEN EXAMINATION

For post code no. 11 (Physical):-

Mechanics

Vector Analysis

Scalar and vector fields, gradient of a scalar field and its physical significance. Divergence and curl of a vector field with derivations and physical interpretation. Vector integration (line, surface and volume), Statement and proof of Gauss and Stokes theorems.

Mechanics of particles

Laws of motion, motion of variable mass system, Equation of motion of a rocket. Conservation of energy and momentum, Collisions in two and three dimensions, Concept of impact parameter, scattering cross-section, Rutherford scattering.

Mechanics of Rigid bodies

Definition of rigid body, rotational kinematic relations, equation of motion for a rotating body, angular momentum, Euler equations and its applications, precession of a top and Gyroscope

Central forces

Central forces, definition and examples, conservative nature of central forces, conservative force as a negative gradient of potential energy, equation of motion under a central force. Derivation of Kepler's laws.

Special theory of relativity

Galilean relativity, absolute frames. Michelson-Morley experiment, Postulates of special theory of relativity. Lorentz transformation, time dilation, length contraction, addition of velocities, mass-energy relation. Concept of four-vector formalism.

Waves & Oscillations

Simple Harmonic oscillations

Simple harmonic oscillator and solution of the differential equation-Physical characteristics of SHM, torsion pendulum-measurements of rigidity modulus, compound pendulum-measurement of 'g', Principle of superposition, combination of two mutually perpendicular simple harmonic vibrations of same frequency and different frequencies. Lissajous figures.

Damped and forced oscillations

Damped harmonic oscillator, solution of the differential equation of damped oscillator. Energy considerations, comparison with un-damped harmonic oscillator, logarithmic decrement, relaxation time, quality factor, differential equation of forced oscillator and its solution, amplitude resonance and velocity resonance.

Vibrating strings

Transverse wave propagation along a stretched string, general solution of wave equation and its significance, modes of vibration of stretched string clamped at ends, overtones and harmonics. Energy transport and transverse impedance.

Vibrations of bars

Longitudinal vibrations in bars-wave equation and its general solution. Special cases (i) bar fixed at both ends (ii) bar fixed at the midpoint (iii) bar fixed at one end. Tuning fork.

Wave Optics

Aberrations

Introduction - monochromatic aberrations, spherical aberration, methods of minimizing spherical aberration, coma, astigmatism and curvature of field, distortion. Chromatic aberration-the achromatic doublet. Achromatism for two lenses (i) in contact and (ii) separated by a distance.

Interference

Principle of superposition - coherence-temporal coherence and spatial coherence-conditions for interference of light. Fresnel's biprism-determination of wavelength of light -change of phase on reflection. Oblique incidence of a plane wave on a thin film due to reflected and transmitted lights (cosine law) -colors of thin films- Interference by a film with two non-parallel reflecting surfaces (Wedge shaped film). Determination of diameter of wire, Newton's rings in reflected light. Michelson interferometer, Determination of wavelength of monochromatic light using Newton's rings and Michelson Interferometer.

Diffraction

Introduction, Distinction between Fresnel and Fraunhofer diffraction, Fraunhofer diffraction -Diffraction due to single slit - Fraunhofer diffraction due to double slit-Fraunhofer diffraction pattern with N slits (diffraction grating). Resolving power of grating, Determination of wavelength of light in normal incidence position using diffraction grating, Fresnel's half period zones - area of the half period zones - zone plate -comparison of zone plate with convex lens, differences between interference and diffraction.

Polarization

Polarized light: methods of polarization, polarization by reflection, refraction, double refraction, scattering of light-Brewster's law-Mauls law-Nicol prism polarizer and analyzer-Quarter wave plate, Half wave plate-optical activity, determination of specific rotation by Laurent's half shade polarimeter-Babinet's compensator - Linear, elliptical and circular polarization.

Fiber Optics

Introduction- different types of fibers, rays and modes in an optical fiber, fiber material, principles of fiber communication (qualitative treatment only), advantages of fiber optic communication.

Thermodynamics

Kinetic theory of gases

Introduction -Deduction of Maxwell's law of distribution of molecular speeds. Transport phenomena -Viscosity of gases-thermal conductivity-diffusion of gases.

Thermodynamics

Introduction- Second law of thermodynamics, Kelvin's and Clausius statements-Entropy, physical significance -Change in entropy in reversible and irreversible processes-Entropy and disorder-Entropy of Universe-Temperature-Entropy (T-S) diagram- Change of entropy of a perfect gas- change of entropy when ice changes into steam.

Thermodynamic potentials and Maxwell's equations

Thermodynamic potentials-Derivation of Maxwell's thermodynamic relations-Clausius-Clapeyron's equation- Derivation for ratio of specific heats-Derivation for difference of two specific heats for perfect gas. Joule Kelvin effect-expression for Joule Kelvin coefficient for perfect and van der Waal's gases.

Low temperature Physics

Joule Kelvin effect-Porous plug experiment - Joule expansion-Distinction between adiabatic and Joule Thomson expansion-Expression for Joule Thomson cooling-Liquefaction of helium, Kapitza's method- Adiabatic demagnetization, Production of low temperatures.

Quantum theory of radiation

Blackbody-Ferry's black body-distribution of energy in the spectrum of black body-Wein's displacement law, Wein's law, Rayleigh-Jean's law-Quantum theory of radiation-Planck's law-Measurement of radiation-Types of pyrometers-Disappearing filament optical pyrometer-experimental determination - Angstrom pyrheliometer determination of solar constant, Temperature of Sun.

Electromagnetism & Modern Physics

Electric field intensity and potential

Gauss's law statement and its proof- Electric field intensity due to (1) Uniformly charged sphere and (2) an infinite conducting sheet of charge. Electrical potential - equipotential surfaces- potential due to i) a point charge, ii) charged spherical shell and uniformly charged sphere.

Electric and magnetic fields

Biot-Savart's law, explanation and calculation of B due to long straight wire, a circular current loop and solenoid - Lorentz force.

Electromagnetic Induction and Electromagnetic waves

Faraday's law - Lenz's law- Self and mutual inductance, displacement current - Maxwell's equations - Maxwell's plane wave equation, Transverse nature of electromagnetic waves.

Atomic Physics

Drawbacks/limitations of Bohr's atomic model- Sommerfeld's Modification of Bohr's Theory, Sommerfeld's elliptical orbits-relativistic correction.

Wave particle duality and concept of Matter waves, de Broglie's hypothesis - wavelength of matter waves, Davisson and Germer experiment. Heisenberg's uncertainty principle - Complementarity principle of Bohr, X-rays and Lasers Theory.

Nuclear Physics

Basic ideas of nucleus - size, mass, binding energy. Liquid drop model and Shell model (qualitative aspects only) - Magic numbers.

Radioactive decay, Alpha decay, ß-decay, Energy kinematics for ß-decay, neutrino hypothesis.

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For post code no. 12 (Chemical):-

ORGANIC CHEMISTRY

Acyclic Hydrocarbons

Alkanes: preparation: Corey-House reaction, Wurtz reaction, Kolbe synthesis. Chemical reactivity - Halogenation.

Alkenes- Preparation of alkenes (a) by dehydration of alcohols (b) dehydrohalogenation of alkyl halides (c) by dehalogenation of 1,2 dihalides, Zaitsev's rule. Properties: Addition of HX, Markonikov's rule, addition of H_2O, HOX, $H_2SO_4$with mechanism and addition of HBr in the presence of peroxide Oxidation (cis - additions) - hydroxylation by $KMnO_4$, OsO_4, trans addition- peracids , ozonolysis -location of double bond.

Alkynes- Preparation by dehydrohalogenation of vicinal dihalides, dehalogenation of tetrahalides. Physical Properties: Acidity of terminal alkynes . Chemical reactivity - electrophilic addition of X_2, HX, H_2O . Oxidation and reduction Alicyclic Hydrocarbons Nomenclature, preapartion by Freunds method, Dickmann, heating dicarboxylic metal salts. Stability of cycloalkanes - Baeyer strain theory. Conformational structures of cyclohexane.

Aromatic Hydrocarbons

Aromaticity -definition, Huckel's rule - application Reactions - General mechanism of electrophilic substitution, mechanism of nitration, sulphonation, and halogenation, Friedel Craft's alkylation (polyalkylation) and acylation. Orientation of aromatic substitution.

Arenes

Preparation of alkyl benzenes by Friedel Craft's alkylation, Friedel Craft's acylation followed by reduction, Wurtz-Fittig reaction. Chemical reactivity: Ring substitution reactions,side chain substitution reactions and oxidation.

Halogen compounds

Nomenclature and classification. Chemical reactivity - reduction, formation of RMgX, Nucleophilic substitution reactions - classification into SN1and SN2. Mechanism and energy profile diagrams of SN1and SN2reactions. Stereochemistry of SN2 (Walden Inversion) 2-bromobutane, SN1(Racemisation) 1-bromo-1-phenylpropane explanation of both by taking the example of optically active alkyl halide

Alcohols

Preaparation of alchols using Griganard reagent, Ester hydrolysis, Reduction of Carbonyl compounds, carboxylic acids and esters. Physical properties: H-bonding, Boiling point and Solubility. Reactions with Sodium, HX/$ZnCl_2$(Lucas reagent), esterification, oxidation with PCC, alk. KMnO4, acidic dichromates.

Phenols:

Preapartion: (i) from diazonium salts of anilines, (ii) from benzene sulphonicacids and (iii) Cumene hydroperoxide method.Properties: Acidic nature, formation of phenoxide and reaction with R-X, electrophilic substitution nitration, halogenation and sulphonation. Riemer Tiemann reaction, Gattermann-Koch reaction, Azo-coupling reaction, Schotton-Boumann raction.

Ethers and epoxides

Nomenclature, preparation by (a) Williamson's synthesis. Physical properties, Chemical properties -action of conc. $H_2SO_4$and HI

Carbonyl compounds

Nomenclature and isomerism. Preparation of aldehydes & ketones from acid chloride, nitriles, oxidation of arenes. Physical properties - absence of Hydrogen bonding. Keto-enol

tautomerism, polarisability of carbonyl groups, reactivity of the carbonyl groups in aldehydes and ketones. Chemical reactivity: Addition of [a] $NaHSO_3$(b) HCN (c) RMgX (d) NH_3(e) RNH_2(f)NH_2OH(g) $PhNHNH_2$(h) 2,4DNP (Schiff bases). Addition of H_2O to form hydrate addition of alcohols. Base catalysed reactions - Aldol, Cannizaro reaction, Perkin reaction, Benzoin condensation, haloform reaction, Knoevengeal condensation. Oxidation reactions - $KMnO_4$ oxidation , reduction -catalytic hydrogenation, Clemmenson's reduction, Wolf-kishner reduction, reduction with LAH, $NaBH_4$. Analysis - 2,4 -DNP test, Tollen's test, Fehlings test, Scihff'stest, haloform test.

Carboxylic acids

Nomenclature, classification. Preparation a) Hydrolysis of Nitriles, b) Carbonation of Grignard reagent. Oxidation of Arenes. Kolbe reaction. Physical properties- hydrogen bonding, dimeric association, acidity - strength of acids. Chemical properties - Reactions involving H, OH and COOH groups -salt formation, anhydride formation, Acid halide formation, Esterification & Amide formation. Reduction of acid to the corresponding primary alcohol - via ester or acid chloride. Degradation of carboxylic acids by Huns Diecker reaction, Schmidt reaction .Arndt - Eistert synthesis, Halogenation by Hell-Volhard - Zelensky reaction. Carboxylic acid Derivatives - Reactions of acid halides, Acid anhydrides, acid amides and esters

Nitrogen compounds

Nomenclature and classification of nitro hydrocarbons. Preparation, reactivity, Nef reaction, Mannich reaction,Michael addition, Reduction reaction of Nitrobenzenes in different media.

Amines: Nomenclature, classification. Preparation : Gabriel synthesis, Hoffman's bromamide reaction. Physical properties- basic character. Chemical Properties: a) Alkylation b) Acylation c) Carbylamine reaction d) Hinsberg separation, reaction with Nitrous acid. Aromatic amines - Bromination, diazotisation. Synthetic utility of diazonium salts.

Cyanides and isocyanides: Nomenclature and structure. Preparation of cyanides from a) Alkyl halides b) from amides c) from aldoximes. Preparation of isocyanides from Alkyl halides and Amines. 2. Properties of cyanides and isocyanides, a)hydrolysis b) addition of Grignard reagent iii) reduction.

Biomolecules

Carbohydrates : classification, monosaccharide, structures of pentose and hexose's.
anomeric carbon, mutarotation, simple chemical reactions of glucose, disaccharides :
reducing and non reducing sugars-sucrose, maltose and lactose, polysaccharides :
elementary idea of structures of starch and cellulose;
Proteins : amino acids, peptide bond, polypeptides, proteins, structure of proteins -
primary, secondary, tertiary structure and quaternary structures (qualitative idea only),
denaturation of proteins; enzymes. Hormones - Elementary idea excluding structure.
Vitamins - Classification and functions.
Nucleic Acids: DNA and RNA.

Polymers: Classification of polymers, General method of polymerization addition and condensation, free radical, cationic and anionic polymerization, copolymerization, natural rubber, vulcanization of rubber, synthetic rubbers.

Basics of drugs and formulation analysis : Weights, balances, importance of analysis, quality control and quality assurance, analytical methods (classification, validation parameters), requirements - chemicals (types, purification, checking purity), glass wares (types, calibration, cleaning), sampling techniques, sampling error minimization. Units of concentrations. Errors science, errors minimization.

INORGANIC CHEMISTRY

Chemical bonding

Molecular orbital theory: Shapes and sign convention of atomic orbitals. Modes of overlapping. Concept of σ and π bonds. LCAO concept. Types of molecular orbitals-bonding, antibonding and non bonding. MOED of homo nuclear diatomics - H_2, N_2, O_2,O^{2-} ,O_2^{2-},F_2(unhybridized diagrams only) and hetero nuclear diatomics CO, CN^-,NO, NO^+ and HF. Bond order, stability and magnetic properties

s-block elements

General Characteristics of groups I and II elements, Diagonal relationship between Li and Mg, Be and Al.

p-block elements

Group-13: Synthesis and structure of diborane ,Boron nitrogen compounds ($B_3N_3H_6$and BN),

Group 14: Carbides-Classification - ionic, covalent, interstitial - synthesis. Industrial application. Silicones - Preparation - a) direct silicon process b) use of Grignard reagent Classification - straight chain, cyclic and cross-linked.

Group-15: Synthesis of ammonia. Oxy acids of nitrogen and phosphorous

Group 16: Manufacture of H_2SO_4, oxy acids of sulphur.

Group 17: Inter halogens-classification- general preparation- structures of AB,AB_3, AB_5 and AB_7type and reactivity. Comparison of Pseudo halogens with halogens. Chemistry of Zero group elements

General preparation, structure, bonding and reactivity of Xenon compounds - Oxides, Halides and Oxy-halides.

Chemistry of d-block elements

Characteristics of d-block elements with special reference to electronic configuration variable valence, ability to form complexes, magnetic properties &catalytic properties. Stability of various oxidation states and comparative treatment of second and third transition series with their 3d analogues.

Chemistry of Lanthanides:

Electronic structure, oxidation state, ionic and atomic radii- lanthanide contraction- cause and consequences, -complex formation. Magnetic properties-. Colour and spectra, Chemistry of actinides- electronic configuration, oxidation state, actinide contraction, colour and complex formation. Comparison with lanthanides

Theories of bonding in metals

Valence bond theory, Explanation of metallic properties and its limitations, Free electron theory, Band theory, formation of bands, explanation of conductors, semiconductors n-type and p-type, extrinsic & intrinsic semiconductors, and insulators

Coordination Compounds-

Coordination complexes. IUPAC Nomenclature Werner's theory, Sidgwick's EAN rule and limitations. Valence bond theory (VBT) - postulates and application to (a) tetrahedral complexes $[Ni(NH_3)_4]^{2+}$, $[NiCl_4]^{2-}$ and $[Ni(CO)_4]$ (b) octahedral complexes $[Fe(CN)_6]^{4-}$, $[Fe(CN)_6]^{-3}$, $[FeF_6]^{4-}$, $[Co(NH_3)_6]^{3+}$, $[CoF_6]^{3-}$. Limitations of VBT, Isomerism in coordination compounds, stereo isomerism -(a) geometrical isomerism in (i) square planar metal complexes of the type$[MA_2B_2]$, $[MA_2BC]$, $[M(AB)_2]$, $[MABCD]$. (ii) Octahedral metal complexes of the type $[MA_4B_2]$, $[M(AA)_2B_2]$, $[MA_3B_3]$ using suitable examples, (b) Optical isomerism in (i). tetrahedral complexes [MABCD], (ii). Octahedral complexes $[M(AA)_2B_2]$, $[M(AA)_3]$ using suitable examples. Structural isomerism: ionization, linkage, coordination ligand isomerism using suitable examples.

Cements

Introduction, Classification of cement and properties, chemical composition of cement, Standards, Manufacturing of Portland cement, chemical constituents of Portland cement, Setting and hardening of cement, PCC & RCC.

PHYSICAL CHEMISTRY

Atomic structure and elementary quantum mechanics

Planck's radiation law, De Broglie's hypothesis. Heisenberg's uncertainty principle, Schrodinger's wave equation and its importance. Physical interpretation of the wave function, significance of Ψ and Ψ^2. Schrodinger wave equation for H-atom. (no derivation)

Gaseous State

Deviation of real gases from ideal behavior. van der Waals equation of state. The van der Waal's equation and critical state. Relationship between critical constants and van der Waal's constants. The law of corresponding states, reduced equation of states. Joule Thomson effect and inversion temperature of a gas. Liquifaction of gases: i) Linde's method based on Joule Thomson effect ii) Claude's method based on adiabatic expansion of a gas

Dilute Solutions & Colligative Properties

Dilute Solutions, Colligative Properties, Raoult's law, relative lowering of vapour pressure, molecular weight determination. Osmosis-determination of molecular weight from osmotic pressure. Elevation of boiling point and depression of freezing point. Derivation of relation between molecular weight and elevation in boiling point and depression in freezing point. Experimental methods for determining various colligative properties. Abnormal molar mass, Van't hoff factor, degree of dissociation and assocoation of solutes.

Solid state Chemistry

Symmetry elements in crystals , Law of rationality of indices. Definition of space lattice, unit cell. Bravais Lattices and Seven Crystal systems (a brief review). X-ray diffraction by crystals; Bragg's equation. Miller indices.

Symmetry of molecules

Symmetry operations and symmetry elements in molecules. Definition of Axis of symmetry types of Cn, Plane of symmetry (σh, σv, σd) Center of symmetry and improper rotational axis of symmetry (Sn).

Phase Rule

Meaning of the terms - Phase, Component and degrees of freedom, Gibb's Phase rule, phase equilibria of one component system - water system.

Colloids& surface chemistry

Definition of colloids. Classification of colloids. Solids in liquids (sols): preparations, Protective action. Hardy-Schultz law, Gold number. Liquids in liquids(emulsions): Types of emulsions, preparation and emusifier. Liquids in solids(gels); Classification, preparations and properties, General applications of colloids. Adsorption: Types of adsorption, Factors influencing adsorption. Freundlich adsorption isotherm. Langmuir theory of unilayer adsorption isotherm. Applications

Chemical Equillibrium:

Equilibrium in physical and chemical processes, dynamic nature of equilibrium, law of mass action, equilibrium constant, factors affecting equilibrium- Le Chatelier's principle, ionic equilibrium- ionization of acids and bases, strong and weak electrolytes, degree of ionization, ionization of poly basic acids, acid strength, concept of pH, Henderson

Equation, hydrolysis of salts (elementary idea), buffer solution, solubility product, common ion effect (with illustrative examples

Electrochemistry & EMF

Electrical transport - conduction in electrolyte solutions, specific conductance and equivalent conductance, measurement of equivalent conductance, variation of specific and equivalent conductance with dilution. Migration of ions and Kholrausch's law, Arrhenius theory of electrolyte dissociation and its limitations, weak and strong electrolytes, Ostwald's dilution law, Debye-Huckel-Onsagar's equation for strong electrolytes (elementary treatment only). Transport number, determination by Hittorf's method. Applications of conductivity measurements: Determination of degree of dissociation, determination of Ka of acids, determination of solubility product of a sparingly soluble salt, conductometric titrations. Nernst equation, cell EMF and single electrode potential, standard Hydrogen electrode - reference electrodes (calamel electrode) - standard electrode potential, sign conventions, electrochemical series and its significance. Applications of EMF measurements, Determination of pH quinhydrone electrode, Solubility product of AgCl. Potentiometric titrations.

Chemical Kinetics

Introduction , rate of reaction, variation of concentration with time, rate laws and rate constant. Specific reaction rate. Factors influencing reaction rates: effect of concentration of reactants, effect of temperature, effect of pressure, effect of catalyst with simple examples, order of reaction. First order reaction, derivation of equation for rate constant. Characteristics of first order reaction. Units for rate constant. Half-life period, graph of 1^{st} order reaction, examples. Decomposition of H_2O_2. Pseudo first order reaction, Hydrolysis of methyl acetate, Second order reaction, derivation of expression for 2^{nd} order rate constant, examples-Saponification of ester, $2O_3 \rightarrow 3O_2$, $C_2H_4+H_2 \rightarrow C_2H_6$. units for rate constants, half-life period and second order plots.

Thermodynamics

A brief review of -Energy, work and heat units, definition of system, surroundings. I law of thermodynamics statement, extensive properties and intensive properties, state function, path functions Work of expansion and heat absorbed as path function. Expression for work of expansion, Heat changes at constant pressure and heat changes at constant volume. Enthalpy. Heat capacities at constant pressure and constant volume. Derivation Cp-Cv = R. Isothermal adiabatic processes. Reversible and irreversible processes. Reversible change and maximum work. Derivation of expression for maximum work for isothermal reversible process. Internal energy of an ideal gas. Joules experiment and Joule-Thompson coefficient. Adiabatic changes in ideal gas P-V curves for isothermal and adiabatic processes. Kirchhoff's equation and problems. Limitations of I law and need for II law. Statement of II law of thermodynamics. Cyclic process. Heat engine, Carnot's theorem, Carnot's cycle.

Entropy: Definition from Carnot's cycle. Entropy as a state function. Entropy as a measure of disorder. Sign of entropy change for spontaneous and non-spontaneous processes & equilibrium processes. Entropy changes in i). Reversible isothermal process, ii). reversible adiabatic process, iii). phase change, iv). reversible change of state of an ideal gas. Entropy of mixing, inert perfect gases. Free energy Gibb's function (G) and Helmholtz'sfunction (A) as thermodynamic quantities. Concept of maximum work and net work ΔG as criteria for spontaneity.

Analytical Chemistry:

Analytical Techniques: Introduction Types of analysis - Physical, Chemical and instrumentation. Physical analysis - Specific gravity, Melting point, Boiling point, Crystallization. Purification of compounds etc. Chemical analysis - Quantitative and Qualitative analysis of organic and inorganic compounds. Instrumental analysis - Spectroscopic, Chromatographic PH measurement, Conductivity, Turbidity etc

Volumetric analysis (Titrimetric analysis) :

Acid-base titrations: Relative strength and its effect on titration, common ion effect, pH, Henderson-Hesselbach equation, buffers, neutralization curve, acid bas indicators, theory of indicators, back titrations, biphasic titrations, pharmacopoeial applications, hydrolysis of salts, ionic products of water and law of mass action; Redox titrations : Theory of redox titrations, redox indicators, types of redox titrations, iodometry, cerrimetry, mercury metry, diazotization nitrite titrations, 2,6-dichlorophenol indophenol titrations, titration curve and calculations of potentials during course of titrations.; Argentometric or precipitation titrations : Mohrs, Fajans and Volhard methods; Nonaqueous titrations : Nonaqueous solvents, titrants and indicators. Differentiating and leveling solvents.; Complexometric titrations : Theory of the titrations, titrant, indicators and pharmacopoeial applications.; Miscellaneous titrations : Karl-Fischer titrations, Kjeldahl method.

Gravimetric analysis: Stability, solubility products, types of precipitations, precipitation techniques, pharmacopoeial applications

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For post code no. 13 (Biology/Serology):-

Cell Biology

Ultrastructure of prokaryotic and eukaryotic cell, Structure and functions of cell organelles.

Cell division - Mitosis and Meiosis. Chromosomes - Structure, Karyotype.

Genetics

Mendelian principles, Gene Interaction, Linkage and Crossing over, Multiple alleles (Human blood groups), Sex determination, Sex linked inheritance, Mutations - Genetic and chromosomal (Structural and numerical); Chromosomal aberrations in humans. Recombination in prokaryotes - transformation, conjugation, transduction, sexduction. Extra genomic inheritance. DNA finger printing

Molecular Biology and Genetic Engineering

Structure of eukaryotic gene, Structure of DNA and RNA, DNA replication in prokaryotes and eukaryotes, Transcription and translation in prokaryotes and eukaryotes, Genetic code. Regulation of gene expression in prokaryotes, Principles of recombinant DNA technology. DNA vectors, Transgenesis. Applications of genetic engineering.

Bio molecules

Structure and functions of Carbohydrates, proteins and amino acids, lipids, vitamins and porphyrins. Enzymes - classification and mode of action, enzyme assay, enzyme units, enzyme inhibition, enzyme kinetics, Factors regulating enzyme action.

Techniques

Microscopy - Light and Electron, Centrifugation, Chromatography, Eletrophoresis, Calorimetric and Spectrophotometric techniques for the quantification of DNA, RNA, and protein, Blotting techniques, PCR.

Microbiology

Introduction to microbiology, Sterilization techniques, Different methods for isolation of microorganisms.

Outlines of Structure, Nutrition and Reproduction of Eukaryotic microbes (Algae, Fungi, Mycolplasm) Prokaryotes (Bacteria, Cyanobacteria). Virus: Viral diseases - common cold, Typhoid, Cholera, Ring worm, Candidiosis.

Biotechnology

Plant and animal cell culture, cloning, Fermentors types and process, Biopesticides, Biofertilizers, Bioremediation, Renewable and non - renewable energy resources, Non-conventional fuels.

Nutrition

Biological values of carbohydrates, proteins and fats. Carbohydrate and protein malnutrition, disorders, Chemistry and physiological role of vitamins and minerals in living systems.

Metabolism

Metabolism of carbohydrates, lipids, proteins, aminoacids and nucleic acids. Biological oxidation and bioenergetics.

Immunology

Types of immunity, cells and organs of immune system, Antigen - antibody reaction.

Immunotechniques, Hypersensitivity, Hepatitis B, AIDS. Vaccines.

Plant Science

Structure of root, stem and leaf of a flowering plant. Plant physiology Water relations, Mineral nutrition, Photosynthesis, Phytohormones.

Animal Science

Biology of Non chordates and chordates, Embryology of chordates, Parasites of human importance - Entamoeba histolytica, Plasmodium vivax, Taenia solium, Ascaris lumbricoides, Wuchereria bancrofti.

Physiology

Structure and functions of liver, lungs (exchange and transport of respiratory gases), heart and kidney. Composition of blood, blood coagulation, Biochemical tests for the identification of blood, Digestion and absorption, Endocrinology, Muscle - structure and contraction and Nervous system..

Environment and wild life

Ecological pyramids, Biogeochemical cycles - Nitrogen, Carbon and Phosphorus. Ecological adaptations - pelagic, volant, fossorial, cursorial, desert, parasitic. Climatic and edaphic and biotic factors. Ecological sucession - Hydrosere and xerosere, Natural resources, Biodiversity, current environmental issues, Environmental pollution - air, water, soil, sound pollution, Globlal warming, depletion of ozone and climate change. Importance of wild life species in ecosystem, Endangered and rare species, Wild life Management, Different methods of killing and poaching of the wild life animals.

Evolution

Theories and evidences of organic evolution, Hardy - Weinberg law. Sympatric and allopatric speciation. Evolution of man.

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ANNEXURE - II (A)

SCHOOL STUDY CERTIFICATE

Name of the student:

Father's Name:

Class	Name and Place of School	District	Duration of study Giving month & year
IV			
V			
VI			
VII			
VIII			
IX			
X or SSC			

Note: Should be obtained from the Educational Institutions(s)

Name of the School(s):

Village / Town:

Mandal:

District:

Station:

Date:

Signature of the Head of the
Educational Institute (s) with seal

ANNEXURE - II (B)

CERTIFICATE OF RESIDENCE

(To be produced by such candidates who have not studied in any educational Institution During the whole/part as case may be of the relevant 4/7 years period but claim to be local candidates by virtue of residence for which there is reservation for local candidates.)

(a) It is hereby certified that Sri/Smt./Kum_____-Son/daughter/wife of_____ Appeared for the first time for the Matriculation (S.S.C.) Examination in_____ (Month)_____(Year).

(b) that he/she has not studied in any educational Institution during the whole or part* of the 4/7 consecutive academic years ending with the academic year in which he/she first appeared for the aforesaid examination.

(c) That in the 4/7 years immediately preceding the commencement of the aforesaid examination he/she resided in the following place/places namely;

Sl.No.	Village	Mandal	District	Period
01				
02				
03				
04				
05				

Office Seal:

Station:
Dated:

Officer of Revenue Department not below the rank of M.R.O. holding independent Charge of a Mandal.

* Strike off whole/part as the case may be.

ANNEXURE - III

FORM FOR COMMUNITY, NATIVITY AND DATE OF BIRTH CERTIFICATE

Serial No.

S.C.
S.T.
B.C.

District Code:
Mandal Code:
Village Code:

Certificate No:

COMMUNITY, NATIVITY AND DATE OF BIRTH CERTIFICATE

1) This is to certify that Sri/Smt./Kum_____Son/ Daughter of Sri _____ of Village/Town_____ Mandal _____ District _____ of the State of Andhra Pradesh belongs to _____Community which is recognized as S.C./S.T./B.C. Sub-group_____.

   The constitution (scheduled Castes) Order, 1950
   The Constitution (Scheduled Tribes) Order, 1950

   G.O. Ms. No. 1793, Education, dated 25-09-1970 as amended from time to time (BCs)/S.Cs, S.T. list(modification) order, 1956 S.Cs and S.Ts (Amendment) Act, 1976.

2) It is certified that Sri/Smt./Kum_____ is a native of _____ Village/Town _____ Mandal _____ District of Andhra Pradesh.

3) It is certified that the place of birth of Sri/Smt./Kum _____ is _____ Village/Town _____ _Mandal _____ District of Andhra Pradesh.

4) It is certified that the date of birth of Sri/Smt./Kum _____ is day _____ Month _____ Year _____ (in words) _____ as per the declaration given by his/her/father/Mother/guardian and as entered in the school records where he/she studied.

Signature:
Date:
Name in Capital Letters:
Designation:

(Seal)

Explanatory Note:- While mentioning the community, the competent the sub-caste (in case of Scheduled Castes) and sub-tribe or sub-group (in case of Schedules Tribes) as Listed out in the S.Cs and S.Ts (Amendment) Act, 1976.

ANNEXURE-IV

APPLICATION CUM CERTIFICATE TO DECIDE THE CREAMY LAYER STATUS OF A PERSON BELONGING TO BC/OBC CATEGORY

1. Name of the Applicant:
2. Date of Birth:
3. Caste and Group:
   (Certificate issued by the competent authority should be enclosed)
4. Religion:
5. Address:

   a) Present Address: _____
   _____
   _____
   _____

   b) Permanent Address: _____
   _____
   _____
   _____

6. Occupation of the Applicant:
7. Name of the Father:
8. Date of Birth of Father:
9. PAN No. /TAN No. of the Father:
10. Name of the Mother:
11. Date of Birth Mother:
12. PAN No. /TAN No. of the Mother:
13. Aadhar Number of the application:

OCCUPATION/INCOME/WEALTH STATUS OF PARENTS AND FAMILY

A) Constitutional posts

		Father	Mother
i)	Holding/held any Constitutional Post		
ii)	If Yes, Name of the post holding/ held		

B) Government Employment

i)	Holding/held any Government Employment		
ii)	If yes, Employment under Central Govt./ State Govt. / Public Sector Undertaking		
iii)	Designation of Initial appointment		
iv)	Status of initial appointment (Group -I or II or III or IV)		
v)	Designation of Present post held and status of the post		
vi)	If the initial appointment is of Group II Category and the individual was Promoted to group-I category, date Of Promotion and age at which Promoted to Group-I category		

C) Military/Paramilitary forces

i)	Designation of the Post holding or held	
ii)	Is the Post holding or held is equivalent to Colonel or above	

D) Land holdings possessed by the family (Father, Mother and unmarried children)

i) Extent of double crop irrigation land

ii) Extend of single crop irrigated land

iii) Extend of unirrigated/dry land

iv) Nature of Crops / Plantations raised

v) If the entire land Possessed by the Family is irrigated land, does the Extent of irrigated land exceed 85% Of the Ceiling limit as per Land Ceiling Act.

vi) If the land Possessed by the family is both irrigated and un irrigated land and after conversion of un irrigated land into irrigated land on the basis of conversion formula, does the extent of irrigated land so obtained exceed 80% of the Ceiling Limit as per Land Ceiling Act.

vii) If the Plantations like Rubber, Coffee, Tea etc. are raised, annual income from them during last three years.

E) Income from other sources - Private employment, Professional Services, Business, Commerce, Rents etc.

i) Sources of income to the Family with full detail of source:

Private employment

Professional Service

Business

Commerce

Rents

Other

ii) The annual income during last three years year wise:
(enclose income tax returns)

F) Wealth Tax for having vacant land / or building(s) in urban areas and urban agglomeration

i) Location of property and value

ii) Details of Property

iii) Use to which it is put

iv) Whether wealth Tax is being paid and Tax Paid annum

DECLARATION BY THE APPLICANT AND PARENTS OF THE APPLICANT

It is certified that the above mentioned particulars are true to the best of our knowledge and belief.

Signature of Mother **Signature of the Father** **signature of the Applicant**

CERTIFICATE BY THE ISSUING AUTHORITY

The particulars mentioned above have been verified and found that

a) The applicant does not come under creamy layer of BCs/OBCs under any of the categories.

b) The applicant comes under creamy layer of BCs/OBCs under the category of _____ (A/B/C/D/E/F) mentioned above.

Note: Strik off (a) or (b) whichever is not applicable, otherwise the certificate will be treated as rejected.

Signature of the Issuing Authority