APEAPCET2022

(Engineering, Agriculture and Pharmacy Common Entrance Test- 2022)
Conducted by
JNT University Anantapur,Ananthapuramu
onbehalf of
Andhra Pradesh State Council for Higher Education (APSCHE)

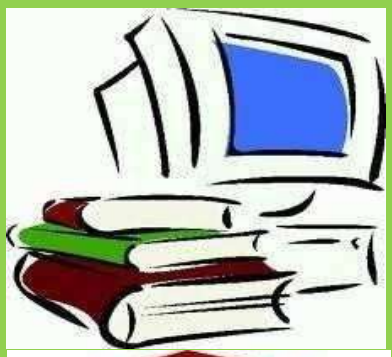
DatesofExamination: 04-07-2022to12-07-2022
(9.00A.M.to12.00P.M.& 3.00 P.Mto6.00P.M)

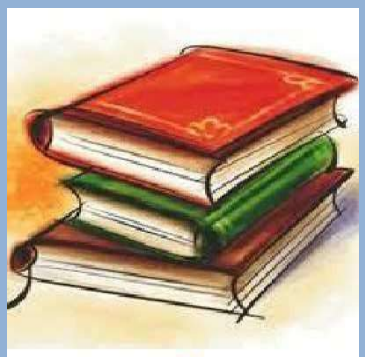
INSTRUCTIONBOOKLET

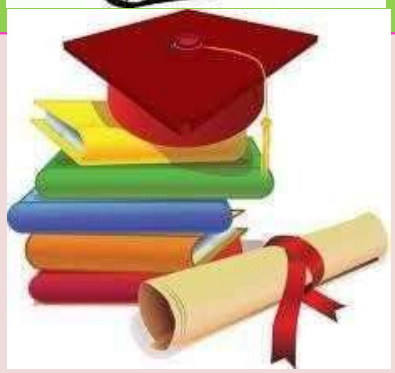
AGRICULTUREANDPHARMACY

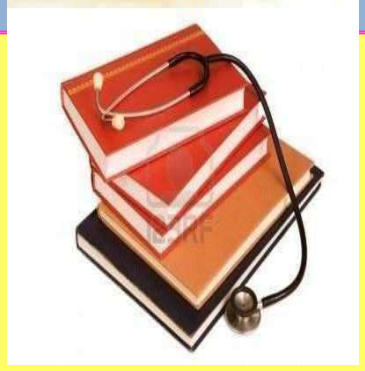
ENGINEERING, AGRICULTURE&PHARMACYCOMMONENTRANCETEST

JNT University AnantapurAndhraPradeshStateCouncilofHigherEducation
AnanthapuramuTadepalli,GunturDistrict.









AGRICULTUREANDPHARMACY

ENGINEERING, AGRICULTURE&PHARMACYCOMMONENTRANCETEST
(beingconducted by JNTUA onbehalfofAPSCHE)

APEAPCET-2022

FORENTRANCETESTRELATINGTOPROFESSIONAL COURSESIN

A) B.Sc.(Ag.)/B.Sc.(Hort.)/B.V.Sc.&AH/B.F.Sc./B.Tech.(FST)/B.Sc.(CA&BM)
B) B.Pharm./B.Tech.(Bio-Technology)(Bi.P.C.)
C) Pharm-D(Bi.P.C)

Note: Informationabout theEntrancetestisalsoavailableintheWebsitehttps://cets.apsche.ap.gov.in.

LASTDATESFORSUBMISSIONOFONLINE APPLICATION	
WITHOUTLATEFEE	**10-05-2022**
WITHLATEFEERs.500/-	**20-06-2022**
WITHLATEFEERs.1000/-	**25-06-2022**
WITHLATEFEERs.5000/-	**01-07-2022**
WITHLATEFEERs. 10000/-	**03-07-2022**

AddressforCorrespondence:

CONVENER, AP EAPCET - 2022 FIRST FLOOR, ADMINISTRATIVE BUILDINGJAWAHARLALNEHRUTECHNOLOGICALUNIVERSITYANANTAPUR

ANANTHAPURAMU – 515002

ANDHRAPRADESH

APEAPCET -2022 (AGRICULTURE&PHARMACY)

A Common Entrance Test designated as "Engineering, Agriculture & Pharmacy CommonEntranceTest"(APEAPCET–2022)willbeconductedby JNTUniversity Kakinada,KAKINADAfortheacademicyear2022-2023foradmissionintotheFirstYearofProfessional Courses i.e.i) B.Sc.(Ag.) / B.Sc.(Hort.) / B.V.Sc. & AH / B.F.Sc. / B.Tech. (FST) /B.Sc.(CA&BM),ii) B.Pharm/B.Tech.(Bio-Technology) (Bi.P.C.)&iii)Pharm-D(Bi.P.C)

I. PARTICULARSOFAPEAPCET –2022

❖ The Test will be conducted from**04-07-2022 to 12-07-2022 in two sessions every dayi.e.9.00 A.M. to12.00**P.M. and 3.00 P.M to 6.00 P.M duringOnline Testmode only.

❖ The question paper consists of a total of 160 questions comprising of 80questions in Biology (Botany-40, Zoology-40), 40 questions in Physics, and 40 questions inChemistry.

❖ All questions are of objective type (multiple choice) only and each question carries onemark. The syllabus in Mathematics, Physics, and Chemistry is furnished in Annexure-I. Themodelquestions are given in Annexure-II.

❖ Asample/mocktestwillbeavailableonhttps://cets.apsche.ap.gov.in.websiteforpractice purpose and to give the candidate a look and feel of the On-Line (Computer Based)Examination.

II. ELIGIBILITYTOAPPEAR FOR APEAPCET –2022

Candidates satisfying the following requirements shall be eligible to appear for AP EAPCET-2022:

1. Candidates should be of Indian Nationality or Persons of Indian Origin (PIO) / OverseasCitizenofIndia(OCI) CardHolders.

2. Candidates should belong to the state of Andhra Pradesh / Telangana. The candidatesshould satisfy Local / Non-Local status requirements as laid down in the Andhra Pradesh /Telangana. Educational Institutions (Regulation of Admission) order, 1974 as subsequentlyamended(SeeAnnexureIII).

3. Candidateshouldobtainatleast45%marks(40%incaseofcandidatebelongingtoreservedcategory) in thesubjects specifiedtakentogether in thequalifyingexamination.

4. For B.V.Sc. & A.H. / B.Sc. (Ag) / B.Sc. (Hort) / B.F.Sc. / B.Tech. (FS&T)courses:Candidatesshouldhavepassedintermediateexamination

(10+2 pattern)oranye xamination recognizedasequivalenttheretobytheBoardofIntermediate Education, Andhra Pradesh/ Telangana, with any two / three of the subjectsindicatedagainst each course,noted below. However, the candidates who have appeared for the Final Year Intermediate Examination (10+2 Pattern) and who are awaiting their results may also apply for APEAPCET 2022, but their ranks obtained in APEAPCET 2022 will be valid only if they pass the Intermediate Examination.

Withanytwoofthe subjects:

a)B.Sc.(Ag.)	I. PhysicalScience II. BiologicalorNaturalSciences III. Agriculture IV. VocationalCourseinAgriculture
b)B.Sc.(Hort)	I. PhysicalScience II. BiologicalorNaturalSciences III. Agriculture IV. VocationalCourseinAgriculture
c)B.V.Sc.&A.H	I. Physicalsciences II. BiologicalorNaturalSciences III. Vocational Courses in VeterinarySciences
d)B.F.Sc	I. PhysicalSciences II. BiologicalorNaturalSciences III. VocationalCoursesinFisherySciences
e)B.Tech.(FS&T)	I. Mathematics II. Physical Sciencesor I. PhysicalSciences II. BiologicalorNaturalsciences
f)B.Pharmacy&Pharm-D	I. Mathematics II. Physical Sciencesor I. PhysicalSciences II. BiologicalorNaturalsciences

Note: i) Irrespective of the subjects taken at the qualifying examination, candidates seekingadmission to the above courses should appear for Biology, Physics, and Chemistry in APEAPCET-2022. (AP Category).

ii) Candidates should have completed 17years of age as of 31st December of the year ofadmission (2022) and an upper age limit of 22 years for all the candidates and 25 years inrespectof SC/STcandidates asof 31stDecemberofthe year ofadmission (2022).

ForB. PharmCourse:

i. Candidatesshouldhavepassedtheintermediateexamination (10+2 pattern) with Biology, Physics, and Chemistry as options, conducted bytheBoardofIntermediate Education, Andhra Pradesh/ Telangana as equivalent.However, the candidates who have appeared for the Final Year Intermediate Examination (10+2 Pattern) and who are awaiting their results may also apply for APEAPCET 2022, but their ranks obtained in APEAPCET 2022 will be valid only

if they pass the Intermediate Examination.

Candidates should have completed 16 years of age by the date of commencement ofadmission or on such other date as may be notified by the CET committee. There is no upperagelimit.

ForB.Tech.(Bio-Technology)Course:

Candidates should have passed the intermediate examination(10+2 pattern) with Biology, Physics, and Chemistry as options. However, the candidates who have appeared for the Final Year Intermediate Examination (10+2 Pattern) and who are awaiting their results may also apply for APEAPCET 2022, but their ranks obtained in APEAPCET 2022 will be valid only if they pass the Intermediate Examination.

ForPharm-DCourse:

i. CandidatesshouldhavepassedIntermediateExamination (10+2 pattern) with Physics, Chemistry, and Biology as optional conducted bythe Board of Intermediate Education, Andhra Pradesh / Telangana or any other examinationrecognizedbytheBoardofIntermediateEducation,AndhraPradesh/TelanganaasequivalenttheretoorshouldhavepassedorappearedatthefinalyearofthediplomaexaminationinpharmacycourseconductedbytheAndhraPradesh/TelanganaStateBoardof Technical Education and Training or any other examination recognized as equivalent.However, the candidates who have appeared for the Final Year Intermediate Examination (10+2 Pattern) and who are awaiting their results may also apply for APEAPCET 2022, but their ranks obtained in APEAPCET 2022 will be valid only if they pass the Intermediate Examination.

ii. The candidates should have completed 17 years of age as of 31st December of the year ofadmission(2022)to theabovecourse.

III. GENERALINFORMATION/INSTRUCTIONS:

a) The Convener, AP EAPCET – 2022 reserves the right to reject the application of thecandidateat anystage, if:

(I) TheOnline ApplicationFormisincomplete.

(II) Thecandidatefails to satisfytheeligibilityconditions.

(III) Anyfalseorincorrectinformation isfurnished.

(IV) TheOnlineApplicationFormissubmittedafterthe duedate.

(V) Nocorrespondence willbe entertainedinthisregard.

a) TheConvenerisnotresponsiblefornon-receiptofapplicationbythenotifieddateandtimeforanyreason.

IV. MEDIUM OFENTRANCETEST:

The question paper contains questions in the “English” and “Telugu” medium only.

Candidates,who have studied thequalifying examination in Urdu mediumand wishtoavailassistancefortranslatingthe questions into Urdu,**willbeallotteda**

TestCentreatKurnool only.In case of ambiguity in the Telugu Question, the Question given in English shall be taken as final.

V. REGISTRATIONFEE:

Payment of Registration Fee for submission of Online Application Form is the first step andtheRegistrationFeeisRs.600/-forstudentsbelongingtothe opencategory(forSC/STCandidatesRs500/-andforBCCandidatesRs550/-) whichhastobepaidthroughthefollowingmodes:

a) APONLINE/TSONLINE

b) CREDITCARD/DEBITCARD/NETBANKING

VI. SAME CENTRE FOR CANDIDATES APPEARING FOR BOTH ENGINEERINGAND AGRICULTURE & PHARMACY: Candidates of E – Category who are eligible anddesirous of taking the test in AP- Category, in addition to the test for E - Category should**select the option Both (E & AP Category) together,** during the submission of the OnlineApplication Form, so that same Test Centre can be allotted to them for both the tests. If thisinstruction is not followed, the candidate may be allotted different Test Centers for E &APcategory tests, and Convener, AP EAPCET- 2022 is not responsible for the allotment of differentcenters.

VII**REGIONAL CENTERS**

District	RC1	RC2	RC3
Anakapalle	Anakapalle		
Anantapur	Ananthapuramu	Gooty	Tadipatri
Annamayya	Madanapalle	Rajampet	
Bapatla	Bapatla	Chirala	
Chittoor	Chittoor		
East Godavari	Rajahmundry		
Eluru	Eluru		
Guntur	Guntur		
Kakinada	Kakinada		
Konaseema	Amalapuram		
Krishna	Gudlavalleru	Machilipatnam	
Kurnool	Kurnool	Yemmiganur	
Nandyal	Nandyal		
NTR	Mylavaram	Tiruvuru	Vijayawada
Palnadu	Narasaraopeta		
Prakasam	Markapuram	Ongole	
Sri Potti Sriramulu Nellore	Kavali	Nellore	
Sri Sathya Sai	Puttaparthi		
Srikakulam	Srikakulam	Tekkali	

Tirupati	Puttur	Tirupati	Gudur
Visakhapatnam	Anandapuram	Gajuwaka	Visakhapatnam
Vizianagaram	Rajam	Bobbili	Vizianagaram
West Godavari	Tadepalligudem	Bhimavaram	Narasapuram
YSR Kadapa	Kadapa	Proddatur	
Hyderabad	LB Nagar	Nacharam	Secunderabad

Note: 1.The Convener reserves the right to add or delete some online Test Centers from thelistof Regional Centers notified.

2. The Convener reserves the right to allot the candidates to any online Test Centre otherthan that opted bythecandidates.
3. Candidatehastosubmitnotmorethanoneapplicationeitherfor"E"or"AP"or"E&AP" category test.If any candidate submits more than one application for one category, theConvener reserves theright to reject all theapplications or accept anyoneofthem.

VIII. SUBMISSION OFONLINEAPPLICATIONFOR APEAPCET–2022

Applicationsshouldbesubmittedthrough Onlinemodeonly.

The following information must be kept ready for filling the details during Onlinesubmission:

a. HallticketNumberof QualifyingExamination
b. HallticketNumberofS.S.C.orequivalent
c. DateofBirth
d. Castein caseofSC/ST/BCcandidates
e. AadharNumber
f. PH, NCC, Sports,etc.
g. IncomeUptoOne LakhorUptoTwo LakhsorMorethanTwoLakhs (Rupees)
h. RationCard
i. Studyor Residenceor relevant certificate forproofoflocal status(last12years)

Onlinesubmission:

For Online submission, visit the website https://cets.apsche.ap.gov.in.A candidate has to payRs.600/- as Registration Fee (for SC/ST Candidates Rs 500/- and for BC Candidates Rs 550/-)and late fee (if applicable) by opting any of the following two modes of payment: (a) APONLINE / TS ONLINE (b) Debit / Credit Card / Net Banking. After filling out the OnlineApplication Form with the required details, the candidate is required to verify all the detailscarefully and press Submit button. Filled in Online Application Form will be generated whichcontains Registration Number along with filled in details. The candidate is required to takea printoutof the FilledInOnline ApplicationFormanditis tobe submitted tothe Invigilatorduring the examination **after affixing a recent color photograph duly attestedby theGazetted Officer or Principal of the College where studied qualifying examination.** Thecandidateshould usetheRegistration Number forfuturecorrespondence.

Mere appearance and qualifying at AP EAPCET-2022 do not confer any right foradmissionintoprofessionalcourses.The candidatehastofulfilltheeligibilitycriterialaiddownintherelevant G.O atthetimeofadmission.

IX. QUALIFYINGMARKSFORAPEAPCET–2022

The qualifying percentage of marks for the AP EAPCET-2022 is 25% of the maximum marksconsidered for the ranking. However, for candidates belonging to Scheduled Caste and ScheduledTribe, no minimum qualifying mark is prescribed. But their admission will be limited to theextentofseatsreservedforsuchcategories(videG.O.Ms.No.179,LEN&TE,dated16.06.1986).

X. APEAPCET-2022RESULTS

1. **Evaluation:**Everycarewillbetakentoavoiderrorsintheevaluation,checking,scrutiny, tabulation,normalizationandranking.
2. **Ranking:**

a. Candidates shall be ranked based on the EAPCET normalized marks (75% weightage) and10+2(25%weightage)intheorderofmeritasexplainedinAnnexure-IVandAnnexure-V.

b. The rank obtained in AP EAPCET-2022 is valid for admission to the courses mentioned in theapplication form fortheacademicyear 2022-2023 only.

c. The rankcardshallbedownloadedfromthewebsitehttps://cets.apsche.ap.gov.in.

d. Rank obtained with the benefit of relaxation of the minimum qualifying marks at APEAPCET-2022 by any candidate claiming as SC/ST Category will be canceled in case theclaim is found to be invalid at the time of admission to any course of study in anyparticipatingUniversity/Institution.

***Note: 25% weightage to Intermediate (10+2) marks will be based on the decision ofthe APState Government.**

XI. The candidates should preserve the Filled In Online Application Form, the Hall TicketandtheRankCard to producethem whencalled forverification.

XII. Any malpractice in AP EAPCET-2022 will be dealt with as per rules in force videG.O.Ms.No: 114, Edn / (IE) Dt: 13th May1997 for theCET.

XIII. In any litigation concerning AP EAPCET-2022 Test, Convener is the person to sue andbe sued. The Convener (Examination), AP EAPCET – 2022 is not responsible for the allotment ofseats at the time of admissions. The Commissioner of Technical Education, Andhra Pradesh istheConvenerfortheAdmissions.

XIV. AnylitigationconcerningAPEAPCET-

2022shallbesubjecttothejurisdictionoftheA.P.HighCourt,Amaravathionly.

XV. HALLTICKET

The candidate should download the Hall Ticket from website

XVI. https://cets.apsche.ap.gov.in.COUNSELLINGAND ALLOTMENTOFSEATS

The list of institutions for allotment of candidates with intake in each discipline and category,as per reservations through AP EAPCET–2022 would be released in the**InformationBooklet** for Counseling in due course and the same information would also be released on the website**https://cets.apsche.ap.gov.in.**

IMPORTANTINSTRUCTIONSTOCANDIDATES

1. **Materialtobe broughtonthedate ofexamination**

Hall Ticket along with Filled in Online Application Form with duly affixed recent colorphotograph attested by Gazetted Officer (or) Principal of the College where the candidate hasstudied the qualifying examination. However, the Signature of the candidate and Left HandThumb impression in the presence of the Invigilator are to be captured in the respective placesprovidedin the Filled inOnline Application form.

2. **Otherimportantinstructions**

a. Hall ticket issued to the candidate is an important document. Candidates are required topreserveit carefully.

b. Hall ticket is not transferable. Any tampering of Hall Ticket will automatically lead to thedisqualificationofthecandidate

c. Candidates shall arrive at the online examination center 2 hours before commencement of theexamination. This will enable the candidate to familiarize himself/herself with the onlineexaminationprocess.

d. Candidate is not allowed even late by One Minute from the commencement of the onlineexamination.

e. The candidate does not have the option of choosing a specific date/session to appear for the APEAPCET- 2022 entrance examination. This information is known to him/her only afterdownloading Hall Ticket. For any reason, if the candidate fails to appear in the given slot, he/sheistreatedasabsent.

f. Candidatesarerequiredtobringthefollowingtothe onlineexamination center:

i) Hall Ticket, ii) Filled in Online Application Form, iii) A good Ball Point Pen (for roughwork, working sheets will be provided by the Test Centre), and iv) **Attested copy** of Castecertificate**(in caseofSC/ST category candidatesonly)**.

g. Candidates are not allowed to carry any textual material, Calculators, DocuPen, Slide Rules,Log Tables, Electronic Watches with facilities of calculator, printed or written material, bitsof papers, mobile phone, pager or any other device, except the Hall Ticket, document asrequired under point no. 2.(e) inside the Examination Room/Hall. If any candidate is inpossession of any of the above items, his/her candidature will be treated as an unfair means andhis/her currentexaminationwillbe canceled& he/shewillalsobe debarredfor futureexamination(s)&the equipmentwill beseized.

GUIDE LINES TO CANDIDATES

1. PleasechecktheHallticketcarefullyforyour Name,DateofBirth,Gender,Category,TestCentreName, Date,and Timeofexamination.
2. Candidates are advised to reach the venue at least 2 hours before the examination tocomplete the frisking and registration formalities well before the time. The registration desk willbeclosed 05 minutes before theexamination.
3. The candidate must show, on demand, the Hall Ticket for admission in the examinationroom/hall. A candidate who does not possess the Hall Ticket issued by the Convener, APEAPCET-2022, shall not be permitted for the examination under any circumstances by theCentreSuperintendent.
4. No candidate, under any circumstances, will be allowed to enter the Examination Centreafterthe commencement of theexamination.
5. A seat indicating the Hall Ticket number will be allocated to each candidate. Candidatesshould find out and occupy their allotted seats only. Any candidate found to have changedroom or the seat on his/her own other than allotted, his/her candidature shall be canceled andno pleawould beacceptedforit.
6. The candidate should ensure that the question paper is available on the computer in EnglishandTelugu languagesonly.
7. No Candidate will be allowed to carry any baggage inside the Examination Centre. TheConvener, AP EAMPET-2022 will not be responsible for any belongings stolen or lost at thepremises.
8. Smoking andeating arestrictlyprohibitedintheexaminationroom.
9. Tea, coffee, cool drinks or snacks are not allowed to be taken into the examination roomsduringexaminationhours.
10. Approach the Centre Superintendent/Invigilator in the room for any technical assistance,first aid emergency,oranyother information duringtheexamination.
11. Nocandidate,withoutthespecialpermissionoftheCentreSuperintendentortheInvigilator concerned, will leave his/her seat or Examination Room until the full duration ofthe Examination. Candidates must follow the instructions strictly as instructed by the CentreSuperintendent/Invigilators.
12. For any queries or issues regarding computer-based examination, the candidates maycontact helpline numbers which will be available onthe https://cets.apsche.ap.gov.inwebsite.

INSTRUCTIONS FOR ONLINE (COMPUTER BASED) EXAMINATION

The On-Line (Computer Based) Examination will be conducted as per the followingschedule.

1. ThetestwillstartexactlyatthetimementionedintheHallTicketandanannouncementtothis effect will be madebytheinvigilator.
2. The Entrance test is conducted for a duration of 3 hours and the question paper consists ofa total of 160 questions comprising of 80 Biology (Botany-40, Zoology-40), 40 questions in Physics, and40questions in Chemistry.All questions arehavingequalweightage.
3. Thereis onlyonecorrectresponse foreach question out offourresponsesgiven.
4. There is no negative marking and No deduction from the total score will be made if noresponseis indicated foraquestion.
5. All calculations/writing work is to be done only in the rough sheet provided at the centerand on completion of the test candidates must hand over the rough sheets to the invigilator ondutyin theRoom/Hall.The candidates shall write their Hall Ticket number on the rough sheets used by them.
6. During the examination time, the invigilator will check the Hall ticket of the candidate tosatisfyhimself/herself about theidentityof eachcandidate.
7. The candidates are governed by all Rules and Regulations of the Convener, EAPCET-2022with regard to their conduct in the Examination Hall. All cases of unfair means will bedealtwith asperrules.
8. Thecandidatesmustsignandgivehis/herLeft-HandThumbimpressionontheAttendanceSheet at the appropriateplace.

ThefollowingProforma I,IIandIIIaretobesubmitted atthetimeofcounselingto claimnativity,communityandlocal status.

PROFORMA–I

REVISED PROFORMAAS PER G.O.Ms.No.58, SOCIAL WELFARE (J) DEPT.DATED12.05.1997ANDHRAPRADESHGAZETTEEXTRAORDINARYPA RT-I

SerialNo. **FORM III**

S.C. DistrictCode:

S.T. Emblem MandalCode:

B.C. VillageCode:

CertificateNo.:

COMMUNITY,NATIVITYANDDATEOFBIRTHCERTIFICATE
(IntegratedCommunityCertificate)

1. ThisistoCertifythatSri/Smt/Kum_____
Son/DaughterofSri_____ofvillage/Town _____Mandal_____ District of the state of Andhra Pradesh /Telanganabelongsto_____
_____CommunitywhichwasrecognizedasSC/ST/BCunder
The Constitution (Scheduled Caste) Order,
1950TheConstitution(ScheduledTribes)Order,1950
G.O.Ms.No.1793, Education, dated 25.09.1970 as amended from time to time BCs, SCs, STslist(Modification) Order1956,SCs andSTs (Amendment)Act, 1976.

2. Itis to certifythat Sri/ Smt / Kum_____isanativeof _____ Districtof AndhraPradesh / Telangana

3. Itis tocertifythatdateofbirth ofSri /Smt /Kum_____is Day_____Month_____Year_____(inwords _____)
as per the declaration given by his /her Father / Mother / Guardian and as entered in theschoolrecordswherehe/she studied

Signature
Date
(Seal) **Namein Capitalletters:**
Designation:

ExplanatoryNote:
1)Whilementioningthecommunity,thecompetentAuthoritymust mentionthesub-caste(incase of SCs) and Sub-Tribe or Sub- Group (in case of STs) as listed out in the SCs and STs(Amendment)Act,1976.

PROFORMA–II

RESIDENCECERTIFICATEINSUPPORT OFAPPLICATION

1. Itis herebycertified

a. ThatSri/Smt/Kum_____ son/daughterof Sri/Smt._____acandidateforadmissiontothecourseappearedforthefirst timeforthe_____

_____examination(beingtheminimumqualifyingexaminationfor admissionto thecoursementioned above)in_(month)

_____(year).

b. Thatinthe7years,immediatelyprecedingthecommencementoftheaforesaidexamination he/she has resided in the following place/places falling within the area inrespectof theAU/OU/SVUregion (Tickappropriateone).

S.No.	Period	Village	Mandal	District
1				
2				
3				
4				
5				
6				
7				

2. The above candidate is, therefore, a local candidate in relation to the area specified inParagraph3(1)(2)(3)oftheAndhraPradeshEducationalInstitution(RegulationofAdmissions)Order 1974asamended.

Officer of the Revenue Department(Issuedbythecompetentauthorityof RevenueDept.)

Date: (OFFICESEAL)

PROFORMA–III

CERTIFICATESINSUPPORTOFNON-LOCALSTATUSFORE–CATEGORY

(A) Certificatetobefurnishedwhenthecandidatehasresidedinthestateforaperiodof10years(ReadInstructio nsunder3(a)ofAnnexure(III)ofInstructionBookletofadmission)

Thisisto certifythat Mr./Kum. _____
Son/DaughterofSri./Smt._____
acandidateseekingadmissionintoprofessionalcourses(Engineeringstream&AgriculturalandPharmacystre am)throughAPEAPCET2022fortheAcademicYear2022-23isaresidentof
_____(Place)in_____
_____(District)ofAndhraPradesh/Telanganaforatotalperiodof10yearsfromtheyear__
_____to_____excludingtheperiodsofstudyoutsidethestate.

Place: **SignatureoftheCompetent**
Date: **AuthorityfromRevenueDept.**
OfficeSeal:

(B) Certificate to be furnished when either of the parents of the candidate has resided in the state for aperiodof10years.(ReadInstructionsunder3(b)ofAnnexure(III)ofInstructionBookletofadmission)
Thisisto certifythatSri/Smt.
_____,Father/Motherof_____
_____
acandidateseeking
admissionintoprofessionalcourses(Engineeringstream&AgriculturalandPharmacystream)
throughAPEAPCET 2022fortheAcademicYear 2022-23,isaresidentof
_____(Place)in
_____(District)ofAndhraPradesh/Telanganaforatotalperiodof10yearsfr omtheyear_____to__excludingtheperiodsof studyoutside thestate.

Place: **SignatureoftheCompetent**
Date: **AuthorityfromRevenueDept.**
OfficeSeal:

(C) Certificatetobefurnishedwhentheparent/ spouseisanemployeeoftheStateorCentralGovernment or Quasi-GovernmentOrganization.
(ReadInstructionsunder3(c)and3(d)ofAnnexure(III)ofInstructionBookletofadmission)
This is tocertifythatSri/Smt._____
Father/Motherof_____
acandidateseekingadmissionintoprofessionalcourses(Engineeringstream&AgriculturalandPharmacystre am)throughAPEAPCET2022forthe Academic Year 2022-23, is presentlyemployed in Andhra Pradesh State in the Organizationfrom_____tillto-date.ThisOrganizationisaState/Central/QuasiGovernmentOrganizationintheStateofAndhraPradesh /Telangana.

Place: **SignatureoftheCompetent**
Date: **AuthorityfromRevenueDept.**
OfficeSeal:

ANNEXURE-I

APEAPCET– 2022 SYLLABUS

NOTE

- InaccordancetoG.O.Ms.No:16Edn.,(EC)Dept.,Dt:25thFeb‟04,AP EAPCETCommitteehasspecifiedthesyllabus of APEAPCET-2022 as givenhereunder.
- In view of the Covid Pandemic situation Board of Intermediate Education reduced syllabus/topics to the tune of 30% at both First year and Second year level. Hence the AP EAPCET 22 Examination will beconductedwith30%reductionin both firstyear andSecond yearSyllabus.
- The details of the syllabus in which the exam will be conducted and arefurnishedbelowforthe convenienceof students.
- The syllabus is applicable to students of both the current and previous batches of IntermediateCourse,who desire to appearforAPEAPCET-2022.

SUBJECT:BOTANY

UNIT-I: DIVERSITYINTHE LIVINGWORLD:
The living world: What is living? Diversity in living world, Taxonomiccategories.
BiologicalClassification:Kingdom Monera, KingdomProtista,Kingdom Fungi,Kingdom Plantaeand Kingdom Animalia, Six kingdomclassification,Viruses,Viroids,Prions &Lichens.
Science ofplants–Botany: Origin, Development,Scope ofBotanyand BranchesofBotany.
Plant Kingdom:Algae, Bryophytes, Pteridophytes,Gymnosperms.

UNIT-II: STRUCTURALORGANISATIONINPLANTS-MORPHOLOGY:
Morphologyof flowering Plants: The root, The stem, The Inflorescence, The flower

UNIT-III: REPRODUCTION INPLANTS:
SexualReproduction in Flowering Plants:Pre-fertilization structures and events, Pollination, Pollen-pistil interaction, Double fertilization, Postfertilization structures and events, Apomixis and polyembryony.

UNIT-IV: PLANTSYSTEMATICS:
Taxonomyofangiosperms:Systems, Types ofclassification, Semi- Technicaldescription ofatypical flowering plant, DescriptionofFamilies:Solanaceaeand Liliaceae.

UNIT-V: CELL STRUCTURE ANDFUNCTION:
Cell- TheUnitofLife: What is a Cell?Celltheory, an overviewofthecell, Prokaryotic cells, Eukaryoticcells,
Biomolecules: How to analyze chemical composition, Primary and secondary metabolites, Biomacromolecules, Proteins, Polysaccharides, Nucleic acids, Structure of Proteins, Nature of Bond linking Monomers in a polymer, Dynamic state of body constituents-concept of metabolism, metabolic basis for living, The living state.
Cellcycleand CellDivision:Cellcycle, M phase, Significance of Mitosis, Meiosis, significance of Meiosis.

UNIT-VI: INTERNAL ORGANISATION OF PLANTS:
HistologyandAnatomyofFloweringPlants:Anatomy ofDicotyledonous and Monocotyledonous plants.

UNIT-VII: PLANT ECOLOGY:
EcologicalAdaptations,Succession and EcologicalServices:Introduction.Plantcommunities andEcologicaladaptations:Plantsuccession. Ecological services

UNIT-VII: PLANT PHYSIOLOGY
Transportin Plants:MeansofTransport, Plant-WaterRelations, LongDistance TransportofWater-Transpiration, Uptake and transport ofMineral NutrientsIons,Phloemtransport:Flowfrom Sourceto Sink
Enzymes:ChemicalReactions,EnzymaticConversions, NatureofEnzymeAction,Factors Affecting Enzyme Activity,Classification and NomenclatureofEnzymes, Co-factors.
Photosynthesis inHigherPlants: What do we know? Early experiments, What is siteofPhotosynthesis, How many Pigments are Involved in Photosynthesis, What is LightReaction?,TheElectron Transport, Where are the ATP and NADPH used?, The C4 Pathway, Photorespiration, Factors affecting Photosynthesis.
Respiration of Plants: Do plants breathe? Glycolysis, Fermentation, AerobicRespiration, The RespiratoryBalanceSheet,Amphibolic Pathway, RespiratoryQuotient.
Plant Growth and Development: Plant GrowthRegulators

UNIT-IX:MICROBIOLOGY:

Bacteria: Morphology ofBacteria, Bacterial cellstructure,Nutrition, Reproduction,TheimportanceofBacteriato Humans.

Viruses: Discovery, Classification of Viruses, structure of Viruses, Multiplication of Bacteriophages,ViraldiseasesinPlants,Viraldiseasesin Humans.

UNIT- X: GENETICS:

PrinciplesofInheritanceand Variation:Mendel'sExperiments,Inheritanceofone gene (Monohybrid Cross), Deviations from Mendelianconceptofdominance, Inheritanceoftwogenes(Dihybrid cross), Chromosomal theory of Inheritance, Linkage and Recombination, Mutations.

UNIT- XI: MOLECULARBIOLOGY:

MolecularBasisofinheritance:TheDNA, The SearchforGenetic Material, RNAWorld,Replication, Transcription, GeneticCode, Translation, Regulation of GeneExpression.

UNIT-XII: BIOTECHNOLOGY

Principlesand Processesof Biotechnology:PrinciplesofBiotechnology, Tools ofRecombinantDNATechnology,Processesof RecombinantDNATechnology

Biotechnologyanditsapplications:BiotechnologicalApplicationsinAgriculture,Otherapplications ofBiotechnology, Transgenic plants, Bio-safetyand Ethicalissues

UNIT-XIII:

PLANTS, MICROBES AND HUMAN WELFARE

Strategiesforenhancementinfoodproduction:PlantBreeding,Tissue Culture.

Microbesin Human Welfare:MicrobesinHouseholdProducts,MicrobesinIndustrialProducts, Microbes in SewageTreatment,Microbesin Production ofBiogas, Microbes asBiocontrolAgents, Microbes asBiofertilisers,Challengesposed byMicrobes.

SUBJECT:ZOOLOGY

UNIT-1: ZOOLOGY - Diversity of Living World:
What is life?; Nature, Scope & meaning of zoology; Branches of Zoology; Need for classification- Zoos as tools for study of taxonomy; Basic principles of Classification: Biological system of classification- (Phylogenetic classification only); Levels or Hierarchy of classification; Nomenclature - Bi &Trinominal; Species concept; Kingdom Animalia; Biodiversity- Meaning and distribution, Genetic diversity, Species diversity, Ecosystem diversity(alpha,beta and gama), other attributes of biodiversity, role of biodiversity, threats to biodiveristy, methods of conservation, IUCN Red data books, Conservation of wild life in India -Legislation, Preservation, Organisations, Threatened species.

UNIT-2: STRUCTURAL ORGANIZATION IN ANIMALS:
Levels of organization, Multicellularity: Diploblastic & Triploblastic conditions; Asymmetry,Symmetry: Radial symmetry, and Bilateral symmetry (Brief account giving one example for each type from the representative phyla); Acoelomates, Pseudocoelomates and Eucoelomates: Schizo&Entero coelomates (Brief account of formation of coelom); Tissues: Epithelial, Connective, Muscular and Nervous tissues.

UNIT-3: ANIMAL DIVERSITY-I: INVERTEBRATE PHYLA:
General Characters –Classification up to Classes with two or three examples – (Brief account only). Porifera; Cnidaria; Ctenophora; Platyhelminthes; Nematoda; Annelida (Include Earthworm as a type study adhering to NCERT text book); Arthropoda; Mollusca; Echinodermata; Hemichordata.

UNIT-4: ANIMAL DIVERSITY-II: PHYLUM: CHORDATA:
General Characters – Classification up to Classes - (Brief account only with two or three examples). Phylum: Chordata; Sub phylum: Urochordata; Sub phylum: Cephalochordata; Sub phylum : Vertebrata; Super class: Agnatha, Class Cyclostomata; Super class: Gnathostomata, Super class pisces, Class: Chondricthyes, Class: Osteichthyes; Tetrapoda, Class: Amphibia (Include Frog as a type study adhering to NCERT text book), Class: Reptilia, Class: Aves, Class: Mammalia.

UNIT-5: LOCOMOTION & REPRODUCTION IN PROTOZOA:
Locomotion: Definition, types of locomotor structures pseudopodia (basic idea of pseudopodia without going into different types), flagella & cilia (Brief account giving two examples each); Flagellar& Ciliary movement- Effective & Recovery strokes in Euglena, Synchronal &Metachronal movements in Paramecium; Reproduction: Definition, types. Asexual Reproduction: Transeverse binary fission in Paramecium & Longitudinal binary fission in Euglena. Multiple fission, Sexual Reproduction.

UNIT-6: BIOLOGY IN HUMAN WELFARE:
Parasitism and parasitic adaptation; Health and disease: introduction; Life cycle, Pathogenecity, Treatment & Prevention (Brief account only) 1. *Entamoebahistolytica*2. *Plasmodium vivax*3. *Ascarislumbricoides*4. *Wuchereriabancrofti*; Brief account of pathogenecity, treatment & prevention of Typhoid, Pneumonia, Common cold, & Ring worm; **Tobacco**, Drugs and Alcohol abuse.

UNIT-7: ECOLOGY & ENVIRONMENT:
Organisms and Environment: Ecology, population, communities, habitat, niche, biome and ecosphere (definitions only); Ecosystem: Elementary aspects only, Abiotic factors- Light, Temperature & Water, (Biological effects only),Ecological adaptationsPopulation interactions Population attributes: Growth, Natality and Mortality, Age distribution, Population regulation;

UNIT-8: HUMAN ANATOMY AND PHYSIOLOGY-I:

Breathing and Respiration: Respiratory organs in animals; Respiratory system in humans; Mechanism of breathing and its regulation in humans - Exchange of gases, transport of gases and regulation of respiration, Respiratory volumes; Respiratory disorders: Asthma, Emphysema, Occupational respiratory disorders - Asbestosis, Silicosis, Siderosis, Black Lung Disease in coal miners.

UNIT-9: HUMAN ANATOMY AND PHYSIOLOGY-II:

9-A) Body Fluids and Circulation: Lymphatic system, Clotting of blood; **Circulating pathways,** Human circulatory system - structure of human heart and blood vessels; Cardiac cycle, cardiac output, double circulation, regulation of cardiac activity; Disorders of circulatory system: Hypertension, coronary artery disease, angina pectoris, heart failure.

9-B) Excretory products and their elimination: Modes of excretion- Ammonotelism, Ureotelism, Uricotelism, Human excretory system - structure of kidney and nephron; Urine formation, osmoregulation; Regulation of kidney function -Renin-Angiotensin - Aldosterone system, Atrial Natriuretic Factor, ADH and diabetes insipidus; Role of other organs in excretion; Disorders: Uraemia, renal failure, renal calculi, nephritis, dialysis using artificial kidney.

UNIT-10: HUMAN ANATOMY AND PHYSIOLOGY-III:

10-A) The Muscle - ultra structure; Contractile proteins & muscle contraction,

10-B) Neural control and co-ordination: Nervous system in human beings - Central nervous system, Peripheral nervous system and Visceral nervous system, Generation and conduction of nerve impulse;

UNIT-11: HUMAN ANATOMY AND PHYSIOLOGY-IV:

11-A) Endocrine system and chemical co-ordination: Endocrine glands and hormones; Human endocrine system - Hypothalamus, Pituitary, Pineal, Thyroid, Parathyroid, Adrenal, Pancreas, Gonads; Mechanism of hormone action, Role of hormones as messengers and regulators; Hypo and Hyper activity and related disorders: Common disorders - Dwarfism, acromegaly, cretinism, goiter, exophthalmic goiter, diabetes, Addison's disease, Cushing's syndrome.

11-B) Immune system: Basic concepts of Immunology - Types of Immunity - Innate Immunity, Acquired Immunity, Active and Passive Immunity, Cell mediated Immunity and Humoral Immunity, **Vaccination or Immunization, Immunological disorders**, , HIV and AIDS.

UNIT-12: HUMAN REPRODUCTION:

12-A) Human Reproductive System: Male and female reproductive systems; Microscopic anatomy of testis & ovary; Gametogenesis, Spermatogenesis & Oogenesis; Menstrual cycle; Fertilization, **Gastrulation,** Embryo development upto blastocyst formation, Implantation; Pregnancy, placenta formation, Parturition, Lactation.

12-B) Reproductive Health: Need for reproductive health and prevention of sexually transmitted diseases (STD); Birth control - Need and methods, contraception and Pharmacy termination of pregnancy (MTP); Amniocentesis; infertility and assisted reproductive technologies - IVF-ET, ZIFT, GIFT.

UNIT-13: GENETICS:

Heredity and variations. Mendel's laws of inheritance with reference to *Drosopila*(*Drosophila melanogaster*- Grey, Black body colour; Long, Vestigial wings), Pleiotropy, Multiple alleles and inheritance blood groups, Rh-factor, Codominance (Blood groups as example), elementary idea of polygenic inheritance, skin colour in humans, sex- determination- in humans, birds, *Fumea*, genic balance theory of sex determination, Haplodiploidy in honey bees; Sex linked inheritance-

Haemophilia and colorblindness, Mendelian disorders in humans- Thalassemia, Haemophilia, Sickle cell anaemia, cystic fibrosis, Phenylketonuria, Alkaptonuria; Chromosomal disorders- Down syndrome, Turner's syndrome, Kleinfiltersyndrome; Genome, Human genome project, and DNA finger printing.

UNIT-14: APPLIED BIOLOGY:

Bio-medical applications, Vaccines, **Molecular Diagnosis** Gene Therapy; Transgenic animals; ELISA; MABs, Cancer biology, stem cells. Bio- Medical Technology, Diagnostic Imaging (X-ray, CT scan, MRI), ECG, EEG,

SUBJECT:PHYSICS

1. **PHYSICAL WORLD:** What is physics? Scope and excitement of physics. Physics, technology and society Fundamental forces in nature. Nature of physical laws

2. **UNITS AND MEASUREMENTS: Introduction,** The international system of units, Measurement of Length, Measurement of Large Distances, Estimation of Very Small Distances, Size of a Molecule, Range of Lengths, Measurement of Mass, Range of Masses, Measurement of time, Accuracy, precision of instruments and errors in measurement, Systematic errors, random errors, least count error, Absolute Error, Relative Error and Percentage Error, Combination of Errors, Significant figures, Rules for Arithmetic Operations with Significant Figures, Rounding off the Uncertain Digits, Rules for Determining the Uncertainty in the Results of Arithmetic Calculations, Dimensions of Physical Quantities, Dimensional Formulae and dimensional equations, Dimensional Analysis and its Applications, Checking the Dimensional Consistency of Equations, Deducing Relation among the Physical Quantities.

3. **MOTION IN A STRAIGHT LINE: Introduction,** Position, path length and displacement, average velocity and average speed, instantaneous velocity and speed, acceleration, kinematic equations for uniformly accelerated motion, relative velocity.

4. **MOTION IN A PLANE: Introduction,** Scalars and vectors, position and displacement vectors, equality of vectors, multiplication of vectors by real numbers, addition and subtraction of vectors - graphical method, resolution of vectors, vector addition - analytical method, motion in a plane, position vector and displacement, velocity, acceleration, motion in a plane with constant acceleration, relative velocity in two dimensions, projectile motion, equation of path of a projectile, time of maximum height, maximum height of a projectile, horizontal range of projectile, uniform circular motion.

5. **LAWS OF MOTION: Introduction,** Aristotle's fallacy, Equilibrium of a particle, Common forces in mechanics, friction, types of friction, static, kinetic and rolling frictions, Circular motion, Motion of a car on a level road, Motion of a car on a banked road, solving problems in mechanics.

6. **WORK, ENERGY AND POWER: Introduction,** The Scalar Product, Notions of work and kinetic energy, The work-energy theorem, Work, Kinetic energy, Work done by a variable force, The work-energy theorem for a variable force, The concept of Potential Energy, The conservation of Mechanical Energy, The Potential Energy of a spring, Various forms of energy, Heat, Chemical Energy, Electrical Energy, The Equivalence of Mass and Energy, Nuclear Energy, The Principle of Conservation of Energy, Power, Collisions, Elastic and Inelastic Collisions, Collisions in one dimension, Coefficient of Restitution and its determination, Collisions in Two Dimensions.

7. **SYSTEM OF PARTICLES AND ROTATIONAL MOTION: Introduction,** Rigid body motion, Centre of mass, Centre of Gravity, Motion of centre of mass, Linear momentum of a system of particles, Vector product of two vectors, Angular velocity and its relation with linear velocity, Angular acceleration, Kinematics of rotational motion about a fixed axis, Moment of force (Torque), Angular momentum of particle, Torque and angular momentum for a system of a particles, conservation of angular momentum, Equilibrium of a rigid body, Principle of moments, Moment of inertia, Dynamics of rotational motion about a fixed axis, Angular momentum in case of rotation about a fixed axis, Rolling motion, Kinetic Energy of Rolling Motion.

8. **OSCILLATIONS: Introduction,** Periodic and oscillatory motions, Period and frequency, Displacement, Simple harmonic motion (S.H.M.), Simple harmonic motion and uniform circular motion, Velocity and acceleration in simple harmonic motion, Force law for Simple harmonic Motion, Energy in simple harmonic motion, some systems executing Simple Harmonic Motion, Oscillations due to a spring, The Simple Pendulum, damped simple harmonic motion, Forced oscillations and resonance.

9. **GRAVITATION: Introduction,** Universal law of gravitation, central forces, the gravitational constant, Acceleration due to gravity of the earth, Acceleration due to gravity below and above the surface of earth, Gravitational potential energy, Escape speed, Orbital Speed, Earth satellites, Energy of an orbiting satellite, Geostationary and polar satellites, Weightlessness.

10. **MECHANICAL PROPERTIES OF SOLIDS: Introduction,** Elastic behavior of solids, Stress and strain, Hooke's law, Stress-strain curve, Elastic moduli, Young's Modulus, Determination of

Young's Modulus of the Material of a Wire, Shear Modulus, Bulk Modulus, Applications of elastic behavior of materials.

11. **MECHANICAL PROPERTIES OF FLUIDS: Introduction,** Pressure, Pascal's Law, Variation of Pressure with Depth, Atmospheric Pressure and Gauge Pressure, Hydraulic Machines, Archimedes' Principle, Streamline flow, Bernoulli's principle, Speed of Efflux, Torricelli's Law, Venturi- meter, Blood Flow and Heart Attack, Dynamic Lift, Viscosity, Variation of Viscosity of fluids with temperature, Stokes' Law, Reynolds number, Critical Velocity, Surface tension and Surface Energy, Angle of Contact, Drops and Bubbles, Capillary Rise, Detergents and Surface Tension.

12. **THERMAL PROPERTIES OF MATTER: Introduction,** Temperature and heat, Measurement of temperature, Ideal-gas equation and absolute temperature, Thermal expansion, Specific heat capacity, Calorimetry, Change of state, Triple Point, Regelation, Latent Heat, Newton's law of cooling and its experimental verification.

13. **THERMODYNAMICS: Introduction,** Thermal equilibrium, Zeroth law of thermodynamics, Heat, Internal Energy and work, First law of thermodynamics, Specific heat capacity, Specific heat capacity of water, Thermodynamic state variables and equation of State, Thermodynamic processes, Quasi-static process, Isothermal Process, Adiabatic Process, Isochoric Process, Isobaric process, Cyclic process, Second law of thermodynamics, Reversible and irreversible processes, Carnot engine, Carnot's theorem.

14. **KINETIC THEORY: Introduction,** Molecular nature of matter, Behaviour of gases, Boyle's Law, Charles' Law, Kinetic theory of an ideal gas, Pressure of an Ideal Gas, Kinetic interpretation of temperature, Law of equipartition of energy, Specific heat capacity, Monatomic Gases, Diatomic Gases, Polyatomic Gases, Specific Heat Capacity of Solids, Specific Heat Capacity of Water, Mean freepath.

15. **WAVES: Introduction,** Transverse and longitudinal waves, displacement relation in a progressive wave, amplitude and phase, wavelength and angular wave number, period, angular frequency and frequency, the speed of a travelling wave, speed of a transverse wave on stretched string, speed of a longitudinal wave (speed of sound), the principle of superposition of waves, reflection of waves, standing waves and normal modes, beats.

16. **RAY OPTICS AND OPTICAL INSTRUMENTS: Introduction,** Sign convention, refraction, total internal reflection, total internal reflection in nature and its technological applications, refraction at spherical surfaces and by lenses, power of a lens, combination of thin lenses in contact, refraction through a prism, dispersion by a prism, optical instruments, the eye, the simple and compound microscopes, refracting telescope and Cassegrain reflecting telescope.

17. **WAVE OPTICS: Introduction,** Huygens principle, refraction and reflection of plane waves using Huygens principle, refraction in a rarer medium (at the denser medium boundary), reflection of a plane wave by a plane surface, the Doppler effect, coherent and incoherent addition of waves, interference of light waves and Young's experiment.

18. **ELECTRIC CHARGES AND FIELDS: Introduction,** Electric charge, conductors and insulators, charging by induction, basic properties of electric charges, additivity of charges, conservation of charge, quantization of charge, Coulomb's law, forces between multiple charges, electric field, electric field due to a system of charges, physical significance of electric field, electric field lines, electric flux, electric dipole, the field of an electric dipole for points on the axial line and on the equatorial plane, physical significance of dipoles, dipole in a uniform external field, continuous charge distribution, Gauss's law.

19. **ELECTROSTATIC POTENTIAL AND CAPACITANCE: Introduction,** Electrostatic potential, potential due to a point charge, potential due to an electric dipole, potential due to a system of charges, equipotential surfaces, relation between field and potential, potential energy of a system of charges, potential energy in an external field, potential energy of a single charge, potential energy of a system of two charges in an external field, potential energy of a dipole in an external field, electrostatics of conductors, electrostatic shielding, dielectrics and polarisation, electric displacement, capacitors and capacitance, the parallel plate capacitor, effect of dielectric on capacitance, combination of capacitors, capacitors in series, capacitors in parallel, energy stored in a capacitor, Van de Graaff generator.

20. CURRENT ELECTRICITY: Introduction, Electric current, electric current in conductors, Ohm's law, drift of electrons and the origin of resistivity, mobility, limitations of Ohm's law, Temperature dependence of resistivity, electrical energy, power, Cells, EMF, internal resistance, cells in series and in parallel, Kirchhoff's rules, Wheatstone Bridge, Meter Bridge, Potentiometer.

21. MOVING CHARGES AND MAGNETISM: Introduction, Magnetic force, sources and fields, magnetic field, Lorentz force, magnetic force on a current carrying conductor, motion in a magnetic field, helical motion of charged particles, , magnetic field due to a current element, Biot – Savart's law, Magnetic field on the axis of a circular current loop, Ampere's circuital law, the solenoid and the toroid, force between two parallel current carrying conductors, the ampere (UNIT), torque on current loop, magnetic dipole, torque on a rectangular current loop in a uniform magnetic field, circular current loop as a magnetic dipole, the magnetic dipole moment of a revolving electron, the Moving Coil Galvanometer; conversion into ammeter and voltmeter.

22. MAGNETISM AND MATTER: Introduction, The bar magnet, the magnetic field lines, the electrostatic analog, Magnetism and Gauss's Law, The Earth's magnetism, magnetic declination and dip.

23. ELECTROMAGNETIC INDUCTION: Introduction, The experiments of Faraday and Henry, magnetic flux, Faraday's Law of induction, Lenz's law and conservation of energy, motional electromotive force, energy consideration - a quantitative study, Eddy currents, inductance, mutual inductance, self-inductance, AC generator.

24. ALTERNATING CURRENT: Introduction, AC voltage applied to a resistor, representation of AC current and voltage by rotating vectors - Phasors, AC voltage applied to an inductor, AC voltage applied to a capacitor, AC voltage applied to a series LCR circuit, Phasor – diagram solution, analytical solution, resonance, sharpness of resonance, LC oscillations, transformers.

25. ELECTROMAGNETIC WAVES: Introduction, electromagnetic waves, sources of electromagnetic waves, nature of electromagnetic waves, electromagnetic spectrum: radio waves, microwaves, infrared waves, visible rays, ultraviolet rays, X-rays, gamma rays.

26. DUAL NATURE OF RADIATION AND MATTER: Introduction, Electron emission, Photoelectric Effect, Hertz's observations, Hallwachs and Lenard's observations, experimental study of photoelectric effect, effect of intensity of light on photocurrent, effect of potential on photoelectric current, effect of frequency of incident radiation on stopping potential, Photoelectric effect and Wave theory of Light, Einstein's Photoelectric equation, Energy Quantum of Radiation, particle nature of light, the photon, wave nature of matter, photocell.

27. ATOMS: Introduction, Alpha particle scattering and Rutherford's nuclear model of atom, alpha particle trajectory, electron orbits, atomic spectra, spectral series, Bohr model of the hydrogen atom, energy levels, Franck – Hertz experiment, the line spectra of the hydrogen atom, deBroglie's explanation of Bohr's second postulate of quantization, LASERlight.

28. NUCLEI: Introduction, Atomic masses and composition of nucleus, discovery of neutron, size of the nucleus, Mass - Energy, Nuclear Force, Nuclear Energy, Fission, Nuclear reactor, nuclear fusion, energy generation in stars, controlled thermonuclear fusion.

29. SEMICONDUCTOR ELECTRONICS: MATERIALS, DEVICES AND SIMPLE CIRCUITS: Introduction, Classification of metals, conductors, and semiconductors on the basis of conductivity and energy bands, Band theory of solids, Intrinsic semiconductor, Extrinsic semiconductor, p-type semiconductor, n-type semiconductor, Optoelectronic junction devices, Photodiode, light emitting diode, solar cell. Junction transistor, structure and action, Basic transistor circuit configurations and transistor characteristics, transistor as a switch and as an amplifier (CE – Configuration), Feedback amplifier and transistor oscillator, Digital Electronics and Logic gates, NOT, OR, AND, NAND and NOR Gates, Integrated circuits.

30. COMMUNICATION SYSTEMS: Introduction, Elements of a Communication system, basic terminology used in electronic communication systems, bandwidth of signals, bandwidth of transmission medium, propagation of electromagnetic waves, ground waves, sky waves, space wave, modulation and its necessity, size of the antenna or aerial, effective power radiated by an antenna, mixing up of signals from different transmitters, amplitude modulation, production of amplitude modulated wave, detection of amplitude modulated wave.

SUBJECT:CHEMISTRY

Unit-1: ATOMIC STRUCTURE: Developments to the Bohr's model of atom; Wave nature of electromagnetic radiation; Particle natureofelectromagneticradiation-Planck'squantumtheory;Bohr'smodelforHydrogenatom;Explanationoflinespectrumofhydrogen;LimitationsofBohr'smodel;Quantummechanicalconsiderations of sub atomic particles; Dual behaviour of matter; Heisenberg's uncertainty principle;Quantum mechanical model of an atom. Important features of Quantum mechanical model of atom;Orbitals and quantum numbers; Shapes of atomic orbitals; Energies of orbitals; Filling of orbitals inatoms.AufbauPrinciple, Pauli's exclusionPrincipleandHund'sruleofmaximum multiplicity;Electronicconfigurationsofatoms;Stabilityofhalf-filledand completelyfilledorbitals.

Unit-2: CLASSIFICATIONOFELEMENTSANDPERIODICITYINPROPERTIES: Modern periodic law and present form of theperiodictable;Nomenclatureofelementswithatomicnumbergreaterthan100;Electronicconfiguration of elements andthe periodic table; Electronic configuration and types of elements s,p,d.and f blocks; Trends in physical properties:(a) Atomic radius, (b) Ionic radius (c) Variation of size ininner transition elements, (d) Ionization enthalpy,(e) Electron gain enthalpy, (f) Electro negativity;Periodic trends in chemical properties: (a) Valence or Oxidation states, (b) Anomalous properties ofsecondperiodelements - diagonalrelationship;Periodic trendsand chemicalreactivity.

Unit-3: CHEMICAL BONDING AND MOLECULAR STRUCTURE: Kossel - Lewis approach tochemical bonding, Octet rule, Lewis representation of simple molecules, formal charges, limitations of octetrule; Ionic or electrovalent bond - Factors favourable for the formation of ionic compounds- Crystalstructure of sodium chloride, General properties of ionic compounds; Bond Parameters - bond length,bond angle, and bond enthalpy, bond order, resonance-Polarity of bonds dipole moment-Fajan rules;Valence Shell Electron Pair Repulsion (VSEPR) theory; Predicting the geometry of simple molecules;Valence bond theory-Orbital overlap concept-Directional properties of bonds-overlapping of atomicorbitals-types of overlapping and nature of covalent bonds-strength of sigma and pi bonds-Factorsfavouring the formation of covalent bonds; Hybridisation- different types of hybridization involving s,p and d orbitals- shapes of simple covalent molecules; Coordinate bond - definition with examples;Molecular orbital theory - Formation of molecular orbitals, Linear combination of atomic orbitals(LCAO)-conditionsforcombinationofatomicorbitals-Energyleveldiagramsformolecularorbitals -Bonding in some homo nuclear diatomic molecules- H2, He2, Li2, B2, C2, N2 and O2; Hydrogenbonding-cause of formation of hydrogen bond - Types of hydrogen bonds-inter and intra molecular-General propertiesof hydrogen bonds.

Unit-4:STATESOFMATTER:GASESANDLIQUIDS: Intermolecularforces;ThermalEnergy;Intermolecular forces Vs Thermal interactions; The Gaseous State; The Gas Laws; Ideal gas equation;Graham's law of diffusion - Dalton's Law of partial pressures; Kinetic molecular theory of gases;Kinetic gas equation of an ideal gas (No derivation) deduction of gas laws from Kinetic gas equation;; Behaviour of real gases - Deviation from Ideal gas behaviour - Compressibility factor VsPressure diagrams of real gases;

Unit-5: STOICHIOMETRY: Laws of Chemical Combinations - Law of Conservation ofMass, Law of Definite Proportions, Law of Multiple Proportions, Atomic and molecular masses-moleconcept and molar mass. Concept of equivalent weight; Percentage composition of compounds andcalculationsofempiricalandmolecularformulaeofcompounds;Stoichiometryandstoichiometriccalculations-limiting reagent; Methods of Expressing concentrations of solutions-mass percent, molefraction,molarity,molalityandnormality;Redoxreactions-classicalideaofredoxreactions,oxidation and reduction reactions-redox reactions in terms of electron transfer; Oxidation numberconcept; Types of Redox reactions- combination, decomposition, displacement and disproportionationreactions;Balancingofredoxreactions-

oxidationnumbermethodHalfreaction(ion-electron)method;.

Unit-6: THERMODYNAMICS: Thermodynamic Terms; The system and the surroundings; Types ofsystemsandsurroundings;Thestateofthesystem;TheInternalEnergyasaStateFunction.(a)Work(b) Heat (c) The general case, the first law of Thermodynamics; Applications; Work; Enthalpy, H- auseful new state function; Extensive and intensive properties; The relationship between C_p and C_v;Measurementof ΔU and ΔH:Calorimetry;Enthalpychange, $\Delta_r H$ofreactions-reaction Enthalpy(a)Standardenthalpyofreactions,(b)Enthalpychangesduringtransformations,(c)Standard enthalpy of formation, (d) Thermo chemical equations (e) Hess's law of constant Heatsummation;Enthalpiesfordifferenttypesofreactions.(a)Standardenthalpyofcombustion($\Delta_c H^0$),(b) Enthalpy of atomization ($\Delta_a H^0$), phase transition, sublimation and ionization, (c) Bond Enthalpy($\Delta_{bond} H^0$), (d) Enthalpy of solution ($\Delta_{sol} H^0$) and dilution-lattice enthalpy; Spontaneity. (a) Is decreaseinenthalpyacriterionforspontaneity?(b)Entropyandspontaneity,thesecondlawofthermodynamics, (c) Gibbs Energy and spontaneity; Absoluteentropyand thethird law ofthermodynamics.

Unit-7: CHEMICALEQUILIBRIUMANDACIDS-BASES: EquilibriuminPhysicalprocess;Equilibrium in chemical process - Dynamic Equilibrium; Law of chemical Equilibrium - Law of massaction and Equilibrium constant; Homogeneous Equilibria, Equilibrium constant in gaseous systems.Relationship between K_P and K_c; Heterogeneous Equilibria; Applications of Equilibrium constant;Relationship between Equilibrium constant K, reaction quotient Q and Gibbs energy G; Factorsaffecting Equilibria.-Le-chatlier principle application to industrial synthesis of Ammonia and Sulphurtrioxide; Ionic Equilibrium in solutions; Acids, bases and salts- Arrhenius, Bronsted-Lowry and Lewisconcepts of acids and bases; Ionisation of Acids and Bases - Ionisation constant of water and its ionicproduct- pHscale-ionisationconstantsofweak acids-ionisationofweak bases-relation between K_a and K_b-Di and poly basic acids and di and poly acidic Bases-Factors affecting acid strength- Commonion effect in the ionization of acids and bases- Buffersolutions- Solubility Equilibria of sparinglysolublesalts. SolubilityproductconstantCommonioneffectonsolubilityof Ionicsalts.

Unit-8: HYDROGEN AND ITS COMPOUNDS: Position of hydrogen in the periodic table; Dihydrogen-Occurrence and Isotopes; Hydrides: Ionic,covalent,andnon-stoichiometrichydrides;Water:Physicalproperties;structureofwater,ice.Chemical properties of water; hard and soft water, Temporary and permanent hardness of water; HeavyWater;Hydrogenasa fuel.

Unit-9: THEs-BLOCK ELEMENTS(ALKALIANDALKALINEEARTH METALS):

Group 1 Elements : Alkali metals; Electronic configurations; Atomic and Ionic radii; Ionizationenthalpy; Hydration enthalpy; Physical properties; Chemical properties; Uses; General characteristicsof the compounds of the alkali metals: Oxides; Halides; Salts of oxo Acids; Anomalous properties ofLithium:Differences and similaritieswith other alkalimetals, Diagonalrelationship;similaritiesbetweenLithiumandMagnesium;Some important compounds of Sodium: Sodium Chloride

Group 2 Elements: Alkaline earth elements; Electronic configuration; Ionization enthalpy; Hydrationenthalpy; Physical properties, Chemical properties; Uses; General characteristics of compounds of theAlkaline Earth Metals: Oxides, hydroxides, halides, salts of oxoacids (Carbonates; Sulphates andNitrates);AnomalousbehaviorofBeryllium;itsdiagonalrelationshipwithAluminium;Someimportantcompoundsofcalcium:PreparationandusesofCalciumHydroxide,PlasterofParis;Cement;

Unit-10: p- BLOCK ELEMENTS GROUP 13 (BORON FAMILY): General introduction - Electronicconfiguration, Atomic radii, Ionization enthalpy, Electro negativity; Physical & Chemical properties (Note: Aluminum reactivity towards acids &alkalies is deleted) Important trends and anomalous properties of boron; Uses ofboron, aluminiumand theircompounds.

Uni-11: p-BLOCK ELEMENTS - GROUP 14 (CARBON FAMILY): General introduction - Electronicconfiguration, Atomic radii, Ionization enthalpy, Electro negativity; Physical & Chemical properties;Important trends and anomalous properties of carbon; Allotropes of carbon; Uses of carbon;

Unit-12: **ORGANICCHEMISTRY-SOMEBASICPRINCIPLESANDTECHNIQUESANDHYDROCARBONS:** General introduction; Tetravalency of Carbon: shapes of organic compounds;Structural representations of organic compounds; Classification of organic compounds; Nomenclatureof organic compounds; Isomerism; Fundamental concepts in organic reaction mechanisms; Fission ofcovalent bond; Nucleophiles and electrophiles; Electron movements in organic reactions; Electrondisplacement effects in covalent bonds: inductive effect, resonance, resonance effect, electromericeffect, hyper conjugation; Types of Organic reactions;

Hydrocarbons: Classification of Hydrocarbons; **Alkanes** - Nomenclature, isomerism (structural andconformations of ethane only); Preparation of alkanes; Properties - Physical properties and chemicalReactivity, Substitution reactions – Halogenation (free radical mechanism is deleted), ControlledOxidation, Isomerisation, Aromatization, and reaction with steam; **Alkenes-** Nomenclature,structureofethene,Isomerism(structuralandgeometrical);Methodsofpreparation;Properties-Physical and chemical reactions: Addition of Hydrogen, halogen, water, sulphuric acid, Hydrogenhalides (Mechanism- ionic and peroxide effect, Markovnikov's, anti-Markovnikov's or Kharascheffect). Oxidation, Ozonolysis and Polymerization; **Alkynes -** Nomenclature and isomerism, structureof acetylene. Methods of preparation of acetylene; Physical properties, Chemical reactions- acidiccharacterofacetylene,additionreactions-ofhydrogen,Halogen,Hydrogenhalidesandwater.Polymerization;**AromaticHydrocarbons:** Nomenclatureandisomerism,Structureofbenzene,Resonanceandaromaticity;Preparationofbenzene.Physicalproperties.Chemicalproperties:Mechanism of electrophilic substitution. Electrophilic substitution reactions- Nitration, Sulphonation,Halogenation, Friedel-Craft's alkylation and acylation; Directive influence of functional groups inmonosubstituted benzene,Carcinogenicityand toxicity.

Unit-13:

SOLIDSTATE: Generalcharacteristicsofsolidstate;Amorphousandcrystallinesolids;Classification of crystallinesolids based on different binding forces (molecular, ionic, metallic andcovalent solids); Probing the structure of solids: X-ray crystallography; Crystal lattices and unit cells.Bravaislatticesprimitiveandcenteredunitcells;Numberofatomsinaunitcell(primitive,bodycenteredandfacecenteredcubicunitcell);Closepackedstructures:Closepackinginonedimension, in two dimensions and in three dimensions- tetrahedral and octahedral voids- formula of acompound and number of voids filled- locating tetrahedral andoctahedral voids;Packingefficiencyinsimple cubic, bcc and in hcp, ccp lattice; Calculations involvingunitcelldimensions-density ofthe unit cell; Imperfections in solids-types of point defects-stoichiometric and non-stoichiometricdefects;.

Unit-14: **SOLUTIONS:**Typesofsolutions;Expressingconcentrationofsolutions-masspercentage,volumepercentage,massbyvolumepercentage,partspermillion,molefraction, molarityandmolality; Solubility: Solubility of a solid in a liquid, solubility of a gas in a

liquid, Henry's law;Vapour pressure of liquid solutions: vapour pressure of liquid- liquid solutions. Raoult's law as aspecial case of Henry's law -vapour pressure of solutions of solids in liquids; Ideal and non-idealsolutions;Colligativepropertiesanddeterminationofmolarmass-relativeloweringofvapourpressure-elevationofboilingpoint-depressionoffreezingpoint-osmosisandosmoticpressure-reverseosmosisand waterpurification;.

Unit-15: ELECTROCHEMISTRYANDCHEMICALKINETICS:

Electrochemistry: Electrochemical cells; Galvanic cells: measurement of electrode potentials; Nernstequation- equilibrium constantfrom Nernstequation-electrochemicalcelland Gibbsenergy ofthecellreaction;Conductanceofelectrolyticsolutions-measurementoftheconductivityofionicsolutions-variation of conductivity and molar conductivity with concentration-strong electrolytes andweak electrolytes-applications of Kohlrausch's law; Electrolytic cells and electrolysis: Faraday's lawsofelectrolysis-productsofelectrolysis;Hydrogen economy.

Chemical Kinetics: Rate of a chemical reaction; Factors influencing rate of a reaction: dependence ofrateonconcentration-rateexpressionandrateconstant-orderofareaction,molecularityofareaction; Integrated rate equations-zero order reactions-first order reactions- half-life of a reaction;Pseudo first orderreactions;Temperature dependence of the rate of a reaction -effect of catalyst;

Unit-16: SURFACECHEMISTRY:Adsorption:Distinctionbetweenadsorptionandabsorption-mechanismofadsorption-typesofadsorption-characteristicsofphysisorption-characteristicsofchemisorption-adsorptionisotherms-adsorptionfromsolutionphase-applicationsofadsorption;**Colloids**; Classification of colloids: Classification based on physical state ofdispersedphaseanddispersionmedium-classificationbasedonnatureofinteractionbetweendispersed phase and dispersion medium-classification based on type of particles of the dispersedphase-multimolecular,macromolecularandassociatedcolloids-cleansingactionofsoaps-preparationofcolloids-purificationofcolloidalsolutions-propertiesof colloidalsolutions:Colligativeproperties,Tyndaleffect,colour,Brownianmovement-chargeoncolloidalparticles,electrophoresis;coagulation-precipitation methods-coagulationof lyophilic sols andprotectionofcolloids-Colloids around us-applicationofcolloids.

Unit-17: p-BLOCKELEMENTS: **Group-15Elements:**Occurrence-electronicconfiguration,atomicandionicradii,ionisationenthalpy, electronegativity, physical and chemical properties; Dinitrogen-preparation, properties anduses;Compoundsofnitrogen-preparation,propertiesandusesofammonia;Oxidesofnitrogen (note: only structures are deleted);Preparationandpropertiesofnitricacid;

Group-16Elements:Occurrence-electronicconfiguration,atomicandionicradii,ionisationenthalpy, electron gainenthalpy, electronegativity, physicalandchemicalproperties;Dioxygen-preparation, properties and uses; Simpleoxides; Ozone-preparation, properties, structure anduses; Sulphur-allotropic forms; Sulphur dioxide-preparation, properties and uses; Oxoacids of sulphur;Sulphuricacid-properties and uses.

Group-17Elements: Occurrence,electronicconfiguration,atomicandionicradii,ionisationenthalpy,electrongainenthalpy,electronegativity,physicalandchemicalproperties;Chlorine-preparation, properties and uses; Hydrogen chloride- preparation, properties and uses; Oxoacids ofhalogens; Interhalogen compounds-preparation,properties anduses.

Group-18 Elements: Occurrence, electronic configuration, ionization enthalpy, atomic radii, electrongain enthalpy, physical and chemical properties(a) Xenon-fluorine compounds- XeF_2, XeF_4 and XeF_6 -preparation, hydrolysis and formation of fluoro anions-structures of XeF_2, XeF_4 and XeF_6 (b) Xenon-oxygencompounds $XeO_3$and $XeOF_4$ -their formationandstructures-

Unit-18: dANDfBLOCKELEMENTS&COORDINATIONCOMPOUNDS: d and fblock elements: Position in the periodic table; Electronic configuration of the d-blockelements; General properties of the transition elements (d-block) -physical properties, variation inatomic and ionic sizes of transition series, ionisation enthalpies, oxidation states, trends in the $M^{2+}/M$and M^{3+}/M^{2+} standard electrode potentials, trends in stability of higher oxidation states, chemicalreactivityandE^{θ}values,magneticproperties, formation of coloured ions, formation ofcomplex compounds, catalytic properties, formation of interstitial compounds,alloy formation;;Innertransitionelements(f-block)-lanthanoids-electronicconfiguration-atomic and ionic sizes-oxidation states- Some applications ofd andf blockelements.

Coordination compounds: Werner's theory of coordination compounds; Definitions of some termsused in coordination compounds; Nomenclature of coordination compounds-IUPAC nomenclature;Bondingincoordination compounds. (a)Valence bond theory - magnetic properties of coordination compounds-limitations of valence bond theory (b) Crystal field theory (i) Crystal field splitting in octahedral andtetrahedral coordination entities (ii) Colour in coordination compounds-limitations of crystal fieldtheory;Bondinginmetalcarbonyls;Stabilityofcoordinationcompounds;applicationsof coordination compounds.

Unit-19: BIOMOLECULES:Carbohydrates-Classificationofcarbohydrates-Monosaccharides:preparationofglucosefromsucroseandstarch-Propertiesandstructureofglucose-D,Lconfigurations and (+), (-) configurationsofglucose-Structureof fructose; Disaccharides: Sucrose-preparation, structure; Invert sugar- Structures of maltose and lactose- Polysaccharides: Structures ofstarch, celluloseandglycogen-Importanceofcarbohydrates (Note: Sucrose, lactose, maltose, starch, carbohydrates importance is deleted);**Proteins:**Aminoacids: Naturalaminoacids-classification ofaminoacids-structuresandDandLforms-Zwitterions;Proteins-Structures, classification, fibrous and globular- primary, secondary, tertiary and quarternary structuresof proteins-Denaturation of proteins; **Vitamins:**Explanation-names- classification of vitamins - sources of vitamins-deficiency diseases of differenttypes of vitamins; **Nucleic acids:** chemical composition of nucleic acids, structures of nucleic acids,DNA fingerprinting biologicalfunctions of nucleic acids;

Unit-20:HALOALKANESANDHALOARENES: Classificationandnomenclature;NatureofC-Xbond;Methodsofpreparation:Alkylhalidesandarylhalides-fromalcohols,fromhydrocarbons(a) by free radical halogenation (b) by electrophilic substitution (c) byreplacementof diazoniumgroup (Sandmeyer reaction)(d) by the addition of hydrogenhalidesandhalogensto alkenes-byhalogen exchange reactions; Physical properties-melting and boiling points, density and solubility;Chemicalreactions:Reactionsofhaloalkanes(i)Nucleophilicsubstitutionreactions(a)S_N^2mechanism(b)SN^1mechanism(c)stereochemicalaspectsofnucleophilicsubstitutionreactions-optical activity(ii) Eliminationreactions(iii)Reaction with metals-Reactions of haloarenes: (i) Nucleophilic substitution (ii) Electrophilicsubstitution and (iii) Reaction with metals;

Unit-21: ORGANICCOMPOUNDSCONTAININGC,HANDO(ALCOHOLS,PHENOLS, ETHERS,ALDEHYDES,KETONES ANDCARBOXYLICACIDS):

Alcohols,PhenolsandEthers: Alcohols,phenolsandethers-classification;Nomenclature:(a)Alcohols, (b)phenols and (c) ethers; Structures of hydroxy and ether functional groups; Methods ofpreparation:Alcohols fromalkenesandcarbonylcompounds, from Grignard reagents; Phenolsfrom haloarenes, benzene sulphonicacid,diazonium salts, cumene;Physicalproperties of alcoholsandphenols; Chemical reactions ofalcohols and phenols (i)Reactions involving cleavageofO-Hbondinalcohols-Acidityofalcoholsandphenols,esterification(ii)Reactionsinvolvingcleavageof C-Obond-reactionswithHX,PX_3,dehydrationandoxidation(iii)Reactionsofphenols-electrophilic aromatic substitution, Kolbe's reaction, Reimer - Tiemann reaction, reaction with zincdust,oxidation;Ethers-

Methodsofpreparation:Bydehydrationofalcohols,Williamsonsynthesis-Physicalproperties-Chemicalreactions: CleavageofC-Obondandelectrophilicsubstitutionofaromaticethers(anisole).

Aldehydes and Ketones: Nomenclature and structure of carbonyl group; Preparation ofaldehydesandketones-

(1)byoxidationofalcohols(2)bydehydrogenationofalcohols(3)fromhydrocarbons -Preparation of aldehydes (1)fromacylchlorides (2) from nitriles and esters(3) fromhydrocarbons-Preparationofketones(1)fromacylchlorides(2)fromnitriles(3)frombenzeneorsubstituted benzenes; Physical properties of aldehydes and ketones; Chemical reactions of aldehydesand ketones-nucleophilic addition,reduction,oxidation, reactionsduetoα-Hydrogenandotherreactions(Cannizzaroreaction,electrophilicsubstitutionreaction);Usesofaldehydesand ketones.

Carboxylicacids:Nomenclatureandstructureofcarboxylgroup;Methodsofpreparationofcarboxylicacids(1)fromprimary alcoholsandaldehydes(2)fromalkylbenzenes(3)fromnitrilesand amides (4)from Grignard reagents (5) from acyl halides and anhydrides (6) from esters; Physicalproperties; Chemicalreactions:(i)Reactions involving cleavage of O-H bond-acidity, reactionswith metals and alkalies (ii) Reactions involving cleavage of C-OH bond- formation of anhydride,reactions with PCl_5, PCl_3, $SOCl_2$, esterification and reaction with ammonia (iii) Reactions involving-COOH group-reduction, decarboxylation (iv) Substitution reactions in thehydrocarbonpart-halogenationandringsubstitution;Uses ofcarboxylicacids.

Unit-22: ORGANICCOMPOUNDSCONTAININGNITROGEN:

Amines: Structure of amines; Classification; Nomenclature; Preparation of amines: reduction of nitrocompounds,ammonolysisofalkylhalides,reductionofnitriles,reductionofamides,Gabrielphthalimide synthesis and Hoffmann bromamide degradation reaction; Physical properties;

Chemicalreactions: basic character of amines, alkylation, acylation, carbyl amine reaction, reaction with nitrousacid, reaction with aryl sulphonyl chloride, electrophilic substitution of aromatic amines (aniline)-bromination,nitrationandsulphonation.

CyanidesandIsocyanides:

Structureandnomenclatureofcyanidesandisocyanides;Preparation,physicalpropertiesandchemicalreactionsof cyanides and isocyanide

ANNEXURE– II

MODELQUESTIONS –BOTANY

1. **Assertion(A)**:Intheleaves ofthesugarcaneC_3andC_4cycles arespatially separated.
Reason (R) : Hatch and Slack pathway occurs in bundle sheath cells and Calvincyclein mesophyll cells.
1) Both(A)and(R) aretrue.(R)isthecorrectexplanationof(A)
2) Both(A)and (R)aretrue, but (R) is not the correct explanation of(A)
3) (A)istruebut(R)isfalse
4) (A)isfalsebut(R)istrue

2. Arrangethefollowingintheorderoftheir occurrenceinthelifecycle ofanangiospermicplant:
I.PrimaryEndospermNucleus II.Microsporogenesis
III.Xenogamy IV.PericarpThecorrectsequenceis:
1)I,III, II,IV 2) III, I,IV,II
3)II,III, I,IV 4) IV,I,II,III

3. IfonestrandofDNAmoleculehasthenucleotidesequenceTACAATCGGTAA,thenewstandsynthesized intranscription will havethenucleotide sequenceas:
1)ATGTTAGCCATT 2) TACAATCGG TAA
3) AUGUUA GCC AUU 4) TUCUUTCGG TUU

4. Studythe followinglists:

ListI	**ListII**
*A)*Spadix	I. *Allium*
*B)*Umbel	II.*Tridax*
*C)*Spike	III. *Cocos*
*D)*Head	IV.*Achyranthus*
	V.*Hibiscus*

Thecorrectmatchis:

	(A)	(B)	(C)	(D)
1.	I	IV	V	II
2.	IV	I	III	V
3.	II	III	IV	I
4.	III	I	IV	II

5. Prokaryoticcellpossessesthefollowing:I. Chloroplast II.Cellwall
III. 70Sribosomes IV.Welldefinednucleus

Thecorrectcombinationis:
1)IandII 2) IIandIII 3) Iand III 4)IIandIV

MODELQUESTIONS–ZOOLOGY

1. Inhuman beingacromianprocessispresnton:

1) Sternum 2)Skull 3)Pectoralgirdle 4) Pelvicgirdle

2. Identifythesequenceoflegpartsofcockroachfrombase totipoftheleg

A)Tibia B)Coxa C)Tarsus D)Femur E) TrochanterCorrectsequenceis

1)B-A-D-E-C 2)B-E-D-A-C 3)A-D-C-B-E 4)A-C-B-E-D

3. Multipleselectiontype

ChoosethecorrectstatementswithreferencetoCephalopods:

A) Shellmaybe externalandmulti chambered
B) ItincludesCuttlefishes
C) DevelopmentincludesVeligerlarva
D) Bloodcirculationisopentype

1) All 2)A&B 3)C&D 4) A &D

4. Matchingtype

SET-ISET-II

Scientificnames	CommonNames
A) Pinctada	I)Elephanttuskshell
B) Mytilus	II)Seahare
C) Dentalium	III)PearlOyster
D) Aplysia	IV)Marinemussel
	V) Ship

wormIdentifythecorrect match between SET-Iand SET-II

A	B	C	D
1)III	IV	II	I
2)III	I	II	V
3)III	IV	I	II
4)III	V	II	IV

5. Statementand Reasontype

Statement(S)DuringfavourableconditionsEuglenaundergoeslongitudinalbinaryfission.

Reason (R) Binary fission in Euglena is described as symmetrogenic division asdaughterindividuals arelike mirrorimages.

1) BothSandRcorrectandRisthecorrectexplanationto„S".
2) BothS andRarecorrectbutRisnotcorrectexplanationto„S".
3) SiscorrectbutRisnotcorrect.
4) SisnotcorrectbutRiscorrect.

MODELQUESTIONS–PHYSICS

1. A particle starts from origin at t=0 with a velocity of 10 **i**m/s and moves in x-yplane under the action of force which produces a constant acceleration of $(2i + 3j)$ m/s^2 .The y – coordinate in meters of the particle at the instant its x-coordinate is 24mbecomes

(1)12 (2)6 (3)18 (4)3

2. When 0.2 kg of ice at 0^0 C mixed with 0.5 kg of water at 60 ^{0} C in a container , theresultingtemperatureis 10^0C. Theheat of fusion of ice(S_{water} =4.186J/kg/K)

(1)1.31 X10^5J/kg (2)2.62 X10^5J/kg

(3)10.46 X10^5J/kg (4)5.23 X10^5J/kg

3. 5 bulbs each of 100 W are connected across 220 V power supply for domesticapplication.If each unitcosts Rs.4 then the cost perdayin Rs.is

(1)48 (2)24 (3)96 (4)12

4. Asolenoidoflength1.0mhasaradiusof1cmandismadeupof1000turns.Itcarriesacurrentof2.5 A.Themagnitudeofthemagneticfieldinside thesolenoidin Tesla is

(1)πx10^- (2)πx10^{-4} (3)πx10^{-6} (4)πx10^{-5}

MODELQUESTIONSCHEMISTRY

1. Whichoneofthefollowinghasstableelectronicconfiguration?

(1)N (2)C (3)F (4)Al

2. Whichoneofthefollowingexhibitsacidity?

(1)R-OH (2)R-CHO (3)R-X (4)C_6H_5-OH

3. Assertion(A):Carbonylcompoundsundergonucleophilicadditionreactions.Reason(R): Carbonylgroup isnon-polar.

Thecorrectansweris:

(1) Both(A)and (R)aretrueand (R)is the correctexplanation of(A)
(2) Both(A)and (R)aretrueand (R)is not thecorrectexplanation of(A)
(3) (A)istruebut(R)isnottrue
(4) (A)isnottruebut(R)istrue

4. Matchthefollowing:

LIST I	**LISTII**
(A)Packingefficiencyinccp structure	(1)2
(B) Numberofatomsinbccunitcell	(2)4
(C)Packingefficiencyinsimplecubic structure	(3)52.4%
(D)Numberofatomsinfccunitcell	(4)68.0%
	(5)74.0%

Thecorrectansweris:

	(A)	(B)	(C)	(D)
(1)	5	4	3	2
(2)	3	2	1	4
(3)	5	1	3	2
(4)	4	1	2	3

ANNEXURE–III

DEFINITIONOFLOCAL / NON-LOCAL STATUS

1. ACandidateshallberegardedasalocalCandidateinrelationtoalocalarea(AU/OU/SVU)
If he/she has studied in an Educational Institution or Educational Institutions in such localarea for a period of not less than four consecutive academic years ending with the academicyear in which he/she appeared or first appeared in the relevant qualifying examination as thecasemaybe.

Where, during the whole or any part of the four consecutive academic years in which he/sheappeared, or first appeared in the relevant qualifying examination, he/she has not studied inany educational institutions, if he/she resided in that local area for a period of not less thanfouryears immediately preceding the date of commencement of the relevant qualifyingexaminationin which he/sheappeared, orfirstappeared,as thecasemaybe.

2. A candidate who is not regarded as local candidate under clause (1.1) above in relation toanylocal area shall

If he/she studied in the educational institutions in the state for a period of not less than sevenconsecutive academic years ending with the academic year in which he/she appeared or firstappeared for the relevant qualifying examination as the case may be, be regarded as a localcandidatein relation to

i. Such local area where he/she studied for the maximum period out of period ofsevenyears.
   OR
ii. Where the period of his/her study in two or more local areas is equal, such localarea wherehe/she studied last in such equalperiods.

If during the whole or any part of the seven consecutive academic years ending with theacademicyearinwhichhe/sheappearedorfirstappearedfortherelevantqualifyingexamination, he/she has not studied in the educational institutions, in any local area, but hasresided in the state during the whole of the said period of seven years, be regarded as a localcandidatein relation to

i. Such local area where he/she has resided for the maximum period out of the saidperiodofsevenyears.
   OR
ii. Where the period of his/her residence in two or more local areas is equal suchlocalareawherehe/she had resided last in suchperiods.

Note:
1. LocalareainrespectofAndhraUniversity(A.U.area)includesNagarjunaUniversityarea.In respect of Sri Venkateswara University (S.V.U. area), it includes Sri KrishnadevarayaUniversityarea.InrespectofOsmaniaUniversity(O.U.area),itincludesKakatiya Universityarea. (Table showing the Local Areas of new districts of AP is given below).
2. The Candidate belonging to PIO / OCI category will be considered as under non localcategoryonly.

3. Candidatescomingunderanyofthecategoriesgivenbelowandnotsatisfyingtheconditions mentioned in 1 or 2 above are treated as „Non-Local" to all the three Universityareasspecifiedabove.

a. Candidates who have resided in the state of A.P. for a total period of 10 years or moreexcludingthe period ofstudyoutsidethisstate.

OR

b. Candidates either of whose parents has resided in this state for a total period of 10 years ormoreexcludingthe periods of employment outsidethestate

OR

c. Candidates either of whose parents is employed in the State of A.P. or Central GovernmentPublic Sector Corporations, Local Bodies, Universities and other similar quasi GovernmentInstitutionswithin this state, atthetime ofsubmittingtheapplication

OR

d. Candidates who are spouses of those employed in the State of A.P. or Central Government,Public Sector Corporations, Local Bodies, Universities and other similar quasi GovernmentInstitutionswithin this state, atthetime ofsubmittingthe application.

Forfulldetails referG.O.No.646, dated10.07.1979.

Note:

Blank**ProformaIII**isprovidedforsubmittingrelevantinformationregardingLocal/Non-Localstatusofcandidates.

S.No	District Official Name	Local Area
1	Srikakulam	AU
2	ParvathipuramManyam	AU
3	Vizianagaram	AU
4	Visakhapatnam	AU
5	Alluri Sitharama Raju	AU
6	Anakapalli	AU
7	Kakinada	AU
8	East Godavari	AU
9	Konaseema	AU
10	Eluru	AU
11	West Godavari	AU
12	NTR	AU
13	Krishna	AU
14	Palnadu	AU
15	Guntur	AU
16	Bapatla	AU
17	Prakasam	AU
18	Sri Potti Sriramulu Nellore	SVU
19	Kurnool	SVU
20	Nandyal	SVU
21	Anantapur	SVU
22	Sri Sathya Sai	SVU
23	YSR	SVU
24	Annamayya	SVU
25	Tirupati	SVU
26	Chittoor	SVU

ANNEXURE-

IVNORMALIZATIONPROCEDU

RE

Candidates are aware that the APEAPCET-2022 (MPC and Bi.PC Streams) are conductedfrom19-09-2022 to 25-08-2022 in multiplesessions.
APEAPCET-2022 is being conducted in multiple sessions based on the same syllabus, samepattern for candidates having the same eligibility criteria. A candidate will be eligible to appearonly in one session. Since the question paper will be different for each session, there is apossibility that the candidates compare themselves about the variation in the difficulty level ofquestions. However, it may be noted that utmost care will be taken so that all the papers are ofsame standard. Further, it is decided to adopt a normalization process to eliminate any suchvariationsin the difficultylevel of varioussessions.

WhatisNormalization?
Normalization,asusedinthe Indiancontext,isaprocessforensuringthestudentsare neitheradvantagednordisadvantagedbythedifficultyofexaminationsconductedinmultiplesession s. This process is based on a simple formula that has been adopted as recommendedby the experts from reputed educational institutions at all India level and Universities. Theprocess is being implemented in other all India / Nationwide entrance tests for admission intoundergraduateandgraduateprofessionalcourses.The
normalizationprocessranksallthecandidates across all sessions on a comparative scale. In any normalization process, the marksof the easier session may be reduced marginally and the marks of the harder paper mayincreasemarginallyonthegloballevel,dependingontheaverageperformanceineachsession. If there is no much difference in the averages between the two sessions then there won"tbe much difference in the normalized marks as well. Normalizing marks would justify thecandidateswhileprotectingtheiractualperformance.

APEAPCETmarksNormalizationProcess:
The main aim of the normalization is to justify the candidates who got a difficult papercompared to an easier paper. Hence, the task is to rationalize in the best possible sense and
rankthecandidatesbasedontheglobalperformance.VariousnationallevelexaminationbodieslikeJ EE(Main),GATE,etc.arecurrentlyadoptingsuchnormalizationprocedures.Correspondingly, the EAPCET committee has deliberated extensively and decided to use thefollowingnormalization procedure.
NormalizedMarksofthecandidate

$$GMS+\frac{Top\ AverageGlobal-GMS}{TopAverageSession-SMS}\times(MarksObtainedbyCandidate-SMS)$$

where
SMS: (Average + Standard Deviation) of the session in which the candidate belongs toGMS: (Average + Standard Deviation) of all the candidates across all sessions togetherTopAverage Session:Average marks of the top 0.1% of the candidatesinthe

session in

whichthecandidatebelongsto
TopAverageGlobal:Averagemarksofthetop0.1%ofallthecandidatesacrossallsessionsTo
gether

Weightageforassigningmerit ranks:
75%ofAPEAPCETnormalizedmarksand25%ofIntermediateMarksingroupsubjectstoprepareth
e rank.

Note:

- For Candidates having qualifying marks in AP EAPCET-2022, if after normalization, themarks(s) in any individual subject(s) become negative, then the normalized mark(s) in therespectivesubject(s)aretreatedaszero.However,totalmarksinthreesubjectsareconsideredas EAPCET marks.
- For the candidates for whom there is no qualifying cut off in AP EAPCET - 2022, if themarks in all the three subjects after normalization goes below zero (negative), the total marksistreatedaszeroandtherankisassigned.IfthetiepersiststhenAPEAPCET2022normalization marks (thoughnegativeareconsidered forbreakingthetie).

Demonstrationwithasampledata:

The following is based on a sample data to explain the normalization process. The data isbased on almost equal number of candidates in all the four sessions. The normalization isshown subject wise so that students get the benefit based on subject wise performance ratherthantheentirepaper inasession.
AveragesandStandardDeviationsinaparticularsessionandaveragesoftop0.1%candidates of a particular session, Global Average and Standard Deviations of all sessionstogether,Averages of top0.1%candidates inall sessions isgiven in Table

1. Example data ofnormalizedmarks is shownin Table 2toTable5.

Table1:AveragesandStandardDeviationsofsampledata

		Maths	Physics	Chemistry
Session1	Avg	27.01245	11.44816	13.56629
	Std_Dev	10.23632	4.135746	5.939418
	Top 0.1%Avg	74.28	37.93	37.7
Session2	Avg	27.23746	11.49711	13.69626
	Std_Dev	10.38974	4.177132	6.005731
	Top 0.1%Avg	74.85	38.03	37.93
Session3	Avg	23.8686	10.25933	13.55555
	Std_Dev	7.717783	3.20095	5.403734
	Top 0.1%Avg	70.05	35.55	39
Session4	Avg	23.95383	10.2931	13.55808
	Std_Dev	7.793973	3.212227	5.460391
	Top 0.1%Avg	70.18	36.4	39.38
All sessions together	*Global_Avg*	*25.52725*	*10.87743*	*13.60516*
	Global_Std_Dev	9.252138	3.764241	5.718592
	Top 0.1%Global Avg	73.92	37.65	38.74

Table2:ExampleofNormalizedmarksinSession1:

Candidate	Marks	Maths	Physics	Chemistry	Total
C1	ActualMarks	0	0	0	0
	NormalizedMarks	-4.6	-1.407	-1.49	-7.498
C2	ActualMarks	8	3	5	16
	NormalizedMarks	3.857	1.682	3.845	9.385
C3	ActualMarks	61	16	25	102
	NormalizedMarks	59.89	15.07	25.19	100.1
C4	ActualMarks	76	36	38	150
	NormalizedMarks	75.75	35.67	39.06	150.5

Table3:ExampleofNormalizedmarksinSession2:

Candidate	Marks	Maths	Physics	Chemistry	Total
C1	ActualMarks	1	3	4	8
	NormalizedMarks	-3.74	1.595	2.595	0.451
C2	ActualMarks	14	9	2	25
	NormalizedMarks	9.932	7.771	0.464	18.17
C3	ActualMarks	48	24	33	105
	NormalizedMarks	45.69	23.21	33.49	102.4
C4	ActualMarks	78	38	39	155
	NormalizedMarks	77.24	37.62	39.88	154.7

Table4:ExampleofNormalized marksinSession3:

Candidate	Marks	Maths	Physics	Chemistry	Total
C1	ActualMarks	0	0	0	0
	NormalizedMarks	2.634	0.622	0.957	4.21
C2	ActualMarks	10	5	1	16
	NormalizedMarks	12.81	5.83	1.926	20.6
C3	ActualMarks	50	17	31	98
	NormalizedMarks	53.52	18.33	30.99	103
C4	ActualMarks	74	39	38	151
	NormalizedMarks	77.94	41.24	37.77	157

Table5:ExampleofNormalized marksinSession4:

Candidate	Marks	Maths	Physics	Chemistry	Total
C1	ActualMarks	4	1	2	7
	NormalizedMarks	6.457	1.97	2.935	11.4
C2	ActualMarks	19	7	9	35
	NormalizedMarks	21.75	8.018	9.641	39.4
C3	ActualMarks	13	6	16	35
	NormalizedMarks	15.63	7.01	16.35	39
C4	ActualMarks	67	9	24	100
	NormalizedMarks	70.69	10.03	24.01	105
C5	ActualMarks	57	8	35	100
	NormalizedMarks	60.49	9.025	34.55	104
C6	ActualMarks	80	38	40	158
	NormalizedMarks	83.94	39.26	39.34	163

ANNEXURE–V

CRITERIAFORRANKING(APEAPCET–2022"AM"CATEGORY")

AsperG.O.Ms.No73ofHigherEducation(EC.2)Department,dated28-07-2011,thecandidateswhohavesecuredqualifyingmarksinAPEAPCET-2022andcandidatesbelongingtothecategoryofScheduledCasteandScheduleTribe,forwhomqualifyingmarkshavenotbeenprescribed,shallbeassignedrankingintheorderofmeritonthebasisof combined score obtained by giving 75% weightage to the marks secured in AP EAPCET-2022and25% weightage tothe markssecuredinthe relevantgroupsubjectsnamelyMathematics,Physics, Chemistryof thequalifyingexamination.

Forthepreparationofmeritlist,incaseofmorethanonestudentsecuringthesamecombined score obtained as mentioned above, the tie shall be resolved to decide the relativerankingbysuccessivelyconsideringthe following

(I) ThetotalmarkssecuredinAPEAPCET-2022
(II) TheMarkssecuredinBiologyinAPEAPCET-2022
(III) Themarks securedin Physicsin APEAPCET-2022
(IV) Ifthetiestillpersists,theolder(basedondateofbirth)beinggivenpreferenceovertheyounger.

The weightage of marks in the case of candidates belonging to the category of Persons of Indian Origin (PIO) / Overseas Citizen of India (OCI) Card Holders, will be decided by a committee constituted by the competent authority.