ANGRAU

ACHARYA N.G. RANGA AGRICULTURAL UNIVERSITY

ADMINISTRATIVE OFFICE:LAM
GUNTUR - 522034

Advt.No. 1406/OP/A2/2016, dt.13.08.2018

Applications are invited in the prescribed format for the posts of **Assistant Executive Engineer (Civil) & Assistant Executive Engineer (Electrical)** under **(Direct Recruitment–General)**. Information pertaining to the number of vacancies, reservation, qualifications, experience, registration fee, general instructions and application format, syllabus is available in the University website www.angrau.ac.in.

The last date for submission of the applications in offline is 14.09.2018 at 4.00PM.

D. BHASKARA RAO
REGISTRAR

ACHARYA N.G. RANGA AGRICULTURAL UNIVERSITY

ADMINISTRATIVE OFFICE:LAM, GUNTUR-522034

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Advt.No. 1406/OP/A2/2016, dt.13.08.2018

(Direct Recruitment – General)

Applications are invited in the prescribed format together with Registration Fee of Rs.1250/- (Rs.750/- for SC/ST) for the under mentioned posts. Candidates should possess the prescribed qualifications as on the date of this notification. The registration fee amount payable by way of crossed Demand Draft in favour of THE COMPTROLLER, Acharya N.G.Ranga Agricultural University, Lam, Guntur payable at Guntur, Andhra Pradesh on any Nationalized bank and the same shall be enclosed with filled in application form

1.**Assistant Executive Engineer (Civil) – 6 posts**

Scale of Pay : Rs.37100-91450(RPS, 2015)

OC -2nos; OC-W-1no; BC-A-1no; BC-B-W-1no; SC-1no

2.Assistant Executive Engineer (Electrical) – 1 post

Scale of Pay : Rs.37100-91450(RPS, 2015)

OC-W-1no

Age:

For all the above posts, age as on 01.07.2018 should be between 18-42 years. Upper age limit is relaxable by 5 years in case of SC, ST & BC candidates and 10 years for physically handicapped candidates.

Candidates for all the above posts must be able to speak, read and write Telugu language.

QUALIFICATIONS:

Essential:

AEE Civil :

Must possess a Bachelor's Degree in Civil Engineering of an University in India established or incorporated by or under a Central Act, State Act or an Institution Recognized by the University Grants Commission / AICTE or a Pass in Sections-"A" and "B" of AMIE (India) Examination in Civil Engineering.

AEE Electrical :

Must possess a Bachelor's Degree in Electrical Engineering of an University in India established or incorporated by or under a Central Act, State Act or an Institution Recognized by the University Grants Commission / AICTE or a Pass in Sections-"A" and "B" of AMIE (India) Examination in Electrical Engineering.

Desirable:

Experience in the respective fields from any reputed firms or Government.

METHODS OF SELECTION

1. **Written Test**:
   (Objective Type –Manual with OMR answer sheet)

PART - A	General Studies and Mental ability	45 Marks	45 Questions	45 Minutes
PART- B	Subject (B.E./B.Tech Standard)	135 Marks	135 Questions	135 Minutes

Selected candidates shall be governed by Acharya N.G.Agricultural University Engineering service regulations, 1984 and they are eligible for new Contributory Pension Scheme of the University and such other conditions as may be prescribed by the University from time to time. All the selected candidates are liable to be posted or transferred to any part of the Andhra Pradesh state to the equivalent posts.

GENERAL INSTRUCTIONS TO THE CANDIDATE

1. The application format is placed at the University web site www.angrau.ac.in
2. Candidates have to download the application and fill in the application and submit in offline to "The Registrar, Acharya N.G. Ranga Agricultural University, Lam, Guntur – 522034" either in person or through registered post.
3. Candidates must be able to speak, read and write Telugu language.
4. Application with incomplete information or false information will be rejected.
5. Applications received without support of attested copies of documents and certificates including work experience will be rejected.
6. Any action or attempt to influence the University authorities either personally or by letter or by any other way entails for disqualification of the candidature of the applicant.
7. Candidates working under Government/Quasi Government and Public Sector undertaking/Autonomous bodies have to send their applications through proper channel.
8. The University reserves the right to fill or not to fill some or all the posts now advertised.
9. Separate applications shall be submitted for each post along with prescribed fee.
10. The in-service candidates of ANGRAU may send their applications directly.
11. The applicants should appear for written test and interview when called at their own cost.
12. The examination is likely to be held between date 12th October, 2018 and 14th October, 2018.
13. Syllabus for the exam is enclosed.
14. **HALL TICKETS** can be downloaded 7 days before commencement of Examination.
15. The success in the Examination confers no right to appointment unless the appointing authority is satisfied after such enquiry as may be considered necessary that the candidate having regard to his/her character and antecedents are suitable in all respects for appointment to the services.
16. The Candidate should physically fit for the post.
17. The Candidate should produce original certificates as may be required by the appointing authority in accordance with the Rules / Notification.

RESERVATION TO LOCAL CANDIDATES

1. Reservation to the Local candidates is applicable as provided in the Rules and as amended from time to time as in force on the date of notification. The candidates claiming reservation as Local candidates should obtain the required Study certificates (from IV Class to X Class or SSC) OR Residence Certificate in the Proforma only for those candidates who have not studied in any Educational Institutions as the case may be. The relevant certificates with authorized signature shall be produced as and when required.

2. **DEFINITION OF LOCAL CANDIDATE**:

i) "LOCAL CANDIDATE" means a candidate for direct recruitment to any post in relation to that Local areas where he/she has studied in Educational Institution(s) for not less than four consecutive academic years prior to and including the year in which he/she appeared for S.S.C or its equivalent

examination. If however, he/she has not studied in any educational institution 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 Candidate does not fall within the scope of above then, if he/she has studied for a period of not less than seven years prior to and inclusive of the year in which he/she has studied SSC or its equivalent, he/she will be regarded has local candidate on the basis of the maximum period out of the said period of seven years AND where the period of his/her study in two or more local areas or equal such local area where he/she has studied last in such equal periods will be taken for determining the local candidature. Similarly, if he/she has not studied during the above said period in any Educational Institution(s) the place of residence during the above period will be taken into consideration and local candidature determined with reference to the maximum period of residence or in the case of equal period where he/she has resided last in such equal periods.

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 4/7-year period. If, however, it is based on residence, a certificate should be obtained from an officer of the Revenue Department not below the rank of a Mandal Revenue Officer in independent charge of a Mandal.

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

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 S.S.C. OR EQUIVALENT EXAMINATION, SUCH CANDIDATES HAVE TO PRODUCE STUDY CERTIFICATES INVARIABLY. THE CANDIDATES, WHO ACQUIRED DEGREE FROM OPEN UNIVERSITIES WITHOUT STUDYING SSC/ MATRICULATION OR EQUIVALENT IN EDUCATIONAL INSTITUTIONS, HAVE TO SUBMIT RESIDENCE CERTIFICATE ONLY. EDUCATIONAL INSTITUTIONS MEANS A RECOGNIZED INSTITUTION BY THE GOVERNMENT / UNIVERSITY/ COMPETENT AUTHORITY. (C) Candidates are advised to refer provisions of the PRESIDENTIAL ORDER 1975 in this regard (D) G.S.R. 591(E).—In exercise of the powers conferred by clauses (l) and (2) of article 371D of the Constitution, the President hereby makes the following Order further to amend the Andhra Pradesh Public Employment (Organization of Local Cadres and Regulation of Direct Recruitment) Order, 1975, namely:-

1. this order may be called the Andhra Pradesh Public Employment (Organisation of Local Cadres and Regulation of Direct Recruitment) Amendment Order, 2016. (2) 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 subparagraph 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 three 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. Note: At the time of verification, candidates who have migrated from Telangana to Andhra Pradesh in between 2nd June,2014 and 1st June, 2017 shall produce local Status certificate as laid out **in circular memo No.4136/SPF & MC/2015-5, Dated.08/08/2016.**

The prescribed application forms for the posts can be down loaded from the University website **www.angrau.ac.in** and such filled in applications should reach the undersigned on or before 14.09.2018 at 4.00 PM but the applications received after 14.09.2018 at 4.00 PM cannot be entertained.

The University is not responsible for late receipt of the applications due to postal delay.

D.BHASKARA RAO
REGISTRAR

Date: 13.08.2018
Guntur

ACHARYA N.G. RANGA AGRICULTURAL UNIVERSITY
ADMINISTRATIVE OFFICE:LAM, GUNTUR-522034

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APPLICATION FOR THE POST OF **ASSISTANT EXECUTIVE ENGINEER**

Post applied (Civil / Electrical) :

Affix Self attested recent Passport size photograph of the candidate

1. Name of the Candidate (In Block letters) :

2. Date of Birth :

3. Place of Birth (Including District) :

4. Nationality :

5. Social Status (OC/SC/ST/BC-A, BC-B, BC-C, BC-D/ BC-E/P.H(Proof should be enclosed) :

6. Marital Status :

7. Gender :

8. Mother tongue :

9. Languages known(put a √ mark in the relevant column for "YES" and X mark for "NO"

S.No.	Language known	Speak only	Read only	Read and write
1.				
2.				
3.				
4.				

10. Father's Name :

11. Address for correspondence :

12. Permanent address :

13. Email ID :

14. Mobile No. :

15. Educational qualifications :

S.No.	Name of the Examination	Name of the Board & University	Registration No.	Year & Month of passing	Max. Marks	Marks obtained	Percentage
1.	SSC						
2.	Intermediate/Diploma						
3.	Graduation						
4.	Post Graduation						
5.	Other extra qualifications						

16. Technical qualifications:

S.No.	Name of the examination	Name of the Board	Registration No.	Year & Month of passing	Max. Marks	Marks obtained	Percentage
1.							

17. Experience :

S.No.	Name of the Organization & Place	Post held	Monthly salary received	Service		Period		
				From	To	YY	MM	DD
1.								
2.								
3.								

18. Details of Registration Fee:

Name of the Bank & Branch	D.D.No.	Date	Amount

Declaration

I certify that the information furnished above is true and correct to the best of my knowledge and belief. If the above information is found to be false or incorrect, my services can be terminated at any time without notice. Further, no medical authority has declared me not eligible for Government service earlier.

SIGNATURE OF THE APPLICANT

Date:
Place:

Name:

SYLLABUS FOR ASSISTANT EXECUTIVE ENGINEER

COMMON PAPER PART-A

GENERAL STUDIES / MENTAL ABILITY

1. Events of national and international importance.
2. Current affairs- international, national and regional.
3. General Science and it applications to the day to day life Contemporary developments in Science & Technology and information Technology
4. Social- economic and political history of modern India with emphases on

   Indian national movement.
5. Indian polity and governance: constitutional issues, public policy, reforms and e-governance initiatives.
6. Economic development in India since independence.
7. Physical geography of India sub-continent.
8. Disaster management: vulnerability profile, prevention and mitigation strategies, Application of Remote Sensing and GIS in the assessment of Disaster
9. Sustainable Development and Environmental Protection
10. Logical reasoning, analytical ability and data interpretation.
11. Data Analysis:

    a) Tabulation of data

    b) Visual representation of data

    c) Basic data analysis (Summary Statistics such as mean and variance coefficient of variation etc.,) and Interpretation
12. Bifurcation of Andhra Pradesh and its Administrative, Economic, Social, Cultural, Political, and legal implications/problems, including

    a). Loss of capital city, challenges in building new capital and it's financial implications.

    b). Division and rebuilding of common Institutions.

c). Division of employees, their relocation and nativity issues.

d). Effect of bifurcation on commerce and entrepreneurs.

e). Implications to financial resources of state government.

f). Task of post-bifurcation infrastructure development and opportunities for investments.

g). Socioeconomic, cultural and demographic impact of bifurcation.

h). Impact of bifurcation on river water sharing and consequential issues. i). AP REORGANISATION ACT, 2014 on AP and the arbitrariness of certain provisions.

1. General Science – Contemporary developments in Science and Technology and their implications including matters of every day observation and experience, as may be expected of a well-educated person who has not made a special study of any scientific discipline.

2. Current events of national and international importance.

3. History of India – emphasis will be on broad general understanding of the subject in its social, economic, cultural and political aspects with a focus on AP Indian National Movement.

4. World Geography and Geography of India with a focus on AP.

5. Indian polity and Economy – including the country's political system- rural development – Planning and economic reforms in India.

6. Mental ability – reasoning and inferences

PART-B

FOR CIVIL ENGINEERING

I. STRENGTH OF MATERIAL:

Forces, moments, Equilibrium; Applying the Equation of Equilibrium, Planar Trusses; Friction;

Forces and Moments Transmitted by Slender members-shear Force and Bending

Moment Diagrams;

Mechanics of Deformable Bodies-Force –deformation –Relationships and Static Indeterminacy, Uniaxial Loading and Material Properties, Analysis of Statically Determinate and Indeterminate Trusses. Deflection of Statically Determinate Trusses.

Force –Stress- Equilibrium – Multi axial Stress and Strain and their relationship; Linear Elasticity – Material Behaviour – Stress-strain-temperature Relationships and Thin-walled Pressure Vessels. Thick Cylinders. Stress Transformations and Principal Stress, Stress and Strain Trasformation, Theories of Failure.

Bending : Stress and Strains; Deflections – Pure Bending, Moment –curvature relationship. Deflection of statically determinate beams using Macaulay's method, Moment-Area Method and Conjugate Beam Method.

Torsion; Energy Methods –Torsion and Twisting, Energy Methods

II. FLUID MECHANIC AND MACHINERY

Basic principles of fluid mechanics – pascal's ;aw, transmission & multiplication of force, basic properties of hydraulic fluids , density , specific weight specific gravity , viscosity and bulk modulus, continuity equation, Bernoulli's eq., Torricelli's theorem laminar v/s turbulent flows ,static head pressure, pressure losses ,hydraulic system; Fluid Statics – Hydrostatics, Fluid forces on planes and curved surfaces, submerged and floating bodies, Buoyancy and stability. Control Volume analysis; Basic laws – Mass conservation law, thermodynamic laws, Newton's laws, Angular-Momentum principle; Flows in a pipes and channels – friction factor; Governing equations of fluid flows – continuity, Euler equations, Navier-stokes equations, internal flows; external flows, Flow separation;

Flow measurement devices – Gross measurement: Venturi meter, Orifice meter, notches and weirs, turbine flow meters, rotameters; Point measurement: pitot tubes, hot wire/film anemometer, their measurement principles and sources of errors; calibration, uncertainty estimation.

Hydraulic pumps-pumps flow and pressure, pump drive, torque and power, efficiency, types of pumps-gear, vane, piston; pressure compensated pumps, cavitation and aeration, velocity triangles, centerline thermodynamic analysis

Hydraulic Directional Control –Check Valves, Shuttle Valves, two-three- and four-Way Directional Control Valves, Directional Control Valve Actuation Hydraulic Pressure Control – Pressure Relief Valves, Unloading Valves, Pressure Reducing Valves, Sequence Valves, Counterbalance Valves, Pressure Compensated Pumps

TURBINES – performance characteristics for low and high speed machines, centerline thermodynamic analysis, velocity triangles, hydraulic turbines – pelton, Francis and Kaplan turbine.

III. BUILDING MATERIALS:

Timber: Different types and species of structural timber, density – moisture relationship, strength in different directions, defects, preservations, plywood.

Bricks: Types, Indian standard classification, absorption, saturation factor, strength in masonry, influence of mortar strength on masonry strength.

Cement: Compounds of different types, setting times, strength.

Cement mortar: Ingredients, proportions, water demand, mortars for plastering and masonry.

Concrete: Importance of w/c ratio, strength, ingredients including admixtures, workability, testing for strength, mix design methods, non-destructive testing.

IV. STRUCTURAL ANALYSIS:

General theorems : theorems relating to elastic structures, principles of virtual work, strain energy in elastic structures, complementary energy ,Castigliano's theorem ,Betti's and Maxwell's reciprocal theorems.

Analysis of determinate structures –Deflection of determinate beams by double integration maculay's movement area and conjugate beam methods, Analysis of indeterminate skeletal frames-Moment distribution, Slope deflection, Kani's, Stiffness and force methods, Energy methods, Plastic analysis of indeterminate beams and simple portal frames..

V. DESIGN OF STEEL STRUCTURES:

Principles of working stress method. Design of bolted and welded connections, axially and eccentrically loaded joints, Simple connection of bracket plates to columns, beam to beam and beam to column connections, design of framed, unstiffened and stiffened seat connections Design of industrial roofs. Principles of ultimate load design. Design of simple members.

VI. DESIGN OF CONCRETE AND MASONRY STRUCTURES:

Limit state design for bending, Shear, Axial compression and combined forces. Codal provision for slabs, Beams, Columns and footings. Working stress method of design of R.C. members. Principles of pre-stressed concrete design, Materials, Methods of pre- stressing, losses. Design of simple members and determinate structures. Design of brick masonry as per IS codes.

VII. CONSTRUCTION PLANNING AND MANAGEMENT:

Bar chart, Linked bar chart, Work break down structures, Activity – on – arrow diagrams. Critical path, Probabilistic activity durations, Event based networks. PERT network: Time-cost study, Crashing, Resource allocation.

VIII. HYDROLOGY AND WATER RESOURCE ENGINEERING:

Hydrological cycle, Precipitation and related data analysis, Unit hydrographs, Evaporation and transpiration. Floods and their management, Stream gauging, Routing of floods, Capacity of reservoirs. Multi purpose uses of water: Soil-plant – Water relationships, Irrigation systems. Water demand assessment: Storages and their yields. Ground water yield and well Hydraulics. Water logging and drainage design. Design of rigid boundary canals, Lacey's and tractive force concepts in canal design, Lining of Canals, Sediment transport in canals, Non-overflow and overflow dams and their design, Energy dissipaters, Design of head works, Distribution works, Falls, Cross- drainage works, Outlets, River training.

IX. ENVIRONMENTAL ENGINEERING:

- Water Supplying Engineering: Sources of supply, Yields, Design of intakes and conductors, Estimation of demand. Water quality standards, Control of water borne diseases. Primary and secondary treatment. Conveyance and distribution systems of treated water, Leakages and control. Rural water supply. Institutional and industrial water supply.

- Waste Water engineering: Urban rain water disposal, Systems of sewage collection and disposal. Design of sewers and sewerage systems, Pumping. Characteristics of sewage and its treatment. Disposal of products of sewage treatment. Plumbing systems. Rural and semi-urban sanitation.

- Solid Waste Management: Sources and effects of air pollution, Monitoring of air pollution, Noise pollution, Standards, Ecological chain and balance. Environmental assessment.

X. SOIL MECHANICS AND FOUNDATION ENGINEERING:

Properties and classification of soil, Compaction, Permeability and Seepage, Flow nets, Compressibility and consolidation. Stress distribution in soils, Shearing resistance, Stresses and failure. Soil testing in laboratories and in-situ, Earth pressure theories, Soil exploration. Types of foundations, Selection criteria, Bearing capacity, Settlement, Laboratory and field tests, Design of shallow foundations.Types of piles and their design and layout. Foundations on expansive soils.

XI. SURVEYING AND TRANSPORT ENGINEERING:

Classification of surveys, Scales, Accuracy, Measurement of distances, Direct and indirect methods, Optical and electronic devices, Measurement of directions, Prismatic compass, Local attraction, Theodlytes, Types, Measurement of elevations, Spirit and trigonometric leveling, Contours, Digital elevation modeling concept, Establishment of control by triangulations and traversing, Measurement and adjustment of observations, Computation of coordinates, Field astronomy, Concept of global positioning system, Map preparation by plane tabling and by photogrammetry, Remote sensing concepts, Map substitutes. Planning of Highway systems, Alignment and geometric design, Horizontal and vertical curves, Grade separation,Highway Materials and construction methods for different surfaces and maintenance. Principles of pavement design, Drainage. Traffic surveys, Intersections, Signaling, Mass transit systems, Accessibility, Networking.

PART-B

FOR ELECTRICAL ENGINEERING

SYLLABUS FOR RECRUITMENT TO THE POST OF ASST. EXECUTIVE ENGINEER (ELECTRICAL)

Degree Standard:

I. ELECTRICAL CIRCUITS:

Basic electrical laws, Analysis of DC networks, transient response of RLC networks excited by impulse, step, ramp and sinusoidal excitations. Transform methods, transfer functions, poles and zeros steady state AC networks, frequency domain analysis, resonance, coupled circuits, two port networks, three phase networks, power in a.c. networks, power measurement in 3-phase networks.

II. E.M. THEORY:

Electro static and electro magnetic fields, vector methods, Fields in dielectric, conducting and magnetic materials, Laplace and Poisson's equation. Time varying fields, Maxwell's equation, Poynting Theory, properties of transmission lines.

III. ELECTRICAL MEASUREMENT AND INSTRUMENTS:

Electrical standards, Error analysis, Measurement of current, voltage, power, energy, power factor, resistance, inductance capacitance frequency and loss angle. Indicating instruments, extension of range of instruments, DC and AC bridges. Electronic measuring instruments. Electronic multimeter, CRO, frequency counter, digital voltmeter, transducers, Thermocouples, Thermistor, LVDT, strain gauges, Piezo electric crystal, Measurement of non-electrical quantities like, pressure, velocity, temperature, flow rate, displacement acceleration and strain.

IV. CONTROL SYSTEMS

Open and closed loop control systems, Mathematical modelling, block diagram, signal flow graphs, time response and frequency response of linerar systems, error constants and series Rootlocus technique, Bodeplot, polar plot, M-circles, N-circles, Nichol's charts, stability, Routh Hurwitz criteria. Nyquist stability criteria, compensators, design in frequency domain. Control system components. Servo motors, synchros, tacho generator, error detector. State variable approach, modelling, state transition matrix, transfer function, response.

V. ELECTRONICS:

Solid state devices and circuits. Small and large signal-amplifiers with and without feedback at audio and radio frequency, multistage amplifiers. Operational amplifiers and applications. Integrated circuits oscillators, RC, LC and crystal oscillators wave form generators, multi-vibrators – Digital circuits, Logic gates, Boolean algebra combinational and sequential circuits. A to D and D to A converters Micro processors (8085) instruction set, memories, interfacing programmable p

eripheral devices – Number system flow charts – expressions and statements in C – language – simple programs for engineering application.

VI. D.C. ELECTRICAL MACHINES:

Fundamentals of electro mechanical energy conversion, constructional features of D.C. Machines, emf equation types and characteristics of generators application, Torque in DC motor, types of DC motors, applications. Testing of D.C. motors, efficiency, and starting and speed control.

VII.TRANSFORMERS:

Construction – Principle of operation of 1-phase transformers – Vector diagram on No Load and – Load – Parallel operation – Regulation – efficiency – Equivalent circuit 3 phase transformer connections – Scott connection.

VIII. INDUCTION MOTORS:

Production of rotating magnetic field, production of torque types of motors equivalent circuits, Circle diagram, torque slip characteristics, starting and maximum torque, speed control, principle of single phase induction motors, Applications.

IX. SYNCHRONOUS MACHINES:

Generation of emf in 3 phase AC Generator, Armature reaction, regulation by Synchronous inpedance and Ampere turn methods, parallel operation, transient and sub-transiat reactances, theory of salient pole machines. Synchronous Motor: Torque production, performance characteristics, methods of starting, V- Curves, synchronous condenser.

Special Machines: Stepper motor, Methods of operation, Amplidyne and metadyne- applications.

X. ELECTRICAL POWER GENERATION:

General layout – Types of power stations, economics of different types, base load and peak load stations, load factor and its effects, pumped storage schemes.

XI. POWER TRANSMISSION:

Calculation of line parameters, concepts of short, medium and long transmission lines, ABCD parameters, insulators, Corona, P.U. quantities, fault calculations, symmetrical components load flow analysis using Gauss Seidal, New-ton Raphson, methods, economic operation, stability, steady state and transient stability, equal area criterion, ALFC and AVR control for real time operation of interconnected systems.

XII. POWER SYSTEM PROTECTION:

Principles of arc quenching, circuit breaker classification, Recovery and restriking voltages, relaying principles over current, directional over current relays-generator and transformer protection using differential relays-line protection using distance relays Surgeo phenomena in transmission lines

– Travelling wave theory, protection against surges.

XIII. UTILISATION:

Industrial Drives – Motors for various drives – Braking methods – Speed control of motors – Economics of rail traction – Mechanics of train movement – Estimation of power and energy requirements – Illumination – Laws Factory lighting – Street lighting – Induction and dielectric heating.

-END-