NOTICE

It is hereby notified for the information of all the eligible candidates who have applied for the post of Technical Assistant available in various departments/campuses of the University advertised vide Advertisement Notice No. 04 of 2026, dated 04.02.2026 that the syllabus for the aforementioned posts is appended to this notice as under:

S. No	Post	Department/ Campus	Annexure
1.	Technical Assistant	Biochemistry	*Annexure-A*
2.	Technical Assistant	Botany	*Annexure-B*
3.	Technical Assistant	Computer Science	*Annexure-C*
4.	Technical Assistant	Home Science	*Annexure-D*
5.	Technical Assistant	Kupwara Campus	*Annexure-E*
6.	Technical Assistant	Physics	*Annexure-F*

By order,

Sd/-
Deputy Registrar
Recruitment

No. F/NT-Syllabus-TA/KU/26
Dated: 04.06.2026

Annexure - A

Syllabus for the post of Technical Assistant (Biochemistry)

Unit 1

- Carbohydrates: Structure, classification and properties. Bological importance of mono-, di and polysaccharides. Mucopolysaccharides and proteoglycans
- Amino acids: Structure, classifications and physiochemical properties: Essential and non-essential amino acids
- Proteins: Structure, classification and properties; Protein denaturation and renaturation
- Lipids: Classification and properties, Nomenclature and properties of saturated and unsaturated fatty acids
- Nucleic acids: Structure, properties and types of nucleic acids. Denaturation and annealing of DNA

Unit 2

- Enzymes: classification and nomenclature
- Enzyme activity, factors affecting enzyme activity
- Enzyme kinetics: Michaelis Menten equation, Lineweaver-Burk plot
- Enzyme inhibition: competitive, uncompetitive and noncompetitive. Irreversible inhibition
- Enzyme regulation: allosteric enzymes, Covalent modifications of enzymes. Feed back inhibition
- Enzyme assays
- Organ function tests

Unit 3

- Carbohydrate Metabolism: Glycolysis, TCA cycle, pentose phosphate pathway, gluconeogenesis, glycogen synthesis and breakdown
- Electron transport chain and ATP synthesis
- Lipid Metabolism: β-oxidation of fatty acids, biosynthesis of fatty acids, Ketone bodies- Formation and utilization
- Transamination and deamination reactions, urea cycle, Inborn errors of amino acid metabolism
- Metabolism of purines and pyrimidines

Unit 4

- Structural organization of prokaryotic and eukaryotic cells
- Structure, composition and functions of cell wall and plasma membrane
- Structure and functions of cell organelles: nucleus, mitochondria, plastids, endoplasmic reticulum, golgi apparatus, lysosomes and ribosomes
- Cell cycle and its regulation
- Cell death: apoptosis and necrosis
- Cell signaling: The basic elements of cell signaling, Signaling molecules and their receptors

Unit 5

- DNA as genetic material, Central dogma of molecular biology

- Chromatin organization and structure of chromosome
- Replication, transcription, genetic code, translation
- Epigenetics and its importance in regulation of gene expression
- Hereditary, linkage and recombination
- Mutations: types and consequences
- Mendelian laws of genetics

Unit 6

- Cells and organs of immune systems
- Immunoglobulins: structure, function and classes
- Types of immunity and immune response (innate, humoral and cell mediated)
- Hypersensitivity: Type I, II, III, and IV
- Autoimmunity and autoimmune diseases
- Immunological techniques: ELISA and RIA

Unit 7

- Safety practices in the laboratory
- Preparation of solutions and buffers
- Analysis of biomolecules using UV/visible, fluorescence spectroscopy
- Centrifugation: principle and its applications
- Chromatography: Gel filtration, Ion exchange, Affinity and High-pressure liquid chromatography
- Electrophoresis and its types, Isoelectric focusing
- Western blotting technique

Unit 8

- Recombinant DNA technology: concept and applications
- Vectors: plasmids, bacteriophages, phagemids, cosmids, YACs, and BACs
- Restriction endonucleases: types and specificity
- Site Directed Mutagenesis
- Cell culture: basic concepts
- Polymerase chain reaction (PCR) and types
- Principles of - RFLP, RAPD and AFLP techniques
- Gene silencing and knockout approaches

Syllabus for the post of Technical Assistant (Botany)

Unit-1: Microbes, Mycology and Pathology

Viruses: Discovery, general structure, replication, DNA virus (T-phage); lytic and lysogenic cycle, RNA virus (TMV).

Bacteria: General characteristics and cell structure; reproduction – vegetative, asexual and sexual (conjugation, transformation and transduction); economic importance.

Fungi: General characteristics, classification (Alexopolous, Mims & Blackwell). Cell wall composition, nutrition, and reproduction; life cycle of representative genera: *Rhizopus* (Zygomycota), *Venturia* (Ascomycota), *Agaricus* (Basidiomycota).

Plant Diseases: Study of major plant diseases: symptoms, causal organism, disease cycle, and management practices viz., Late blight of Potato, Paddy blast, *Alternaria*; Bacterial blight of rice.

Unit 2: Algae and Bryophytes

Algae: General characteristics. Classification (Round 1965), criteria for algal classification; range of thallus organization; morphology, reproduction, and life cycle of *Nostoc, Chlamydomonas, Oedogonium, Ectocarpus, Batrachospermum*; economic importance of algae.

Bryophytes: General characteristics; Proskauer's classification (up to family); morphology, anatomy, and reproduction of Marchantia and Funaria; evolution of sporophyte; apogamy and apospory; alternation of generations; economic importance.

Unit 3: Pteridophytes and Gymnosperms

Pteridophytes - General characteristics; classification of pteridophytes (Sporne 1965); Early land plants (*Rhynia*); morphology, anatomy and reproduction of *Equisetum* and *Dryopteris*; heterospory and origin of seed habit; evolution of stellar systems in pteridophytes.

Gymnosperms - General characteristics, classification – Christenhusz et al. 2011 (upto family); morphology, anatomy and reproduction of *Cycas* and *Pinus*; economic importance of gymnosperms.

Unit 4: Plant Taxonomy

Plant Taxonomy: Introduction and types of classification (artificial, natural, phylogenetic).

Classification Systems: Bentham and Hooker (up to series); Angiosperm Phylogeny Group (APG) system (up to order level).

Plant identification: Methods of identification; dichotomous keys (kinds and construction); polyclaves (a brief account); cybertaxonomy (concept and scope), e-floras and e-herbaria; role of herbaria and botanical gardens in plant identification and conservation.

Scientific nomenclature: Brief overview of various nomenclature codes; International Code for Nomenclature of Cultivated Plants (ICNCP), International Code for Nomenclature of algae, fungi and plants (ICN); author citation; effective and valid publication; basionyms and synonyms; homonyms; autonyms and tautonyms.

Unit 5: Plant Anatomy and Reproductive Biology

Anatomy: Meristematic and permanent tissues (simple and complex); organization of root and shoot apical meristem (Histogen theory, Tunica-Corpus theory); anatomy of typical dicot and monocot root, stem, and leaf; cambium types and structure, general account of wood structure (heartwood and sapwood); structure and function of cuticle, epidermis, and stomata; anatomical adaptations in xerophytes and hydrophytes.

Reproduction: Micro-sporogenesis and development of male gametophyte; megasporogenesis and development of female gametophyte; **s**tructure and types of ovules & embryosac;

Fertilization: Types of pollination and floral modifications; double fertilization; structure and development of dicot (*Capsella bursa-pastoris*) and monocot (maize) embryo; seed dispersal mechanisms; brief account of apomixes and its applications.

Unit 6: Plant Physiology and Biochemistry

Plant Water relations: Water potential and its components; transpiration; ascent of sap; essential macro and micronutrients, their roles in plant metabolism; passive and active transport of ions across membranes.

Photosynthesis: Light reaction (Photosystems I and II, Electron transport chain, Photophosphorylation); Dark reaction (C3, C4, and CAM pathways); Photorespiration.; **and Respiration**: Glycolysis; anaerobic respiration; TCA cycle; Electron Transport System and Oxidative phosphorylation; Pentose Phosphate Pathway.

Metabolism an Growth: Classification, mechanism of action, and properties of Enzymes; roles of auxins, gibberellins, cytokinins, ABA, and ethylene; photo-morphogenesis; vernalization.

Unit 7: Genetics and Cell Biology

Genetics: Mendelian principles and modified Mendelian ratios (lethal genes, co-dominance, incomplete dominance, epistatic interactions); multiple allelism and pleiotropy; concept of linkage, complete and incomplete linkage (Bridges experiment); Crossing over-concept and significance.

Chromosomal Aberrations: Numerical and structural changes in chromosomes (origin, meiotic behaviour and genetic consequences)

Cell Biology: Structure of prokaryotic and eukaryotic cells; structure and function of bio-membranes (Fluid Mosaic Model); cell wall structure; cell division- mitosis and meiosis.

Cell Organelles: Structure and functions of ribosomes, endoplasmic reticulum, golgi bodies, lysosomes, mitochondria, chloroplast, and nucleus; euchromatin and heterochromatin.

Unit 8: Molecular Biology

DNA: DNA structure, mechanism of DNA replication, DNA damage and repair mechanisms.

Transcription: RNA polymerase, introns and their significance, transcription factors, mechanism of transcription, post transcriptional modifications, RNA editing.

Translation: Ribosomes - structure and assembly, tRNA and genetic code; mechanism of protein synthesis, initiation, elongation and termination factors.

Regulation: Gene regulation in prokaryotes (Lac operon, tryptophan operon) and eukaryotes (role of promoters, activators, repressors and DNA methylation).

Unit 9: Ecology

Population Ecology: Population characteristics (density, natality, mortality); population growth curves (J and S shaped); types of species interactions (positive, negative, neutral); interspecific competition; symbiosis (mutualism, commensalism, parasitism); community structure and attributes (species composition, diversity); Species diversity and its measurement (richness and evenness); ecological succession (mechanism and process).

Ecosystem Ecology: Biotic components (food chains, food webs, trophic levels); abiotic components (soil formation, soil profile and horizons); Primary production & controlling factors; energy flow pathways; Cycles of Carbon, Nitrogen, and Phosphorus (pathways and processes).

Biogeography: Concept of habitat and niche; fundamental and realized niche; resource partitioning; types of terrestrial biomes (forest, grassland, desert) and aquatic ecosystems (freshwater, marine).

Unit 10: Economic Botany:

Germplasm: Concept of germplasm and gene pool; centres of origin of major crop plants, crop domestication, conservation strategies.

Cereals: Origin, morphology, and uses of Wheat and Rice.

MAPs: Introduction, morphology, and uses of *Crocus sativus* (Saffron), *Curcuma domestica* (Turmeric), *Saussurea costus* (Kuth) and *Papaver somniferum* (Opium Poppy); methods of extraction of essential oils.

Oils and Fibers: Systematic position and uses of Brassica (Mustard) and Coconut; classification of fibres; morphology, extraction, and uses of cotton.

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Syllabus for the post of Technical Assistant (Computer Science)

Unit 1: Network Device Configuration and Secure Access

- Configure console, Telnet, and SSH access on Cisco devices with authentication and encryption settings.
- Configure enable secret and service password encryption.
- Assign IP addresses to interfaces, including calculating subnet masks, determining wildcard masks, broadcast addresses, and default gateways.
- Use both classfull and classless addressing schemes.

Unit 2: VLANs and Inter-VLAN Communication

- Configure VLANs on managed switches.
- Assign switch ports to specific VLANs.
- Set up trunk links using IEEE 802.1Q encapsulation.
- Implement Inter-VLAN routing using Router-on-a-Stick (ROAS) or Layer 3 switches.
- Verify connectivity between VLANs.

Unit 3: DHCP and Network Address Translation

- Configure DHCP services on routers or dedicated servers.
- Configure DHCP pools, excluded addresses, lease time, and verify DHCP bindings.
- Implement NAT (Static, Dynamic, PAT) for private-to-public IP translation.
- Validate NAT functionality through simulation and testing.

Unit 4: Network Security and Switching Protocols

- Secure switch ports using Port Security (sticky MAC, shutdown, restrict, protect modes).
- Configure Spanning Tree Protocol (STP) and Rapid STP (RSTP).
- Assign bridge priority manually to optimize path selection and prevent switching loops.

Unit 5: Routing Protocols and Access Control

- Implement Static Routing and Default Routing.
- Configure dynamic routing protocols.
- Implement route redistribution between protocols (e.g., OSPF and EIGRP).
- Configure Standard and Extended Access Control Lists (ACLs) for traffic filtering based on IP, protocols, and ports.

Unit 6: Windows Server Installation and Virtualization

- Install and configure Windows Server OS.
- Perform initial configuration (hostname, IP settings, domain membership).
- Enable remote management and server roles.
- Create and configure virtual machines using Hyper-V or Oracle Virtual Box.
- Allocate CPU, memory, storage, and configure virtual network adapters.

Unit 7: Directory Services and DNS Management

- Install and configure Active Directory Domain Services (AD DS).
- Deploy a sample web page and configure IIS Web Server.
- Install and configure DNS Server.
- Create forward and reverse lookup zones.
- Configure A, CNAME, MX, and PTR records.
- Test DNS functionality.

Unit 8: File Services and Backup Management

- Configure shared folders on Windows Server.
- Implement NTFS and share permissions.
- Enable offline files and access auditing.
- Create user accounts manually or via Group Policy.
- Implement Windows Server Backup, scheduled backups, system image backup, and restoration.

Unit 9: Linux System Administration and Automation

- Install and configure Linux distributions (Ubuntu, CentOS, Debian).
- Manage users, groups, and permissions (chmod, chown).
- Manage storage using LVM and NFS.
- Configure and manage services using systemd (start, stop, enable, disable).
- Configure SSH with key authentication and firewall rules using iptables/firewalld.
- Use monitoring tools: top, htop, df, du, netstat.
- Write Bash scripts for automation.
- Schedule tasks using cron and systemd timers.

Unit 10: DGX A100 AI Server Administration

- Understand DGX A100 architecture, NVIDIA A100 Tensor Core GPUs, NVLink interconnect, and DGX OS.
- Install and update DGX OS and NVIDIA drivers.
- Configure Docker and NVIDIA Container Toolkit for GPU-accelerated containers.
- Monitor GPU utilization, temperature, and performance using nvidia-smi and DCGM tools.
- Manage deep learning environments using NGC containers and frameworks such as TensorFlow, PyTorch, and RAPIDS.
- Configure high-speed data transfer using Mellanox/InfiniBand interfaces.
- Implement system-level security and access control for multi-user AI research environments.
- Backup and restore critical data and system configurations in DGX environments.

Annexure - D

Syllabus for the post of Technical Assistant (Home Science)

Unit 1: Assessment of Nutritional Status

➤ **Anthropometric methods**

- ❖ Height and Weight
- ❖ Mid-arm circumference
- ❖ Head circumference and Chest circumference
- ❖ Waist hip ratio and BMI
- ❖ Conversion of Weight, length and Volume

➤ **Clinical and Biochemical assessment**

➤ Diet survey methods

- ❖ 24 hour recall method
- ❖ Weightment method
- ❖ Qualitative and quantitative methods

Unit 2: Dietary principles required in diet planning for various Normal conditions

- ❖ Pregnant women and Lactating women
- ❖ Pre-school children
- ❖ School going children
- ❖ Children suffering from PEM (3–6 years)
- ❖ Adolescents
- ❖ Athlete involved in a strenuous sport event
- ❖ Elderly person (60–80 yrs) having dental problems/dentures
- ❖ Identification of common nutritional deficiencies

Unit 3: Dietary principles required in diet planning for various Therapeutic conditions

- ❖ Febrile illness
- ❖ Diarrhea and Constipation
- ❖ Liver diseases
- ❖ Peptic ulcer patient
- ❖ Atherosclerosis and Hypertension

- ❖ Renal diseases.
- ❖ Obesity and under nutrition
- ❖ Mal absorption syndrome
- ❖ Obese diabetic

Unit 4: Advanced Nutrition

- **Body composition**: Importance, components. Wang's five level model of body composition
- **Energy**: Introduction, Components of Energy Expenditure. Energy Expended in physical activity. Measurement of energy expenditure. Units of measurement, Estimating Energy Requirements
- **Proteins:** Metabolism, Nitrogen Balance. Quality of Proteins. Methods used for evaluating protein quality (amino acid score, PER, BV, NPU)
- **Lipids:** Fatty Acids and Essential Fatty Acid deficiency
- **Water and electrolytes:** Body water, (Preformed and metabolic water) Functions, Distribution, Requirement, Water Balance. Water Retention and Depletion. Electrolyte balance

Unit 5: Role of Minerals and Vitamins in Nutrition

Macro and Micro Elements:

- **Calcium**: Metabolism, Absorption and factors affecting it
  Calcium Balance and factors contributing to balance
- **Phosphorous, Magnesium,Sulphur** : Functions, deficiency and toxicity
- **Iron**: Absorption, Transport, Storage, Excretion, Functions, Deficiency and Toxicity
- **Other Micro-Elements:** Functions, Deficiency and Toxicity
- **Fat Soluble vitamins:** Functions, sources and deficiency
- **Water Soluble Vitamins:** Functions, sources and deficiency

Unit 6: Nutritional Biochemistry I

- **Carbohydrates:** Properties of monosaccharides, biologically important derivatives of monosaccharides (glycosides, sugar alcohols, sugar acids, sugar phosphates, deoxy sugars, amino sugars), disaccharides (lactose, maltose, sucrose),structures and functions of polysacharides, (starch, glycogen, pectin, cellulose), mucopolysaccharides (hyaluronic acid, heparin, chondroitin sulphate).
- **Lipids:** Triglycerides, fatty acids - nomenclature and their properties, phospholipids, lecithin, cephalin, sphingomyelins, glycolipids, lipoproteins (composition and transport) steroids (cholesterol and bile acids)

Unit 7: Nutritional Biochemistry II

- **Proteins:** Peptides and proteins. Composition of proteins (N & C terminals) orders of protein structure, factors responsible for protein structure, structure of collagen, denaturation.
- Classification of foods on the basis of composition. Common types of food spoilage and food borne diseases.

Unit 8 : Qualitative Estimation

- Qualitative detection of Monosaccharide, Disaccharides and Polysaccharides.
- Qualitative Detection of Protein and Amino-acids.
- Qualitative test for Fats, Cholesterol.
- Qualitative test for Calcium, Phosphorus, Sodium Chloride.
- Determination of Saponification value of lipids, Acid number of fats, Iodine number of fats.

Unit 9 : Quantitative Estimation

- Estimation of glucose and total proteins in blood.
- Estimation of calcium & phosphorus in blood.
- Estimation of bilirubin & cholesterol in serum.
- Making of % solution, Normality

Unit 10: Blood Profile Estimation

- Microscopic examination of slides of various tissues.
- Estimation of hemoglobin (Sahlis method)
- Total blood count and differential count.
- Determination of various blood group
- Examination of urine for various normal and abnormal constituent

Syllabus for the post of Technical Assistant (Kupwara Campus)

Unit-1: Basic Circuit Elements and Sources

Voltage and current sources; ideal voltage source and ideal current source with their V characteristics: controlled (dependent) sources. Passive circuit elementsresistor, inductor and capacitor (R, L and C); V-I characteristics and ratings of R, L and C elements. Source transformation: conversion of voltage sources into current sources and current sources into voltage sources. Series, parallel and series-parallel combinations of resistances and determination of equivalent resistance. Colour coding of resistors.

Unit-II: Circuit Laws and Network Analysis

Ohm's law. Kirchhoff's Current Law (KCL) and Kirchhoff's Voltage Law (KVL) with simple applications. Concept of node and loop; nodal and mesh analysis. Star-Delta and Delta-Star transformations. Introduction to network theorems: Superposition, Thevenin's. Nortons. Reciprocity and Maximum Power Transfer theorems. Basic concept of one-port and two-port networks.

Unit-III: Semiconductor Fundamentals and Diodes

Introduction to semiconductors and classification of materials;commonly used semiconductor materials. Energy band concept in semiconductors; charge carriers (electrons and holes) and effect of temperature on conductivity. Intrinsic and extrinsic semiconductors: N-type and P type semiconductors. Formation and working of P-N junction diode: V-I characteristics under forward and reverse biasing; concept of knee voltage and breakdown voltage: basic diode equation. Zener diode: working, characteristics and application as a voltage regulator: introduction to regulator ICs. Special purpose diodes such as LED and photodiode basic working principles, characteristics and applications.

Unit-IV: Rectifier and Wave-Shaping Circuits

Rectifier circuits: definition and types: halt-wave rectifier and full-wave rectitier (centre Lapped and bridge): basic working principle and output waveforms. Concept ot rectifier efficiency and ripple factor for half-wave and full-wave rectifiers. Diode numbering system, polarity identification, and basic ratings including8 maximum forward current, peak inverse voltage (P|V) and power dissipation. Wave-shaping cireuits: clippers-unbiased and biased (positive and negative), and clamperspositive and negative: basic working and applications.

Unit-V: Transistors and Biasing

Introduction to transistors as semiconductor devices. Bipolar Junction Transistor (BJT): construction and working of PNP and NPN transistors. Transistor configurationscommon base (CB), common emitter (CE) and common collector (CO: input and output characteristics. Regions of operation (cut-ofl, active and saturation), Transistor as a sw itch. Current gains in CB and CE configurations. DC load line and operating point (Q-point). Introduction to transistor biasing. Voltage divider bias, Stabilization of Q point. Introduction

to other Field Effect Transistor transistors: Field Effect Transistor (FET) and Metal Oxide Semiconductor (MOSFET)-basic structure and working (qualitative).

Unit - V: Transistors and Biasing

Introduction to transistors as semiconductor devices. Bipolar Junction Transistor (BJT): construction and working of PNP and NPN transistors. Transistor configurationscommon base (CB), common emitter (CE) and common collector (CO: input and output characteristics. Regions of operation (cut-ofl, active and saturation), Transistor as a switch. Current gains in CB and CE configurations. DC load line and operating point (Q-point). Introduction to transistor biasing. Voltage divider bias, Stabilization of Q point. Introduction to other Field Effect Transistor transistors: Field Effect Transistor (FET) and Metal Oxide Semiconductor (MOSFET)-basic structure and working (qualitative).

Unit - VI: Amplifiers and Oscillators

Transistor as need an amplifier: basic principle of amplification. Single-stage and multistage positive and negative for cascading. feedback. RC-coupled amplifier: basic circuit and working. Concept of Oscillators: Sinusoidal basic concept and need; essentials of oscillation and Barkhausen criterion. working oscillators-Hartley, Colpitts, RC phase shift and Wien bridge oscillators: basic principle and frequency of oscillation. Crystal oscillator: basic idea and applications.

Unit VII: Linear Integrated Circuits

Introduction amp. Block to operational amplifiers (op-amps): basic idea and ideal characteristics of an op diagram of IC 741 and basic working principle. Concept of open-loop and closed loop operation of an op-amp. Basic op-amp applications: inverting and non-inverting amplifiers; summing amplifier and subtractor; integrator and differentiator. Schmitt trigger. 555 Timer: basic introduction; monostable and astable modes of operation. Introduction to active filters: basic idea of low-pass and high-pass filters.

Unit-VIII: Digital Electronics

Number systems, base conversions. Representation of signed and unsigned numbers. Binary arithmetic: addition and subtraction using 2's complement method. Introduction to BCD code. Logic gates: numbering, truth tables and logic symbols. Boolean algebra: basic postulates and fundamental theorems. Combinational logic circuits: standard representation of logic functions (SOP and POS forms). Karnaugh map minimization. Half adder and Trull adder: half subtractor and full Subtractor Multiplexers, demultiplexers, encoders and decoders-basic operation and applications. Sequential logic circuits: flip-flops. Counters. Registers and memories: registers and shit registers-Memory devices: ROM, PROM, EPKOM and EEPROM. RAM: static and dynamic. Introduction to Logic Families.

Unit-IX: Communication Electronics

Introduction to communication systems and their basic elements; Modulation techniques: Amplitude Modulation (AM) -basic principle, modulation index, generation and detection using envelope detector. Frequency Modulation (FM) basic concept, advantages over AM. generation and detection. Introduction to digital communication; need tor digital

transmission: basic idea of Pulse Code Modulation (PCM). Introduction to Dipole Antenna, Optic Fibre Basics.

Unit-X: Electronic Instruments and Measurements

Introduction to measurement and basic concepts of errors. Definition and classification of transducers. Basic idea of resistive, inductive and capacitive transducers. Working principles and applications of piezoelectric, thermoelectric, photoelectric and Hall-effect sensors. Applications of transducers in the measurement of temperature, pressure, displacement and light. Measurement of voltage, current and resistance using analog instruments. Digital measuring instruments: Digital Voltmeter (DVM) and Digital Multimeter (DMM) basic principle and applications. Cathode Ray Oscilloscope (CRO): basic block diagram. principle of operation and applications; measurement of voltage and frequency using CR0

Annexure - F

Syllabus for the post of Technical Assistant (Physics)

1. **Heat & Thermodynamics:** Laws of Thermodynamics, Kinetic theory of gases, heat transfer, thermal expansion, specific heat, calorimetry, entropy.
2. **Mechanics & General Properties:** Newton's laws, central forces, Kepler's laws, rigid body motion, and fluid kinematics (Bernoulli's theorem).
3. **Electromagnetism:** Electrostatics, Gauss law, Maxwell's equations, Biot-Savart law, electromagnetic induction, and alternating current (LCR circuits).
4. **Optics:** Ray optics (lenses and telescopes) and wave optics (interference, Young`s double slit, Newton's rings, diffraction gratings, and polarization).
5. **Modem Physics & Quantum Theory:** Photoelectric effect, Compton effect, Schrodinger wave equation, Bohr's atomic model, and special theory of relativity.
6. **Electronics & Devices:** Semiconductor physics (P-N junction, Zener diodes, BJT, FET), logic gates (AND, OR, NOT), and operational amplifiers (Op-amps).
7. **Solid State & Nuclear Physics:** Crystal structure, band theory of solids, radioactivity, nuclear models and particle detectors.
8. **Waves & Oscillations:** S.H.M, damped and forced oscillations, resonance, wave equation, Doppler effect.