SHRI VISHWAKARMA SKILL UNIVERSITY
(State University enacted under the Government of Haryana Act 25, 2016)

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Syllabus for the post of Skill Instructor

50 Marks

Sr. No.	Subject
1	Agriculture
2	Civil Engineering
3	Computer Science Engineering
4	Electronics Engineering
5	Interior Design
6	Management (Retail)
7	Mechanical Engineering
8	Medical Lab. Technology
9	Physics
10	Visual Arts (Graphics &Design)
11	Yoga & Health

SYLLABUS FOR TO THE POST OF SKILL INSTRUCTOR (AGRICULTURE)

Domain Knowledge   **50 Marks**

UNIT-I: Farm Machinery: Machine Design: Design and selection of machine elements - gears, pulleys, chains and sprockets and belts; overload safety devices used in farm machinery; measurement of force, stress, torque, speed, displacement and acceleration on machine elements - shafts, couplings, keys, bearings and knuckle joints, Soil Village; forces acting on a tillage tool; hitch systems and hitching of Village implements; functional requirements, principles of working, construction and operation of manual, animal and power operated equipment for tillage, sowing, planting, fertilizer application, inter-cultivation, spraying, mowing, chaff cutting, harvesting and threshing calculation of performance parameters - field capacity, efficiency, application rate and losses; cost analysis of implements and tractors.

UNIT-II: Sectoral composition of Indian Economy & External Sector In India: Issues in Agriculture sector in India, land reforms Green Revolution and agriculture policies of India, India's foreign trade value composition and direction, India Balance of payment since 1991, FDI in India, Impact of Globalization on Indian Economy, WTO and India.

UNIT-III: Agricultural Meteorology: Different meteorological variables related to agriculture, Rainfall- Hydrologic cycle and it's components, Types and forms of precipitation, Humidity, definition, windvane, Anemo-meter, Indian Agro Climatic Zones Elementary idea of weather forecasting, etc.

UNIT-IV: Principles of Crop Production: Definition and scope of Agronomy, Classification of Crops on Different basis, General principles of Crop production: Climate, soil and its preparation, seed and seed sowing, post-sowing tillage, water management, nutrition, plait protection measures, harvesting, threshing and storage, Crop sequences and systems with emphasis on mixed cropping and inter cropping, etc.

UNIT-V: Introduction to Plant Biotechnology: Definition scope and importance of plant biotechnology, Plant tissue culture, Cloning vectors for recombinant DNA, Application of plant genetic engineering in crop improvement, etc.

Principles of Plant Breeding: Plant Breeding-history, objectives and scope, Mode of reproduction in crop plants in relation to breeding techniques, Plant variation kind and causes, Genetic consequences of elf and cross pollinated crops, etc.

SYLLABUS FOR TO THE POST OF SKILL INSTRUCTOR (CIVIL ENGINEERING)

Domain Knowledge   **50 Marks**

UNIT-I

Engineering Mechanics: System of forces, free-body diagrams, equilibrium equations; Internal forces in structures; Friction and its applications; Kinematics of point mass and rigid body; Centre of mass; Euler's equations of motion; Impulse-momentum; Energy methods; Principles of virtual work.

Solid Mechanics: Bending moment and shear force in statically determinate beams; Simple stress and strain relationships; Theories of failures; Simple bending theory, flexural and shear stresses, shear centre; Uniform torsion, buckling of column, combined and direct bending stresses.

UNIT-II

Structural Analysis: Statically determinate and indeterminate structures by force/ energy methods; Method of superposition; Analysis of trusses, arches, beams, cables and frames; Displacement methods: Slope deflection and moment distribution methods; Influence lines; Stiffness and flexibility methods of structural analysis.

Construction Materials and Management: Construction Materials: Structural steel - composition, material properties and behaviour; Concrete - constituents, mix design, short- term and long-term properties; Bricks and mortar; Timber; Bitumen. Construction Management: Types of construction projects; Tendering and construction contracts; Rate analysis and standard specifications; Cost estimation; Project planning and network analysis - PERT and CPM.

UNIT-III

Concrete Structures: Working stress, Limit state and Ultimate load design concepts; Design of beams, slabs, columns; Bond and development length; Pre stressed concrete; Analysis of beam sections at transfer and service loads.

Steel Structures: Working stress and Limit state design concepts; Design of tension and compression members, beams anal beam- columns, column bases; Connections - simple and eccentric, beam-column connections, plate girders and trusses; Plastic analysis of beams and frames.

Unit-IV

Soil Mechanics: Origin of soils, soil structure and fabric; Three-phase system and phase relationships, index properties; Unified and Indian standard soil classification system; Permeability - one dimensional flow, Darcy's law; Seepage through soils - two-dimensional flow, flow nets, uplift pressure, piping; Principle of effective stress, capillarity, seepage force and quicksand condition; Compaction in laboratory and field conditions; One dimensional consolidation, time rate of consolidation; Mohr's circle, stress paths, effective and total shear strength parameters, characteristics of clays and sand.

Foundation Engineering: Sub-surface investigations - scope, drilling bore holes, sampling, plate load test, standard penetration and cone penetration tests; Earth pressure theories - Rankine and Coulomb; Stability of slopes finite and infinite slopes, method of slices and Bishop's method; Stress distribution in soils - Boussinesq's and Westergaard's theories, pressure bulbs; Shallow foundations - Terzaghi's and Meyerhoff's bearing capacity theories, effect of water table; Combined footing and raft foundation; Contact pressure; Settlement analysis in sands and clays; Deep foundations - types of piles, dynamic and static formulae, load capacity of piles in sands and clays, pile load test, negative skin friction.

Unit-V

Water and Waste Water: Quality standards, basic unit processes and operations for witer treatment. Drinking water standards, water requirements, basic unit operations and unit processes for surface water treatment, distribution of water. Sewage and sewerage treatment, quantity and characteristics of wastewater. Primary, secondary and tertiary treatment of wastewater, effluent discharge standards. Domestic wastewater treatment, quantity of characteristics of domestic wastewater, primary and secondary treatment. Unit operations and unit processes of domestic wastewater, sludge disposal.

Air Pollution: Types of pollutants, their sources and impacts, air pollution meteorology, air pollution control, air quality standards and limits.

Municipal Solid Wastes: Characteristics, generation, collection and transportation of solid wastes, engineered systems for solid waste management (reuse/ recycle, energy recovery, treatment and disposal).

Noise Pollution: Impacts of noise, permissible limits of noise pollution, measurement of noise and control of noise pollution.

SYLLABUS FOR TO THE POST OF SKILL INSTRUCTOR (COMPUTER SCIENCE ENGINEERING)

Domain Knowledge   **50 Marks**

Unit-I:

Digital logic: Binary Systems and Logic Circuits: Number Systems, Logic Gates, Logic Family Terminology- Boolean algebra and Mapping Methods: Boolean Algebra, Karnaugh Maps, Realizing Logic Function with Gates, Combinational Design Examples. Combinational Logic with Multiplexers and Decoders, Overview of Sequential circuits: Flip Flops, Counters and Registers. Logic Families: Transistor-Transistor Logic(TTL), Emitter- Coupled Logic(ECL), MOSFET Logic, TTL Gates. Programmable Logic Devices: Introduction to Programmable Logic Devices,

Computer Organisation and Architecture: Machine instructions and addressing modes. ALU, data-path and control unit. Instruction pipelining. Memory hierarchy: cache, main memory and secondary storage; I/O interface (interrupt and DMA mode). Central Processing Unit: General register organization, stack organization, Instruction formats, Data transfer and manipulation, program control. RISC & CISC architecture. Pipeline and Vector processing: Pipeline structure, speedup, efficiency, throughput and bottlenecks. Arithmetic and Instruction pipeline. Stored program architecture of computers, Storage device- Primary memory, and Secondary storage, Random, Direct and Sequential access methods, Concepts of High-level, Assembly and Low-level languages.

Unit-II:

Programming in C and C++ : Programming in C- flow chart, data types, assignment statements, input-output statements, developing simple C programs, If statement, looping concept:for loops, while loops, do-while loops, switch statement, break statement, continue statement, development of C programs using above statements, Arrays, functions, parameter passing, recursion, Programming in C using these statements, Structures, files, pointers and file handling.

Concept of object, class, objects as variables of class data type, difference in structures and class in terms of access to members, private and public Basics of C++. Friend functions and classes, using this pointer, creating and destroying objects dynamically using new and delete operators. Constructors and destructors, Static class members, container classes and iterators, proxy classes. members of a class, data & function members. Characteristics of OOP- Data hiding, Encapsulation, data security. Operator overloading: Overloading stream function, binary operators. and unary operators.

Inheritance: constructors and destructors in derived classes, public, private and protected inheritance, relationship among objects in an inheritance hierarchy, abstract classes, virtual functions and dynamic binding, virtual destructors. Templates, exception handling.

Unit-III:

Data structure and Algorithms: Linear Data Structures: Linear linked lists: singly, doubly and circularly. Comparison of arrays and linked lists as data structures. Linked implementation of stack, queue and dequeue. Insertion, deletion and traversal of stack, queue, dequeue implemented using linked structures.

Non-Linear Structures: Trees definition, characteristics, and Binary tree: different types of binary trees based on distribution of nodes, binary tree (threaded and unthreaded) as data structure, insertion, deletion and traversal of binary trees, constructing binary tree from traversal results. Threaded binary Tree. AVL tree: Concept of balanced trees, balance factor in AVL trees balancing, AVL tree after insertion and deletion.

Searching, sorting, hashing. Asymptotic worst case time and space complexity. sparse matrices for transposing & multiplication, stack, queue, dequeue, circular queue Evaluation of Expression: Concept of precedence and associativity in expressions, Evaluation of expression in infix, postfix & prefix forms using stack. Recursion.

Graphs: Definition, Relation between tree & graph, directed and undirected graph, representation of graphs using adjacency matrix and list. Depth first and breadth first traversal of graphs, finding connected components and spanning tree. Single source single destination shortest path algorithms.

Unit-IV:

JAVA: Introduction Programming language Types and Paradigms. Features of Java Language, JVM, Bytecode. Java Source File Structure, Compilation, Executions. Basic Language Elements: Lexical Tokens, Identifiers, Keywords, Liberals, Comments, Primitive Datatypes, Operators Assignments.

Class Fundamentals, Object & Object reference, Object Life time & Garbage Collection, Creating and Operating Objects, Constructor & initialization code block, Access Control, Modifiers, methods Nested , Inner Class &Anonymous Classes ,Abstract Class & Interfaces Defining Methods, Argument Passing Mechanism , Method Overloading, Recursion, Dealing with Static Members, Finalize() Method, Native Method. Use of "this "reference, Use of Modifiers with Classes & Methods, Design of Accessors and Mutator Methods Cloning Objects, shallow and deep cloning, Generic Class Types.

Types of Inheritance in Java, Role of Constructors in inheritance, Overriding Super Class Methods, Use of "super", Polymorphism in inheritance, Type Compatibility and Conversion Implementing interfaces.

Package, Exception Handling: The Idea behind Exception, Exceptions & Errors, Types of Exception, Control Flow In Exceptions, JVM reaction to Exceptions, Use of try, catch, finally, throw, throws in Exception Handling, In-built and User Defined Exceptions, Checked and Un-Checked Exceptions. Thread: Understanding Threads , Needs of Multi-Threaded Programming ,Thread Life-Cycle, Thread Priorities ,Synchronizing Threads,

Operating systems: Overview of operating systems, functionalities and characteristics of OS. Hardware concepts related to OS, CPU states, I/O channels, memory hierarchy, and microprogramming, concept of a process, operations on processes, process states, concurrent processes, process control block, process context. UNIX process control and management, PCB, signals, forks and pipes. Interrupt processing, operating system organisation, OS kernel FLIH, dispatcher. Job and processor scheduling, scheduling algorithms, process hierarchies. Problems of concurrent Processes, critical sections, mutual exclusion, synchronisation, deadlock. Mutual exclusion, process co-operation, producer and consumer processes. Semaphores: definition, init, wait, signal operations. Use of semaphores to implement mutex, process synchronisation etc., implementation of semaphores. Critical regions, Conditional Critical Regions, Monitors, Ada Tasks. Interprocess Communication (IPC), Message Passing, Direct and Indirect. Deadlock: prevention, detection, avoidance, banker's algorithm. Memory organisation and management, storage allocation. Virtual memory concepts, paging and segmentation, address mapping. Virtual storage management, page replacemant strategies. File organisation: blocking and buffering, file descriptor, directory structure. File and Directory structures, blocks and fragments, directory tree, inodes, file descriptors, UNIX file structure.

Unit-V:

Databases: File Systems Organization, Terminologies, Database characteristics, Data models and Types of data models. Components of DBMS-Relational Algebra. Logical Database Design: Relational DBMS Codd's Rule, Entity Relationship model, Extended ER Normalization, Functional Dependencies, SQL & Query optimization SQL Standards, Data types, Database Objects- DDL, DML, DCL,TCL-Embedded SQL-Static Vs Dynamic SQL QUERY OPTIMIZATION: Query Processing and Optimization, Heuristics and Cost Estimates in Query Optimization. Transaction Processing and Concurrency Control. Properties of Transaction, Serializability, Concurrency Control Locking Mechanisms- Two Phase Commit Protocol Deadlock. File Organization, Organization of Records in Files- Indexing and Hashing —Ordered lndices — B+ tree Index Files — B tree Index Files — Static Hashing — Dynamic Hashing — Introduction to Distributed Databases

Computer Networks: Concept of layering, LAN technologies (Ethernet), Flow and error control techniques, switching. IPv4/IPv6, routers and routing algorithms (distance vector, link state). TCP/UDP and sockets, congestion control. Application layer protocols (DNS, SMTP, POP, FTP, HTTP). Basics of Wi-Fi. Network security: authentication, basics of public key and private key cryptography, digital signatures and certificates, firewalls.

SYLLABUS FOR TO THE POST OF SKILL INSTRUCTOR (ELECTRONICS ENGINEERING)

Domain Knowledge   **50 Marks**

UNIT-I

Overview of Electronic Components & Signals: Passive Active Components: Resistances, Capacitors, Inductors, Diodes, Transistors, FET, MOS and CMOS and their Applications. Signals: DC/AC, voltage/current, periodic/non- periodic signals, average, rms, peak values, different types of signal waveforms, Ideal/non-ideal voltage/current sources, independent/dependent voltage current sources.

UNIT-II

Overview of Analog Circuits: Operational Amplifiers-Ideal Op-Amp, Practical op amp, Open loop and closed loop configurations, Application of Op-Amp as amplifier, adder, differentiator and integrator.

UNIT-III

Overview of Digital Electronics: Introduction to Boolean Algebra, Electronic Implementation of Boolean Operations, Gates-Functional Block Approach, Storage Elements-Flip Flops-A Functional block approach, Counters: Ripple, Up/down and decade, Introduction to digital IC Gates (of TTL Type).

UNIT-IV

Electric and Magnetic Circuits: EMF, Current, Potential Difference, Power and Energy; M.M.F, magnetic force, permeability, hysteresis loop, reluctance, leakage factor and BH curve; Electromagnetic induction, Faraday's laws of electromagnetic induction, Lenz's law; Dynamically induced emf; Statically induced emf; Equations of self and mutual inductance; Analogy between electric and magnetic circuits.

UNIT-V

A.C. Circuits: Cycle, Frequency, Periodic time, Amplitude, Angular velocity, RMS value, Average value, Form Factor Peak Factor, impedance, phase angle, and power factor; Mathematical and phasor representation of alternating emf and current; Voltage and Current relationship in Star and Delta connections; A.C in resistors, inductors and capacitors; A.C in R-L series, R-C series, R-L-C series and parallel circuits; Power in A. C. Circuits, power triangle. **Transformer and Machines:** General construction and principle of different type of transformers; Emf equation and transformation ratio of transformers; Auto transformers; Construction and Working principle of motors¡ Basic equations and characteristic of motors.

SYLLABUS FOR TO THE POST OF SKILL INSTRUCTOR (INTERIOR DESIGN)

Domain Knowledge   **50 Marks**

Unit-I

Architecture, Planning and Design: Architectural Graphics; Visual composition in 2D and 3D; Computer application in Architecture and Planning; Anthropometrics; Organization of space; Circulation- horizontal and vertical; Space Standards; Universal design; Building byelaws; Codes and standards.

Unit-2

Construction and Management: Project management techniques e.g. PERT, CPM etc.; Estimation and Specification; Professional practice and ethics; Form and Structure; Principles and design of disaster resistant structures; Temporary structures for rehabilitation.

Unit-3

Urban Design, landscape and Conservation : Historical and modern examples of urban design; Elements of urban built environment – urban form, spaces, structure, pattern, fabric, texture, grain etc.; Concepts and theories of urban design; Principles, tools and techniques of urban design; Public spaces, character, spatial qualities and Sense of Place; Urban design interventions for sustainable development and transportation; Development controls – FAR, densities and building byelaws; Urban renewal and conservation; heritage conservation; historical public spaces and gardens; Landscape design; Site planning.

Unit-4

Services and Infrastructure : Fire fighting Systems; Building Safety and Security systems; Building Management Systems; Water treatment; Water supply and distribution system; Water harvesting systems; Principles, Planning and Design of storm water drainage system; Sewage disposal methods; Methods of solid waste management - collection, transportation and disposal; Recycling and Reuse of solid waste; Land-use – transportation - urban form inter-relationships; Design of roads, intersections, grade separators and parking areas; Hierarchy of roads and level of service; Para-transits and other modes of transportation, Pedestrian and slow moving traffic planning.

Unit-5

Building Services and Sustainability : Solar architecture; Thermal, visual and acoustic comfort in built environments; Natural and Mechanical ventilation in buildings; Air-Conditioning systems; Sustainable building strategies; Building Performance Simulation and Evaluation; Intelligent Buildings; Water supply; Sewerage and drainage systems; Sanitary fittings and fixtures; Plumbing systems; Principles of internal and external drainage system; Principles of electrification of buildings; Elevators and Escalators - standards and uses.

SYLLABUS FOR TO THE POST OF SKILL INSTRUCTOR (RETAIL MANAGEMENT)

Domain Knowledge   **50 Marks**

Unit-I: Fundamentals of Retail Management

- Meaning, nature and importance of retailing
- Evolution & growth of retail industry (India & global)
- Types of retail formats – store-based, non-store, organized, unorganized, multi-channel & omni-channel
- Role of retail in the economy

Unit-II: Retail Consumer Behaviour & Selling Skills

- Retail consumer characteristics & shopping behaviour
- Factors affecting buying decisions (cultural, social, psychological, personal)
- Consumer decision-making process in retail context
- Fundamentals of retail selling & salesmanship
- Steps in the selling process: approach, presentation, handling objections, closing, follow-up
- Customer relationship management (CRM) & loyalty programs

Unit-III: Retail Operations & Merchandising

- Store location and site selection
- Store design, layout, atmospherics & visual merchandising
- Merchandise planning & assortment
- Pricing strategies & promotion tools (in-store & digital)
- Inventory management, stock control & billing systems
- Customer service, complaint handling & shrinkage control

Unit-IV: Retail Supply Chain, Technology & E-Commerce

- Supply chain & logistics in retail: warehousing, distribution, vendor management
- Reverse logistics & loss prevention
- Role of technology in retail (RFID, POS, barcoding, analytics)
- E-commerce & m-commerce in retail
- Omnichannel strategies & digital payments
- Emerging technologies: AI, AR/VR, personalization in retail

Unit-V: Retail Laws, Ethics & Emerging Trends

- Legal framework for retail in India: Shops & Establishment Act, Consumer Protection Act, GST, Labour Laws, FDI in retail
- Ethical issues: fair pricing, advertising, consumer rights, data privacy
- Sustainability & green retailing practices
- Human resource management in retail (recruitment, training, motivation, performance management)
- Globalization of retail & future trends: experiential retail, subscription models, personalization

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SYLLABUS FOR TO THE POST OF SKILL INSTRUCTOR (MACHENICAL ENGINEERING)

Domain Knowledge   **50 Marks**

Unit-I

Engineering Mechanics: Free-body diagrams and equilibrium; kinematics and Dynamics of particles and of rigid bodies in plane motion; impulse and momentum (linear and angular) and energy formulations, collisions.

Mechanics of Materials: Stress and strain, elastic constants, Poisson's ratio; Mohr's circle for plane stress and plane strain; thin cylinders; shear force and bending moment diagrams; bending and shear stresses; deflection of beams; torsion of circular shafts; Euler's theory of columns; energy methods; thermal stresses; strain gauges and rosettes; testing of materials with universal testing machine; testing of hardness and impact strength.

Theory of Machines: Displacement, velocity and acceleration analysis of plane mechanisms; dynamic analysis of linkages; cams; gears and gear trains; flywheels and governors; balancing of reciprocating and rotating masses; gyroscope

Unit-II

Vibrations: Free and forced vibration of single degree of freedom systems, effect of damping; vibration isolation; resonance; critica1 speeds of shafts.

Machine Design: Design for static and dynamic loading; failure theories; fatigue strength and the S-N diagram; principles of the design of machine elements such as bolted, riveted and welded joints; shafts, gear's, rolling and sliding contact bearings, brakes and clutches, springs.

UNIT-III

Fluid Mechanics: Fluid properties; fluid statics, manometry, buoyancy, forces on submerged bodies, stability of floating bodies; control-volume analysis of mass, momentum and energy; fluid acceleration; differential equations of continuity and momentum; Bernoulli's equation; dimensional analysis; viscous flow of incompressible fluids, boundary layer, elementary turbulent flow, flow through pipes, head losses in pipes, bends and fittings.

Heat-Transfer: Modes of heat transfer; one dimensional heat conduction, resistance concept and electrical analogy, heat transfer through fins; unsteady heat conduction, lumped parameter system, Heislei's charts; thermal boundary layer, dimensionless parameters in free and forced convective heat transfer, heat transfer correlations for flow over flat plates and through pipes, effect of turbulence; heat exchanger performance, LMTD and NTU methods; radiative heat transfer, Stefan Boltzmann law, Wien's displacement law, black and grey surfaces, view factors, radiation network analysis.

UNIT-IV

Thermodynamics: Thermodynamic systems and processes; properties of pure substances, behaviour of ideal and real gases; zeroth and first laws of thermodynamics, calculation of work and heat in various processes; second law of thermodynamics; thermodynamic property charts and tables, availability and irreversibility; thermodynamic relations.

Applications: *Power Engineering*: Air and gas compressors; vapour and gas power cycles, concepts of regeneration and reheat. *I. C. Engines*: Air-standard Otto, Diesel and dual cycles. *Refrigeration and air-conditioning*: Vapour and gas refrigeration and heat pump cycles; properties of moist air, psychrometric chart, basic psychrometric processes. *Turbomachinery*: Impulse and reaction principles, velocity diagrams, Pelton-wheel, Francis and Kaplan turbines.

UNIT-V

Engineering Materials: Structure and properties of engineering materials, phase diagrams, heat treatment, stress-strain diagrams for engineering materials.

Casting, Forming and Joining Processes: Different types of castings, design of patterns, moulds and cores; solidification and cooling; riser and gating design. Plastic deformation and yield criteria; fundamentals of hot and cold working processes; load estimation for bulk (forging, rolling, extrusion, drawing) and sheet (shearing, deep drawing, bending) metal forming processes; principles of powder incta11ui'gy. Principles of welding, Grazing, soldering and adhesive bonding.

Machining and Machine Tool Operations: Mechanics of machining; basic machine tools; single and multi-point cutting tools, tool geometry and materials, tool life and wear; economics of machining; principles of non-traditional machining processes; principles of work holding, design of jigs and fixtures.

Metrology and Inspection: Limits, fits and tolerances; linear and angular measurements; comparators; gauge design; interferometry; form and finish measurement; alignment and testing methods; tolerance analysis in manufacturing and assembly.

Computer Integrated Manufacturing: Basic concepts of CAD/CAM and their integration tools.

Production Planning and **Control:** Forecasting models, aggregate production planning, scheduling, materials requirement planning.

Inventory Control: Deterministic models; safety stock inventory control systems.

Operations Research: Linear programming, simplex method, transportation, assignment, network flow models, simple queuing models, PERT and CPM.

SYLLABUS FOR TO THE POST OF SKILL INSTRUCTOR (MEDICAL LAB. TECHNOLOGY)

Domain Knowledge   **50 Marks**

Unit-I: Health Education; Introduction to Health, Health providers, Health Care Delivery System, Health Problems, Wellness, Ageing and FirstAid.

Fundamentals of Medical Laboratory, Instruments & Reagents; Introduction to Laboratory, Code of conduct of medical laboratory personnel, Organization of clinical laboratory and role of medical laboratory technician, Safety measures, Professional Ethics.

Unit-II: Medical Biochemistry; Chemistry of Lipids, Introduction of Enzymes, Vitamins, Diabetes, Photcolorimeter.

Fundamentals of Microbiology; General characters and classification of Bacteria, Growth and Maintenance of Microbes, Sterilization and Disinfection, Culture Media.

Diagnostic Biochemistry; Diabetic Profile and Liver Function Test, Renal and Pancreatic Function Test, Cardiac Function Test, Gastric Function Test, Acid Base Balance.

Unit-III: Clinical Endocrinology and Tumor; Hormones, Thyroid Function, Infertility, Growth Hormones, Tumor Markers.

Unit-IV: Basic Haematology; Composition of blood and its functions, Origin, Development, and morphology of Blood cells, Basic concepts of Anaemia, Leukaemia, and hemorrhagic disorder, Normal Cell, Cell Injury- types of call injury, etiology of cell injury, morphology of cell injury, cellular swelling, Cell death : types- autolysis, necrosis, apoptosis & gangrene, Cellular adaptations-atrophy, hypertrophy, hyperplasia & dysplasia.

Blood banking & Immunohaematology; Methods of estimation of Haemoglobin, Methods of determination of PCV, Blood Group- methods of grouping and ungrouping, Blood transfusion and hazards, Testing Donor Blood, Blood Donor Records, Storage & Transport, Storage & Transport.

Unit -V: Clinical Pathology (body fluids) and Parasitological; Reception of Patients, The Microscope- Types, Parts, Cleaning, and Care, Examination of Urine, Examination of Body Fluids, Clinical Biochemistry Definition of Antigen and Antibody, Clinical Enzymology, Disorders of Carbohydrates, Nutritional Disorders, Liver function test

Immunology; Antigens and Antibodies, Types of Antigens, Inflammation, Haemodynamic Disorders: Oedema, hyperemia, congestion, haemorrage, circulatory disturbances, thrombosis, ischaemia & infarction.

SYLLABUS FOR TO THE POST OF SKILL INSTRUCTOR (PHYSICS)

Domain Knowledge   **50 Marks**

UNIT-I: Motion in a Straight Line, Motion in a Plane, Laws of Motion, Work, Energy and Power. System of Particles and Rotational Motion.

UNIT- I I : Mechanical Properties of Solids, Mechanical Properties of Fluids, Thermal Properties of Matter, Thermodynamics and Kinetic Theory.

UNIT- III: Electric Charges and Fields, Electrostatic Potential and Capacitance, Current Electricity and Semiconductor Electronics: Materials, Devices and Simple Circuits.

UNIT-IV: Moving Charges and Magnetism, Magnetism and Matter, Electromagnetic Induction, Alternating Current and Electromagnetic Waves.

UNIT- V: Ray Optics and Optical Instruments, Wave Optics, Dual Nature of Radiation and Matter

SYLLABUS FOR TO THE POST OF SKILL INSTRUCTOR {VISUAL ARTS (GRAPHICS & DESIGN)}

Domain Knowledge   **50 Marks**

Unit-I: Foundations of Design & Visual Communication

- **Media & Entertainment Industry**: scope, influence on design, emerging creative trends.
- **Role of Graphic Design**: in print, digital, video, gaming, advertising.
- **Design Process**: tools, rough sketches, concept development, iterations.
- **Elements & Principles of Design**: line, shape, proportion, form, tone, texture, balance, contrast, hierarchy, rhythm, repetition, unity.
- **Typography**: anatomy of type, classification of typefaces, readability, hierarchy, expressive typography.
- **Composition & Layout**: focus, leading lines, scale, white space, rule of thirds, golden ratio.
- **Camera Angles & Framing**: shots, perspectives, storytelling through visuals.
- **Graphic Design Movements & Styles**: Bauhaus, Swiss Style, Postmodernism, Contemporary design.
- **Visual Metaphors in Design**: concept, analysis, creation for advertising & campaigns.

Unit-II: Graphic Visualization & Branding

- **Understanding Design Briefs**: interpreting job requirements, specifications, deliverables.
- **Concept Development**: base idea, theme, moodboards, sketches to digital mock-ups.
- **Branding Integration**: logos, color palettes, typography standards, target audience research.
- **Platform Adaptation**: television, film, print, web, gaming—design modifications.
- **Hands-on Visualization Projects**: brochures, posters, social media creatives, campaign collaterals.
- **Advanced Layouts & Grid Systems**: making and breaking the grid, responsive layouts.
- **Aesthetics in Design**: principles of beauty, proportion, balance.
- **Indian Design Philosophy**:
    - Rasa Theory (Bharat Muni, Abhinav Gupta etc.).
    - Dhwani, Alankar, Auchitya, Riti.
    - Shadanga: form, proportion, expression, arrangement, likeness, color application.
- **Application of Aesthetics**: in branding, visualization graphics & campaign storytelling.

Unit-III: Graphic Tools, Production & Workflow

- **Gathering Raw Stock**: images, clipart, filters, libraries, licensing.
- **Preparing Materials**: organization of design assets, project management.
- **Software & Equipment Checks**: Photoshop, Illustrator, CorelDraw, InDesign (intro).
- **Data Management**:
  - Interim files, saving in multiple formats (.psd, .ai, .cdr).
  - Preparing final deliverables.
  - Backup techniques & storage media.
- **Software Maintenance & Optimization**: clearing logs, managing updates, workflow efficiency.
- **Practical Application**:
  - Creation of poster series.
  - Digital illustrations.
  - Social media content packs.
  - Print-ready files (with bleed, CMYK/RGB, resolution control).

Unit-IV: Raster & Vector Graphics

- **Raster Graphics (Photoshop focus):**
  - Image editing, retouching, photo manipulation.
  - Compositing multiple images.
  - Creating digital paintings & artworks.
  - Print media layouts (flyers, magazines, posters).
- **Vector Graphics (Illustrator focus):**
  - Logo design, icons, scalable illustrations.
  - Stationery design (business cards, letterheads, envelopes).
  - Typography as vector art.
- **Color Theory Applications:** color harmony, brand consistency, cultural symbolism.
- **Hybrid Designs:** mixing raster & vector for creative outcomes.
- **Practice Projects:**
  - Logos & brand identity kit.
  - Movie title typography.
  - Campaign posters (digital + print).
  - Infographics & visual storytelling.

Unit-V: Multimedia & Applied Design Projects

- **Multimedia Fundamentals**: text, image, sound, video, animation, interactivity.
- **Authoring Tools**: introduction to multimedia authoring (card-based, time-based, icon-based).
- **Design for Digital Platforms**: e-learning slides, digital brochures, social media ads.
- **Storytelling & Visual Communication**: storyboarding, color theory, audio-visual harmony.
- **Internet & Design**: role of internet tech in design (web formats, protocols, basic UI/UX).
- **Emerging Technologies**: AR/VR, applications in design and multimedia campaigns.

- **Applied Project Work (I & II):**
  - Raster graphics project (digital painting / manipulated artwork).
  - Print media design project (poster, flyer, magazine cover).
  - Vector design project (logo + branding kit).
  - Multimedia project (interactive slides, AR/VR mockup, website/app UI design).

SYLLABUS FOR TO THE POST OF SKILL INSTRUCTOR (YOGA)

Domain Knowledge   **50 Marks**

UNIT-I: Origin of Yoga, History and Development of Yoga; Etymology and Definitions, True Nature and Principles of Yoga. Introduction to Schools (Streams)of Yoga: Yoga Schools with Vedanta Tradition (Jnana, Bhakti,Karma and Dhyana), Yoga Schools with Samkhya-Yoga Tradition (Yoga of Patanjali) and Yoga Schools with Tantric Tradition (Hatha Yoga, Swara Yoga and Mantra Yoga) Elements of Yoga and Yogic practices in Jainism, Buddhism and Sufism.
Introduction to human body according to Ayurveda, yogic mantra, listening to peace prayers and its effect on human body and health.

UNIT-II: Yogic nature of health, health and disease, Yogic nature of life and its relevance, Yoga is a complete medicine. Mental Health: Its meaning, concept, factors, importance of mental health in life and physical aspect. Role of yoga in developing better mental health.

UNIT-III: Effect of Yogic practice on various systems of the human body: Benefits of Shatkarma, effect of Yogasana, Pranayama and Bandha on respiratory system, circulatory system, skeletal muscular system, endocrine system.

UNIT-IV: Role of diet, sleep and Bramcharya (celibacy) in health. Yoga therapy: - Normal metabolism and diet. Dhatusamyata, disease examination of the patient: - History and test method.

UNIT-V: Yoga in Ayurveda – Introduction to Ayurveda, Nature of Yoga in Ayurveda, Definition, objectives of Ayurveda according to Ayurveda texts and Objectives and goals of Yoga according to Ayurveda.