

## **ANNEXURE – II**

### **SCHEME AND SYLLABUS FOR RECRUITMENT TO THE POST OF ASSISTANT ENVIRONMENTAL ENGINEER IN A.P. POLLUTION CONTROL BOARD**

#### **SCHEME**

(As per Annexure-VII of G.O.Ms.No.201,Finance(HR-I,Plg,&Policy) Dept.,dt:21.12.2017)

<b>WRITTEN EXAMINATION (OBJECTIVE TYPE) DEGREE STANDARD</b>				
<b>Paper</b>	<b>Subject</b>	<b>No. of Questions</b>	<b>Duration Minutes</b>	<b>Maximum Marks</b>
<b>Paper-I</b>	General Studies & Mental Ability	150	150	150
<b>Paper-II</b>	Civil <b>OR</b> Mechanical <b>OR</b> Chemical <b>OR</b> Environmental Engineering	150	150	150
<b>Paper-III</b>	Environmental Science & Technology (Common for all branches)	150	150	150
<b>TOATAL</b>				<b>450 Marks</b>
<p><b>N.B:</b> As per G.O.Ms. No.235 Finance (HR-I, Plg &amp; Policy) Dept, Dt: 06/12/2016, for each wrong answer will be penalized with 1/3<sup>rd</sup> of the marks prescribed for the question in all Objective type papers.</p>				

#### **SYLLABUS**

##### **PAPER – I**

##### **GENERAL STUDIES AND MENTAL ABILITY**

1. Major Current Events and Issues pertaining to International, National and State of Andhra Pradesh.
2. General Science and its applications to the day to day life Contemporary developments in Science & Technology and Information Technology.
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 and Indian National Movement.
4. Geography of India with focus on Andhra Pradesh.
5. Indian polity and Governance: constitutional issues, public policy, reforms and e-Governance initiatives.
6. Indian Economy and planning
7. Sustainable Development and Environmental Protection
8. Disaster management: vulnerability profile, prevention and mitigation strategies, Application of Remote Sensing and GIS in the assessment of Disaster
9. Logical reasoning, analytical ability and logical interpretation.
10. Data Analysis: Tabulation of data Visual representation of data Basic data analysis (Summary Statistics such as mean, median, mode and variance) and Interpretation.

## **PAPER-2: CIVIL ENGINEERING**

### **01. ANALYSIS OF STRUCTURES:**

Sending stresses and shear stresses in beams;  
 Deflection and slope of beams;  
 Combined bending and direct stresses; axially and eccentrically loaded columns;  
 Close-Coiled and open-Coiled; helical springs under axial load and axial twist; carriage springs;  
 Analysis thin and thick cylinders; compound cylinders;  
 Analysis of statically determinate plane trusses; method of joints and method of sections.  
 Analysis of statically indeterminate beams; proposed canti-levers, fixed beams and continuous beams.  
 Strain energy method, slope-deflection method, moment distribution method and Kaini's method of analysis of indeterminate structures.  
 Influence lines and moving loads on beams and simple bridge trusses.

### **02. STRUCTURAL DESIGN:**

Reinforced concrete, concrete technology, R.C.C. Design working stress method and limit state method, Design of beams, Design of one- way and two-way slabs, design of axially loaded columns, design of continuous beams and slabs; Design of wall footings and isolated footings, combing footings, raft foundations, and retaining walls by limit state method, water tanks, Deck-slab and T- beam bridges by working stress method. Structural Steel-design of revetted and welded joints, design of tension members;  
 Compression members, simple and compound beams. Design of plate girders, crane girders and roof- trusses. Elements of pre-stressed concrete.

### **03. FLUID MECHANICS AND HYDRAULIC MACHINES:**

Fluid properties; fluid static's; fluid-flow concepts; laminar and turbulent flow; steady and unsteady- flow, uniform and non-uniform flow; Fundamental EQUATIONS; CONTINUITY EQUATION; Euler's equation of motion; Bernoulli's equation, Analysis of liquid jets; flow through orifices and mouth pieces; radial flow, flow along a curved path; momentum equation and applications; Moment of Momentum equation. Dimensional analysis and similitude; Viscous flow-laminar flow through circular pipes; velocity distribution in laminar flow. Turbulent flow in pipes, velocity distribution in turbulent flow; Flow measurement-pressure moment, velocity measurement and discharge measurement; venturimeter, Orifice, meter, notches and weirs. Hydraulic machines; Turbines and pumps; basic equations; Orifice, performance, selection specific speed.

### **04. WATER RESOURCES ENGINEERING:**

Steady flow through open channels. Uniform flow in channels; Chezy and Manning's formulae. Specific energy and critical depth. Hydraulic jump-Momentum equation for a hydrologic jump. Surface Water hyderology; Hydrologic cycle, Hydrologic data-measurement of precipitation, evaporation, transpiration, and infiltration. Runoff, determination of run-off. Steam gauging; floor-Studies, Hydrograph and unit hydrograph, flood routing. Ground water resources, Darcy's law, Dupuits equation, yield of wells, recuperation test.

### **05. SURVEYING:**

Chain surveying; compass surveying, plane table surveying; leveling and contouring, Minor instruments; Areas and Volumes; Theodolite surveying and traversing, Tachometry; Curve ranging; setting out works.  
 Principles and uses of triangulation, hydrographic surveying, Arial photogrammetry and photo interpretation, remote sensing and electromagnetic distance measurement.

### **06. GEO-TECHNICAL ENGINEERING:**

Physical properties of soils; identification and classification of soils; permeability and seepage; consolidation; shearing strength of soil; stability of earth slopes; site investigation and sub soil exploration.  
 Stress distribution in soil; soil; compaction; lateral earth pressure and retaining walls; bearing capacity and shallow foundations; pile foundation well foundations; Machine foundations.

### **07. TRANSPORTATION ENGINEERING:**

Highway Engineering; classification of roads; highway alignment and surveys; geometric design of highways; elements of traffic engineering; highway materials and testing; elements of pavement design; construction and maintenance of earth gravel, W.B.M., bitumenous and concrete roads; highway drainage. Railway Engineering; engineering surveys for a new railway route, gauge problem; track components; ballast; sleepers; rails anrail fastenings;

Station and station yards; requirements and requirement for station yards; signaling and inter locking. Elements of cross drainage works; causeway; culverts; bridges.

### **08. ENVIRONMENTAL ENGINEERING:**

Water supply engineering; sources of water supply, conveyance of water, distribution systems; quality of water; treatment of water; filtration; dis-infection; methods of water treatment.

Sanitary engineering; sewerage and sewage disposal; house fittings; design of sewers; characteristics of sewage, primary and secondary treatment of sewage' methods of disposal of sewage.

## **PAPER-2. MECHANICAL ENGINEERING**

### **01. FLUID MECHANICS:**

Fluid Properties, fluid static's, Kinematics and Dynamics, Euler's equation, Bernoulli's energy equation, flow of ideal fluids, Viscous in compressible flows - laminar flow, boundary layer, basic features of turbulent flow, flow through pipes, fluid machinery, Specific speed and classification of fluid machines. Performance and operation of pumps, impulse and reaction turbines, velocity triangles and degree of reaction.

### **02. THERMO DYNAMICS:**

Thermo dynamic systems, measurements of temperature work, heat and internal energy, First law of thermodynamics, ideal gas equation Air standard cycles, Carnot, Otto, Diesel, dual and joule cycle Energy and Enthalpy. Second law of Thermo dynamics. Available and Unavailable energies. Reversible and irreversible processes. Psychrometry, Properties of pure substances.

### **03. MATERIAL SCIENCE:**

Structure of metal and alloys, Bonding in solids. Imperfections of metals and in crystals, fracture, creep, fatigue and corrosion. Phase Rule, phase transformation diagrams and lever rule.

### **04. ENGINEERING MECHANICS AND STRENGTH OF MATERIALS:**

Equivalent force systems, free body concepts and equations of equilibrium, frictional forces. Kinematics and dynamics of rigid bodies. Stress and strain, elastic limit, yield point and ultimate stress, shear force and bending moment diagrams for beams. Calculation of stress slope and deflection in beams, theories of failure, torsion of circular shaft, thin cylinders, equivalent bending moment for solid and hollow shafts.

### **05. MANUFACTURING PROCESSES**

Classification of manufacturing processes, Fundamentals of casting. Classification of casting process. Sand-casting patterns, molding, melting and pouring solidification, cleaning and finishing casting defects. Metal forming-hot and cold working, forging, rolling extrusion, wire and tube drawing, deep drawing, blanking and stamping processes.

Fundamentals of welding arc and gas welding, brazing and soldering, heat treatment- annealing - normalizing, hardening and tempering.

### **06. APPLIED THERMO DYNAMICS:**

Internal combustion engines classification, working and performance of C.I and S.I engines combustion process in IC. Engines Rating of fuels, pre ignition and knocking in IC Engines, Carburation and injection, Reciprocating air compressors - Single and; multi stage compressors, inter cooling, volumetric efficiency.

Rotary Compressors - fans blowers and compressors Axial and Centrifugal compressors - merits and demerits.

Boilers and condensers - types of boilers and condensers, calculation of boiler efficiency and equivalent evaporation, feed water heaters.

Steam and Gas turbines Impulse and reaction turbines degree of reaction velocity triangles, ranking cycle for steam turbine power plant reheating and regeneration Gas turbine cycles methods of improving gas turbine cycle efficiency.

### **07. HEAT TRANSFER AND REFRIGERATION:**

Modes of heat transfer, one dimensional steady and unsteady heat conduction convective heat transfer forced convection over flat plates and tubes, free convection over cylinders and flat plates radiative heat transfer-black and grey surfaces. Types of heat exchangers - heat exchanger performance LMTD and NTU methods vapor compression cycle analysis. COP; and its estimation vapor absorption refrigeration cycle properties of refrigerators.

**08. MACHINE DESIGN:**

Design for static and dynamic loading fatigue strength stress concentration; factor of safety designing of bolted, riveted and welded joints, hydro dynamic lubrication, journal and roller bearings design of spur and helical gears, clutches and breaks. Belt and rope drives Design of shafts, keys and couplings.

**09. THEORY OF MACHINES:**

Constrained motion, plane mechanisms, velocity acceleration analysis, Flywheel and their applications, Balancing of reciprocating and rotating masses cams and followers, Tooth profiles Types of gears Principles of gyroscope, vibration of free and forced one degree of freedom systems with and without damping, critical speed of shaft.

**10. PRODUCTION ENGINEERING:**

Metal cutting and machining types of chips, chip formation tool wear and tool life, machine ability single point and multi point cutting operations machining processes shaping, planning, turning, milling, grinding, hobbling and drilling operating unconventional machining processes - USM, EDM, ECM and LBM. Basic features of NC Machines tools linear and angular measurements, Comparators, limit gauges, screw and gear measurements.

**11. INDUSTRIAL ENGINEERING AND MANAGEMENT:**

Industrial organisations and plant layout production planning and control cost of manufacturing. Break even analysis. Time and motion study, basic linear programming and queuing theory. PERT/ CPM in production systems.

**PAPER-2: CHEMICAL ENGINEERING**

**PROCESS CALCULATIONS AND THERMODYNAMICS:** Laws of conservation of mass and energy; use of tie components, recycle, bypass and purge calculations; degrees of freedom. First & Second law of thermodynamics and their applications; equations of state and thermodynamic properties of real systems; phase equilibria, fugacity, excess properties and correlations of activity coefficients; chemical reaction equilibria.

**FLUID MECHANICS AND MECHANICAL OPERATIONS:** Fluid statics, Newtonian and non-Newtonian fluids, macroscopic energy balance, Bernoulli equation, dimensional analysis, continuity equation, flow through pipeline systems, flow meters, pumps and compressors, packed and fluidized beds, elementary boundary layer theory.

Size reduction, and size separation, free and hindered settling, centrifuges, and cyclones, thickening and classification, filtration, mixing and agitation, storage and handling of solids.

**HEAT TRANSFER:** Conduction, convection and radiation, heat transfer coefficients, study and unsteady heat conduction, boiling, condensation and evaporation, types of heat exchangers & evaporators and their design principles.

**MASS TRANSFER:** Flick's law, mass transfer coefficients, film, penetration and surface renewal theories; momentum, heat and mass trans analogies, stage wise continuous contacting and stage efficiencies; design principles and operation of equipment for distillation absorption, leaching, liquid-liquid extraction, crystallization, drying, humidification, dehumidification and adsorption

**CHEMICAL REACTION ENGINEERING:** Theories of reaction rates; kinetics of homogeneous actions, interpretation of kinetic data, single and multiple reactions in ideal reactors; non-isothermal reactors, basics of non-ideal flow, F& E curves axial dispersion, kinetics of heterogeneous catalytic reactions; diffusion effects in catalysis.

**INSTRUMENTATION AND PROCESS CONTROL:** Measurement of process variables; dynamics of simple systems such as CSTRs, heat exchanges, transfer functions, response of systems, process reaction curve, controller modes (P, PI, and PID); control valves; analysis of closed loop systems including stability, frequency response (including Bode plots) and controller tuning.

**PLANT DESIGN AND ECONOMICS:** Design of chemical process plants; principles of process economics and cost estimation.

**CHEMICAL TECHNOLOGY:** Inorganic chemical reactions; sulfuric acid, sodium hydroxide, fertilizers; ammonia, urea, di-ammonium phosphate super phosphate; natural product industries; pulp and paper, sugar, oil and fats; petroleum refining and petrochemicals; polymerization industries; poly ethylene, poly propylene, and synthetic fibres.

## **PAPER-2: ENVIRONMENTAL ENGINEERING**

**ECOSYSTEMS:** Definition, Scope and Importance of ecosystem. Structure and function of an ecosystem, Food Chains, Food webs and ecological pyramids, Flow of energy, Biogeochemical cycles.

**NATURAL RESOURCES:** Water resources: use and over utilization of surface and ground water. Mineral Resources: Environmental effects of extracting and using mineral resources. Land Resources: Forest resources. Energy resources renewable and non renewable energy sources, use of alternate energy source.

**BIODIVERSITY AND BIOTIC RESOURCES:** Value of biodiversity. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity.

**ENVIRONMENTAL POLLUTION AND CONTROL TECHNOLOGIES:** Environmental Pollution and control: Classification of pollution, causes, effects and control technologies. Air Pollution: Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards.

Water Pollution: Sources and types of pollution, drinking water quality standards. Soil Pollution: Sources and types, degradation of soil. Pollution from Power projects, Solid waste: Municipal Solid Waste management, composition and characteristics of e-Waste and its management. Pollution control technologies: Wastewater Treatment methods: Primary, secondary and Tertiary, Grit chambers, sedimentation tank, trickling filters, oxidation ponds, activated sludge process, septic tank, disposal of sludge, recycling of waste water.

Air: Overview of air pollution control technologies, Global Environmental problems and Global Efforts Climatic change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions/ Protocols: Earth summit, Kyoto protocol and Montreal Protocol.

**WATER SUPPLY:** Estimation of surface and subsurface water resources, predicting demand for water, impurities of water and their significance. Physical, chemical and bacteriological analysis, water borne diseases, standards for potable water.

SEWAGE CHARACTERIZATION BOD: COD, Total solids, dissolved oxygen, Nitrogen and TOC, Standards of disposal in normal water course and on land.

**ENVIRONMENTAL POLICY, LEGISLATION & EIA:** Environmental Protection act, Legal aspects Air Act-1981 Water Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules EIA: EIA Structure. Overview on Impacts of air, water, biological and Socio-economical aspects Concepts of Environmental Management Plan (EMP). Concept of Sustainable Development, Population and its explosion, Environmental Ethics, Concept of Green Building.

## **PAPER-3**

### **ENVIRONMENTAL SCIENCE & TECHNOLOGY** **(Common for all Branches)**

**ECOSYSTEM AND BIODIVERSITY:** Ecology and Ecosystem: Basic concepts of Ecology, Ecosystem: Components and Types, Food Chains – Biodiversity: Meaning, Components, Biodiversity Hotspots, Loss of Biodiversity and Conservation of Biodiversity: Methods, Recent Plans, Targets, Convention and Protocols.

**NATURAL RESOURCES:** Water resources, Mineral Resources, Forest resources. Energy resources: renewable and non renewable energy sources, Environmental effects, use of alternate energy source.

**ENVIRONMENTAL POLLUTION AND CONTROL:** Classification of pollution, causes, effects and control technologies. Air Pollution: Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. Global Environmental problems and Effects. Deforestation and desertification. Ozone depletion, Global Warming, Climate Change.

Environmental Initiatives: Recent International Initiatives, Protocols, Conventions to tackle Climate Change with special reference to India's Participation and Role – Sustainable Development: Meaning, Nature, Scope, Components- and Goals of Sustainable Development.

Water Pollution: Sources and types of pollution, Impurities of water. Physical, chemical and bacteriological analysis, water borne diseases, Drinking water quality standards. Soil Pollution

Sources and types, Solid waste: Municipal solid waste management, composition and characteristics of e-Waste and its management. Pollution control technologies: Wastewater Treatment methods: Sedimentation tank, Trickling filters, Oxidation ponds, Activated sludge process, Septic tank, Disposal of sludge, Recycling of waste water.

**WATER SUPPLY:**

SEWAGE CHARACTERIZATION: BOD, COD, Total solids, dissolved oxygen, Nitrogen and TOC. Standards of disposal in normal water course and on land.

**ENVIRONMENTAL POLICY, LEGISLATION & EIA:** Environmental Protection act, Legal aspects Air Act-1981, Water Act, hazardous waste management and handling rules. EIA: EIA Structure. Overview on Impacts of air, water, biological and Socio-economical aspects. Concepts of Green Building.

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**SCHEME & SYLLABUS OF EXAMINATION FOR THE COMPUTER PROFICIENCY TEST (CPT)**

**Scheme for Computer Proficiency Test**

(As per G.O.Ms.No.26, G.A. (Ser.B) Dept., dt: 24.02.2023)

Scheme of the examination (Practical Type)					
Test	Duration (Minutes)	Maximum Marks	Minimum Qualifying Marks		
			SC/ST/PH	B.C's	O.C's
Proficiency in Office Automation with usage of Computers and Associated Software.	60	100	30	35	40

**Syllabus for Computer Proficiency Test**

**PART-A**

- 1. INTRODUCTION TO COMPUTERS:** Introduction to Computers - Components and their classification - Peripheral devices and their purpose. Input Devices - Keyboard, Mouse, Scanner, Lighten, Touch screens, Joystick, Micro phone, Scanner, Digital camera, Bar code reader, Biometric sensor Output Devices: Display devices, Printers, Monitor, Speaker, Plotter, Secondary Storage Devices – Feature- Driven Development (FDD), Magnetic tape, Universal Serial Bus(USB), Pen Drives, Disks - The Role of input Processing / output processing devices - Computing Concepts - Data - Information – Random Access Memory (RAM) – Read-Only Memory(ROM) - Control Unit - Memory Unit – Arithmetic Logic Unit(ALU).
- 2. COMPUTER SOFTWARE TYPES:** System Software, Application Software, Embedded software, Proprietary Software, Open source software (their purpose and characteristics only).
- 3. OPERATING SYSTEM:** Purpose of operating system, Single User and Multi User Operating Systems with Examples.
- 4. WINDOWS OPERATING SYSTEM:** Interfacing Graphical User Interface (GUI), Differences between Criminal Interdiction Unit(CUI) and Graphical User Interface(GUI) - working With Files and Folders - More About Files - Running An Application Through The File Manager - Running an Application Through The Program Manager - Setting up of Printer, Webcam, Scanner and other peripheral devices,
- 5. LINUX/MAC OS (only basic concepts):** Introduction to Linux - Features and advantages of Linux, File handling commands, directory handling commands - User Management - File permissions Media Access Control Address(MAC) OS - Introduction - Advantages of Media Access Control Address(MAC) OS . Basics commands
- 6. INTERNET CONCEPTS (only basic concepts):** Minimum Hardware and Software Requirements for a system to use internet, Communication Protocols and Facilities - Various browsers - What is Internet Protocol(IP) Address - Steps required in connecting system to network - Uploading and Downloading Files from Internet
- 7. ELECTRONIC MAIL (only basic concepts):** Sending and receiving mails, Basic E-Mail Functions, Using your word processor for E-mail, Finding E-Mail Address, Mailing Lists and lists Servers.
- 8. WORLD WIDE WEB (only basic concepts):** WWW advantages of the Web - how to navigate with the Web - Web Searching.

## **PART – B**

1. **OFFICE SUITE:** MSOFFICE or any open source office like Libre Office /Apache Open Office Neo office for Windows/Linux/Media Access Control Address (MAC)OS.
2. **GETTING STARTED WITH OFFICE:** Introduction to Office Software- Starting and Exiting the Office Applications - Introducing the Office Shortcut Bar - Customizing Office Shortcut Bar.
3. **FILE OPERATIONS IN THE OFFICE:** Common Office Tools and Techniques - Opening An Application - Creating Files - Entering And Editing Text - Saving Files - Opening Files - Closing a File - Exiting The Application - Managing Your files With The Office Applications.
4. **TOOLS IN THE OFFICE APPLICATIONS:** Key Combinations - Cut, Copy and Paste - Drag And Drop Editing - Menu Bars And Toolbars - Undo and - Redo - Spell Checking - Auto Correct - Find and Replace - Help And The Office Assistants - Templates and Wizards.
5. **WORD PROCESSING (MS WORD or its equivalent in Libre office /Apache Open Office / Neo office for Windows/s/Linux/Mac OS):** Starting Word
  - Title Bar - Menu Bar - Format Bar - Standard Bar - Ruler - Workspace Area - Scroll Bar - Status Bar - Different Toolbars - Option a Menu Bar - Creating New Document When Word is Running - Opening Pre existing Documents When Word is Running - Designing Your Document - Typing Text - Selection text - Deleting Text - Formatting text and document - copying and moving - Saving Document - Page Setup - Properties of a document - Undo-Redo-Cut-Copy a Document - Pasting a Document - Print Preview - Printing - Select All - Find - Replace - Go To - Four Different View Of A Document - Normal, Web Layout, Print Layout, and Outline Layout- Document Map - Full Screen - Zoom - Objects - Page Break - Header and Footer - Page Number - Auto Format - Auto Text - Inserting Date And Time - Working With Header, Footers- footnotes-Fields-Symbols-Caption Cross Reference-Index-Tabs-Table and Sorting - Working With Graphics - Inserting Pictures - Modifying Pictures - Word Art - Inserting Chart - Inserting Files - Hyper Linking - Bookmark - Using Different Fonts - Paragraph – Bullets Borders and Shading- Columns-Drop Cap-Theme-Change Case Background-Frames-Style-Spelling And Grammar - Set Language - Word Count - Auto Summarize - Auto Correct - Merge Document - Protect Document - Envelopes And Labels - - Templates, Wizards And Sample Documents - drawing Tables - Merge Cell - Spilt Cells - Spilt Table - Table Auto Format - Auto Fit - Sort - Formula - Arrange All-Split- Micro Soft Word Help - Macros - Custom Toolbars - Keyboard Shortcuts - Menus - Mail Merge.
6. **SPREAD SHEET (MS Excel or its equivalent in Libre Office / Apache Open Office / Neo office for Windows/s/Linux/ Maa OS):**

Features Of Excel - Excel worksheet - Selecting Cell - Navigating With The Mouse And Keyboard - Entering And Editing Text - Text Boxes - Text Notes - Checking Spelling - Undoing And Repeating Action - Entering And Editing Formulas - Referencing Cells - Order Of Evolution in Formulas - Copying Entries And Equations To Minimize Typing - More Auto Fill Examples - Creating Custom Fill Lists Protecting And Un Protecting Documents And Cell - Creating A New Worksheet - Excel Formatting Tips And Techniques - Moving cell - Copying Cells - Sorting Cell Data - Insertion Cells Inserting As You Paste - Deleting Parts Of Worksheet - Clearing Parts Of A Worksheet - Excel Page Setup - Changing Column Width And Row Heights - Auto Format - Manual Formatting - Using style - Format Code Alter A Number's Appearance - Format Painter Speeds-Up Format Copying - Changing Font Size And Attributes - Adjusting Alignments - Cantering Text Across Column - Using Border Buttons And Commands - Changing Color And Shading - Inserting And Removing Page Breaks - Hiding Rows And Columns - Rearranging Worksheet - Entering Formula - Excel Functions - Inserting Rows And Columns - Saving A Worksheet - Printing A Worksheet - Printing Tips For Large Excel Project - Parts Of A Function - Functions Requiring Add-ins - Function Wizard - Example Of Functions By Category - Organizing Your Data - Excel's Chart Features - Chart Parts And Terminology - Instant charts with The chart wizard - Creating Chart On Separating Worksheets - Resizing And Moving Charts - Adding Chart Notes And Arrows - Editing Charts - Rotating 3-D Charts - Printing Charts - Deleting Charts Setting The Default Chart Type - Creating Trend Lines Data Map - Working With Graphics in Excel - Creating And Pacing Graphic objects - Resizing Graphs - Possible Sources Of Excel Graphics - Creating and Running Macro - Sorting Excel Data - Adding Subtotals To Databases - Customizing Excel - Customizing Workspace – Comma Separated Value (CSV) File format - Using Worksheet As Databases.
7. **PRESENTATION SOFTWARE (MS Power Point or its equivalent in Libre Office/Apache Open office/Neo office for Windows/s/Linux/Mac Os):** Introduction - Starting Presentation Software - Views in Presentation Software - Slides - Terminology - Color Schemes - Formatting Slides - Creating a Presentation - Using the Auto Content Wizard - Masters- - Using a Template - Creating a Blank Presentation - Working with Text in Power Point - Adding Slides Editing And Working Text - Working in Outlaying view – Spell checking - Finding And Replacing Text - Formatting Text - Aligning Text - Developing Your Presentation - Importing images From The

Outside World - The Clipart Gallery - Drawing in Presentation software- Bringing A Presentation to Life - Inserting Objects in Your Presentation - Inserting A Picture - Working With Graphics - Multimedia in Power Point - Animating The Objects, Pictures, Graphics, - Enhancements to the Slide Show Showing Slides Out Of Order Printing Presentation Elements - Finalizing The Presentation - Assigning Transitions And Timings - Setting The Master Slide - Setting Up The Slide Show - Running The Slide Show.

**Assessment Pattern:**

**Part-A:** Test may be designed to assess the candidate by means of MCQs.

**(20 %of Total Marks)**

**Part-B:** A computer based assessment test where they need to:

1. Prepare a model document and organize the same in a formatted manner. This should cover evaluating the typing speed, organizing the document and covering several other aspects such as inserting tables, inserting Images/WordArt, mail merge, etc...).
2. Evaluating typing speed **(25% of Total Marks)**  
(This may be made mandatory for qualifying based on the norms existing)
3. Organizing and inserting different objects **(15% of Total Marks)**
4. Prepare an Excel Sheet to fill with data and format the sheet, merging/splitting cells, formulae for calculation in the cells, conditional formatting, preparation of different graphs based on the data. **(20% of Total Marks)**
5. Prepared a Power Point presentation using the standard layouts available and filling different slides with content (Formatted text, images, tables, transition effects, animation etc.,). **(20%of Total Marks)**

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