

# Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya

Gwalior (M. P.)

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## Syllabus for the written test proposed to be conducted for Programme Assistant (Computer) advertised vide University Advisement IPRO/Advt. No./30th/2023/Reg./3206 dated 25-09-2023

### MARKS DISTRIBUTION:

Subjects	Marks	Questions
Computer & IT	100	100
Agriculture and General Science	20	20
IT Applications in Agriculture and e-Governance	20	20
General Awareness and Current Affairs	20	20
Hindi + English	20	20
Mathematics and Reasoning	20	20
<b>Total</b>	<b>200</b>	<b>200</b>

### SCHEME OF EXAMINATION:

- No. of questions : 200
- Time duration : Three Hours
- One mark for each correct answer.
- 0.25 marks will be deducted for each wrong answer.

### DETAILED SYLLABUS:

#### COMPUTER & IT (100 questions)

##### Computer Organization: (05 questions)

Number System, Arithmetic Addition and Subtraction, Overflow Detection, Decimal Fixed-Point Representation, Floating Point Representation, Gray Code, Weighted Code, Excess-3 Code, Error Detection Codes, Parity Bit, Odd Function, Machine Language, Addressing Modes, Program Counter, CPU, General Register Organization, Data Dependency, Memory Organization.

##### Object-Oriented Programming (15 questions)

Basic Knowledge of OOPS through C++ and Java (Data types, variables, scope and lifetime of variables, arrays, operators, expressions, control statements, typeconversion and casting, simple java program, concepts of classes, objects, constructors, methods, access control, this keyword, overloading methods and constructors, parameter passing, recursion, nested and inner classes, exploring string class), Inheritance, Polymorphism, Encapsulation, Packages and Interfaces, Exception Handling, Multithreading, Event Handling, Applets.

### **Data Structure (15 questions)**

Asymptotic Notation, Stacks and Queues, Trees, Algorithms, Binary Trees, Lemma, Heaps and Heapsort, Minimum Spanning Trees, Optimal Binary Search Trees, Tree Traversal, Graphs-Search and Traversal techniques, Sorting-Insertion Sort, Selection Sort, Radix Sort, Merging, Complexity of Sorting and Merging Algorithms, Hashing.

### **Operating System (10 questions)**

Simple Batch Systems, Multi Program Batch systems, Time-Sharing Systems, Process Concepts and PCB, Process Scheduling, Schedulers, and Context Switching, Interprocess Communication, CPU Scheduling, Scheduling Criteria, Scheduling Algorithms-FCFS, SJFS, Priority Scheduling, Round-Robin Scheduling, Multilevel Queue Scheduling, Multilevel Feedback Queue Scheduling, Multiple-Processor Scheduling, Real-Time Scheduling, The Critical Section Problem, Semaphores, The Dining Philosophers Problems, Critical Regions, Deadlock-Prevention, Avoidance, Detection, Recovery, Bankers Algorithm, Memory Management, Logical Vs Physical Address Space, Segmentation, Virtual Memory, Demand Paging, Page Replacement Algorithms- FIFO, Optimal Algorithm, LRU, Second Change; Counting Algorithm, Thrashing.

### **Database Management Systems (15 questions)**

Database Models, DBMS, Database Design and Normal Forms, Data-Structure Diagrams, ER Diagram, SQL, Joins, Stored Procedures, Transaction Control, Handling Operations in DBMS Software (MS SQL Server, MySQL).

### **Computer Network (10 questions)**

Networking Devices, Internet, Types of Networks, Transmission, Transmission Medium, IP Addressing Schemes (IPV4, IPV6), Data Switching, OSI and TCP/IP Reference Models, Handling and Troubleshooting LAN.

### **Web Application and Mobile App development (20 questions)**

Web Page Designing: HTML: list, table, images, frames, forms, CSS, Document type definition, XML: DTD, XML schemes, Object Models, presenting and using XML, Using XML Processors: DOM and SAX, Dynamic HTML; Java script: Introduction, documents, forms, statements, functions, objects; Introduction to AJAX, Building Web Applications using ASP.NET with C#, Web API Development, Python, Android SDK, Angular, Basic JQuery.

### **Computer and Network Security (10 questions)**

Basic security topics, including symmetric and public-key cryptography, digital signatures, cryptographic hash functions, authentication pitfalls, and network security protocols.

## **AGRICULTURE AND GENERAL SCIENCE (20 questions)**

### **Food (02 questions)**

Sources of food, Components of food, cleaning food, Deficiency Diseases, Nutrients in Food and Balanced Diet

### **Water and Air (02 questions)**

Water - A Precious Natural Resource, Water Cycle and availability of Water, Importance of Groundwater and Water Distribution, Conservation of Water and Water Management

Air - A Precious Natural Resource, Components of Air, Oxygen and Carbon dioxide.

**Weather, Climate and Adaptations of Animals to Climate (02 questions)**

Climate and Adaptation, Climate and Weather, Winds, Storms and Cyclones, Safety Measures. Thunderstorms and Cyclones, Crop seasons in India

**Soils (02 questions)**

Properties of Soil and Soil Pollution, Soil: An Important Natural Resource for Life, Types of Soils in India with special reference to Soils of Madhya Pradesh, degradation of soils and their conservation measures.

**Pollution of Air and Water (02 questions)**

Air Pollution, Ozone and Global Warming, Wastewater Sanitation, Water Pollution.

**Forests (02 questions)**

Major forest of Madhya Pradesh, Forest Ecosystem, Importance of Forest.

**Crop Production and Management (02 questions)**

Types of Farming, Types of Crops, Cropping Pattern, Major Agricultural Practices, Major crops of India and Madhya Pradesh, technological and institutional reforms.

**Principle and practice of crop production: (02 questions)**

Crop Nutrient Management, Irrigation Systems and Cropping Patterns, Horticultural crops: Classification of horticultural crops Harvesting and Storage, Soil Preparation, Seed and variety Selection and Sowing, Preparation of Soil, Agricultural Implements, Manure and Fertilizers, Irrigation, Traditional Methods of Irrigation, Modern Methods of Irrigation, Protection from Weeds, insect pest and disease, Harvesting, Storage.

**Animal Husbandry: (02 questions)**

Animals in agriculture, livestock and their roles in agriculture, Cattle farming, poultry farming, fish production, bee- keeping, Nutrition in Animals, Modes of Feeding in Animals, reproduction in Animals

**Other topics related to agriculture:(02 questions)**

Critical role of credit and marketing systems in rural development, importance of diversification of productive activities to sustain livelihoods, significance of organic farming in sustainable development.

**IT APPLICATIONS IN AGRICULTURE AND e-GOVERNANCE (20 questions)**

Use of IT and Artificial Intelligence in crop production and management, disease and pest identification, generation of district and block level agrometeorology advisories through Web and Mobile applications; **(10 questions)**

Basics of e-governance applications like- e-office, e-HRMS, e-Store Management, academic management system, e-library etc.;**(05 questions)**

Use of software packages like MS Word, MS Excel, MS Power Point, Video Conferencing systems like ZOOM, Google Meet, Webex, MS Team etc.**(05 questions)**

## **GENERAL AWARENESS AND CURRENT AFFAIRS (20 questions)**

- History, culture, Literature, Geography, Constitutional System, Tribes and Current affairs/ events of M.P.
- Major wildlife sanctuary and national park
- Major personalities of Madhya Pradesh
- Irrigation planning
- Culture
- Main general knowledge of Madhya Pradesh
- Sports
- Major rivers
- Economic Science
- History
- Geography
- General Policy
- Books and Authors, Science and innovations, Important Dates, Music & Literature, National Dance, Famous Places, Tourism spots of Historical Importance, Geography of India, Economic issues in India, National News (current), International issues, Indian Culture, Countries and capitals, Political Science, Scientific observations, About India and its neighboring countries, World organizations

## **REASONING (10 questions)**

- Figure Series
- Puzzle
- Causes and effects
- Number
- Syllogism
- Alphabet test
- Classification
- Decision making
- Statement and arguments
- Coding-decoding
- Direction sense test
- Odd Man out
- Series
- Passage and conclusions
- Analytic reasoning
- Statement and conclusions
- Input-output
- Analogy
- Ranking and time sequence
- Sitting arrangement

## **MATHEMATICS (10 questions)**

- Mathematical operations test
- Simplification
- Probability and Linear Quadratic Equation
- Sets (relation and functions)
- Statistics

## **ENGLISH(10 questions)**

- Spellings/ Detecting
- Close Passage
- Idioms & Phrases
- Conversion into Direct/ Indirect narration
- Synonyms/ Homonyms
- Improvement of Sentences
- Antonyms
- Spot the Error
- Shuffling of Sentences in a passage
- Mis-spelled words
- Shuffling of Sentence parts
- Comprehension Passage
- Fill in the Blanks
- One word substitution
- Active/ Passive Voice of Verbs

## **HINDI(10 questions)**

- संधि
- उपसर्ग—प्रत्यय
- समास
- वाक्य भेद, तत्सम—तद्भव
- वाक्य शुद्धि
- मुहावरे
- लोकोक्तियों / कहावतें
- वाक्य में कमबद्धता
- अनुच्छेद में कमबद्धता
- अपठित गद्यांश
- पाठबोधन
- रिक्तस्थानों की पूर्ति