DETAILED SYLLABUS FOR THE POST OF COMPUTER OPERATOR / ANALYST IN KERALA WATER AUTHORITY

TOTAL MARKS : 100

Distribution of Marks and Detailed Syllabus

I. General Knowledge	
i. History	5
ii. Geography	5
iii. Economics	5
iv. Indian Constitution	8
v. Kerala – Governance and System of Administration	5
vi. Life Science and Public Health	4
vii. Physics	3
viii. Chemistry	3
ix. Arts, Literature, Culture, Sports	4
II. Current Affairs	8
III. Simple Arithmetic, Mental Ability and Reasoning	10
IV. General English	10
V. Regional Language (Malayalam, Kannada, Tamil)	10
VI. Computer Application	20

Detailed Syllabus

I. GENERAL KNOWLEDGE

(i) HISTORY   (5 Marks)

- **KERALA** - Arrival of Europeans-Contributions of Europeans- History of Travancore from Marthanda Varma to Sree Chithirathirunnal- Social and Religious Reform movement- National movement in Kerala- Literary Sources

of Kerala History- United Kerala Movement- Political and Social History of Kerala after 1956.

- **INDIA** – Political History- Establishment of the British- First War of Independence – Formation of INC- Swadeshi Movement- Social Reform movement- Newspapers - Literature and Arts during the freedom struggle – Independence Movement & Mahathma Gandhi - India's independent – Post independent period - State reorganization – Development in Science, Education, and Technology – Foreign policy.

- **WORLD** – Great Revolution in England- American War of Independence – French Revolution- Russian Revolution – Chinese Revolution- Political History after Second World War- UNO and other International Organizations

ii) GEOGRAPHY (5 Marks)

Basics of Geography – Earth Structure – Atmosphere, Rocks, Landforms, Pressure Belt and Winds, Temperature and Seasons, Global Issues- Global Warming- Various forms of Pollution, Maps- Topographic Maps and Signs, Remote Sensing – Geographic Information System, Oceans and its various movements – Continents, – Nations and their specific features.

INDIA – Physiography- States and its features, Northern Mountain Region, Rivers, Northern Great Plain, Peninsular Plateau, Coastal Plain, Climate – Natural Vegetation - Agriculture – Minerals and Industries- Energy Sources, Transport system – Road- Water- Railways- Air.

Kerala – Physiography- Districts and its features - Rivers- Climate – Natural Vegetation - Wild life - Agriculture and research centers – Minerals and Industries - Energy Sources - Transport system – Road - Water- Railway- Air

(iii) ECONOMICS   (5 Marks)

India : Economy, Five Year Plans, New Economic Reforms, Planning Commission and Niti Aayog, Financial Institutions, Agriculture – Major Crops, Green Revolution, Minerals. Direct and indirect taxes in India, GST in India-rationale and structure of GST, benefits of GST.

(iv) INDIAN CONSTITUTION   (8 Marks)

Constituent Assembly-Preamble-Citizenship- Fundamental Rights, Writs -Habeas Corpus, Mandamus, Prohibition, Certiorari and Quo warranto. Directive Principles of State Policy- Fundamental Duties- Structure of Governments- Union Executive, Parliament and Judiciary- State Executive, Legislature and Judiciary- Local Self Government Institutions (LSGIs)- Important Constitutional Amendments (42, 44, 52, 73, 74, 86, 91, 97, 101, 102, 103, 104)- Constitutional Authorities and their functions - Comptroller and Auditor General, Attorney General, Advocate General, Election Commission of India, State Election Commission, Union Public Service Commission, State Public Service Commission- Finance Commission- State Finance Commission- GST Council- Distribution of legislative powers- Union List- State List- Concurrent List- Services under the Union and the States- Tribunals-National Commission for Scheduled Castes- National Commission for Scheduled Tribes-National Commission for Backward Classes- Official Language-Regional Languages-Language of the Supreme Court, High Courts, etc-Special directives relating to languages

(v) Kerala Governance and System of Administration – (5 Marks)

Kerala State Civil Service- Quasi-judicial bodies, various Commissions, Basic facts of socio-economic development- Planning Board-Commercial Planning and Policies- Disaster Management- Watershed Management- Employment and

Labour-National Rural Employment Programmes- Land Reforms- Social Welfare and Security- Protection of Women, Children and Senior Citizens- Population, Literacy,   E-governance, Delegated Legislation and its controls- Legislative and Judicial controls- Constitutional law remedies against Administrative Arbitrariness- Administrative Discretion and its Controls- Administrative Adjudication-Principles of Natural Justice.

(vi) Life Science and Public Health   (4 Marks)

1. Basic facts of Human Body
2. Vitamins and Minerals and their Deficiency Diseases
3. Communicable Diseases and Causative Organisms, Preventive and Remedial Measures
4. Kerala – Welfare activities in Health Sector
5. Lifestyle Diseases.
6. Basic Health Facts
7. Environment and Environmental Hazards

(vii) Physics (3 Marks)

1) Branches of Physics –Matter - Units, Measurements - Physical Quantities.

2) Motion - Newton's Laws of Motion - Third law – Momentum - Projectile Motion - Uses of Third Law - Achievements in space missions in India- ISRO.

3) Light- Lens, Mirrors - Problems based on r = 2f - Different phenomena of Light - Rainbow - Colours of different materials - Electromagnetic Spectrum – IR rays- UV rays - X rays - Photoelectric Effect.

4) Sound - Different types of Waves - Velocity of Sound in different media - Resonance – Reverberation.

5) Force - Different types of Forces – Friction - Advantages and disadvantages of Friction - Liquid Pressure - Buoyant Force – Archimedes Principle - Pascal's law – Density - Relative density- Adhesive Cohesive forces- Capillarity - Viscous force - Surface tension.

6) Gravitation - Centripetal Force - Centrifugal Force - Escape Velocity, Satellites - Escape Velocity - Weight Mass - value of 'g'- 'g' in different places.

7) Heat - Temperature - Different types of thermometers – Humidity - Relative Humidity.

8) Work - Energy - Power - Simple problems relating to Work, Energy, Power, Levers - Different types of Levers.

(viii) Chemistry (3 Marks)

1. Atom – Molecule - States of Matter – Allotropy - Gas laws - Aqua regia.

2. Elements - Periodic Table-Metals &Non metals-Chemical Physical changes- Chemical reactions-Solutions, Mixtures, Compounds.

3. Metals-Non metals – Alloys – Acids, Bases - pH value - Alkaloids.

(ix) Arts, Sports, Literature and Culture (4 Marks)

Arts

1. Important Audio Visual Art Forms of Kerala- Famous Places, Institutions, Personalities, Artistes and Writers related to origin, development, extension, and practice of these Art Forms.

Sports

1. Famous Sports personalities of Kerala, India and World – their Sports Events, achievements and awards.

2. Important Awards – Corresponding Fields , Winners

3. Famous Trophies – Related Events and Sports Items.

4. Number of Players in Important Sports Items.

5. Important Terms associated with various Sports and Games.

6. Olympics - Basic Facts, Venues / Countries, Famous Performances and Personalities- India in Olympics-Winter Olympics & Para Olympics.

7. Asian Games, Afro-Asian Games, CommonWealth Games, SAF Games – Venues, Countries, Performance of India, other facts.

8. National Games.

9. Games - Events, Players, Achievements.

10. National Sports / Games , Events of various Countries

Literature

1. Malayalam - Important Literary Movements – Icons and their first works.

2. Main works of Literature related to each movement and their authors.

3. Writers – Pen name and Nick name.

4. Famous Works and Characters.

5. Famous Quotes – Books and Authors.

6. Beginning of Journalism in Kerala – Pioneers, Journals and Publications.

7. Famous Awards/ Honours – Writers and their works.

8. Malayalam Writers who won the Jnanpith Award and related facts.

9. Malayalam Cinema - Origin, Development, Milestones, Pioneers, National Awards.

Culture

1. Kerala - Important Celebrations -Places associated with such Celebrations, Important Festivals.

2. Kerala – Cultural Centres, Worship Places, Cultural Leaders and their Contributions.

II. Current Affairs   (8 Marks)

III. Simple Arithmetic, Mental Ability and Reasoning

(i). Simple Arithmetic   (5 Marks)

1. Numbers and Basic Operations
2. Fraction and Decimal Numbers
3. Percentage
4. Profit and Loss
5. Simple and Compound Interest
6. Ratio and Proportion

7. Time and Distance

8. Time and Work

9. Average

10.   Laws of Exponents

11. Mensuration

12.   Progressions

(ii). Mental Ability & Reasoning   (5 Marks)

1. Series

2. Problems on Mathematical Signs

3. Verifying Positions.

4. Analogy- Word Analogy, Alphabet Analogy, Number Analogy

5. Odd man out

6. Numerical Ability

7. Coding and Decoding

8. Family Relations

9. Sense of Direction

10. Time and Angles

11. Time in a clock and its reflection

12. Date and Calendar

13. Clerical Ability

IV. GENERAL ENGLISH

(i). English Grammar   (5 Marks)

1. Types of Sentences and Interchange of Sentences.
2. Different Parts of Speech.
3. Agreement of Subject and Verb.
4. Articles - The Definite and the Indefinite Articles.
5. Uses of Primary and Modal Auxiliary Verbs
6. Tag Questions
7. Infinitive and Gerunds

8. Tenses
9. Tenses in Conditional Sentences
10. Prepositions
11. The Use of Correlatives
12. Direct and Indirect Speech
13. Active and Passive voice
14. Correction of Sentences

(ii) Vocabulary   (5 Marks)

1. Singular & Plural, Change of Gender, Collective Nouns
2. Word formation from other words and use of prefix or suffix
3. Compound words
4. Synonyms
5. Antonyms
6. Phrasal Verbs
7. Foreign Words and Phrases
8. One Word Substitutes
9. Words often confused
10. Spelling Test
11. Idioms and their Meanings

V. REGIONAL LANGUAGE (10 Marks)

Malayalam

1. പദശുദ്ധി
2. വാക്യശുദ്ധി
3. പരിഭാഷ
4. ഒറ്റപദം
5. പര്യായം
6. വിപരീത പദം
7. ശൈലികൾ പഴഞ്ചൊല്ലുകൾ
8. സമാനപദം
9. ചേർത്തെഴുതുക

10. സ്ത്രീലിംഗം പുല്ലിംഗം

11. വചനം

12. പിരിച്ചെഴുതൽ

13. ഘടക പദം (വാക്യം ചേർത്തെഴുതുക)

Kannada

1. Word Purity / Correct Word
2. Correct Sentence
3. Translation
4. One Word / Single Word / One Word Substitution
5. Synonyms
6. Antonyms
7. Idioms and Proverbs
8. Equivalent Word
9. Join the Word
10. Feminine Gender, Masculine Gender
11. Number
12. Sort and Write

Tamil

1) Correct Word

2) Correct Structure of Sentence

3) Translation

4) Single Word

5) Synonyms

6) Antonyms / Opposite

7) Phrases and Proverbs

8) Equal Word

9) Join the Word

10)   Gender Classification – Feminine, Masculine

11)   Singular, Plural

12)   Separate

13)   Adding Phrases

VI. Computer Application (20 Marks)

MODULE 1- COMPUTER FUNDAMENTALS & INFORMATICS

1.1 Components of a Computer system

1.1.1   **Hardware components**- Hardware-Definition, Components - Control unit, ALU,I/O devices, Memory, Motherboard-functions of each. Types of PCs – Desktop, Laptop, Note book, PDA, Special Purpose computers, Super computers – Characteristics and area of use. Memory – Comparison- Primary vs Secondary memory. RAM and ROM variations, Various Magnetic and Optical Storage Devices –examples. Input Devices – Keyboard, Mouse, trackball, joystick, scanners, Digital camera, OCR, OMR, MICR, Light pen, bar code readers, QR code, Voice recognition and touch screen-Characteristics. Output Devices - Monitors, Printers, Plotter, Sound cards and speakers-Characteristics.   **(3 marks)**

1.1.2

1.1.2   **Software Concepts** - Types of software-system software and application software. System software-definition and examples. Functions of OS, Application software – definition and examples. Number systems – decimal, octal, hexadecimal and binary –Representation concepts only. Computer coding systems- EBCDIC, ASCII and Unicode-definitions.

                                                (2 marks)

MODULE 2 - OFFICE AUTOMATION

2.1 Introduction to MS-Office
2.1.1 Introduction to MS –WORD
Introduction to Word Processing, Introduction to MS Word: features, Creating, Saving and Opening documents in Word, Interface, Toolbars, Ruler, Different Menus, Keyboard Shortcut. Editing a Document. Opening Multi document windows, Editing Text – Selecting, Inserting, deleting, moving text, Previewing documents, Printing documents. Formatting Documents: Paragraph formats, Aligning Text and Paragraph, Borders and Shading, Headers and Footers, Multiple Columns.   **(2 marks)**

2.1.2 Introduction to MS-Excel
Worksheet basics- Creating worksheet, Definition of cell, columns and rows.. Saving & protecting worksheet. Opening and moving around in an existing

worksheet. Toolbars and Menus-Functions, keyboard shortcuts. Cell formatting, changing alignment, character styles, column width, date format, borders & colors. Working with formulas & cell referencing. Functions .Previewing & Printing worksheet – Page setting, Print titles, Adjusting margins, Page break, headers and footers.   **(2 marks)**

2.1.3 Introduction to MS-PowerPoint

Purpose of PowerPoint. Working with different views and menus of power point. Working with slides – Make new slide, move, copy, delete, duplicate, designing and lay outing of slide. Editing and formatting text, Printing presentation – Print slides, notes, handouts and outlines. Inserting Objects – Drawing and inserting objects using Clip Art's pictures and charts. Adding graphics, multimedia and special effects. Custom Animation – slide transition effects and other animation effects.   **(1 mark)**

MODULE 3 - PROGRAMMING LANGUAGES

3.1   OOP Concepts

3.1.1 Principles of Object-oriented Programming: Object-Oriented Programming Paradigm, Basic Concepts of Object Oriented Programming, Benefits of OOPs, Object-Oriented Languages, Essentials of OOP(Objects, Class, ,Encapsulation, Data Abstraction, Inheritance, Reusability, Polymorphism, Delegation, Message Communication), Structure of C++ Program, Creating the Source File, Compiling and Linking.   **(1 mark)**

3.1.2 C++ Basics - Preprocessors, comments, Data types, Operators, Expressions, Identifiers, Key words, Symbolic constants, Variable declaration and dynamic initialization,   C++ statements, Control structures, Arrays and string handling, Specifying a Class, Defining Member Functions, its scope

(1 mark)

3.2   Visual Basic.Net

 3.2.1 Introduction to .NET- .NET Framework features & architecture, CLR, Common Type System, MSIL, Assemblies and class libraries. Introduction to Visual studio, Project basics, types of project in . Net, IDE of VB.NET-Menu bar, Toolbar, Solution Explorer, Toolbox, Properties Window, Form Designer, Output Window, Object Browser. Visual development & event driven Programming -Methods and events.   **(1 mark)**

 3.2.2 The VB.NET Language- Variables -Declaring variables, Data Type of variables, Forcing variables declarations, Scope & lifetime of a variable, Constants, Arrays, types of array, control array, Collections, Subroutines, Functions, Passing variable, Number of Argument, Optional Argument, Returning value from function. Control flow statements: conditional statement, loop statement. GUI programming with Windows Forms, Msgbox & Inputbox,

TextBox, Label, Button, Listbox, Combobox, Checkbox,Radio button etc
(1 mark)

MODULE 4 - DATABASE MANAGEMENT SYSTEMS

4.1   **Introduction to Database concepts**
Need of database, Flat database, Database Management Systems, Characteristics of DBMS, Relational Database, Entity and Referential Integrity, Primary key, Foreign key, Database elements-Tables, records, Query, Form, Report, Client-server paradigm   (**1 mark**)

4.2   **Database Query commands**
Different DDL, DML, DCL commands, Creating, deleting, updating and manipulating tables using SQL commands, Applying constraints on tables, filtering using WHERE, LIKE etc. Joining tables, grouping data using Group By. Data aggregation functions   **(2 marks)**

MODULE 5 - WEB DESIGNING

5.1   **Word Wide Web** (www) - History, Working, Web Browsers- functions, Concept of Search Engines, Searching the Web, HTTP, URLs, Web Servers, Web Protocols. HTML, Design tools, HTML editors , Image editors. **(1 mark)**

5.2   **HTML** - Concepts Of Hypertext, Versions of HTML, Elements of HTML, Syntax, Head & Body Sections, Building HTML Documents. Inserting Texts, Images, Hyperlinks, Backgrounds And Color Controls, Different HTML Tags, Table Layout and Presentation, Use of Font Size & Attributes, List Types and Its Tags, Use of Frames and Forms in Web Pages.   **(1 mark)**

5.3   **JavaScript** Overview, syntax & conventions. Variables, Expressions, Branching & Looping statements, Functions, Arrays Objects, Events & Document Object Model - onClick, onMouseOver, on Submit, on Focus, on Change, onBlur. onLoad, onUnload. Alerts, Prompts & Confirms.   **(1 mark)**

NOTE: - It may be noted that apart from the topics detailed above, questions from other topics prescribed for the educational qualification of the post may also appear in the question paper. There is no undertaking that all the topics above may be covered in the question paper.