

Section-A

General Intelligence and Reasoning

Arithmetical reasoning
Arithmetic number series and Operations
Non-verbal series
coding and decoding
Statement conclusion
Syllogistic reasoning
Analogies
Similarities and differences
Relationship concepts,
Figural Pattern-folding and completion

Quantitative Aptitude and Mathematics

Number systems
Percentage, Ratio & Proportion
Interest, Profit and Loss, Discount,
Time and distance, Time & Work
Square roots, Averages
Bar diagram & Pie chart, Histogram
algebraic identities
Trigonometric ratio, Degree and Radian Measures, Standard Identities
Partnership Business, Mixture and Alligation
Congruence and similarity of triangles, Circle and its chords, tangents,

General English

Preposition
Correction of sentences
Change active to passive/ passive to active voice
Change direct to indirect/indirect to direct
Verbs/Tense/Non Finites
Punctuation
Synonyms and Antonyms
Meanings of difficult words
Articles, jumbled letters
Use of pronouns

General Knowledge and current affairs

Current Affairs
Art and Indian Culture
History
Geography
Politics

Computer Skills

Characteristics of computers, Evolution of computers, Generation of Computers
Classification of Computers, The Computer System, Applications of Computers
Input / Output devices and Memory
Introduction, Keyboard, Pointing Devices, Speech Recognition, Digital Cameras
Optical Scanners. Classification of Output, Printers, Plotters, Computer Monitors,
Optical Disk, Magneto Optical Disk
Monitors, Audio Output, Projectors. Random Access Memory (RAM), Re
Classification of Secondary Storage Devices, Magnetic Tape,
MS-Office (MS-Word, MS-Excel, MS-Power Point)
Net Surfing, Internet Services, Case Study, Intranet

About ICMR

History of ICMR
Leadership of ICMR
Institutes and its Location
Mandate, scope
IJMR- Indian journal of medical research
About Going Viral Book
Landmark achievements in past
Fellowships Programs by ICMR
Outbreak investigations
Test tube baby landmark achievement
Covid-19 related information
ICMR Health Communication Ecosystem
Major work of ICMR Institutes
DG/ Directors of ICMR

S.No	SUBJECT CODE	POSTS	SYLLABUS
1	AF	TA(CS/IT)	<p>Relational Database Management System: Relational Algebra– Tuple and Domain Relational Calculus – SQL – Views – Triggers – Domain Constraints – Referential Integrity.</p> <p>Normalization: Functional Dependencies – Inference rules – Decomposition – Properties – Normal Forms (NF) – First NF, Second NF, Third NF, Boyce-Codd NF, Fourth NF, and Fifth NF.</p> <p>Sorting and Indexing:</p> <p>Data Mining: Data Mining Functionalities – Data Preprocessing – Data Cleaning – Data Integration and Transformation – Data Reduction – Data Discretization and Concept Hierarchy Generation. Association Rule Mining: - Efficient and Scalable Frequent Item Set Mining Methods – Mining Various Kinds of Association Rules – from Association Mining to Correlation Analysis – Constraint-Based Association Mining.</p> <p>GIS: Definition -History of GIS -Basic Components of GIS – Hardware, Software, Spatial Data, Non-spatial data, Scaling, Open-Source software.</p> <p>Functions in C++: Function Prototype - Arguments passing - Return type - Default arguments - Inline functions– Function overloading - Operator function - Operator overloading - Template functions.</p> <p>Inheritance in C++: Derived class - Single Inheritance - Multiple Inheritance - Hierarchical Inheritance - Hybrid Inheritance - Virtual Functions - Virtual Base class - Nesting of classes.</p> <p>Markup and Scripting Languages: Introduction to HTML – Attributes, Events, Web forms, SVG, Audio and Video – DHTML – Client-Side Scripting –JavaScript – Cascading style sheets –XML – DTD – XML Schema – DOM – SAX –XSL–AJAX–JSON.</p> <p>Web Application Development: HTML, PHP, Java, JavaScript, Perl, Python</p> <p>Android: Overview – Features - activities - services - content providers - broadcast receivers.</p> <p>Information Security: Security Technology, IDS, Scanning and Analysis Tools, Cryptography, Access Control Devices, Physical Security, Security and Personnel.</p> <p>Testing Automation Tools: Building and testing.</p> <p>R language</p> <p>Machine learning process</p> <p>AI tools</p> <p>Internet of Things</p>

2	AG	TA (Electro./Electri.)	DC Circuits AC Circuits Transformers Electrical Machines Electromagnetic Fields Electronic Devices and Circuits Power Electronics Measurements and Instrumentation Transmission and Distribution Control Systems Electrical Machine Design Power System Engineering Power System Protection and Switch Gear High Voltage Engineering FACTS HVDC and AC Transmission Power Quality Energy Engineering Renewable Energy Systems Electric and Hybrid Vehicles
3	BU	TA(Instrumentation)	"Analytical Instrumentation, Biomedical Instrumentation, Pharmaceutical Instrumentation, Industrial Instrumentation, Optoelectronics and Laser Instrumentation, Linear IC Applications, Control Systems, Microprocessor & Microcontrollers, Signals and Systems, Electronic Measurements, Transducers Engineering ,Applied Physics, Basic Electrical Engineering, Electronic Devices and Circuits, Measurement Of Electrical Parameters, Power And Energy Measurements, Analog And Digital Instruments, Display And Recording Devices, Principles of viewing and interpreting X-ray films, classification of radiographic lesions. Contrast radiography classification, materials, uses, indications and contra indications. Handling of X-ray machine, Principles of ultrasonography and its applications in veterinary Science, Awareness on principles of radiation therapy, Isotopes and their uses in diagnosis and therapy; Principles and application of CT scan"

4	AQ	TA (Life Science)	<p>ZOOLOGY General characteristics of invertebrate, Chordata and vertebrata; Parasites: Morphology, pathogenesis, laboratory diagnosis, prevention and control of the following parasites. <i>Leishmania donovani</i>, <i>Leishmania tropica</i>, <i>Plasmodium falciparum</i>, <i>Balantidium coli</i>, <i>Taenia saginata</i>, <i>Taenia solium</i>, <i>Ascaris lumbricoides</i>. Vector borne human diseases: pathogens and mechanisms of transmission; Structure and functions of cell and cell organelles; cell division and cell cycle; basics of cancer cells Genetics: Mendelian concepts; linkage and crossing over; karyotype; chromosomal anomalies and syndromes. Physiology: Nutrition and digestion, respiration, circulation, locomotion; neural and chemical coordination, excretion and reproduction. Environmental Biology: ecosystem, food chain and food web, population and community ecology; pollution-water, soil, air, thermal and sound. Embryology: gametogenesis, fertilization, cleavage, blastulation and gastrulation, extra embryonic membranes and placentation Evolution: Origin of life, theories and types of evolution, isolation and speciation mechanisms, Hardy-Weinberg equilibrium.</p> <p>MICROBIOLOGY Ultrastructure of micro-organisms-bacteria, fungus and virus; Principles and methods of sterilization; Types of culture media; Pure culture techniques. Prokaryotic DNA replication: semi-conservative method, Meselson and Stahl Experiment, enzymes and mechanism involved; inhibitors of replication. Prokaryotic Transcription: mechanism and enzymes involved. Genetic code; inhibitors of transcription. Prokaryotic Translation: steps involved and inhibitors of translation; Lac operon; Bacteria: pathogenicity, laboratory diagnosis and prevention of infections caused by the following organisms: <i>Staphylococcus aureus</i>, <i>Streptococcus pyogenes</i>, <i>Streptococcus pneumoniae</i>, <i>Neisseria meningitidis</i>, <i>Neisseria gonorrhoeae</i>, <i>Corynebacterium diphtheriae</i>, <i>Clostridium tetani</i>, <i>Escherichia coli</i>, <i>Shigella</i>, <i>Salmonella</i>, <i>Vibrio cholerae</i>, <i>Pseudomonas</i>, <i>Mycobacterium tuberculosis</i>, <i>Mycobacterium leprae</i>. Viruses: General properties and structure; classification: Human viruses, animal viruses, plant viruses, bacterial viruses and retroviruses. Physical and chemical properties, types and functions of carbohydrates, proteins, lipids and nucleic acids; Metabolic pathways: Glycolysis, TCA cycle and its energetics, electron transport chain and oxidative phosphorylation: Gluconeogenesis, Glycogenesis, Glycogenolysis, Gluconeogenesis, Pentose phosphate pathway, β - oxidation of fatty acids, Urea cycle. Nucleic acids: DNA and RNA- structure and types; as genetic materials, experiments of Griffith, Avery, Macleod and McCarty, Hershey and Chase, Lederberg and Tatum; Chargaff's principles Mutation: spontaneous and induced mutations, mutation rate; carcinogens; repair of damaged DNA.</p> <p>MOLECULAR BIOLOGY</p>
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5	AA	TA (Microbiology/Biotechnology/Medical Lab Technology)/ MicroBiology/ MLT	History of Microbiology Morphology and physiology of Bacteria Sterilization and disinfectant Culture media Culture methods Laboratory identification of bacteria and taxonomy Bacterial genetics Genetics engineering Molecular biology of microorganism Molecular biology techniques Antimicrobial therapy and resistance Microbial pathogenesis Laboratory diagnosis of bacterial infection Vaccines Types of immunity Antigens Antibodies Antigen antibody reaction Complement system Structure and function of immune system Cell mediated Immune response Humoral Immune response Immunodeficiency Hypersensitivity Autoimmunity Transplantation immunology Cancer immunology Antimicrobial immunity Immunohematology Techniques in immunology ELISA Western blot
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6	AP	TA Vet Sc / Biomedical/ LT/LA	Veterinary Anatomy Veterinary Physiology Veterinary Biochemistry Livestock Production Management Veterinary Microbiology Veterinary Pathology Animal Genetics and Breeding Animal Nutrition Veterinary Pharmacology and Toxicology Veterinary Public Health and Epidemiology Veterinary Parasitology Livestock Product Technology Veterinary and Animal Husbandry Extension Education Veterinary Clinical Practices Livestock Farm Practices Veterinary Surgery and Radiology Veterinary Medicine Veterinary Gynaecology and Obstetrics Lab animal management
7	CC	TECH(Animal Facility)/Tech (Vet)	General Science

8	BZ	Tech (CS&IT)	<p>Unit I Computer Fundamentals</p> <p>Digital computer components Number representations Memory hierarchy Virtual memory Cache memory I/O organization Modes of data transfer</p> <p>Unit II Programming and Data Structures</p> <p>C programming Recursion Arrays, stacks, queues Linked lists Trees, binary search trees, binary heaps Graphs</p> <p>Unit III Computer Networks</p> <p>OSI and TCP/IP Protocol Stacks Data link layer Routing protocols IP addressing Transport layer Application layer protocols Linux commands</p> <p>Unit IV Operating Systems</p> <p>Operating System concepts Process management CPU scheduling algorithms Threads and Semaphores</p>
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9	CA	Tech (Elect Engg)	Digital Logic Circuits Electromagnetic Theory Linear Integrated Circuits and Applications Electronic Devices and Circuits Electrical Machines - I Transmission and Distribution Discrete Time Systems and Signal Processing Measurements and Instrumentation Power System Analysis Microprocessors and Microcontrollers Power Plant Engineering Power Electronics Electrical Machines - II Control Systems Communication Engineering Solid State Drives Embedded Systems Design of Electrical Machines High Voltage Engineering Protection and Switchgear Special Electrical Machines Electric Energy Generation, Utilization, and Conservation Visual Languages and Applications Power System Transients Fiber Optics and Laser Instruments
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10	CB	Tech (Life Science)	<p>MICROBIOLOGY GENERAL MICROBIOLOGY: History of Microbiology, Working principle, construction, operation and maintenance of microscopes. Principles and methods of sterilization by physical and chemical agents. Morphology of Bacteria and staining methods. Growth and nutrition of bacteria, culture media and culture methods. Antimicrobial susceptibility tests.</p> <p>BACTERIOLOGY: Classification: Occurrence, host pathogen relationship, pathogenic and laboratory diagnosis of Staphylococcus, Streptococcus, Pneumococcus, Neisseria, Corynebacterium, Mycobacterium, Enterobacteria, salmonella, Shigella, E.coli, Klebsiella, Pseudomonas, Proteus, vibrio, Spirochetes.</p> <p>VIROLOGY: Classification: General properties of viruses mode of infection, spread and lab diagnosis of common human viral diseases - Polio, Influenza, Para influenza, Dengue, Japanese encephalitis, Chicken pox, Herpes, HIV, Hepatitis.</p> <p>PARASITOLOGY: Nomenclature, morphology, life cycle, pathogenicity and lab diagnosis and mode of infection of plasmodium, Entamoeba, Giardia, Trichomonas, Hookworm, Roundworm, Tapeworm and Whipworm.</p> <p>MYCOLOGY: Morphology, pathogenesis and lab diagnosis of fungi</p> <p>IMMUNOLOGY: Immunity classification, Antigen- Ab reactions and their application in the diagnosis of the diseases.</p> <p>PATHOLOGY:- HAEMATOLOGY Composition of Blood: Components of the blood (Plasma and Cellular elements) and their functions - Haemopoietic system of the body (Leucopoiesis, erythropoiesis and thrombopoiesis). Haemostasis - disorders and regulation - Types of Anaemia (deficiency of iron, B12 and folic acid, haemolytic, aplastic and genetic disorders), Bleeding disorders of man. Coagulation of blood: Coagulation system- recalcification time activated partial thromboplastin time and thrombin time, Clotting time, bleeding time, Prothrombin time, Partial Prothrombin time, Mechanism of coagulation of blood. Haemogram Haemogram - Haemoglobin, PCV, ESR, RBC count, WBC count, Platelet count, Calculations of Anaemia using MCH, MCV & MCHC, Reticulocyte count, Absolute Eosinophil count, Differential count.</p>
11	BH	Lab Attendant	Basic Science and Laboratory related Science