ICMR – NATIONAL INSTITUTE OF TRADITIONAL MEDICINE, BELAGAVI

I. Syllabus for the post of Technical Assistant (Pharmacy)

Sl. No.	Subject	Marks
01	General Knowledge	50 Marks
	Test of Reasoning	
	General Aptitude	
	Basic English	
	Basic Mathematics / Basic Computer	
02	ICMR Related	10 Marks
03	Subject Syllabus: • Significance of quantitative analysis in quality control, Different techniques of analysis, Types of errors, Statistical treatment of small data sets, Precision and accuracy. • Biometrics: Significant digits bend rounding of numbers, data collection, random and non-random sampling methods, sample size, data organization, diagrammatic representation of data, bar, pie, 2-D and 3-D diagrams, measures of central tendency, measures of dispersion, Standard Deviation and standard error of means, coefficient of variation, Student's and paired t-test, F-test and elements of ANOVA • Gravimetric Analysis: Precipitation techniques, Supersaturation co-precipitation, Filter papers and crocibles, • Standardization of analytical weights and calibration of volumetric apparatus. • Phytochemical Screening: a. Preparation of extracts. b. Screening of alkaloids, saponins, cardenolides and bufadienolides, flavonoids and leucoanthocyanidins, tannins and polyphenols, anthraquinones, cynogenetic glycosides, amino acids in plant extracts. • Chromatography: Introduction, classification and study of different chromatographic methods and their applications in evaluation of herbal drugs. • Spectroscopic analysis of organic compounds. • The theoretical aspects, basic instrumentation, elements of interpretation of spectra, and applications of the following analytical techniques: Ultraviolet and visible spectrophotometry, Infrared spectrophotometry, Nuclear Magnetic Resonance spectroscopy Mass Spectrometry. • Sources of drugs: Biological, marine, mineral and plant tissue cultures as sourcs of drugs • Quality control of crude drugs: Adulteration of crude drugs and their detection by organoleptic, microscopic, physical, chemical and biological methods and properties. • Preparation of herbarium sheets. • Dehumidification and Humidity Control: Basic concepts and definition, wet bulb and adiabatic saturation temperatures, Psychrometric chart and measurement of humidity. • Hazards and Safety Precautions: Mechanical, Chemical, Electrical, fire hazards. Accident records etc.	40 Marks

	• General considerations & concepts, half-life determination, Influence of temperature, light, solvent, catalytic species and other factors, Accelerated stability study, shelf-life determination and expiration dating of pharmaceuticals. • Buffers: Buffer equations and buffer capacity in general, buffers in pharmaceutical systems, preparation, stability, buffered isotonic solutions, measurements of tonicity, calculations and methods of adjusting isotonicity. • Classification of microbes and their taxonomy. Actinomycetes, bacteria, rickettsiae, spirochetes and viruses. • Identification of Microbes: Stains and types of staining techniques, electron microscopy, Nutrition, cultivation, isolation of bacteria, actinomycetes, fungi, viruses, etc., Control of microbes by physical and chemical methods. • Basic Principles of Cell Injury and Adaptation: Causes of Cellular injury, pathogenesis, morphology of cell injury. Intercellular alterations in lipids, proteins and carbohydrates, Cellular adaptation, atrophy, hypertrophy. • Basic Mechanisms involved in the process of inflammation and repair: • Biochemical organization of the cell and transport processes across cell membrane. • Bioenergetics, production of ATP. • Carbohydrate Metabolism: Glycolysis, Gluconeogenesis and glycogenolysis. • The Citric Acid Cycle • Lipids Metabolism: Control of lipid metabolism. • Biosynthesis of DNA and its replication. • Regulation of gene expression. • General Pharmacology: mechanism of action, Combined effect of drugs Pharmacogenetics. Absorption, Distribution, Metabolism and Excretion of drugs, Principles of Basic and Clinical pharmacokinetics, Adverse Drug Reactions and treatment of poisoning, ADME drug interactions, Bioassay of Drugs and Biological Standardization, Discovery and development of new drugs. Drug receptor interaction including transduction mechanisms. • Experimental Pharmacology: Preparation of different solutions for experiments. Drug dilutions, use of molar and w/v solutions in experimental pharmacology. Common laboratory animals and anesthetics used in animal studies. Commonly used instruments in experimental pharmacology. • Bioavailability and bioequivalence: Measures of bioavailability, Cmax, t max, and Area Under the Curve (AUC), • Immunology and Immunological Preparations: Principles, antigens and haptens, immune system, cellular humorai immunity, immunological tolerance, antigen- antibody reactions and their applications. • Quality assurance. • Regulatory control, regulatory drug analysis, interpretation of analytical data. • Validation, quality audit: quality of equipment, validation of equipment, validation of analytical procedures.	
	Total	**100 Marks**

II. Syllabus for the post of Lab. Attendant – 01

Sl. No.	Subject	Marks
01	General Knowledge	50 Marks
	Test of Reasoning	
	General Aptitude	
	Basic English	
	Basic Mathematics / Basic Computer	
02	ICMR Related	10 Marks
03	Subject Syllabus: Basic Science and Laboratory related Science	40 Marks

Sd/-

Administrative Officer