

CENTRE FOR INTERDISCIPLINARY BIOMEDICAL AND HUMAN FACTOR ENGINEERING

FACULTY OF ENGINEERING & TECHNOLOGY

Syllabus for Ph.D Admissions Test 2022-2023 onwards SECTION-B

Signals and their properties, Systems and their characterisation, Laplace Transform, Z- transform, Time Frequency Analysis - Fourier Transform, Short Time Fourier Transform, Wavelet Transform; Signal Model - Autoregressive (AR), Moving Average (MA) and Autoregressive Moving Average (ARMA); FIR and HR filters, Linear Filter Structures, Probabilistic concepts - axioms, relative frequency, joint and conditional probability, independence; Random Variables and Random Processes, Ergodicity, Stationarity, Independence and Correlation functions, Biomedical Signals - EEG, ECG, EMG; Biopotentials and their measurements.

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Annexure - 1

Syllabus for the Ph.D. admission test 2022-2023 onwards vacancy in the medical stream

Gross and Clinical Anatomy; Developmental Anatomy and Genetics. Cell structure and function, nucleic acid structure and function, biomedical importance of chromosomes, nucleosomes, DNA organization, DNA replication, RNA synthesis and regulation of gene expression, microanatomy and recent advances, neuroanatomy and comparative anatomy, cell signal pathway and basic neurosciences. General and cellular physiology, electrophysiology, cardiovascular physiology, electrocardiogram, nerve and muscle physiology, general sensor) and motor physiology. Regulation of respiration, pulmonary function tests. General principles of gastrointestinal function, gastrointestinal hormones, digestion and absorption. Regulation of body temperature special senses, higher nervous system. ANS, limbic system and hypothalamus, EEG. sleep, emotion and behaviour, learning & memory. Mechanism of urine formation, endocrine functions of kidney. Research Methodology, publication Ethics and biomedical research. Ethical guidelines for experimental animals. Epidemiology of communicable and non-communicable diseases, prevention and control, and modes of transmission.

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