BABA FARID UNIVERSITY OF HEALTH SCIENCES
GGS Hospital Complex, Sadiq Road
Faridkot-151203 (Pb.) INDIA

Structure and Syllabus for Ph.D. Entrance Exam

1. The Ph.D. Entrance Exam paper of 100 marks will be open to suitably qualified candidates.
2. The Ph.D. Entrance Exam Paper will consist of Two Parts

   Part – A - Research Methodology (Common to All Faculties)

   Part – B - Concerned Specialty (Faculty-wise)
3. The Ph.D. Entrance Exam Paper will consist of 50 multiple choice questions (MCQs) out of which 20 MCQs will be based on syllabus of Research Methodology and 30 MCQs will be based on syllabus of the concerned specialty of the applicant. Each MCQ will be worth 2 marks and there will be no negative marking for a wrongly answered MCQ. Each MCQ will have four possible choices out of which correct choice will be indicated by the applicant to earn marks.
4. The time duration of the entrance examination will be one hour.
5. The syllabus for the entrance exam will be as under:

   Part – A - Research Methodology:

   An Introduction to Research Methodology, Defining the Research Problem, Research Design, Sampling Design, Methods of Data Collection, Methods of Investigation, Processing and Analysis of Data, Sampling Fundamentals, Testing of Hypothesis, Interpretation and Report Writing, Role of Computer in Research

   Part – B - Concerned Specialty

   Syllabus for the concerned specialty of the applicant for the Ph.D. entrance exam will be the same as detailed in the current Ordinances governing the Post Graduate degree programmes of various faculties of Baba Farid University of Health Sciences, Faridkot

Note: Syllabus for **Health Sciences Library & Information System**:

Information. information science, Information Society, information transfer cycle-generation , collection, Storage and Dissemination Role of information in Planning, Management, Socio-economic development technology Transfer, Communication -Channels , Barriers, Intellectual property Rights-Concept , Copyright, Censorship-Print and non-Print media, Library an information Policy at the national level, Library resources Sharing and Networking, Library Extension Services, Library and Information science education in India, Library and information profession, Information technology-Components, impact of IT on Society, Computers -hardware, Software, Storage devices Input/Output devices, Telecommunication-transmission media, Switching systems, Bandwidth, Multiplexing, Modulation, protocols Wireless communication, fax, E-Mails, Tele-conferencing/Video-conferencing, Bulletin Board Service , Videotext, Voice Mail, Networking - Concepts, Topologies, Types-LAN, MAN, And WAN, Hypertext, Hypermedia and multimedia, Integrated Services Digital Network (ISDN), Open Systems Interconnection (OSI), Library Automation -Areas of automation, planning, Hardware and Software selection , OPAC, Networks-ERNET, NICNET, DELNET, JANET, BLAISE,, OCLC, INFLIBNET, Internet-Components, Services Browsing-Web browser, Search Engine, Meta-Data, Digital Object Identifier (DOI), National And international information system-NISSAT, NASSDOC, INSDOC (latest name is NISCAIR), DESIDOC, INIS, AGRIS, MEDLARS, INSPEC, Types of Libraries national , Public, Academic, and Special Objectives structure Functions, Digital Libraries-Concept, Virtual Libraries-Concept, Types of Users, Users Studies, Users education, Role of UGC in the growth of and development of Libraries and information centers in institutions of higher education in India, Role of Raja Rammohan Roy Library Foundation (RRLF)

Note: Syllabus for **Pharmaceutical Sciences**:

UV- Visible spectroscopy: Introduction, origin and Theory of Spectra instrumentation, interaction with EMR, characteristic absorption spectra of organic compounds, derivative spectroscopy, Solvent effects, Pharmaceutical applications. Infra-Red Spectroscopy: Introduction, origin and Theory of Spectra instrumentation, Sample Handling, absorption of Common Functional groups, interpretation of spectra, Recent Advances in IR spectroscopy. Chromatography: Basic Principle instrumentation, Methodological Techniques and Quantitative Analysis of drugs and their Metabolites using Column, Paper chromatography, TLC, Ion-exchange chromatography, GC, HPLC and HPTLC. Computer aided drugs design: A brief introduction of CADD and their application in designing of molecules. Formulation Considerations: Application of Pre-formulation in development of Solid, Oral liquid and parenteral dosage forms, Solubility, Dissolution rate, pKa, Partition Coefficient Stability etc., In-vitro and In-vivo Evaluation Techniques. Fundamental Aspects of Product Development: Studies of Wettability, Solubility, Dissolution, Partition and Absorption, Surfactant and Hydrocolloids and their role in drug delivery and targeting. Designing of Oral Pharmaceuticals: Formulation, Evaluation, Stability studies and Recent advances in these dosage forms- Tablets, Capsules, Suspension, Emulsions, Coating of Solids Liquids, Advances in Coating techniques. Developments of Parenterals: concepts, formulation, evaluation of large volume parenterals and small volume parenterals, environmental and quality assurance in manufacturing. Dermatological Preparations: Anatomy and Physiology of skin, Mechanism of

absorption through skin including mathematical treatment, formulation and evaluation of ointments, creams, pastes, gels including herbal cosmetic creams. Stability Studies: Basic concepts, consideration of physical and chemical stability studies, determination of shelf life, problems encountered during storage of dosage forms. Polymers and their applications in development of NDDS: Introduction, basic properties of Biodegradable and non-Biodegradable polymers and their uses. Sustained release drug delivery system: Principle involve, advantages and disadvantages, rate dose consideration, physico-chemical and biological properties of drugs relevant to sustained release formulation, microencapsulation, evaluation and stability studies of SRDF. Oral controlled drug delivery systems: Principle involved basic concept, osmotic pressure control, membrane permeation control, pH independent, ion exchange, controlled Gel diffusion, controlled and hydro dynamically balanced systems, and evaluation. Mucosal drug delivery system Introduction anatomy and physiology of oral mucosa, mechanism of trans-mucosal permeation and mucous membrane models, buccal, nasal cavity, pulmonary, rectal, vaginal drug delivery system, delivery of peptides based pharmaceutical. Transdermal Drug Delivery System: Fundamentals of transdermal permeation and factors effecting it, permeation enhancers, development of trans dermal drug delivery systems, evaluation and recent developments. Targeted drug delivery systems: Principles of targeting, method of targeting, preparation and evaluation of vesicular carrier systems such as liposomes, aquasomes, niosomes, pharmacosomes, dendimers and particulate carrier systems such as nano particles, micro spheres, modified micro spheres, solid-lipid nano particles (SLN), liquid crystals, resealed erythrocytes, monoclonal antibodies, interaction of colloidal delivery systems with biological environment, surface modification of colloidal drug delivery systems. Parenteral drug delivery systems: Basic concept and approaches to parenteral controlled release of drug, formulation of controlled release, implants. Intra-vaginal and intrauterine drug delivery systems: Introduction, vaginal contraceptive ring, mediated IUD, copper IUD, hormones releasing IUD. Drug absorption: Gastrointestinal absorption of drugs, mechanism of drug absorption, phytochemical, biological and dosages forms factors influencing absorption, buccal absorption, salivary excretion of drugs. Drug distribution, bio-transformation and excretion: Factors effecting drug distribution, volume of distribution, protein binding, mechanism of biotransformation and factors affecting it, renal and non renal excretion, concept of clearance and kinetics. Bioavailability and bioequivalence: Introduction, factors influencing bioavailability methods to determine bioavailability, designing the study for assessment of bioavailability and bioequivalence, invitro and invivo co-relation of bioavailability, methods to enhance bioavailability, statistical concepts. Pharmacokinetics: Basic consideration of one, two and multiple compartment modules including IV-Bolus, IV-Infusion and extra vascular administration, kinetics of multiple dosing, dosage regimen (loading and maintenance doses) Clinical pharmacokinetics: Concepts, absorption, distribution and renal excretion, hepatic clearance and elimination, diposition and absorption kinetics, therapeutic regimen, therapeutic response and toxicity, dosage regimen, clinical based studies. Non-linear pharmacokinetics: Recognition of nonlinearity, one and two compartment open model with Michaelis-Menton kinetics, determination of Km, non-linear tissue constants.