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DEVI AHILYA VISHWAVIDYALAYA, INDORE

DOCTORAL ENTRANCE TEST IN PHARMACY
(FACULTY OF TECHNOLOGY)

SYLLABUS

The Doctoral Entrance Test will have the question paper in two parts: Part-A and Part B of 50

PART B: 50 marks

Part B shall also consist of 50 objective type compulsory questions of 1 mark each based on the syllabus of the subject at Masters' level as follows:

1. **Pharmaceutical Analytical Techniques:** Spectroscopy: UV-Visible Spectroscopy, Infrared Spectroscopy, NMR Spectroscopy, Raman Spectroscopy, Spectrofluorimetry, Flame Emission Spectroscopy, Atomic Absorption Spectroscopy, Mass Spectrometry. **22 marks**

   Chromatography: Thin Layer Chromatography, High Performance Thin Layer Chromatography, Ion Exchange Chromatography, Column Chromatography, Gas Chromatography, High Performance Liquid Chromatography, Ultra High-Performance Liquid Chromatography, Affinity Chromatography, Gel Chromatography, Flash Chromatography, Super Critical Chromatography, Hyphenated techniques, Electrophoresis, X-ray Crystallography.

   Thermal analytical techniques, Bioassay and Radio-immuno assay.

2. **Pharmacological and Microbiological Screening**: CPCSEA guidelines to conduct experiments on animals. Preclinical screening of new substances for the pharmacological activity using *in vivo, in vitro*, and other possible animal alternative models: Anti-convulsant, anti-depressant, anxiolytic, analgesic, anti-inflammatory, anti-ulcer, anti-diabetic, anti-hyperlipidemic, hepatoprotective, immunomodulatory. Cell culture and cytotoxicity determination. Determination of LD_{50}, ED_{50}, IC_{90}. Identification of microbes and microbial culture, microbial susceptibility test. **07 marks**

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3. **Drug regulatory affairs**: Indian Patent Act 1970 and its amendments, Concepts of IPR, criteria for granting patents, and filing an Indian patent. Patent infringement. INDA, NDA, ANDA filing, Para I, II, III and IV filing. Hatch-Waxman amendments. OECD guidelines for chemical testing pertaining to use as drug, related substances, excipients, toxicity etc. and ICH guidelines, cGMP and GLP. **07 marks**

4. **Physicochemical properties of drug:** Rules for rapid property profiling from structure, liphophilicity, solubility and permeability, pH, pKa, Ionization, Hydrogen bonding, Complexation, Protein binding, Bioisoterism, Effect of Physicochemical properties on Absorption, Distribution, Metabolism, Elimination and Toxicity of Active Pharmaceutical Ingredients. **07 marks**

5. **Biostatistics**: An Introduction to Biostatistics, Distribution pattern: Types of theoretical probability distribution, normal, Binomial and Poison Distribution, Sample and Sampling: Introduction, Types of sampling, characteristics of good sampling design, Limitation of sampling, sample size, factors affecting sample size and importance of sample size, Hypothesis: Introduction, Formulation and testing of hypothesis, Level of significance, Type I and II error, Parametric (t-test, F-test, ANOVA) and non-parametric test (Chi-square test, Sign test, Signed rank test, Mann-Whitney U test, Kruskal-Wallis test, Friedman Test), Correlation and Regression. **07 marks**

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