

PART-A

Part-A shall consist of 50 objective type compulsory questions of 1 mark each. It shall be of generic nature, intended to assess the research aptitude of the candidate. It will primarily be designed to test reasoning ability, data interpretation, and quantitative aptitude of the candidate.

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| 1 Reasoning ability | 20 marks |
| 2 Data Interpretation | 15 marks |
| 3 Quantitative aptitude | 15 marks |

PART-B

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 **Modern Pharmaceutical Analytical Techniques** : UV-Visible spectroscopy, Infrared spectroscopy, NMR spectroscopy, Mass spectrometry, Chromatography : Thin layer, Column, Ion exchange, Gas, High performance liquid, High performance thin layer, Affinity, Gel, Differential scanning calorimetry. 20 marks
- 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 LD₅₀, ED₅₀, IC₉₀. Identification of microbes and microbial culture, microbial susceptibility test. 10 marks
- 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. 10 marks
- 4 **Physicochemical properties of drug**: Rules for rapid property profiling from structure, lipophilicity, pH, pKa, ionization, solubility and permeability. 05 marks
- 5 **Biostatistics** : Sample and sampling, significance of difference in means; standard deviation and standard error of mean, student t-test, analysis of variance, correlation, regression, chi-square test, p-value. 05 marks