लोक सेवा आयोग

नेपाल स्वास्थ्य सेवा, फार्मेसी समूहको सातौं तहको खुला तथा आन्तरिक प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

पाठ्यक्रमको रुपरेखा :– यस पाठ्यक्रमको आधारमा निम्नानुसार दुई चरणमा परीक्षा लिइने छ :

प्रथम चरण :– लिखित परीक्षा पूर्णाङ्क :– २००

द्वितीय चरण :– अन्तर्वार्ता पूर्णाङ्क :– ३०

प्रथम चरण – लिखित परीक्षा योजना (Examination Scheme)

पत्र	विषय	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली	प्रश्न संख्या Xअङ्कभार	समय
प्रथम	फार्मेसी	१००	४०	वस्तुगत बहुउत्तर (Multiple Choice)	१००X१ = १००	१ घण्टा १५ मिनेट
द्वितीय		१००	४०	विषयगत (Subjective)	१०X१० = १००	३ घण्टा

द्वितीय चरण

विषय	पूर्णाङ्क	परीक्षा प्रणाली
व्यक्तिगत अन्तर्वार्ता	३०	मौखिक

१. लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुन सक्नेछ ।

२. पाठ्यक्रमको प्रथम तथा द्वितीय पत्रको विषयवस्तु एउटै हुनेछ ।

३. प्रथम र द्वितीय पत्रको लिखित परीक्षा छुट्टाछुट्टै हुनेछ ।

४. प्रथम तथा द्वितीय पत्रहरुका एकाइहरुबाट सोधिने प्रश्नसंख्या निम्नानुसार हुनेछ :

प्रथम पत्रका एकाई	1	2	3	4	5	6	7	8	9
प्रश्न संख्या	10	15	10	15	15	5	5	10	15
द्वितीय पत्रका खण्ड	**A**		**B**		**C**			**D**	
द्वितीय पत्रका एकाई	1	4	2	6	3	5	7	8	9
प्रश्न संख्या	1	1	1	1	1	1	1	1	2

५. प्रथम पत्रमा वस्तुगत बहुउत्तर (Multiple Choice) प्रश्नहरुको उत्तर सही दिएमा प्रत्येक सही उत्तर बापत १ (एक) अङ्क प्रदान गरिनेछ भने गलत उत्तर दिएमा प्रत्येक गलत उत्तर बापत २० प्रतिशत अर्थात् ०.२ अङ्क कट्टा गरिनेछ । तर उत्तर नदिएमा त्यस बापत अङ्क दिइने छैन र अङ्क कट्टा पनि गरिने छैन ।

६. द्वितीय पत्रको विषयगत प्रश्नका लागि तोकिएका १० अङ्कका प्रश्नहरुको हकमा १० अङ्कको एउटा लामो प्रश्न वा एउटै प्रश्नका दुई वा दुई भन्दा बढी भाग (Two or more parts of a single question) वा एउटा प्रश्न अन्तर्गत दुई वा बढी टिप्पणीहरु (Short notes) सोध्न सकिने छ ।

७. द्वितीय पत्रको पाठ्यक्रमलाई ४ वटा खण्ड/एकाईमा विभाजन गरिएको छ, ४ वटा खण्ड/एकाईको लागि ४ वटै उत्तरपुस्तिका दिईनेछ र परिक्षार्थीले प्रत्येक खण्ड/एकाईका प्रश्नहरुको उत्तर सोही खण्ड/एकाईको उत्तरपुस्तिकामा लेख्नु पर्नेछ ।

८. यस पाठ्यक्रममा जेसुकै लेखिएको भएता पनि पाठ्यक्रममा परेका ऐन, नियमहरु परीक्षाको मिति भन्दा ३ (तीन) महिना अगाडि (संशोधन भएका वा संशोधन भई हटाइएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा रहेको सम्झनु पर्दछ ।

९. प्रथम चरणको लिखित परीक्षाबाट छनौट भएका उम्मेदवारहरुलाई मात्र द्वितीय चरणको अन्तर्वार्तामा सम्मिलित गराइनेछ ।

१०. यस भन्दा अगाडि लागू भएको माथि उल्लिखित समूहको पाठ्यक्रम खारेज गरिएको छ ।

११. पाठ्यक्रम लागू मिति :– २०६२/२/२३ देखि

१२. **मिति २०७०।२।९ मा सातौं तहमा कायम गर्ने निर्णय ।**

लोक सेवा आयोग

नेपाल स्वास्थ्य सेवा, फार्मेसी समूहको सातौं तहको खुला तथा आन्तरिक प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

प्रथम र द्वितीय पत्र : – फार्मेसी

Section A- 20 Marks

1. Development of Pharmacy and Drug Legislation in Nepal.

1.1. Pharmaceutical development in Nepal.
1.2. Pharmaceutical institution in Nepal.
1.3. Drug legislation in Nepal.
1.4. National Health Policy, National Drug Policy and their relation.
1.5. Role and Responsibility of Nepal Pharmacy Council

4. Pharmaceutical analysis

4.1 Fundamental titrametric analysis: Acid-base, Oxidation-reduction, Non-aqueous, Complexometric and potentiometric titrations; Ion selective electrodes.
4.2 Spectroscopic methods of analysis, Absorption, Visible, IR, UV spectroscopy, Fluorimetry, Polarimerty, Atomic absorption and Emission spectroscopy.
4.3 Gravimetric analytical methods and their applications.
4.4 Separation techniques: Column, Paper, Thin layer, Ion exchange, Gel and Gas chromatography; High Performance Liquid Chromatography, High Performance Thin Layer Chromatography, Electrophoreses.
4.5 Extraction procedures and role of partition coefficient.
4.6 Principles and application of microbiological assay of antibiotics and vitamins.
4.7 Good Laboratory Practices, validation, references standards.
4.8 Statistical analysis, sampling technique, analysis of variance.

Section B- 20 Marks

2. Pharmaceutics

2.1. Prescription, proper handling of prescription, incompatibilities.
2.2. Pharmaceutical dosage form: Fast, Immediate, Sustained/controlled release including novel drug delivery system. e.g. mucosal drug delivery systems.
2.3. Manufacturing; Elements of Good Manufacturing Practice; WHO Certification Scheme on the Quality of Pharmaceutical Products Moving in International Commerce and its usefulness for quality assurance; packaging and stability of pharmaceutical products, costing of pharmaceutical formulation and prediction of maximum retail price.
2.4. Pharmaceutical additives.
2.5. Lay out plan of pharmaceutical manufacturing plant including quality control, good manufacturing practice and safety measures in factories.
2.6. Physical pharmacy; application of thermodynamics; rate and order of reaction; accelerated stability testing and shelf-life of drugs; pH; buffered and isotonic solution; solution of electrolytes; micromeritics; colloidal system; theology.
2.7. Bioavailaility and Bioequivalence studies.

6. Microbiology

Scope of microbiology with special reference to pharmaceutical sciences, basic principles of sterility and pyrogen testing, **fundamental of Immunology**, Testing of vaccines used in Extended Programme of Immunization.
Microbial contamination test in pharmaceuticals, food, water and environment; classification of pathogenic microorganisms.
Basic principles of Biotechnology.
Methodology of sterilization.

Section C- 30 Marks

3. Pharmacognosy

3.1 Medicinal herbs of Nepal: Origin, distribution, cultivation, drying, pulverization, storage, and quality control.
3.2 Plant analysis, types of plant constituents and physico-chemical standards.
3.3 Plant based drugs in modern medicine.
3.4 Extraction process and isolation of active ingredients, pilot plant processing.

5. Pharmacology

5.1 Mechanism and action of drugs, their safety, uses and mode of administration.
5.2 Pharmacokinetics, pharmacodynamics and pharmacological evaluation of drugs.
5.3 Poisoning: control and treatment.
5.4 Adverse drug reaction and drug interactions.

7. Medicinal Chemistry

Characterization of organic compounds of pharmaceutical interest and specific reactions.
Synthesis of important pharmaceuticals, their pharmacological action and anti-microbial activities.

Section D- 30 Marks

8. Drug Act & Pharmacopoeia

8.1 Legislation
- 8.1.1 औषधि ऐन, २०३५
- 8.1.2 औषधि दर्ता नियमावली, २०३८
- 8.1.3 औषधि परामर्श परिषद् र औषधि सल्लाहकार समिति गठन नियमावली, २०३७
- 8.1.4 औषधि जांचबूझ तथा निरीक्षण नियमावली, २०४०
- 8.1.5 औषधि स्तर नियमावली, २०४३
- 8.1.6 औषधि उत्पादन संहिता, २०४१
- 8.1.7 लागु औषध (नियन्त्रण) ऐन, २०३३

8.2 Pharmacopoeia; Pharmacopoeial standards and their needs; importance and application of pharmacopoeial specification.

9. Pharmaceutical Care & Drug Supply Management

Comprehensive knowledge of **clinical** and hospital pharmacy; patient counseling and dosage adjustment in elderly, impaired liver and kidney; use of drug in neonates, children, pregnancy and lactation.
Logistics management (selection, procurement, storage and distribution).
Drug Financing Schemes (cost recovery, sharing and insurance).
Concept of Essential Drugs, National Formulary, Hospital Formulary and Drug & Therapeutics Committee.
Standard Treatment Schedules and rational use of drugs.
Role of Pharmacist in hospital and community.

वस्तुगत बहुउत्तर नमूना प्रश्नहरु (Sample questions)

1. Phenobarbitone induces metabolism of:
   (A) Cumarine (B) Paracetamol
   (C) Oral contraceptives (D) Ibuprofen
   Correct Answer:- (C)
2. Validation of a QC procedure is a part of :
   (A) Quality system (B) GLP
   (C) GMP (D) QA activity
   Correct Answer:- (C)
3. A pharmaceutical company received an order for coated ranitidine tablet from the marketing department with an instruction that coated tablet should retain the company logo. Which of the following coating process would you prefer?
   (A) Sugar coating (B) Film coating
   (C) Enteric sugar coating (D) B and C
   Correct Answer:- (B)
4. As per the USP requirement, tablets weighing more than 324 mg should not deviate by more than 5% from the average weight. Normally 20 tablets are sampled. How many tablets USP allows to differ (this deviation should not exceed twice the limit) from the average weight?
   (A) 1 (B) 2 (C) 3 (D) 4
   Correct Answer:- (B)
5. The pH partition hypothesis related to drug absorption is based on the following assumption
   (A) Existence of stationary compartment between GIT and blood.
   (B) Unionised form of the drug is more lipid soluble.
   (C) Passive diffusion of drug through the barrier.
   (D) All of the above.
   Correct Answer:- (D)
6. Morphine upon methylation gives
   (A) Codeine (B) Nicotine (C) Heroin (D) Thebaine
   Correct Answer:- (C)

विषयगत नमूना प्रश्नहरु (Sample questions)

1. Compare and contrast Health and Drug policies of Nepal in relation to catering better health care services to the general public. (10 marks)
2. Describe concept of essential drugs and national formulary. Discuss the role of pharmacist in the community and therapeutic management of the patient. (5+5 marks)
3. Write notes on the following: (5+5 marks)
   a) HPLC
   b) Mass Spectroscopy
4. Outline the main difference between the USP and BP/EP sterility test. (10 marks)
5. Describe principles of technological possibilities for manufacture of oral extended release dosage forms. Indicate where appropriate, the kinetics of release. (10 marks).