

प्रदेश लोक सेवा आयोग

गण्डकी प्रदेश

नेपाल स्वास्थ्य सेवा, फार्मसी समूह सातौं तहको खुला र आन्तरिक प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

पाठ्यक्रमको रूपरेखा: यस पाठ्यक्रमको आधारमा निम्नानुसार दुई चरणमा परीक्षा लिइने छः

प्रथम चरण:- लिखित परीक्षा

पूर्णाङ्क:- २००

द्वितीय चरण:- सामूहिक परीक्षण र अन्तर्वार्ता

पूर्णाङ्क:- ४०

प्रथम चरण - लिखित परीक्षा योजना (Examination Scheme)

पत्र	विषय	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली	प्रश्न संख्या × अङ्कभार	समय
प्रथम	फार्मसी सम्बन्धी	१००	४०	वस्तुगत बहुवैकल्पिक (MCQs)	१००×१= १००	१ घण्टा १५ मिनेट
द्वितीय		१००	४०	विषयगत (Subjective)	१०×१०= १००	३ घण्टा

द्वितीय चरण

विषय	पूर्णाङ्क	परीक्षा प्रणाली	समय
सामूहिक परीक्षण (Group Test)	१०	सामूहिक छलफल (Group Discussion)	३० मिनेट
व्यक्तिगत अन्तर्वार्ता	३०	मौखिक	-

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अङ्ग्रेजी दुवै हुन सक्नेछ।
- पाठ्यक्रमको प्रथम र द्वितीय पत्रको विषयवस्तु फरक फरक हुनेछन्।
- प्रथम र द्वितीय पत्रको लिखित परीक्षा छुट्टाछुट्टै हुनेछ।
- प्रथम तथा द्वितीय पत्रहरूका एकाइहरूबाट सोधिने प्रश्नसङ्ख्या निम्नानुसार हुनेछः

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

- वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरूको गलत उत्तर दिएमा प्रत्येक गलत उत्तर बापत २० प्रतिशत अङ्क कट्टा गरिनेछ। तर उत्तर नदिएमा त्यस बापत अङ्क दिइने छैन र अङ्क कट्टा पनि गरिने छैन।
- बहुवैकल्पिक प्रश्नहरू हुने परीक्षामा कुनै प्रकारको क्याल्कुलेटर (Calculator) प्रयोग गर्न पाइने छैन।
- विषयगत प्रश्नका लागि तोकिएका १० अङ्कका प्रश्नहरूको 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 टिप्पणीहरू (Short notes) सोध्न सकिने छ।
- द्वितीय पत्रमा प्रत्येक खण्डका लागि छुट्टाछुट्टै उत्तरपुस्तिकाहरू हुनेछन्। परिक्षार्थीले प्रत्येक खण्डका प्रश्नहरूको उत्तर सोही खण्डको उत्तरपुस्तिकामा लेख्नुपर्नेछ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भए तापनि पाठ्यक्रममा परेका कानून, ऐन, नियम तथा नीतिहरू परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ।
- पाठ्यक्रम लागू मिति:-

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## प्रथम र द्वितीय पत्र: - फार्मसी

### **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

#### **2. Pharmaceutical analysis**

- 2.1 Fundamental titrimetric analysis: Acid-base, Oxidation-reduction, Nonaqueous, Complexometric and potentiometric titrations; Ion selective electrodes.
- 2.2 Spectroscopic methods of analysis, Absorption, Visible, IR, UV spectroscopy, Fluorimetry, Polarimetry, Atomic absorption and Emission spectroscopy.
- 2.3 Gravimetric analytical methods and their applications.
- 2.4 Separation techniques: Column, Paper, Thin layer, Ion exchange, Gel and Gas chromatography; High Performance Liquid Chromatography, High Performance Thin Layer Chromatography, Electrophoreses, and Mass Spectrometry
- 2.5 Extraction and Importance of partition coefficient.
- 2.6 Principles and application of microbiological assay of antibiotics and vitamins.
- 2.7 Good Laboratory Practices, validation, references standards.
- 2.8 Statistical analysis, sampling technique, analysis of variance.

### **Section B- 20 Marks**

#### **3. Pharmaceutics**

- 3.1. Prescription, proper handling of prescription, incompatibilities.
- 3.2. Pharmaceutical dosage form: Fast, Immediate, Sustained/controlled release including novel drug delivery system. e.g. mucosal drug delivery systems.
- 3.3. 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.
- 3.4. Pharmaceutical additives.
- 3.5. Layout plan of pharmaceutical manufacturing plant including quality control, good manufacturing practice and safety measures in factories.
- 3.6. 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.
- 3.7. Bioavailability and Bioequivalence studies.

#### **4. Microbiology and Immunology**

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

### **Section C- 30 Marks**

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#### 5. Pharmacognosy

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

#### 6. Pharmacology

- 6.1 Mechanism and action of drugs, their safety, uses and mode of administration.
- 6.2 Pharmacokinetics, pharmacodynamics and pharmacological evaluation of drugs.
- 6.3 Poisoning: control and treatment.
- 6.4 Adverse drug reaction and drug interactions.

#### 7. Medicinal Chemistry

- 7.1 Characterization of organic compounds of pharmaceutical interest and specific reactions.
- 7.2 Synthesis of important pharmaceuticals, their pharmacological action and anti-microbial activities.
- 7.3 Structure Activity relationship of the drugs: Drug affecting Nervous system, NSAIDs, Cardiovascular drugs and Diuretics, Antimicrobial Drugs, Endocrinology and related drugs

### 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 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 and Drug Supply Management

- 9.1 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.
- 9.2 Logistics management (selection, procurement, storage and distribution).
- 9.3 Drug Financing Schemes (cost recovery, sharing and insurance).
- 9.4 Concept of Essential Drugs, National Formulary, Hospital Formulary and Drug & Therapeutics Committee.
- 9.5 Standard Treatment Schedules and rational use of drugs.
- 9.6 Role of Pharmacist in hospital and community.
- 9.7 Basic Principles of Pharmacoeconomics and Pharmaceutical Management.

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वस्तुगत नमुना प्रश्नहरू (Sample questions)

1. The mechanism of antibacterial action of tetracycline involves

- A) Binding to a component of the 50S ribosomal subunit
- B) Inhibition of translocase activity
- C) Selective inhibition of ribosomal peptidyl transferases
- D) Blockade of binding of aminoacyl – tRNA to bacterial ribosomes

**Correct Answer:- (D)**

2. National GMP code of Nepal was promulgated in the year

- (A) 2070 BS
- (B) 2072 BS
- (C) 2074 BS
- (D) 2076 BS

**Correct Answer:- (B)**

3. All of the following statements concerning Zero order degradation are true except

- A) Its rate is independent of the concentration.
- B) A plot of concentration versus time yields a straight line on rectilinear paper.
- C) Its half- life is a changing parameter.
- D) Its concentration remains unchanged with respect to time.

**Correct Answer:- (D)**

4. Which equation describes the dissolution of drug from the tablet

- A) Fick's Law
- B) Law of mass action
- C) Noyes- Whitney Equation
- D) Henderson-Hassel Balch Equation

**Correct Answer:- (C)**

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. Strychnine is isolated from

- A) Epicacuahna Radix
- B) Panax gingseng
- C) Nux Vomica
- D) St Jhones Wort

**Correct Answer:- (C)**

विषयगत नमुना प्रश्नहरू (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).

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**सामूहिक परीक्षण (Group Discussion)**

यस प्रयोजनको लागि गरिने परीक्षण १० पूर्णाङ्क र ३० मिनेट अवधिको हुनेछ जुन नेताविहिन सामूहिक छलफल (Leaderless Group Discussion) को रूपमा अवलम्बन गरिने छ। दिइएको प्रश्न वा Topic का विषयमा पालैपालोसँग निर्दिष्ट समयभित्र समूहबीच छलफल गर्दै प्रत्येक उम्मेदवारले व्यक्तिगत प्रस्तुति (Individual Presentation) गर्नु पर्नेछ। यस परीक्षणमा मूल्याङ्कनको लागि देहाय अनुसारको कम्तीमा ३ जनाको समिति रहनेछ।

आयोगका सदस्य - अध्यक्ष

विज्ञ - सदस्य

दक्ष/विज्ञ (१ जना) - सदस्य

**सामूहिक छलफलमा दिइने नमुना प्रश्न वा Topic**

उदाहरणको लागि - उर्जा संकट, गरीबी निवारण, स्वास्थ्य बीमा, खाद्य सुरक्षा, प्रतिभा पलायन जस्ता Topics मध्येकुनै एक Topic मात्र दिइनेछ।