नेपाल खाद्य संस्थान
अधिकृत स्तर ७ तह वरिष्ठ अधिकृत गुण नियन्त्रक पदको प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

एवंपरीक्षा योजना

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

प्रथम चरण :– लिखित परीक्षा पूर्णाङ्क :– २००

द्वितीय चरण :– अन्तर्वार्ता पूर्णाङ्क :– ३०

१.प्रथमचरण: – लिखितपरीक्षा **पूर्णाङ्क :– २००**

पत्र	विषय	पूर्णाङ्क	उतीर्णाङ्क	परीक्षा प्रणाली	प्रश्नसंख्याxअङ्क	समय
प्रथम	व्यवस्थापन र सम्बन्धितकानून	१००	४०	विषयगत	१०प्रश्नX १० अङ्क = १०० अङ्क	३ घण्टा
द्वितीय	सेवा सम्बन्धी	१००	४०	विषयगत	६प्रश्नX १०अङ्क = ६० अङ्क २प्रश्नX २० अङ्क = ४० अङ्क (समस्या समाधान)	३ घण्टा

२. द्वितीय चरण : –अन्तर्वार्ता

विषय	पूर्णाङ्क	उतीर्णाङ्क	परीक्षा प्रणाली
अन्तर्वार्ता	३०	-	मौखिक

द्रष्टव्य :

१. लिखित परीक्षाको माध्यमभाषा नेपालीवाअंग्रेजीअथवा नेपाली र अंग्रेजीदुवै हुनेछ ।

२ प्रथम र द्वितीयपत्रको लिखित परीक्षा छुट्टाछुट्टै हुनेछ ।

३. लिखित परीक्षामायथासम्भव पाठ्यक्रमका सबै एकाईबाट प्रश्नहरु सोधिनेछ ।

४. विषयगतप्रश्नमाप्रत्येकपत्र/विषयकाप्रत्येक खण्डका लागि छुट्टाछुट्टै उत्तरपुस्तिकाहरु हुनेछन् । परिक्षार्थीले प्रत्येक खण्डका प्रश्नहरुको उत्तर सोही खण्डका उत्तरपुस्तिकामा लेख्नुपर्नेछ ।

५. यस पाठ्यक्रम योजनाअन्तर्गतकापत्र/विषयकाविषयवस्तुमा जेसुकै लेखिएको भएतापनि पाठ्यक्रममा परेकाकानून, ऐन, नियमतथानीतिहरु परीक्षाको मितिभन्दा ३ महिना अगाडि (संशोधनभएकावा संशोधनभई हटाईएकावाथप गरी संशोधनभई) कायम रहेकालाई यस पाठ्क्रममा परेको सम्झनु पर्दछ ।

६. प्रथमचरणको परीक्षाबाट छनौट भएकाउम्मेदवारहरुलाई मात्रद्वितीयचरणको परीक्षामा सम्मिलित गराइनेछ ।

७. पाठ्यक्रमलागू मिति :–

नेपाल खाद्य संस्थान

अधिकृत स्तर ७ तह वरिष्ठ अधिकृत गुण नियन्त्रक पदको प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

प्रथमपत्र :– व्यवस्थापन र सम्बन्धितकानून

खण्ड (क) – (५० अङ्क)

१. **सार्वजनिकव्यवस्थापन**

- १.१ व्यवस्थापनको अवधारणा, प्रकार र आधारभूत सिद्धान्तहरु
- १.२ मानवश्रोत व्यवस्थापन : प्राप्ति, विकास, उपयोग र सम्भार
- १.३ व्यवस्थापनमानिर्देशन, नियन्त्रण, समन्वय, निर्णय प्रक्रिया, उत्प्रेरणा, नेतृत्वर अधिकार प्रत्यायोजन
- १.४ कुशलव्यवस्थापककाकार्य र गुणहरु
- १.५ व्यवस्थापकीय सीप र शैलीहरु
- १.६ कार्यसम्पादनव्यवस्थापन
- १.७ ज्ञानव्यवस्थापन
- १.८ श्रोत व्यवस्थापन
- १.९ योजनातर्जुमा, कार्यान्वयन, अनुगमनएवं मूल्यांकनप्रक्रिया
- १.१० आर्थिक प्रशासनको अर्थ, क्षेत्र, प्रमुखकार्यहरु र महत्व
- १.११ बजेटको अर्थ, सिद्धान्त, प्रकार र महत्व
- १.१२ लेखा र लेखा परीक्षणको अवधारण, उद्देश्य र महत्व
- १.१३ विश्वव्यापीकरण, उदारीकरण र निजीकरण
- १.१४ सार्वजनिक - नीजि साझेदारी

२. **व्यवसायिकता, सदाचार र नैतिकता**

- २.१ सार्वजनिकजवाफदेहिता र उत्तरदायित्व
- २.२ व्यवासायिकता, सदाचार र नैतिकताको अवधारणा र आयामहरु
- २.३ सार्वजनिकप्रशासनमाव्यवसायिकता, सदाचार र नैतिकताको प्रबर्द्धनकाउपाय र वर्तमानअवस्था
- २.४ भ्रष्टाचार निवारण तथा भ्रष्टाचार निवारणका लागिगरिएकाव्यवस्थाहरु

खण्ड (ख) – (५० अङ्क)

३. **संविधान, ऐन र नियमहरु तथाखाद्य संस्थान सम्बन्धी**

- ३.१ नेपालको वर्तमान संविधान, २०७२
- ३.२ संस्थान ऐन, २०२१
- ३.३ नेपालखाद्य संस्थानकार्यालय सञ्चालनतथाकर्मचारी सेवाशर्त र सुविधा सम्बन्धीविनियमावली २०६४
- ३.४ खाद्य ऐन, २०२३ र खाद्यनियमावली, २०२७
- ३.५ करार ऐन, २०५६
- ३.६ कम्पनी ऐन, २०६३
- ३.७ उपभोक्ता संरक्षण ऐन, २०५४ र उपभोक्ता संरक्षण नियमावली, २०५६

३.८ वातावरण संरक्षण ऐन, २०५३ र वातावरण संरक्षण नियमावली, २०५४

३.९ स्टाण्डर्ड नाप र तौल ऐन, २०२५ र स्टाण्डर्ड नाप र तौल नियमावली, २०२७

३.१० नेपाल गुणस्तर प्रमाण चिन्ह ऐन, २०३७ र नेपाल गुणस्तर प्रमाण चिन्हनियमावली, २०४०

३.११ सार्वजनिकखरिद ऐन, २०६३ र सार्वजनिकखरिद नियमावली, २०६४

३.१२ विदेशीलगानीतथाप्रविधि हस्तान्तरण ऐन, २०४९

३.१३ भ्रष्टाचार निवारण ऐन, २०५९

३.१४ दाना ऐन २०३३ र दानानियमावली, २०४१

३.१५ पशु वधशाला र मासु जांच ऐन,२०५५ ,

३.१६ आयोडिनयुक्त नून (उत्पादनतथाबिक्रीवितरण) ऐन,२०५५

३.१७ जीवनाशकविषादी ऐन ,२०४८

३.१८ आमाको दूधलाई प्रतिस्थापनगर्ने वस्तु (बिक्रीवितरण नियन्त्रण) ऐन ,२०४९

३.१९ नेपालखाद्य संस्थानको परिचय, संगठनात्मक संरचना, कार्यक्षेत्र, विधमानअवस्था, सम्भावना र चुनौतीहरु

३.२० अन्तर्राष्ट्रिय खाद्यतथा कृषि सम्बन्धी संघ संस्थाहरुः इफड (IFAD),खाद्यतथा कृषि संगठन (FAO),विश्वखाद्यकार्यक्रम(WEP) रविश्वव्यापार संगठन (WTO) सम्बन्धीजानकारी

३.२१ नेपालमाखाद्यान्नउत्पादनको वर्तमानअवस्था, माग र आपूर्ति तथाबजार व्यवस्था

३.२२ खाद्य सुरक्षा र खाद्य सम्प्रभुता

नेपाल खाद्य संस्थान

अधिकृत स्तर ७ तह वरिष्ठ अधिकृत गुण नियन्त्रक पदको प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

द्वितीयपत्रः– सेवा सम्बन्धी

1. **Bio/Food Chemistry and Nutrition**
   - 1.1 Historical development of food chemistry
   - 1.2 Proximate composition of foods and their determination
   - 1.3 Structure, classification and properties of carbohydrates; starch, amylase and amylo-pectin
   - 1.4 Structure, classification and properties of proteins, amino acids and enzymes; coenzymes and factors, enzyme kinetics and mechanism of action, inhibitors and activators, non-enzymatic reactions, enzymes in food industry
   - 1.5 Structure, classification and properties of lipids; fatty acids, rancidity, auto-oxidation, flavour reversion
   - 1.6 Classification and properties of vitamins; occurrence of minerals in food
   - 1.7 Structure of water, water activity and its importance in food
   - 1.8 Artificial food colours, synthetic coal tar dyes and their assessment of safe limit
   - 1.9 Principal flavouring compound in food, threshold value, flavour enhancers
   - 1.10 Food additives used in food industries: antioxidants, emulsifiers, preservatives, stabilizers, anti caking agents, thickening agents, chelating agents, anti foaming agents, artificial sweeteners
   - 1.11 General introduction to flavonoids and alkaloids
   - 1.12 Digestion, absorption, metabolism and functions of carbohydrates, proteins and lipids
   - 1.13 Nutritional classification of food, food groups, balance diet, food composition table, essential fatty acids and essential amino acids, Protein Efficiency Ratio, Net Protein Utilization, Chemical Score, Biological value
   - 1.14 Baby foods, infant foods, weaning foods, supplementary foods
   - 1.15 Nutritional status and their indicators
   - 1.16 Food nutritional problems
   - 1.17 Food security and nutrition
   - 1.18 Food habits and food taboos
   - 1.19 Anti-nutritional factors in foodand their removal, food toxicity and allergenicity
   - 1.20 Malnutrition, Under-nutrition, Double burden of malnutrition, Hidden hunger, Global hunger index, Lifestyle diseases
   - 1.21 Effect of processing on nutrients
   - 1.22 Supplementation, fortification and enrichment of foods
   - 1.23 International convention on nutrition (ICN), World Food Summit, International agencies in nutritional activities

2. **Food Engineering**
   - 2.1 Units, dimensions and their conversion; Unit operation, heat and material balance, heat transferand heat exchangers
   - 2.2 Laws of thermodynamics and its applications
   - 2.3 Principle, application and equipments for refrigeration and freezing, drying, evaporation, centrifugation, size separation and size reduction
   - 2.4 Principle and application of distillation and extraction
   - 2.5 Introduction to belt conveyers, chain conveyers, screw conveyers, elevators and their importance in food industries
   - 2.6 Steam generation and its application in food industries
   - 2.7 High pressure technology, membrane technology (Reverse Osmosis and Ultra Filtration) and its application in food industries

2.8 Process plant and equipment design, scale-up and safety factors especially on cereals, legumes and oil seeds processing
2.9 Cereals, legumes and oil seeds : Structure, chemical composition, physical mechanical and thermal properties
2.10 General milling operation : cleaning, separation, classification, husking, milling and grinding of wheat, legumes and corn
2.11 Complete milling process, break rolls, reduction rolls, milled products and their nutritive value and applications
2.12 Rice milling : Traditional and modern rice milling machines, husking, polishing, destoner, degree of polishing
2.13 Principle and importance of parboiling of rice and wheat, merits and demerits of parboiling
2.14 Processing of oil seeds (traditional & modern methods), refining, solvent extraction
2.15 By-product utilization of cereal grains, legumes and oil seeds

3. **Storage and Packaging Technology**
3.1 Grain sampling: theoretical basis, sampling devices and their applications, analysis of grain samples
3.2 Food losses and damage during storage
3.3 Entomology and mycology of stored grain insects, pest, fungi and mycotoxin
3.4 Storage structures: principles, types, selection of storage building, physical, chemical, biological storage structure and handling of equipment
3.5 Non-chemical control measure of stored food : grain seed and drying; modified atmosphere, hermatic storage and CA storage; refrigeration storage and aeration principle
3.6 Chemical control methods of pest control
3.7 Farm level storage and storage structure in Nepal
3.8 Packing materials: properties and identification, paper and paper board, plastics films, aluminum foils, laminated packing and their importance
3.9 Food packages: bags, pouches, wraps, folding cartons, set-up boxes, liquid-tight paper board containers, cans, collapsible tubes, glass containers, traditional packages
3.10 Shipping and transporting container, wooden containers, corrugated fiber boxes, inserts and cushioning materials
3.11 Process of Packaging and Equipment: Material handling, filling, air removal, sealing, retorting, modified atmosphere packaging, vacuum and gas packaging
3.1 Special problems in packaging of food stuffs: perishable and non-perishable foods
3.2 Packaging specification and quality control
3.3 Evaluation of Packaging materials, toxicity, corrosion prevention, shelf life testing, minimization of transport losses; hazards in handling and storage and packaging and their minimization
3.4 Packaging laws and Regulations
3.5 Importance of packaging and lebeling

4. **Post Harvest and Food Processing Technology**
4.1 The broad-based approach to post- harvest and agro-industry development in Nepal
4.2 Development, growth, maturation, ripening of cereals, pulses and oilseeds
4.3 Post harvest handling of grains: Grading, storage and transportation of cereal grains

4.4 Qualitative and quantitative assessment of post harvest losses and management system for loss reduction in rice, maize, wheat, pulses and oilseeds
4.5 GoN's current policy and plan for increase in agriculture production and strategy for development of food and nutrition security
4.6 Introduction and historical development of food preservation
4.7 Ancient and indigenous practices of food processing and preservation
4.8 General principles and methods of food preservation
4.9 Definition and types of food spoilage, process of food spoilage, and factors affecting spoilage of food
4.10 Different types of food preservation methods (by low temperature, by thermal processing and by irradiation)
4.11 Technology of cereal, legume and oil seeds.
4.12 Uses of enzymes in food processing industries
4.13 Use of various packaging materials in food processing
4.14 Minimal processing for nutrients conservation
4.15 Research on development of food preservation and appropriate technology.

5. **Food Microbiology**
5.1 Principle and application of the microscope
5.2 Morphology and cytology of bacteria, yeasts, molds, viruses and protozoa
5.3 Growth, reproduction, transformation, mutation and spore formation of micro organism
5.4 General principles of serology and immunology
5.5 Bacterial nutrition and metabolism
5.6 Identification characteristics of food spoilage microorganisms (Salmonella species, E. coli, Staphylococcus species., Pseudomonas species)
5.7 Identification of Aspergillus, Penicillum, Rhizopus species
5.8 Microbiology of cereals and cereal products, fast foods, spices, tea and coffee, meat, fish, poultry and their products
5.9 Environmental microbiology (air, water and soil)
5.10 Hurdle concept of food safety
5.11 Food borne infection and intoxication; biotoxins - aflatoxins, fuminosin, ochratoxin, zearalenon

6. **Industrial Microbiology**
6.1 Industrial application of micro-organisms and their identification
6.2 Isolation and preservation of industrially important micro-organisms
6.3 Fermented foods and beverages
6.4 Bio-chemical reaction and fermentation
6.5 Industrial fermentation of organic acids (vinegar, citric acid, lactic acid), amino acid (L-glutamic acid, L- lysine and L-tryptophan), and vitamins (vitamin B-12, riboflavin, β- carotene)
6.6 Industrial production and purification of enzymes (amylase, glucoamylase, dextrin sucrase)
6.7 Single cell protein, antibiotics and chemistry of microbial leaching
6.8 Recent trends and developments in biotechnology

7. **Quality Control and Management**
7.1 Quality control, Quality assurance and Quality Management System
7.2 Food Sampling and Inspection techniques

7.3 Food adulteration and its control mechanism. Food safety and monitoring of contaminants in foods.
7.4 Quality attributes of food and sensory evaluation
7.5 Food standards and Codex Alimentarius Commission (COC), OIE & IPPC, WTO/SPS &TBT Agreements
7.6 Food plant sanitation and management
7.7 General principle and application of Hazard Analysis and Critical Control Point (HACCP), Good Manufacturing Practice (GMP), ISO- 9001, 22000, 50001, TQM&GAP/GAV standards
7.8 Good Laboratory Practices (GLP), Laboratory Accreditations, ILAC, APLAC, NEPLAS
7.9 Principle and application: Enzyme Linked Immuno Sorbent Assay (ELISA), Gas Chromatography(GC), High Performance Liquid Chromatography (HPLC), Atomic Absorption Spectroscopy (AAS), Mass Spectrometry (MS), Infra Red and Ultra Violet Spectroscopy
7.10 General concept of statistical quality control, sampling techniques, measures of location and dispersion, probability, test of significance (Chi-square test, T and Z tests, F-value)