दुग्ध विकास संस्थान
केन्द्रिय कार्यालय, लैनचौर

संस्थानको अधिकृत स्तर तह ७ प्राविधिक सेवा "डेरी" समूहको टेक्निकल अफिसर पदका लागि हुने खुल्ला परिक्षाको पाठ्यक्रम ।

लिखित परिक्षाको माध्यम राष्ट्रभाषा नेपाली अथवा अंग्रेजीमा हुनेछ ।

लिखित परिक्षाको पाठ्यक्रम:

पत्र	बिषय	पूर्णाङ्क	समय	परिक्षण प्रणाली	प्रश्न संख्या	अंक भार
प्रथम	डेरी विज्ञान सम्बन्धी सामान्य ज्ञान	७०	२ घण्टा	छोटो छोटो उत्तर	२०	७०
द्वितीय	सेवा समुह सम्बन्धी ज्ञान	७०	३ घण्टा	क) लामो उत्तर ख) छोटो उत्तर	२ १०	३० ४०

पाठ्यक्रमको विस्तृत विवरण:-

क) प्रथम पत्र: डेरी विज्ञान सम्बन्धी सामान्य ज्ञान:

1. Composition of milk of different livestock species.
2. Chemistry of lipid, protein and carbohydrates.
3. Legal standard of different dairy products in Nepal.
4. Principle of refrigeration and functions of compressor, condensers and evaporators.
5. Refrigerants and its properties used in food industry.
6. Systems of units and its application in dairy industry.
7. Principle of pasteurization, separation, homogenization and its history.
8. Analysis of various components in milk and milk products.
9. Food safety management system.
10. Packing, curing and storage of cheese and butter.
11. Changes that take place during the freezing process, hardening and storage.

ख) द्वितीय पत्र: सेवा समुह सम्बन्धी ज्ञान:-

1. Dairy Calculations and formulae:-
   - Relation between specific gravity and density of milk
   - Calculations of total solids in milk.
   - Standardizing milk.

- Determination of skim milk.
- Determination of holding time of pasteurizers.
- Effect of Haomogenization pressure on fat globules break-up.
- Standardization of milk for manufacture of cream, tonned, double tonned, reconstituted milk, cheese, ice-cream, paneer, condensed and dried milk.

2. Composition of milk and factors affecting it.
3. History, Introductions, manufacturing process, changes during various steps of manufacturing processes and storage of milk and milk products (Dahi, Paneer, Cheese, Flavours milk, Butter, Ghee, Condensed milk, Powders, Cream, Varieties of sweets)
4. Ice-cream:-
   - Manufacturing process
   - Varieties of ice-cream
   - Changes that take place during the freezing process, hardening and storage.
   - Operation of continuous and batch type freezers.
   - How to control overrun?
   - Ice-cream ingredients.
   - Stabilizers
   - Emulsifiers
5. Refrigeration principle and load calculation.
6. Morphology of different types of microorganisms used in the manufacture of milk products.
7. Mother and bulk starter culture and their defailed manufacturing process.
8. Packaging, curing and storage of some common varieties of cheese.
9. Rennets and its importance in cheese industry.
10. Principle of pasteurization, its history and different methods.
11. Milk borne diseases and their method of detection.
12. Sweetened condensed milk.
    - Definition
    - Flow diagram
    - Process of manufacturing
    - Packaging and storage
    - Various defects and its control
13. Dairy sanitation hygiene and their management practices.
14. Ways of milking practices in to respect developed countries and developing countries.
15. Judging of dairy products.
16. Methods of detection of adulterations in milk and milk products.
17. Specifications of machinery, equipments, packaging materials, chemical and detergents used in dairy industry.
18. Analysis of milk proteins, fats, lactose, minerals in milk and milk products.
19. Method of microbiological testing of milk and milk products.
20. Detail study of food safety management system.
21. Analysis of milk and ghee.
    - Detection of Boric acid in milk.
    - Detection of carbonate & Bicarbonate in milk.
    - Detection of Formaldehyde in milk.
    - Henner test, Leech test.
    - Detection of salicylic acid in milk.

- Ferric chloride test
- Detection of Hydrogen peroxide in milk.
- Detection of starch of cereal flours in milk.
- Adulterants in ghee.
- Detection of animal fats in ghee.

22. Milk chemistry
    - Saturate and unsaturated fatty acids and its structures.
    - Different types of amino acid and its structures.
    - Carbohydrates – monosachhoxides & polysaccharides & its structures.
    - Whey proteins and its structures.
    - Types of caseins and its structures.
23. Bacteriophage and its study in the starter culture.