प्रदेश लोक सेवा आयोग, लुम्बिनी प्रदेश

प्रदेश निजामती सेवा तथा स्थानीय सरकारी अन्तर्गत स्वास्थ्य सेवा, सबै समूह, सबै उपसमूह, नवौं तह वा सो सरहका पदहरुको खुला, आन्तरिक र अन्तर तह प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

पाठ्यक्रमको रुपरेखा :- यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination) पूर्णाङ्क :- २००

द्वितीय चरणः- अन्तर्वार्ता (Interview) पूर्णाङ्क :- ३०

प्रथम चरण (First Phase):- लिखित परीक्षा योजना **(Written Examination Scheme)**

Paper	Subject		Marks	Full Marks	Pass Marks	No. Questions & Weightage	Time Allowed
I	General Subject	Part I: Management	50	100	40	6 X 5 = 30 (Short answer) 2 x 10 = 20 (Long answer)	3:00 hrs.
		Part II: General Health Issues and Legal Aspects	50			4 X 5 = 20 (Short answer) 3 X 10 = 30 (Long answer)	
II	Technical Subject			100	40	4 X 15 = 60 (Critical Analysis) 2 X 20 = 40 (Problem Solving)	3:00 hrs.

द्वितीय चरण : (Second Phase)

Paper	Subject	Full Marks	Time Allowed
	Interview	30	

द्रष्टव्य :

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

२. स्वास्थ्य सेवा अन्तर्गतका सबै समूह/सबै उपसमूहहरूको लागि प्रथम पत्रको पाठ्यक्रमको विषयवस्तु एउटै हुनेछ । तर द्वितीय पत्र Technical Subject को पाठ्यक्रम समूह/उपसमूह अनुरुप फरक फरक हुनेछ ।

३. प्रथमपत्रको लिखित परीक्षा समूह/उपसमूहका लागि संयुक्त रुपमा एउटै प्रश्नपत्रबाट एकैदिन वा छुट्टाछुट्टै प्रश्नपत्रबाट छुट्टाछुट्टै दिन पनि हुन सक्नेछ । यसैगरी द्वितीय पत्रको परीक्षा पनि समूह/उपसमूह अनुसार अलग अलग दिन छुट्टाछुट्टै प्रश्नबाट हुनेछ ।

४. प्रथम पत्रको Part I र Part II को लागि छुट्टाछुट्टै (Part I को लागि एउटा र Part II को लागि एउटा) उत्तरपुस्तिकाहरु हुनेछन् भने द्वितीय पत्रको लागि प्रत्येक प्रश्नका उत्तरपुस्तिकाहरूं छुट्टाछुट्टै हुनेछन् ।

५. यस पाठ्यक्रममा जेसुकै लेखिएको भए तापनि पाठ्यक्रममा परेका कानून, नीति, ऐन, नियमहरु यो पाठ्यक्रम स्वीकृत हुँदा कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनुपर्नेछ ।

६. **पाठ्यक्रम स्वीकृत मिति :- २०८१/०५/०६**

Paper I: General Subject

Part I: Management **(50Marks)**

1. Management: - concept, principles, functions, scope, role, level and skills of managers
2. Hospital management system and administration
3. Health manpower recruitment and development
4. Participative management: concept, advantages and disadvantages, techniques of participation
5. Time management: concept, advantages, and disadvantages
6. Conflict management: concept, approaches to conflict management, levels of conflict, causes of conflict and strategies for conflict management
7. Stress/burnout management: concept, causes and sources of stress, techniques of stress/burnout management
8. Disaster management: concept, importance and its implication in service delivery
9. Change management: concept, importance and its implication in service delivery
10. Diversity management: concept, importance and its implication in service delivery
11. Appreciative inquiry: concept, basic principles and management
12. Financial management: concept, approaches, budget formulation and Implementation, auditing, fiscal management and financial accountability
13. Human resource management: concept, functions and different aspects
14. Planning: concept, principles, nature, types, instrument and steps
15. Leadership: concept, functions, leadership styles, leadership and management effectiveness
16. Coordination: concept, need, types, techniques, and approaches of effective coordination
17. Communication: concept, communication process and barrier to effective communication, techniques for improving communication
18. Good governance: Concept and characteristics

Part II: General Health Issues and Legal Aspects (50 Marks)

1. Constitution of Nepal (health and welfare issues)
2. National Health Policy, 2076
3. Health services act 2053, health service regulation, 2055
4. Public Health Service Act,2075
5. Public Health Service Regulation,2077
6. Province Civil Service Act,2080
7. Province Civil Service Regulation,2080
8. Province Good Governance Act, 2076
9. Province Good Governance Regulation, 2077
10. Public Procurement Act,2063
11. Public Procurement Regulation,2064
12. Economic Procedure and Financial Accountability Act,2076
13. Economic Procedure and Financial Accountability Regulation,2077
14. Security of Health Workers and Organization Act,2066
15. Local Government Operation Act,2074 (Health sector)
16. Current Periodic Plan of Nepal and Lumbini Province
17. Second long term health plan (1997-2017)
18. Sustainable Development Goal(SDG)
19. Health sector organizational structures : Federal, Provincial and Local level
20. International health agencies: role and responsibilities of WHO, UNICEF, UNFPA and interagency relationships
21. Professional councils and related regulations
22. Medical and health professional ethics : In general and its application
23. Indigenous and traditional faith healing and health practices
24. Supervision, types and its usage in health sector
25. Monitoring and evaluation system in health
26. Health Management information system (HMIS)
27. Health insurance and financing in health care
28. Effects of environment in public health: air pollution, domestic pollution, noise pollution

29. Health care waste management
30. Climate change and its impact on public health
31. Importance of water, sanitation and hygiene in public health
32. Effects of disaster in public health: deforestation, land slide, flood, earthquake and fire
33. Health volunteers' involvement in health service delivery
34. Community involvement in health service delivery
35. Counseling: - concept, type, importance and its application in health service delivery

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प्रदेश लोक सेवा आयोग, लुम्बिनी प्रदेश

प्रदेश निजामती सेवा अन्तर्गत स्वास्थ्य सेवा, मेडिकल ल्याव टेक्नोलोजी समूह, जनरल मेडिकल ल्याव टेक्नोलोजी उप समूह, नवौं तह मेडिकल ल्याव टेक्नोलोजिष्ट प्रशासक पदको खुला र अन्तरतह प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

Paper II: Technical Subject

1. Hematology **15 %**

1.1. Formation, composition and function of blood
1.2. Collection and preservation of blood for various hematological investigations
1.3. Hemoglobinometry, various methods of estimation of hemoglobin, errors involved and standardization of instrument
1.4. Romanowsky dyes, preparation and staining procedures for all counts, visual as well as electronic method and errors involved and means to minimize such errors in counting red blood cells, white blood cells and platelets.
1.5. Anemia: Definition, classification and clinical features and causes of various types of anemia
1.6. Laboratory investigations for various types of anemia.
1.7. LE cell phenomenon and various methods of its demonstration
1.8. Principle procedure and interpretation of Coomb test.
1.9. Leukocyte abnormalities and pathological variations of white cell values
1.10. Leukemoid reactions and its importance.
1.11. Haemostatic mechanism and theories of blood coagulation.
1.12. Physico chemical properties of coagulation factors.
1.13. Routine test as well as the following Haematological tests and their Principle and interpretation of:
  1.13.1. Reticulocyte count
  1.13.2. Osmotic fragility test
  1.13.3. Foetal hemoglobin
  1.13.4. LE cell phenomenon
  1.13.5. Hb electrophoresis
  1.13.6. Serum Iron, Folic acid, Vit B12.
  1.13.7. Total Iron binding capacity
  1.13.8. Serum ferritin
  1.13.9. BT, CT, PT, APTT
  1.13.10. Factor VIII and IX
  1.13.11. Platelet function test
  1.13.12. Bence Jones protein
1.14. Classify Leukemia
1.15. Identify different types of leukemia and their morphological features

2. Microbiology **35%**

2.1. Historical development of microbiology with reference to Anton Van Leuweenhoek,Louis Pasteur, Robert Koch, Joshep Lister, Edward Jenner
  2.1.1. Bacterial Classification, Morphology and Cell structure
  2.1.2. Laboratory contamination and infection; Disposal of infectious material, laboratory safety measure, laboratory discipline and practices.
  2.1.3. Different ways of sterilization by Physical, chemical, radiation and filtration and its applications. Relationship between disinfectants and antiseptics,disinfection rate of microorganisms; and uses of ethylene oxide sterilizer
  2.1.4. Mechanism, functions, uses and the quality control of the laboratory equipments.
  2.1.5. Classify the types of antigen antibody reactions, hypersensitivity, immediate and delayed.

2.1.6. Morphology, staining property, cultural characteristics, Biochemical reaction, Antigenic Characters, Pathogenicity, Laboratory diagnosis and the diseases caused by the followings:

2.1.6.1. Gram positive cocci: Staphylococci, streptococci, Pneumococci, Micrococci

2.1.6.2. Gram Positive bacilli: Corynebacteria, bacillus; clostridia

2.1.6.3. Gram negative bacilli (Enterobacteriaceae): Escherichia coli, Klebsiella, Enterobacter, Citrobacter, Proteus, Providencia, Yersinia, Salmonella, Shigella, Arizona

2.1.6.4. Gram negative cocci: Neiseria

2.1.6.5. Curve Gram negative bacilli: Vibrio, Campylobacter, helicobacter

2.1.6.6. Mycobacteria: Typical and Atypical mycobacteria, Leprosy

2.1.6.7. Haemophilus: H. Influenzae and other species

2.1.6.8. Non fermentative Gram negative bacilli: Pseudomonal, Acinetobacter, Moraexella

2.1.6.9. Spirochaete; Treponema, Borrelia, Leptospira

2.1.6.10. Miscellaneous fastidious organisms: Mycoplasma, Chalamydia, Rickettsia

2.1.7. Antigen Antibody reaction; agglutination, precipitation flocculation, complement fixation and ELISA.

2.1.8. Bacteriological examination: Water, milk, food, air and pharmaceutical products.

2.1.9. Procedure of: Laboratory diagnosis of common Bacterial infection; Pyogenic Infection; Respiratory tract infection, urinary tract infection, sexually transmitted diseases, food poisoning, enteric fever, gastroenteritis, meningitis, diphtheris, tuberculosis, leprosy.

2.1.10. Diagnostic procedure immunological/serological test; Widal tests; ASO titer; CRP, Rose – Walter test; Brucella agglutination; cold agglutination; VDRL, RPR, TPHA, ELISA, CFT.

2.1.11. Methods of separation of T and B Cells

2.2. Bacteriology (procedure):

2.2.1. Collection of specimens for bacteriological specimens

2.2.2. Methods of culture techniques and organisms encountered in CSF, Blood culture, Sputum, Pus, Urine, Stool, Body fluid aspirate etc.

2.2.3. Quality control in procedure, culture media, equipments

2.2.4. Hospitals infection, Laboratory infection

2.2.5. Infectious waste management

2.3. General Virology:

2.3.1. General properties of viruses and interferon

2.3.2. Principle of viral isolation, embryonated egg and tissue culture

2.3.3. Immunology of viral infection

2.4. Mycology:

2.4.1. Identification of superficial, deep and systemic mycosis

2.4.2. Opportunistic mycosis

2.4.3. Examination and identification by different method and culture

2.5. Parasitology

2.5.1. Classification of human and vectors

2.5.2. General characteristics of Protozoa, Helminthes, trematodes/ cestodes

2.5.3. Methods of collection, transportation and storage of different types of specimens

2.5.4. Methods of identification parasites from different types of clinical materials

2.6. Immunology

2.6.1. Immune system and infectious diseases

2.6.2. Structure, types and function of Immunoglobulin

2.6.3. Toxin/ antitoxin and antibody/antigen reaction; and their various types
2.6.4. Immunological reaction and their various types; agglutination, precipitation, complement fixation, ELISA
2.6.5. Preparation, preservation and titration of complement
2.6.6. T cells and B cells
2.6.7. Monoclonal and polyclonal antibodies preparation

2.7. Systematic Bacteriology

2.7.1. Properties, epidemiology, methods of isolation, differentiation, pathogenesis and Laboratory diagnosis of following bacterial infections:
Staphylococcus, Streptococcus, Pneumococcus, Neisseria, Corynebacteria, Bacillus, Clostridium, nossporing anaerobes, Enterobacteriaceae, Vibrio, Psedomonal, Yersinia, Pasteurella, Francicella, Haemophilus, Bordetella, Mycobacterium, Spirochaetes, Mycoplasma, Actinomycetes, Rickettsia, Chalmydiae

3. Biochemistry 35%

3.1. Total Quality management in Laboratory Medicine
3.1.1. Fundamental of Total Quality management
3.1.2. Stastical process in quality control
3.1.3. Method evaluation
3.1.4. Element of quality assurance program
3.1.5. Type of pre-analytical variables and its control
3.1.6. Control of analytical variables
3.1.7. Selection of QC materials
3.1.8. Frequency of assay for QC materials
3.1.9. Quality control chart-LJ Chart, operating specification chart, Cusum chart, shewhart chart
3.1.10. Rule to evaluate QC results- Westgard multirule concept
3.1.11. Post-analytical variables in laboratory
3.1.12. Calibration issue in Quality control
3.1.13. Quality control using patient data
3.1.14. Standard operating procedure
3.1.15. Monitoring Technical competence
3.1.16. Errors and identification of the source of error in laboratory
3.1.17. External quality control and proficiency testing (PT)
3.1.18. Accreditation in laboratory medicine

3.2. Basic Biochemistry
3.2.1. Principle of Biochemistry
3.2.2. Buffer: Definition, types, composition of buffer present in body fluids
3.2.3. Photometric measurement of light i.e. radiant energy, spectrum characteristics i.e. UV and IR, Beer's law and Lambert's law and their limitations and to select the multiple wave length i.e. single and double beams.

3.3. Metabolism
3.3.1. Carbohydrate
3.3.1.1. Glycolysis
3.3.1.2. Glycogenesis
3.3.1.3. Glycogenolysis
3.3.1.4. Pentose phosphate pathway

3.3.1.5. Kreb's cycle
3.3.1.6. Gluconeogenesis
3.3.1.7. Electron transfer chain (Respiratory chain)

3.3.2. Protein metabolisms
3.3.2.1. Transamination
3.3.2.2. Deamination
3.3.2.3. Urea cycle
3.3.2.4. Nitrogen balance
3.3.2.5. Creatinine and creatinine formation
3.3.2.6. Biochemical basis, investigation and interpretation of aromatic amino acid metabolism disorder

3.3.3. Lipid metabolisms
3.3.3.1. Biochemical basis of formation of bile acid/bile salts.
3.3.3.2. Biosynthesis, biochemical effect of prostaglandin and other arachinodic acid metabolism
3.3.3.3. Use of prostaglandin and their inhibitors in medicine
3.3.3.4. Ketogenesis and its regoulation and transportation
3.3.3.5. Biochemical changes leading to ketosis, utilization of ketone bodies.
3.3.3.6. Biosynthesis of cholesterol and triglyceride (TG)
3.3.3.7. Dyslipidemia and laboratory investigation
3.3.3.8. Introduction, classification, definition and types of lipoprotein

3.4. Liver Function Test
3.4.1. Function of liver and bilirubin metabolism
3.4.2. Liver function test and their list with principle, procedures and interpretations
3.4.3. Biochemical investigation in acute and chronic liver disease

3.5. Kidney function test
3.5.1. Anatomy and physiology of kidney
3.5.2. Function of kidney i.e. excretory, Secretion, re-absorption
3.5.3. Renal function test, their list with principle, procedure and interpretation
3.5.4. Biochemcal investigation in acute and kidney disease, nephritic syndrome
3.5.5. Creatinine clearance test (principle procedure and interpretation).

3.6. Pancreatic Function test
3.6.1. Anatomy and physiology of pancreas
3.6.2. Pancreatic function test, their list and clinical significance of - Serum amylase, Urine amylase, Serum lipase, Serum trypsine, Phospholipase,Hyperglycaemia, Hypoglycaemia

3.7. Cardiac Function test
3.7.1. Biochemical basis, investigation and interpretation of myocardial infraction (MI)
3.7.2. Estimation and interpretation of
3.7.2.1. LDH
3.7.2.2. CPK
3.7.2.3. GOT
3.7.2.4. Troponin
3.7.2.5. CPK MB

3.8. Acid base and Electrolyte
3.8.1. ph, buffer and blood gas analysis and interpretation
3.8.2. Acid base regulation and its disorders
3.8.3. Water and electrolyte Imbalance and measurement of electrolytes

3.9. Endocrinology
- 3.9.1. Thyroid Function Tests,
- 3.9.2. Pituitary Function Test and
- 3.9.3. Reproductive Hormone Test and investigation in infertility
- 3.9.4. Hormonal regulation of calcium and phosphorous metabolism
- 3.9.5. Hormonal regulation of blood glucose level
- 3.9.6. Laboratory investigation in Diabetes mellitus
- 3.9.7. Adrenal Function test

3.10. Tumor Marker
- 3.10.1. Estimation and interpretation of AFP, B-hCG, CEA, CA-125, CA 19-9, CA 15-3, PSA

3.11. Enzyme
- 3.11.1. Definition, classification and properties of enzyme
- 3.11.2. Factor affecting enzymatic activity
- 3.11.3. Mechanism of enzymatic activity
- 3.11.4. Regulation of enzymatic activity
- 3.11.5. Isoenzyme and clinical application of enzyme assessment
- 3.11.6. Clinical importance and estimation of (SGPT, SGOT, ALP, GGT, ACP, CK, CK-MB, LDH, Amylase, Lipase.

3.12. Serum Protein, Lipoprotein and Hemoglobin Electrophoresis

3.13. Recent advances in clinical biochemistry.

3.14. Management of Biochemistry Laboratory

4. Histopathology and Cytology **15%**

4.1. Fixatives and preservatives, their types, composition and methods of preparations

4.2. Different types of decalcifying agents, their principle and mode of decalcification

4.3. Special histological stains, their composition and principle of Haematoxylin, eosin and special stain for connective tissue, protein, amyloid, carbohydrate, lipid and pigments

4.4. Principle and application of immunohistochemistry

4.5. Immnunoflourscence technique

4.6. Electron Microscopic and its applications

4.7. Safety measures and quality assurance in Histopatholaboratory

4.8. Cytology of the respiratory tract: Introduction to respiratory tract, various methods of sample collection, different methods of staining the collected samples and special stains used in the diagnosis of the diseases.

4.9. Gynecological cytology: Introduction to the female genital tract, various methods of sample collection and different methods of staining. Features of various malignant, benign and infective specimens, stains and special stains used.

4.10. Cytology of body fluids and urine: Introduction, methods of sample collection, various methods of staining body fluid samples and urinary cytology.

4.11. Cerebrospinal fluid (CSF): Introduction, staining, cytological study and its applications.

4.12. Sex chromatin, Chromosomal Analysis and Karyotyping: Introduction, methods of staining and its applications.

4.13. Uses of Cytogenetics, Flowcytometry and Polarized microscopy in cytological study

4.14. Role of automation in cytology

4.15. Method of project writing and its importance

---The End---

प्रदेश लोक सेवा आयोग, लुम्बिनी प्रदेश

प्रदेश निजामती सेवा अन्तर्गत स्वास्थ्य सेवा, मेडिकल ल्याव टेक्नोलोजी समूह, जनरल मेडिकल ल्याव टेक्नोलोजी उप समूह, नवौं तह मेडिकल ल्याव टेक्नोलोजिष्ट प्रशासक पदको खुला र अन्तरतह प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

द्वितीय पत्रको Part II: Technical subject का एकाईहरूबाट निम्न अनुसारक प्रश्नहरू सोधिने छन् ।

द्वितीय पत्र **Part II** का एकाई	Hematology (15%)	Microbiology (35%)		Biochemistry (35%)		Histopathology and Cytology (15%)
प्रश्न संख्या	१	१	१	१	१	१
अंक भार	१५	१५	२०	१५	२०	१५

पाठ्यक्रम स्वीकृत मिति : २०८१/०५/२६