

कृषि तथा वन विज्ञान विश्वविद्यालय

सेवा आयोगको कार्यालय

ल्याव अधिकृत पदको खुल्ला/आन्तरिक प्रतियोगितात्मक लिखित तथा प्रयोगात्मक परीक्षाको पाठ्यक्रम

कुल पूर्णाङ्क:१००

समय: ३ घण्टा

प्रथम पत्र

बस्तुगत प्रश्न

(पूर्णाङ्क: ५० समय: ५० मिनेट)

(क) सामान्य ज्ञान तथा विषयगत ज्ञान

(नेपालको भौगोलिक, ऐतिहासिक/राजनैतिक, प्रशासनिक, आर्थिक, सामाजिक, सांस्कृतिक शैक्षिक अवस्था सम्बन्धी सामान्य ज्ञान, विश्वका विविध पक्ष/महत्वपूर्ण समसामयिक घटनाहरू सम्बन्धी सामान्य जानकारी एवम् पद अनुसारको विषयसँग सम्बन्धित सामान्य ज्ञान)

Course Contents for Objectives

1.

Haematology

- 1.1 Preparation of stains and chemicals used in clinical haematology laboratory
- 1.2 Collection of blood from various sites by different methods
- 1.3 Glasswares and instruments used in haematology laboratory, their cleaning procedure and uses
- 1.4 Quality control in clinical haematology laboratory
- 1.5 Different stages of Erythropoiesis, Leukopoiesis and Thrombopoiesis
- 1.6 Biosynthesis of haem and its associated disorders
- 1.7 Haemoglobin : Structure and functions; Haemoglobinopathies
- 1.8 Anemia, Polycythemia, Leukocytosis, Leukopenia, Leukaemia, Thrombocytopenia, Thrombocytosis
- 1.9 Bone marrow aspiration Mechanism of Blood coagulation, Disorders associated with blood coagulation, Fibrinolysis
- 1.10 Blood parasites
- 1.11 Basic principles of blood banking, Blood grouping
- 1.12 Anticoagulants and preservatives used in blood bank
- 1.13 Preparation of blood components, preservation, transportation
- 1.14 Blood transfusion reactions, Indications of haemapheresis, Plasmapheresis, Plateletpheresis
- 1.15 Principle, procedure and clinical significances for

- 1.15.1 Haemoglobin estimation
- 1.15.2 Total RBC, WBC, Platelets count
- 1.15.3 Reticulocyte count
- 1.15.4 Differential leukocyte count
- 1.15.5 Packed cell volume (PCV), Erythrocyte sedimentation rate (ESR), Bleeding time, Clotting time, RBC indices
- 1.15.6 Osmotic fragility test
- 1.15.7 Glucose 6-phosphate dehydrogenase (G6PD) deficiency
- 1.15.8 Coomb's test
- 1.15.9 Fetal haemoglobin estimation
- 1.15.10 Iron profile
- 1.15.11 FIGLU (Formimino glutamate) test
- 1.15.12 Schilling test
- 1.15.13 PT,INR and APTT
- 1.15.14 Sickling test
- 1.15.15 Study of peripheral blood smear
- 1.15.16 LE cell preparation
- 1.15.17 Blood parasites
- 1.15.18 Staining of bone marrow smear
- 1.15.19 Perform Heinz bodies
- 1.15.20 D-dimer test
- 1.15.21 Fibrinogen concentration
- 1.15.22 Haemoglobin electrophoresis

2. Microbiology

2.1 Bacteriology

- 2.1.1 Historical development of microbiology
- 2.1.2 Classification of bacteria
- 2.1.3 Bacterial cell anatomy
- 2.1.4 Microscopy
- 2.1.5 Sterilization and disinfection
- 2.1.6 Culture media
- 2.1.7 Culture methods for different specimens
- 2.1.8 Bacterial growth curve
- 2.1.9 Bacterial nutrition
- 2.1.10 Antibiotic sensitivity test
- 2.1.11 Staining techniques
- 2.1.12 Tuberculosis bacteriology and skin scraping for AFB
- 2.1.13 Water bacteriology
- 2.1.14 CSF and cavity fluids for culture
- 2.1.15 Identification of bacteria ; serological and biochemical test for the identification of bacteria
- 2.1.16 Waste disposal in microbiology laboratory
- 2.1.17 Quality control in microbiology lab
- 2.1.18 Safety measures in microbiology lab

- 2.1.19 Principle , working, care and maintenance of instruments used in microbiology laboratory
- 2.1.20 Description, morphology, cultural characteristics, pathogenicity, lab diagnosis of medically important bacteria
- 2.2 Immunology and Serology
 - 2.2.1 Immunity
 - 2.2.2 Antigen
 - 2.2.3 Antibody
 - 2.2.4 Different types of antigen antibody reactions
 - 2.2.5 Autoimmune disorders
 - 2.2.6 Immunological disorders
 - 2.2.7 Vaccines
 - 2.2.8 Principle, procedure and clinical significance of HIV Tridot test, HbsAg rapid test, ELISA test, TB IgG and IgM test, Dengue IgG and IgM test, widal test, ASO test, Allergy panel test, Mantoux test, VDRL test, RPR test, RA test, TORCH test, TPHA test, etc.
- 2.3 Virology
 - 2.3.1 Classification of medically important viruses and mode of infection
 - 2.3.2 Characteristics of viruses, nature of viruses, viral structure and replication
 - 2.3.3 Oncogenic viruses
- 2.4 Parasitology
 - 2.4.1 Introduction of parasites, host, zoonosis, host parasite relationship, sources of infection, mode of infection,
 - 2.4.2 Diagnostic methods in parasitology
 - 2.4.3 Classification and method of identification of medically important protozoal parasites, helminthic parasites, blood parasites
 - 2.4.4 Method of identification of different parasites from stool samples by wet preparation method, concentration method, culture method
- 2.5 Mycology
 - 2.5.1 Introduction and classification of fungi
 - 2.5.2 Identification of superficial mycosis, deep mycosis, systemic mycosis, opportunistic mycosis.
 - 2.5.3 Culture of fungi
 - 2.5.4 Examination and identification of fungi by different methods

3. Biochemistry

- 3.1 Different glassware, apparatus, instruments used in biochemistry lab
- 3.2 Preparation of different types of solutions
- 3.3 Preparation of different types of chemicals used in biochemistry laboratory.
- 3.4 Hazards in biochemistry lab and first aid in laboratory accident
- 3.5 Specimen collection and processing of different specimens used in biochemistry lab
- 3.6 Automation in biochemistry lab
- 3.7 Chromatography , Electrophoresis, Radioisotopes, Immunoassay

- 3.8 Chemistry, classification and importance of biomolecules (Carbohydrates, lipids, proteins, nucleic acids)
- 3.9 Enzymes and clinical enzymology
- 3.10 Vitamins
- 3.11 Minerals
- 3.12 Hormones – definition, classification, biochemical functions, associated disorders, estimation
- 3.13 Quality control in biochemistry lab
- 3.14 Metabolism of carbohydrates (Glycolysis, Citric acid cycle, Gluconeogenesis, pentose phosphate pathway, glycogenesis, glycogenolysis)
- 3.15 Metabolism of proteins (Transamination, deamination, ammonia transport, Urea cycle)
- 3.16 Metabolism of fatty acids and lipids (beta oxidation of fatty acid, fatty acid synthesis, triglyceride synthesis, ketogenesis, ketolysis, cholesterol biosynthesis, bile acid metabolism)
- 3.17 Acid base balance and associated disorders; Arterial blood gas analysis
- 3.18 Free radicals, antioxidant system, Glutathione redox system
- 3.19 Organ function tests (Liver function tests, Renal function tests, Pancreatic function tests, Cardiac function tests, Thyroid function test)
- 3.20 Principle, procedure and clinical significances for the estimation of glucose, uric acid, renal function test, liver function test, pancreatic function tests, lipid profile tests, electrolytes, 24 hours urinary protein, thyroid function tests, Infertility profile
- 3.21 Different biochemical parameters measured in cavity fluid, Cerebrospinal fluid
- 3.22 Waste disposal in biochemistry lab

4. Histopathology/ Cytology

- 4.1 Preparation of different types of fixatives and their use
- 4.2 Tissue and its types; grossing of tissue,
- 4.3 Methods of decalcification, types of decalcifying fluid
- 4.4 Methods of tissue processing to prepare paraffin block tissue (manual and automated method)
- 4.5 Types and working of microtome, microtome knives, sharpening of knife
- 4.6 Principles and methods of staining and mounting the tissue section on the glass slide
- 4.7 Instruments and equipment used in cytology
- 4.8 Benign and malignant tumors
- 4.9 Aspiration and exfoliative cytology
- 4.10 Stains and chemicals used in cytology
- 4.11 Different staining techniques in cytology

5. Diagnostic molecular biology

- 5.1 Nucleic acid – DNA and RNA
- 5.2 DNA replication, Transcription, Translation
- 5.3 DNA isolation, RNA isolation
- 5.4 Polymerase chain reactions

- 5.5 Gene cloning , Recombinant DNA technology
- 5.6 Blotting techniques (Southern, Northern, Western blotting)
- 5.7 Chromosomal aberrations and gene mutation
- 5.8 Restriction enzymes and RFLP, DNA microarray
- 5.9 Introduction and applications of flow cytometry

द्वितीय पत्र

पूर्णाङ्क : ५०

समय: २ घण्टा १० मिनेट

विषयगत ज्ञान

खण्ड 'क'

प्रशासन, व्यवस्थापन, संविधान, ऐन, नियम र विश्वविद्यालय सम्बन्धी ज्ञान

१. कर्मचारी प्रशासन र सार्वजनिक प्रशासनको अन्तरसम्बन्ध र यसका सिद्धान्तहरू
२. कर्मचारी प्रशासनको विविध पक्षहरू
३. सार्वजनिक प्रशासनको परिभाषा, उद्देश्य र कार्यक्षेत्र
४. शैक्षिक प्रशासनको अर्थ, उद्देश्य र कार्यक्षेत्र
५. नेपालको संविधान र सम्बैधानिक विकासक्रम
६. नेपालको संविधानका प्रमुख विशेषताहरू, कार्यपालिका, न्यायपालिका र व्यवस्थापिकाको गठन प्रकृया, एक अर्काबीच अन्तरसम्बन्ध
७. नेपालको संविधानले व्यवस्था गरेका मौलिक हक र नागरिक अधिकार, नागरिकहरूको मौलिक हक कार्यान्वयन सम्बन्धी व्यवस्था र नागरिकको कर्तव्य
८. शिक्षा र उच्च शिक्षाको सम्बैधानिक व्यवस्था
९. नेपालमा विश्वविद्यालयको स्थापना र विकासक्रम
१०. कृषि तथा वन विज्ञान विश्वविद्यालय ऐन २०६७
११. कृषि तथा वन विज्ञान विश्वविद्यालय संगठन र शैक्षिक प्रशासन नियमावली २०६९
१२. कृषि तथा वन विज्ञान विश्वविद्यालय शिक्षक कर्मचारी सेवा नियमावली २०६९
१३. कृषि तथा वन विज्ञान विश्वविद्यालय आर्थिक प्रशासन नियमावली २०६९

1. Haematology

- 1.1 Collection of blood
- 1.2 Quality control in haematology laboratory
- 1.3 Erythropoiesis, Leucopoiesis and Thrombopoiesis
- 1.4 Biosynthesis of haem and its associated disorders
- 1.5 Haemoglobin : Structure and functions; Haemoglobinopathies
- 1.6 Anaemia, Polycythaemia, Leucocytosis, Leukopenia, Leukaemia, Thrombocytopenia, Thrombocytosis
- 1.7 Bone marrow aspiration
- 1.8 Blood coagulation pathway, Fibrinolysis
- 1.9 Blood parasites
- 1.10 Basic principles of blood banking, Blood grouping
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- 1.12 Preparation of blood components, preservation, transportation
- 1.13 Blood transfusion reactions, Indications of haemapheresis, Plasmapheresis, Plateletpheresis

2 Microbiology

2.1 Bacteriology

- 2.1.1 Contributions of different scientists in the development of microbiology
- 2.1.2 Classification of bacteria
- 2.1.3 Bacterial cell anatomy
- 2.1.4 Microscopy
- 2.1.5 Sterilization and disinfection
- 2.1.6 Culture media
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- 5.7 Chromosomal aberrations and gene mutation

कम्प्युटर प्रयोग सम्बन्धी ज्ञानको प्रयोगात्मक परीक्षाको पाठ्यक्रम

- 1. Knowledge of operating systems: Microsoft Windows & their version
- 2. Knowledge to backup data and store them for further use.
- 3. Knowledge of essential application programs: a) Microsoft office package (MS word, MS excel, MS power point & MS Access) b) Data base Programs (Dbase & Fox Pro.) c) Photo editing programs (Paintbrush, Adobe Photoshop, Macromedia, freehand package etc.) programs
- 4. Printing & Scanning knowledge
- 5. Internet & E-mail uses for official purposes.

Evaluation Method

- Typing letters using MS word in Nepali & English scripts
- Design PVC card using appropriate program
- Maintain the database of AFU staff using MS excel/Access
- PowerPoint presentation of AFU structure

