पाटन स्वास्थ्य विज्ञान प्रतिष्ठान सेवा आयोग

प्राज्ञिक सेवा, बाल चिकित्सा समूह, **Haemato-oncology** उपसमूह, सहायक प्राध्यापक पद, नौं ख (९ ख) तहको खुला र आन्तरिक प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

## Paper II: Technical Subject

### Section (A) - 45 Marks

1. **Haematology**
   - 1.1 Development of hematopoietic system
   - 1.2 Anemias
     - 1.2.1 Congenital hypoplastic anemia
     - 1.2.2 Acquired pure red cell anemia
     - 1.2.3 Anemia of chronic disease and renal disease
     - 1.2.4 Congenital dyserythropoietic anemias
     - 1.2.5 Megaloblastic anemias
     - 1.2.6 Iron deficiency anemia
   - 1.3 Hemolytic anemias
     - 1.3.1 Hereditary spherocytosis
     - 1.3.2 Hereditary elliptocytosis and related disorders
     - 1.3.3 Hereditary stomatocytosis
     - 1.3.4 Paroxysmal nocturnal hemoglobinuria
     - 1.3.5 Hemoglobinopathies
       - 1.3.5.1 Sickle cell disease
       - 1.3.5.2 Sickle cell trait
       - 1.3.5.3 Hereditary methemoglobinemia
       - 1.3.5.4 Thalassemia syndromes
     - 1.3.6 Enzymatic defects
     - 1.3.7 Hemolytic anemias resulting from extracellular factors – immune haemolytic anemias
   - 1.4 Polycythemia(erythrocytosis)
   - 1.5 Pancytopenias
     - 1.5.1 Inherited Bone marrow failure syndromes with pancytopenia
     - 1.5.2 Acquired pancytopenias
   - 1.6 Blood component Transfusions
     - 1.6.1 Red blood cell transfusions and erythropoietin therapy
     - 1.6.2 Platelet transfusions
     - 1.6.3 Neutrophil (granulocyte) transfusions
     - 1.6.4 Plasma transfusions
     - 1.6.5 Risks of blood transfusions
   - 1.7 Hemorrhagic and thrombotic diseases
     - 1.7.1 Clinical and laboratory evaluation of hemostasis
     - 1.7.2 Hereditary clotting factor defeciencies (bleeding disorders)
       - 1.7.2.1 Factor VIII or Factor IX deficiency
       - 1.7.2.2 Factor XI deficiency
       - 1.7.2.3 Factor VII deficiency
       - 1.7.2.4 Factor X deficiency
       - 1.7.2.5 Prothrombin (Factor II ) deficiency
       - 1.7.2.6 Factor V deficiency
       - 1.7.2.7 Combined deficiency of Factor V and VIII

1.7.2.8 Fibrinogen (Factor I) deficiency
1.7.2.9 Factor XIII deficiency
1.7.3 Von willebrand disease
1.7.4 Thrombotic disorders in children
1.7.5 Postneonatal vitamin K deficiency
1.7.6 Acquired inhibitors of coagulation
1.7.7 Disseminated intravascular coagulation
1.7.8 Platelet and blood vessel disorders
1.7.8.1 Autoimmune thrombocytopenic purpura
1.7.8.2 Drug induced thrombocytopenia
1.7.8.3 Nonimmune platelet destruction
1.7.8.4 Haemolytic uremic syndrome
1.7.8.5 Thrombotic thrombocytopenic purpura
1.7.8.6 Neonatal thrombocytopenia
1.7.8.7 Platelet function disorders
1.7.8.8 Congenital and acquired disorders of platelet function
1.8 Splenomegaly, Hyposplenism, splenic trauma and splenectomy
1.9 Lymphadenopathy

**Section (B) - 55 Marks**

2. **Oncology:**
2.1 Epidemiology of childhood and adolescent cancer
2.2 Molecular and cellular biology of cancer
2.2.1 Genes involved in oncogenesis
2.2.2 Syndromes predisposing to cancer
2.2.3 Other factors associated with oncogenesis
2.2.3.1 Viruses
2.2.3.2 Genomic Imprinting
2.2.3.3 Telomerase
2.3 Principles of cancer diagnosis and treatment
2.3.1 Signs and symptoms
2.3.2 Age related manifestations
2.3.3 Importance of early detection
2.3.4 Staging
2.3.5 Histopathology
2.3.6 Diagnosis and staging
2.3.7 Multimodal Multidisciplinary approach
2.3.8 Chemotherapy
2.3.9 Surgery
2.3.10 Radiotherapy
2.3.11 Acute adverse effects and supportive care
2.3.12 Chronic adverse effects and delayed sequelae
2.3.13 Palliative care
2.4 Leukemias
2.4.1 Acute lymbhoblastic leukemia

- 2.4.2 Acute myelogenous leukemia
- 2.4.3 Down syndrome and acute leukemia and transient myeloproliferative disorder
- 2.4.4 Chronic myelogenous leukemia
- 2.4.5 Juvenile myelomonocytic leukemia or JCML
- 2.4.6 Infant leukemia

2.5 Lymphoma
- 2.5.1 Hodgkin lymphoma
- 2.5.2 Non-hodgkin lymphoma
- 2.5.3 Late effects in children and adolescents with lymphoma

2.6 Brain tumors in childhood
- 2.6.1 Distribution of childhood brain tumors based on histology
- 2.6.2 Tumors of the brainstem
- 2.6.3 Metastatic tumors
- 2.6.4 Complications and long term management
- 2.6.5 Future directions

2.7 Neuroblastoma

2.8 Neoplasms of the kidney
- 2.8.1 Wilms Tumor
- 2.8.2 Other kidney tumors in children
  - 2.8.2.1 Congenital mesoblastic nephroma
  - 2.8.2.2 Nephroblastomatosis
  - 2.8.2.3 Multicystic nephroblastoma
  - 2.8.2.4 Renal cell carcinoma

2.9 Soft tissue sarcomas
- 2.9.1 Rhabdomyosarcoma
- 2.9.2 Other soft tissue sarcomas(nonrhabdomyosarcoma)
  - 2.9.2.1 Synovial sarcoma
  - 2.9.2.2 Fibrosarcoma
  - 2.9.2.3 Malignant fibrous histiocytoma
  - 2.9.2.4 Neurogenic tumors
  - 2.9.2.5 Hemangiopericytoma
  - 2.9.2.6 Leomyosarcoma

2.10 Neoplasms of bone
- 2.10.1 Malignant tumors of bone
  - 2.10.1.1 Osteosarcoma
  - 2.10.1.2 Ewing sarcoma
- 2.10.2 Benign tumors and tumor like processes of bone
  - 2.10.2.1 Osteochondroma
  - 2.10.2.2 Enchondroma
  - 2.10.2.3 Chondroblastoma
  - 2.10.2.4 Osteoid osteoma
  - 2.10.2.5 Fibromas
  - 2.10.2.6 Osteofibrous dysplasia
  - 2.10.2.7 Eosinophilic granuloma

- 2.11 Retinoblastoma
- 2.12 Gonadal and germ cell neoplasms
  - 2.12.1 Gonadoblastoma
  - 2.12.2 Teratomas
  - 2.12.3 Germinomas
    - 2.12.3.1 Dysgerminomas
    - 2.12.3.2 Seminomas
    - 2.12.3.3 Endodermal sinus or yolk sac tumor
    - 2.12.3.4 Choriocarcinoma
    - 2.12.3.5 Embryonal carcinoma
- 2.13 Neoplasms of the liver
  - 2.13.1 Hepatoblastoma
  - 2.13.2 Hepatocellular carcinoma
- 2.14 Benign vascular tumors
  - 2.14.1 Hemangiomas
  - 2.14.2 Lymphangiomas and cystic hygromas
- 2.15 Rare tumors
  - 2.15.1 Thyroid tumors
  - 2.15.2 Melanoma
  - 2.15.3 Nasopharyngeal carcinoma
  - 2.15.4 Adenocarcinoma of the colon and rectum
  - 2.15.5 Adrenocortical carcinoma
  - 2.15.6 Desmoplastic small round cell tumors
- 2.16 Histiocytosis syndromes of childhood
  - 2.16.1 Langerhans cell histiocytosis (class I)
  - 2.16.2 Hemophagocytic lymphohistiocytosis (class II)
  - 2.16.3 Malignant histiocytosis (class III)