

Paper II: Technical Subject

Section (A) - 45 Marks

(1 critical analysis Q -15 mark + 3 long Q- 30 marks)

1. Etiology of Cancer

- 1.1 Tobacco:
 - 1.1.1 Epidemiology of Tobacco and Cancer
 - 1.1.2 Carcinogens in tobacco products and processes of cancer development
- 1.2 Oncogenic Viruses:
 - 1.2.1 Principles of Tumor Virology
 - 1.2.2 Papillomaviruses
 - 1.2.3 Epstein-Barr Virus
 - 1.2.4 Kaposi Sarcoma Herpes Virus
 - 1.2.5 Hepatitis Viruses
- 1.3 Chemical Factors
 - 1.3.1 Initial Identification and characterization of carcinogens
 - 1.3.2 Determining Carcinogenicity
 - 1.3.3 Characteristics of chemical carcinogens
- 1.4 Physical factors:
 - 1.4.1 Ionizing Radiation
 - 1.4.2 Ultraviolet Light
 - 1.4.3 Radiofrequency and Microwave radiation
 - 1.4.4 Electromagnetic Fields
 - 1.4.5 Asbestos
- 1.5 Dietary factors:
 - 1.5.1 The role of individual food and nutrition in cancer etiology
 - 1.5.2 Dietary patterns
 - 1.5.3 Diet during childhood
 - 1.5.4 Diet after a diagnosis of cancer
- 1.6 Genetic factors & hereditary cancer predisposition syndromes, Progression from gene mutation to cancer
- 1.7 Immunodeficiency & cancer
- 1.8 Obesity:
 - 1.8.1 Obesity and cancer risk
 - 1.8.2 Obesity and cancer related treatment related complication
- 1.9 Physical Activity:
 - 1.9.1 Physical Activity and Cancer Risk
 - 1.9.2 Sedentary behavior
 - 1.9.3 Physical activity and cancer outcomes

2. Epidemiology of cancer

- 2.1 Global Cancer incidence and Mortality.
- 2.2 Nepal cancer Incidence and mortality
- 2.3 Demographic Factors that affect Risk
- 2.4 Cancer prevalence in Nepal

3. Cancer prevention and Screening

- 3.1 Prophylactic Cancer vaccines:
 - 3.1.1 Hepatitis Vaccines
 - 3.1.2 Human Papilloma virus Vaccines

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प्राज्ञिक सेवा, इन्टर्नल मेडिसिन समूह, **Medical Oncology** उपसमूह सहायक प्राध्यापक पद, नौ ख (९ ख)
तहको खुला र आन्तरिक प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

- 3.2 Cancer Screening:
 - 3.2.1 Introduction of Screening
 - 3.2.2 Screening Guidelines and Recommendations
 - 3.2.3 Breast cancer Screening
 - 3.2.4 Cervical Cancer Screening
 - 3.2.5 Colon Cancer Screening
 - 3.2.6 Lung Cancer Screening
 - 3.3 Genetic Counseling:
 - 3.3.1 Who is a candidate for Cancer Genetic Counseling?
 - 3.3.2 Issues in Cancer Genetic Counseling.
 - 3.3.3 Future Direction
 - 4. **Anti-Cancer drugs:**
 - 4.1 Radiation therapy
 - 4.2 Alkylating Agents
 - 4.3 Platinum Analogs
 - 4.4 Antimetabolites
 - 4.5 Cancer Immunotherapies
 - 4.6 Tyrosine kinase inhibitors
 - 4.7 Immune checkpoint inhibitors
 - 4.8 Bone marrow transplantation
 - 4.9 Monoclonal antibodies
- Section (B) - 55 Marks**
(1 critical analysis Q -15 marks + 4 long Q -40 marks)
- 5. **Practice of Oncology:**
 - 5.1 The knowledge of the following for the common cancers listed below:
 - 5.1.1 Incidence and Etiology of cancers.
 - 5.1.2 Anatomy and Pathology
 - 5.1.3 Control of the cell cycle
 - 5.1.4 Cell life & death
 - 5.1.5 Immunology & cancer
 - 5.1.6 Management of the high risk patient
 - 5.1.7 Screening and prevention
 - 5.1.8 Diagnosis & diagnostic tools in cancer
 - 5.1.9 Staging and prognostic scores
 - 5.1.10 Management by stage
 - 5.1.11 Management of Metastatic Disease
 - 5.1.12 Palliative/ hospice care
 - 5.1.13 Cancers in the elderly
 - 5.1.14 Special issues in pregnancy with cancer
 - 5.1.15 Follow-up
 - 5.2 List of Cancers:
 - 5.2.1 Cancer of the Thoracic Cavity:
 - 5.2.1.1 Non-Small cell Lung Cancer
 - 5.2.1.2 Small-Cell lung Cancer & Neuroendocrine tumors of Lung
 - 5.2.1.3 Tumors of the pleura & mediastinum
 - 5.2.2 Neoplasm of the Mediastinum:
 - 5.2.2.1 Thymic Neoplasms

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- 5.2.2.2 Germ cell tumors
- 5.2.2.3 Thymoma
- 5.2.3 Cancers of the Gastrointestinal Tract:
 - 5.2.3.1 Cancer of the Esophagus
 - 5.2.3.2 Cancer of the Stomach
 - 5.2.3.3 Cancer of the Pancreas
 - 5.2.3.4 Cancer of the Liver & biliary tree
 - 5.2.3.5 Colorectal cancer,
 - 5.2.3.6 Gastrointestinal Stromal Tumor
- 5.2.4 Cancer of the Genitourinary System:
 - 5.2.4.1 Cancer of the Kidney
 - 5.2.4.2 Cancer of the Bladder, Ureter and Renal Pelvis:
 - 5.2.4.3 Cancer of the Prostate
 - 5.2.4.4 Cancer of the Testis
- 5.2.5 Gynecologic Cancer:
 - 5.2.5.1 Cancer of the Cervix, vagina and vulva, uterus
 - 5.2.5.2 Gestational Trophoblastic Neoplasia
 - 5.2.5.3 Ovarian Cancer
- 5.2.6 Skin cancers: Basal cell cancer, Squamous cell cancer, Melanoma, etc
- 5.2.7 Breast cancer
- 5.2.8 Sarcomas of soft tissues & bone
- 5.2.9 Cancers with unknown primary
- 5.2.10 HIV associated malignancies
- 5.2.11 Hematological and lymphoid malignancies
- 5.2.12 Cancers of the endocrine system
- 5.2.13 Head and Neck cancer:
 - 5.2.13.1 Soft Tissue Sarcoma and Bone Cancer:
 - 5.2.13.2 Cancer of the Central Nervous System:
- 5.2.14 Second malignant neoplasms

6. **Oncologic Emergencies & other conditions**

Clinical presentation, Pathophysiology, Diagnostic work up and management of the following:

- 6.1 Superior Vena Cava Syndrome
- 6.2 Increased Intracranial Pressure
- 6.3 Spinal cord Compression
- 6.4 Metabolic Emergencies:
 - 6.4.1 Tumor lysis syndrome & Hyperurecemia
 - 6.4.2 Hyponatremia, Hypercalcemia
- 6.5 Paraneoplastic syndromes
- 6.6 Fever in neutropenic cancer patient
- 6.7 Infections in severely immunocompromised patients
- 6.8 Diagnosis & management of metastases to bone, brain, lung, liver etc
- 6.9 Cardiac effects of cancer therapy
- 6.10 Endocrine complications
- 6.11 Reproductive complications

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 Following pattern will be used for formation of paper I & II as far as possible.

| Paper I | | | | |
|----------|-----------|----------------------------|----------------------------|----------------------------|
| Part | Section | Weightage | No. Questions & Weightage | |
| | | | Objective Multiple Choice | Subjective |
| I | A | 20 | | 2 Questions X 10 Mark = 20 |
| | B | 30 | | 3 Questions X 10 Mark = 30 |
| II | C | 25 | 25 Questions X 1 Mark = 25 | |
| | D | 25 | 25 Questions X 1 Mark = 25 | |
| Paper II | | | | |
| Section | Weightage | No. Questions & Weightage | | |
| | | Long answer | Critical Analysis | |
| A | 45 | 3 Questions X 10 Mark = 30 | 1 Questions X 15 Mark = 15 | |
| B | 55 | 4 Questions X 10 Mark = 40 | 1 Questions X 15 Mark = 15 | |

The End