

## **DETAILED SYLLABUS FOR THE POST OF ASSISTANT PROFESSOR (SURGICAL ONCOLOGY) ( MEDICAL EDUCATION)**

(Total Marks - 100)

### **MODULE: 01 (15 marks)**

1. Genetics, Molecular biology and Etiology of cancer
  - 1.1 basics of the human genome, mutations, genomic landscape of cancers, adenoma-carcinoma sequence,
  - 1.2 oncogenes
  - 1.3 Cancer suppressor genes
  - 1.4 Methods of molecular analysis in oncology
  - 1.5 Hallmarks of cancer
  - 1.6 Susceptibility syndromes in cancer
  - 1.7 Clinical presentations and genetic basis of common diseases like Neurofibromatosis, Multiple endocrine neoplasia, FAP, HNPCC, BRCA 1 and 2 mutations, Lifraumani, Microsatellite instability, Cowden, Peuts Jeghers, Ataxia telangiectasia,
  - 1.8 Oncogenic viruses, chemical, physical factors, Diet, Lifestyle, and inflammation in cancer causation.
  - 1.9 HIV and cancer associations
  - 1.10 Vaccines in cancer prevention.
  - 1.11 Bacteria and microbiome as cancer causatives, and their role in therapy.
  - 1.12 Tobacco and cancer
  - 1.13 Obesity and cancer
  - 1.14 Tumour markers.
  - 1.15 Genetic counselling.
  - 1.16 Cancer research and outcome analysis, Epidemiological methods, Design and analysis of clinical trials.
  - 1.17 Burden of disease and trends in the global and national scenario

## **MODULE:02 (15 marks)**

2. Cancer screening and non-surgical treatments and miscellaneous
  - 2.1 Screening tests, Current screening guidelines, and evidence in skin, lung, prostate, gynecological, gastroenterological, and breast cancer.
  - 2.2 Risk-reducing agents and risk-reducing surgeries.
  - 2.3 Chemotherapy. Basic pharmacology of chemotherapy drugs, classification of chemotherapy drugs.
  - 2.4 Radiation therapy, biologic aspects, response and basic radiation physics, fractionation.
  - 2.5 Nuclear medicine in diagnosis and treatment
  - 2.6 Precision medicine in oncology
  - 2.7 Antiangiogenic agents, PARP inhibitors
  - 2.8 Hormonal agents in cancer treatment
  - 2.9 Monoclonal antibodies
  - 2.10 Immunotherapy.
  - 2.11 Stem cell transplant
  - 2.12 Lymphoma, Hodgkins, nonhodgkins, primary CNS lymphoma, Cutaneous lymphomas.
  - 2.13 Plasma cell neoplasms - multiple myeloma, plasmacytoma, monoclonal gammopathy, Amyloidosis, Waldenstrom macroglobulinemia.
  - 2.14 Leukemia acute and chronic, Myelodysplastic syndromes.
  - 2.15 Oncological emergencies, Spinal cord compression, Superior vena cava syndrome, metabolic emergencies including tumor lysis syndrome
  - 2.16 Paraneoplastic syndromes
  - 2.17 Palliative medicine -assessment and management of cancer pain, supportive care, quality of life. End-of-life care, communicating bad news,
  - 2.18 Nutrition in Surgical Oncology
  - 2.19 Rehabilitation in surgical oncology.
  - 2.20 Assessment of clinical response to therapy

2.21 Assessment and treatment of adverse effects including vomiting, cytopenia, GI, lung, and cardiac treatment-related toxicity

2.22 Cancer of unknown primary excluding neck nodes.

### **MODULE:03 (10 marks)**

#### 3. Gi oncology

1.1 Carcinoma Esophagus anatomy, clinical presentation, pathology, investigations, operations, choice of conduit, neoadjuvant and adjuvant therapies, palliative management

1.2 Stomach, Staging, pathology, molecular classification, types of surgeries, laparoscopy vs open surgeries, diagnostic laparoscopy, D2 resections evidence, nodal staging, adjuvant and neoadjuvant therapies, FLOT, chemoradiation. Dumping syndrome.

1.3 Pancreas- Exocrine and endocrine pancreas cancers, Clinical presentation, workup pancreaticoduodenectomy, post-operative pancreatic fistula management,

1.4 PNET and carcinoids of GI tract

1.5 Liver metastasis, colorectal and non-colorectal including liver resections, ablative therapies, TACE, TARE,

1.6 Primary liver cancer, Cirrhosis, and liver cancer, HCC, assessment including child-pugh score, MELD, portal vein embolization, Anatomical liver resections, Transplantation indications.

1.7 Biliary tree- Obstructive Jaundice workup, cholangiocarcinoma, Gall bladder cancer.

1.8 Small bowel- adenocarcinoma, appendicular tumors, small bowel carcinoids,

1.9 GIST, Diagnosis Staging, Immunohistochemistry, neoadjuvant therapy, Adjuvant Imatinib and other drugs

1.10 Colon- multiple polyposis syndromes clinical decision making, colectomies, total mesocolic excision, nodal clearance, Anastomosis, Adjuvant chemo, colonoscopy. Polypectomy, cancer in a polyp,

1.11 Enhanced Recovery After Surgery Protocols

- 1.12 Rectum- MRI pelvis, neoadjuvant therapy, short course and long course radiation, saving the sphincter, Extra levator APR, pelvic exenteration,
- 1.13 Anal canal and anal verge, Staging, workup, chemoradiation, salvage surgery.
- 1.14 HIPEC and other treatment modalities for peritoneal disease.
- 1.15 Retroperitoneal tumors
- 1.16 Malignant ascites
- 1.17 Advances in endoscopic surgeries.

#### **MODULE:04 (7 marks)**

##### 4. Gynec oncology

- 1.18 Endometrial cancer, FIGO Staging, Pathologic grading, imaging, lymphadenectomy,
- 1.19 Sarcomas of uterus
- 1.20 Carcinoma cervix, staging, pap smear, CIN treatment, risk factors of cancer cervix, vaccine, early disease, locally advanced disease, the role of surgery, radiotherapy,
- 1.21 Vulva and vagina cancers, lymph node assessment, radical vulvectomy,
- 1.22 Gestational trophoblastic disease management and follow-up
- 1.23 Adnexal mass-risk assessment algorithms,
- 1.24 Ovarian cancer- Epithelial ovarian cancer - early ovarian cancer, Advanced ovarian cancer management, Germ cell tumors, Rare tumors of the ovary, Cytoreductive surgery,
- 1.25 Peritoneal carcinomatosis

#### **MODULE:05 (8 marks)**

##### 5. Bone, soft tissue and skin

- 1.26 soft tissue sarcoma Staging and pathological types. Pathologic grading, Margin in sarcoma surgery, neoadjuvant radiation, Adjuvant radiation indications. Chemotherapy indications, drugs used in STS
- 1.27 Fibromatosis

- 1.28 Bone tumors - metastatic bone tumors - management, bone-targeted agents, Skeletal related events, fixing a pathological fracture, Spine metastasis workup, Radiation for bone mets. Systemic radionuclides for bone mets.
- 1.29 Primary bone tumors - imaging, staging and pathologies, surgical management including reconstruction options. Amputations.
- 1.30 Skin cancer - melanoma cutaneous and mucosal staging, margins, surgical resection lymph nodal assessment, adjuvant and palliative systemic therapies, Basal cell carcinoma, Squamous cell carcinoma, Extramammary Paget's, Dermatofibrosarcoma protuberans, Merkel cell tumor, skin adnexal tumors, Mohs surgery.

**MODULE:06 (10 marks)**

6. Uro oncology

- 6.1 Kidney cancer Histopathological types, TNM Staging, differential diagnosis, nephron-sparing surgery, Radical nephrectomy, cytoreductive nephrectomy in metastatic renal cell cancer, systemic therapy in metastatic renal cancer. Hereditary kidney cancer syndromes,
- 6.2 Bladder cancer. Risk factors, Staging of bladder cancer. Treatment of early-stage bladder cancer. Transurethral resection of bladder tumor indications. Intravesical therapies. Treatment of locally advanced bladder cancer. Radiotherapy for bladder cancer. Reconstruction following cystectomy. Long-term complications of urethral diversion.
- 6.3 Prostate cancer. Staging, Gleason, Prostatic biopsy, Active surveillance, radical prostatectomy indications and complications, robotic surgery, Prostate Specific antigen, radiation for prostate, Pattern of spread, bone mets in prostate cancer, Bone scan, PSMA PET, Castration-resistant prostate cancer, Palliating prostate cancer.
- 6.4 Urethral cancer in males and females, penile cancer Staging, lymph node assessment, partial and total penectomy indications, nonsurgical treatment options.
- 6.5 Cancer of testes - risk factors, High inguinal orchidectomy, Seminoma, Non seminomatous germ cell tumors, retroperitoneal lymphadenectomy, chemotherapy and radiotherapy in testicular tumors, retrograde ejaculation, tumor markers in testicular germ cell

- 6.6 Adrenal tumors – pheochromocytoma, Incidentaloma adrenal, Adrenocortical adenoma and carcinoma,

**MODULE:07 (8 marks)**

7. Thoracic oncology

- 7.1 carcinoma lung- Nonsmall cell lung cancer. Presentation and management.
- 7.2 Lung metastasis, surgical metastasectomy, and ablative therapies. Decision-making in different pathologies.
- 7.3 mesothelioma
- 7.4 neuroendocrine tumors lung and small cell lung cancer – management
- 7.5 mediastinal neoplasms, thymoma, germ cell tumors, others
- 7.6 malignant effusion

**MODULE:08 (7 marks)**

8. Neurosurgery and pediatric oncology

- 8.1 Classification of Brain Tumors
- 8.2 Brain metastasis. Treatment options, prognosis.
- 8.3 Increased intracranial pressure presentation and management
- 8.4 Surgery in Brain Tumors
- 8.5 Non-surgical options in brain tumors
- 8.6 Metastatic brain tumors workup and treatment
- 8.7 Peripheral nerve tumors, glomus jugulare, chordoma,
- 8.8 Retinoblastoma
- 8.9 Neuroblastoma
- 8.10 Wilms tumor
- 8.11 Intraocular melanoma

## **MODULE:09 (10 marks)**

### 9. Head and neck oncology

- 9.1 TNM Classification head and neck cancers
- 9.2 Neck nodes staging, types of neck dissections, anatomy of the neck, spaces of the neck
- 9.3 Neck node of unknown primary (cancer of unknown primary)
- 9.4 Thyroid anatomy, Differentiated thyroid cancer workup and management, Anaplastic and poorly differentiated thyroid cancers. Medullary thyroid carcinoma, Thyroidectomy and its complications, Thyroid lymphoma
- 9.5 Parathyroid glands anatomy. Hypo and hyperparathyroidism. Parathyroid adenoma, parathyroid carcinoma,
- 9.6 Oral cavity cancers, Lip, Cancer of the tongue, buccal mucosa, alveolus, retromolar trigone, maxilla . floor of mouth resections and reconstructions of these subsites. Elective neck dissection evidence
- 9.7 Precancerous lesions- leucoplakia, erythroplakia, oral submucous fibrosis, Oral lichen planus.
- 9.8 Larynx endoscopic surgeries, Laryngectomies, voice rehabilitation, tracheostomy.
- 9.9 Nasopharynx, Paranasal sinuses and Nose,
- 9.10 Salivary glands benign and malignant neoplasms and their management. Adjuvant therapy in salivary gland neoplasm, facial nerve anatomy

## **MODULE:10 (10 marks)**

### 10. Breast

- 10.1 Staging and pathological types, core biopsy,
- 10.2 X-ray mammogram, ultrasound, and MR mammogram. BIRADS.
- 10.3 Staging of N0 axilla. Sentinel Lymph node biopsy.
- 10.4 Pagets disease
- 10.5 Male breast cancer
- 10.6 DCIS management

- 10.7 LCIS management
- 10.8 Early breast cancer, Breast conservation surgery, Oncoplasty.
- 10.9 Locally advanced breast cancer- Triple Negative breast cancer, Her 2 positive disease, Mastectomy, ovarian suppression,
- 10.10 Metastatic breast cancer
- 10.11 Phyllodes tumour
- 10.12 Breast reconstruction
- 10.13 Accelerated partial breast irradiation, Hypofractionation in breast cancer
- 10.14 Chemoport, Vascular access methods.
- 10.15 Neoadjuvant and adjuvant protocols in breast cancer,
- 10.16 Risk assessment -mammaprint, oncotype DX.
- 10.17 Oligometastatic disease.

**NOTE: - It may be noted that apart from the topics detailed above, questions from other topics prescribed for the educational qualification of the post may also appear in the question paper. There is no undertaking that all the topics above may be covered in the question paper**