

RAJASTHAN PUBLIC SERVICE COMMISSION, AJMER

SYLLABUS OF COMPETITIVE EXAMINATION FOR THE POST OF ASSISTANT PROFESSOR (Super Speciality) SURGICAL ONCOLOGY MEDICAL EDUCATION DEPARTMENT

1. Etiology and epidemiology of malignant diseases:

- Genetic Predisposition to Cancer
- Chemical Carcinogenesis
- Hormones and the Etiology of Cancer
- Ionizing Radiation
- Ultraviolet Radiation Carcinogenesis
- Physical Carcinogens
- Trauma and Inflammation
- Tumor Viruses
- Herpes viruses
- Papilloma viruses and Cervical Neoplasia.
- Hepatitis Viruses
- Parasites
- Environmental factors in carcinogenesis.

2. Prognosis and natural history of malignant diseases:

- Mechanisms and patterns in local, regional and distant dissemination of malignant diseases.
- Differences in natural history between hereditary and sporadic forms of cancer.
- Diseases predisposing to malignancy e.g. Inflammatory bowel disease or primary sclerosing cholangitis.
- Prognostic and predictive factors.
- Genetics of hereditary malignant diseases.

3. Cancer biology:

- Cell kinetics, proliferation, apoptosis and the balance between cell death and cell proliferation.
- Angiogenesis and lymphangiogenesis.
- Genome maintenance mechanisms to prevent cancer.
- Intercellular and intermolecular adhesion mechanisms and signaling pathways.
- Potential effects of surgery and surgery-related events on cancer biology. (e.g. Angiogenesis)

4. Tumor immunology :

- Cellular and humoral components of the immune system.
- Regulatory mechanisms of the immune system
- Tumor antigenicity
- Immune-mediated antitumor cytotoxicity

- Effect of cytokines on the tumor.
- Effects of the tumor on anti-tumor immune mechanisms.
- Potential adverse effects of surgery and surgery-related events (like blood transfusions) on the immunological responses

5. Cancer Screening and Early Detection

6. Basic principles of cancer treatment:

- Surgery
- Radiotherapy
- Chemotherapy
- Endocrine therapy
- Immunotherapy
- Evaluation of the choices of treatments
- Adverse effects with these treatments
- Interactions of these treatment modalities with those of surgery

7. Cancer Prevention :

- Prevention of tobacco-related cancers
- Nutrition in the etiology and prevention of cancer
- Chemo-prevention of cancer
- Cytokinetics
- Drug resistance and its clinical circumvention
- Principles of dose, schedule, and combination
- Chemotherapy
- Regional Chemotherapy
- Animal models in developmental therapeutics
- In vitro and in vivo predictive tests
- Pharmacology
- Toxicology by organ system

8. Chemotherapeutic Agents :

- Folate Antagonists
- Pyrimidine and Purine Antimetabolites
- Alkylating Agents and Platinum Antitumor Compounds
- Anthracyclines and DNA Intercalators
- Epipodophyllotoxins / DNA Topoisomerases
- Microtubule – targeting anticancer drugs derived from plants and microbes
- Vinca Alkaloids, Taxanes, and Etoposides, Asparaginase
- Recent Advances/concepts

9. Principles of Endocrine Therapy:

- Steroid Hormone Binding and Hormone Receptors
- Hypothalamic and Other Peptide Hormones
- Corticosteroids
- Estrogens and Anti-estrogens
- Clinical use of Aromatase Inhibitors in Breast Carcinoma
- Progestins
- Androgen Deprivation Strategies in the treatment of Advanced Prostate Cancer

10. Principles of Cancer Pathology

11. Principles of Imaging:

- Imaging neoplasms of the head and neck and central nervous system
- Imaging neoplasms of the thorax
- Imaging neoplasms of the abdomen and pelvis
- Cross-sectional imaging of musculoskeletal neoplasms
- Imaging the breast
- Ultrasound in cancer medicine
- Radionuclide imaging in cancer medicine
- Perspectives in imaging
- Interventional radiology for the cancer patient

12. Principles of Surgical Oncology:

- Vascular access in cancer patients

13. Principles of Radiation Oncology:

- Physical and biologic basis of Radiation Oncology
- Principles of Hyperthermia
- Photodynamic Therapy for cancer

14. Principles of Medical Oncology

15. Principles of Biotherapeutics:

- Immunostimulants
- Active specific immunotherapy with vaccines
- Interferons
- Cytokines: biology and applications in cancer medicine
- Hematopoietic Growth Factors.
- Monoclonal Serotherapy
- Cancer Gene Therapy
- Hepatitis Viruses
- Parasites

16. Neoplasms of Head & Neck

17. Neoplasms of the Thorax :

- Cancer of the Lung
- Malignant Mesothelioma
- Thymomas and Thymic Tumors

18. Neoplasms of the Female Reproductive Organs:

- Neoplasms of the vulva and vagina
- Neoplasms of the cervix
- Endometrial cancer
- Neoplasms of the fallopian tube
- Ovarian cancer
- Gestational Trophoblastic Disease

19. Neoplasms of the Breast

20. Neoplasms of the Skin

21. Malignant Melanoma

22. Neoplasms of the Bone and soft Tissue :

- Bone Tumors & Sarcoma of non- osseous tissues

23. Neoplasms of the Hematopoietic System:

- Myelodysplastic Syndrome
- Acute Myeloid Leukemia in adults
- Chronic Myeloid Leukemia
- Acute Lymphocytic Leukemia
- Chronic Lymphocytic Leukemia
- Tumors of the heart and great vessels
- Primary germ cell tumors of the Thorax
- Metastatic tumors in the Thorax
- Hairy – Cell Leukemia
- Hodgkin’s Disease
- Non – Hodgkin’s Lymphomas
- Mycosis Fungoides and the Sezary Syndrome
- Plasma cell tumors
- Mast cell Leukemia and other mast cell neoplasms
- Polycythemia vera and essential thrombocythemia

24. Neoplasms of the Alimentary Canal:

- Neoplasms of the Esophagus
- Neoplasms of the Stomach
- Primary Neoplasms of the Liver
- Treatment of Liver Metastases
- The Gallbladder
- Diagnosis and Management of Biliary Tract Cancer
- Neoplasms of the Ampulla of Vater
- Neoplasms of the Exocrine Pancreas
- Neoplasms of the small intestine, vermiform appendix, and peritoneum, colon and rectum & anal canal.

25. Neoplasms of the Genitourinary Tract:

- Renal Cell Carcinoma
- Neoplasms of the Renal Pelvis and Ureter
- Bladder Cancer
- Neoplasms of the Prostate
- Neoplasms of the Penis
- Neoplasms of the Testis
- Neoplasms in Acquired Immuno deficiency Syndrome

26. Neoplasms of Unknown Primary Site

27. Neoplasms in Children:

- Principles and practice of pediatric oncology
- Incidence, origins, epidemiology
- Principles of pediatric radiation oncology
- Late effects of treatment of cancer in children and adolescents

- Childhood Acute Lymphoblastic Leukemia
- Pediatric Acute Myeloid Leukemia
- Hodgkin's disease in children and adolescents
- Non – Hodgkin's Lymphoma in children
- Langerhans's Cell Histiocytosis
- Hepatic tumors
- Renal tumors of childhood
- Germ cell tumors
- Neuroblastoma
- Soft tissue sarcoma of childhood

28. Complications of Cancer and its Treatment:

- Management of cancer pain
- Anorexia and Cachexia
- Antiemetic Therapy
- Neurologic complications
- Dermatologic complications of cancer chemotherapy
- Skeletal complications
- Hematologic complications of cancer
- Blood bank support
- Coagulopathic complications of cancer
- Urologic complications
- Cardiac complications
- Respiratory complications
- Liver function and hepatotoxicity in cancer
- Gastrointestinal complications
- Oral complications
- Gonadal complications
- Endocrine complications
- Secondary cancers: incidence, risk factors, and management

29. Infections in Patients with Cancer

30. Oncologic Emergencies

31. Neurooncology

32. Neoplasms of Endocrine system

33. Other areas in which knowledge is required:

- Cancer registry & data acquisition
- Biostatistics, Research Methodology and Clinical Epidemiology
- Ethics
- Medico legal aspects relevant to the discipline
- Health Policy issues as may be applicable to the discipline
- Palliative care, Pain management
- Supportive care, Quality of life issues
- Complementary, alternative and Integrative Therapies in Cancer care with Rehabilitation
- Geriatric Oncology

- Cancer Survivorship
- Nutrition support in cancer patients
- Communication with cancer patients
- End of life care
- Basic principles of cancer Hospital and operation theatre complex planning, designing and administration
- Teaching methodology, tools and technology for telemedicine
- Public education, advocacy principles.

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Pattern of Question Papers:

- 1. Objective Type Paper**
- 2. Maximum Marks: 150**
- 3. Number of Questions: 150**
- 4. Duration of Paper: 2.30 Hours**
- 5. All Questions carry equal marks**
- 6. There will be Negative Marking**
(For every wrong answer one-third of the marks prescribed for that Particular question shall be deducted.)