AMREF INTERNATIONAL UNIVERSITY
SCHOOL OF MEDICAL SCIENCES
DEPARTMENT OF NURSING & MIDWIFERY SCIENCES
MAIN EXAMINANTION SEP-DEC 2025 EXAMINATION

COURSE CODE AND TITLE: DOP 116 Cancer Treatment Modalities

DATE:

Duration: Start: Finish:

INSTRUCTIONS

1. This exam is out of 70 marks
2. This Examination comprises THREE Sections. Section I: Multiple Choice Questions (20 marks) Section II: Short Answer Questions (30 marks) and Section III: Long Answer Questions (20 marks)
3. Answer ALL Questions.
4. Do Not write anything on the question paper -use the back of your booklet for rough work if need be.

SECTION I: MULTIPLE ANSWER QUESTION (20 MARKS)

1. The defining characteristic of a chemotherapeutic vesicant is:
   a) It causes severe nausea and vomiting.
   b) It can cause blistering and tissue necrosis if it leaks from the vein.
   c) It suppresses bone marrow function, leading to low blood counts.
   d) It is toxic to the kidneys.

2. The general mechanism of action for all alkylating agents is best described as:
   a) Inhibiting the synthesis of purine and pyrimidine bases
   b) Intercalating between DNA base pairs to disrupt transcription.
   c) Causing covalent cross-links in DNA, preventing cell division.
   d) Interfering with the function of the mitotic spindle apparatus.

3. A classic example of a nitrogen mustard includes:
   a) Busulfan
   b) Carmustine (BCNU)
   c) Cyclophosphamide
   d) Dacarbazine (DTIC)

4. The primary dose-limiting toxicity of nitrosoureas, such as lomustine (CCNU), is unique because it often manifests after 4-6 weeks of treatment. The organ affected is:
   a) Renal System
   b) Pulmonary System
   c) Neurological System
   d) Bladder (Urinary System)

5. The alkylating agent Busulfan is used in conditioning regimens for stem cell transplant, the specific chemical class of Busulfan is:
   a) Nitrogen Mustards
   b) Nitrosoureas
   c) Alkyl Sulfonates
   d) Triazene

6. Mesna is co-administered with cyclophosphamide or ifosfamide is to provide a protective effect against:
   a) Neurotoxicity
   b) Hemorrhagic Cystitis
   c) Pulmonary Fibrosis
   d) Delayed Myelosuppression

7. Matched correctly clinical use of the following alkylating agents is:
   a) Altretamine: Malignant Melanoma
   b) Temozolomide: Glioblastoma Multiforme
   c) Busulfan: Ovarian Cancer
   d) Carmustine (BCNU): Chronic Lymphocytic Leukemia

8. A patient with melanoma is being treated with dacarbazine (DTIC) that is classified as a triazene. The nurse is preparing to administer the drug and is wearing gloves, a gown, and eye protection and patient asks, "Why are you so covered up? Is the drug dangerous to you?" The nurse's best response incorporates the knowledge that:
   a) "Dacarbazine is a vesicant, and this protects us both in case of a spill or leak during the infusion."
   b) "This is a standard precaution we use for all chemotherapies to minimize any risk of exposure."
   c) "Dacarbazine is known to be a potent teratogen, and these precautions are essential for my safety as your nurse."
   d) "The drug can cause severe skin irritation, and this protects me from accidental contact while handling it.

9. The hallmark, dose-limiting toxicity unique to the anthracycline drug is:
   a) Hemorrhagic Cystitis
   b) Cumulative Cardiotoxicity
   c) Severe Neurotoxicity
   d) Renal Tubular Damage

10. A patient is scheduled to receive their first dose of doxorubicin. The nurse knows that the IV must be placed in a large, patent vein and the infusion must be monitored closely because doxorubicin is classified as a:
   a) Vesicant
   b) Neurotoxin
   c) Immunosuppressant
   d) Nephrotoxin

11. The primary and most serious dose-limiting toxicity of Bleomycin is:
   a) Cardiotoxicity
   b) Pulmonary Fibrosis
   c) Cerebellar Ataxia
   d) Hemolytic Anemia

12. Mitomycin shares a crucial safety characteristic with doxorubicin that dictates specific nursing precautions during IV administration. This characteristic is that it is a:
   a) Potent vesicant
   b) Radio-sensitizer
   c) High-emetic-risk drug
   d) Plant alkaloid

13. Plicamycin is an antibiotic chemotherapy agent historically used for testicular cancer but is now primarily used to treat:
   a) Chronic Lymphocytic Leukemia
   b) Hypercalcemia of Malignancy
   c) Brain Tumors
   d) Ovarian Cancer

14. The primary mechanism action of methotrexate, a folate antagonist includes, it:
    a) directly incorporates into DNA, causing chain termination.
    b) inhibits the enzyme dihydrofolate reductase, depleting tetrahydrofolate.
    c) inhibits the enzyme ribonucleotide reductase, halting DNA synthesis.
    d) forms cross-links between DNA strands.

15. The mechanism of action of Purine analogue antimetabolites, such as Mercaptopurine, is to:
    a) Cross-link DNA strands to prevent replication.
    b) Be incorporated into DNA and RNA, leading to faulty molecules and halted synthesis.
    c) Directly break the DNA helix to cause strand breaks.
    d) Stabilize microtubules and prevent mitotic spindle formation.

16. L-Asparaginase is a uniquely effective chemotherapeutic agent in the treatment of:
    a) Solid tumors like breast cancer
    b) Acute Lymphoblastic Leukemia (ALL)
    c) Chronic Myeloid Leukemia (CML)
    d) Prostate cancer

17. The anticancer effect of L-Asparaginase is due to its ability to:
    a) Convert L-asparagine to aspartic acid, depriving leukemic cells of an essential amino acid.
    b) Directly incorporate into DNA, causing chain termination.
    c) Inhibit the synthesis of folic acid.
    d) Cross-link DNA strands.

18. What is the primary mechanism of action for the class of chemotherapeutic drugs known as epipodophyllotoxins?
    a) Inhibition of microtubule assembly
    b) Inhibition of topoisomerase II
    c) Cross-linking of DNA strand
    d) Inhibition of dihydrofolate reductase

19. The two common drugs that belong to the epipodophyllotoxin class are:
    a) Doxorubicin and Daunorubicin
    b) Vincristine and Vinblastine
    c) Etoposide and Teniposide
    d) Irinotecan and Topotecan

20. The primary mechanism of action of Vinca alkaloids is to:
    a) Inhibition of topoisomerase II
    b) Inhibition of microtubule formation
    c) Cross-linking of DNA strands
    d) Inhibition of DNA synthesis.

SECTION II: SHORT ANSWER QUESTIONS (30 MARKS)

1. State five (5) common side effects associated with hormonal therapy in cancer treatment (5marks)

2. Outline five (5) specific nursing responsibilities after administration of Alkylating agents. (5marks)
3. Formulate six (6) nursing diagnoses of a patient on Antitumor Antibiotics in Cancer Treatment (6marks)

4. State four (4) nursing interventions of a patient on Antimetabolites (4marks)

5. Explain the four (4) major types of Immunotherapy (6marks)

6. State four (4) Complications of cancer therapy (4marks)

SECTION II: LONG ANSWER QUESTION (20 MARKS)

1. Write a brief note on Interferons (IFNs) using the following heading (11marks)
    a) Classification of the drug
    b) Mechanism of action
    c) Indications
    d) Side effects
    e) Nursing Considerations
    f) Contraindication
2. Hematopoietic Therapies and Stem Cell Transplantation are treatments used in cancer care especially for blood cancers in order to restore or replace the patient's blood-forming system.

    a) State three (3) types of Stem Cell Transplantation (3marks)
    b) Explain the two complications in each phase of Hematopoietic Stem Cell Transplantation Process (6marks)