CHUKA  **UNIVERSITY**

UNIVERSITY EXAMINATIONS

SECOND YEAR EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE (NURSING)

NURS 224: HUMAN PATHOLOGY **TIME: 3 HOURS**

DAY/DATE: THURSDAY 7/12/2017 **2.30 P.M - 5.30 P.M.**

INSTRUCTIONS:

- Do not write anything on the question paper.
- Mobile phones and any other reference materials are NOT allowed in the examination room.
- The paper has THREE sections. ALL Questions are compulsory
- All your Answers for Section A (MCQs) should be on the first page of the answer booklet.
- Number ALL your answers and indicate the order of appearance in the space provided in the cover page of the Examination answer booklet.
- Write your answers legibly and use your time wisely

SECTION A: MULTIPLE CHOICE QUESTIONS [20 MARKS]

1. The most commonly used fixative in histopathology is:
   A. Ethyl alcohol
   B. 10% formalin
   C. Haematoxylin
   D. Glutaraldehyde

2. Reduced blood flow to the brain results in which type of necrosis:
   A. Coagulative
   B. Gangrenous
   C. Liquefactive
   D. Fibrinous

3. Which of the following morphologic changes most likely suggests a diagnosis of acute tubular necrosis?
   A. Mitochondrial swelling
   B. Plasma membrane blebs
   C. Chromatin clumping
   D. Nuclear fragmentation

4. Increased mitochondrial permeability and release of cytochrome C results in apoptosis through the activation of caspace:
   A. 9
   B. 8
   C. 3
   D. 10

5. A 5- year old child has a history of recurrent bacterial infections, including pneumonia and otitis media. Analysis of leukocytes collected from the peripheral blood shows a deficiency in myeloperoxidase. Which of the following is the most likely cause of this child's increased susceptibility to infections?
   A. Defective neutrophil degranulation
   B. Defective production of prostaglandins
   C. Failure to produce hydroxyl-halide radicals (HOCI-)
   D. Failure to produce hydrogen peroxide

6. A 22-year old woman has a congenital anemia that has required multiple transfusion of RBCs for many years. Which of the following findings would most likely appear in a liver biopsy specimen?
   A. Hemosiderin in hepatocytes
   B. Steatosis in hepatocytes
   C. Bilirubin in canaliculi
   D. Amyloid in portal triads

7. 35-year old woman takes acetyIsalicylic acid (aspirin) for arthritis. Although her joint pain is reduced with this therapy the inflammatory process continues. The aspirin therapy alleviates her pain mainly through reduction in the synthesis of:
   A. Leukotriene B4
   B. Prostaglandins
   C. Substance P
   D. Bradykinin

8. Migration of Leukocytes through the tissues to the site of infection is most likely mediated by:
   A. Integrins
   B. L-selectin
   C. Complement C3a
   D. Chemokines

9. During acute inflammation response, the patient presents with edema of the affected area. This mainly result from:
   A. Retraction of endothelial cells
   B. Endothelial cell necrosis
   C. Leukocyte mediated vascular injury
   D. Increased transcytosis

10. In an experiment, neutrophils collected from peripheral blood are analyzed for a "burst" of oxygen consumption. This respiratory burst is an essential step for which of the following events in an acute inflammatory response?
    A. Attachment to endothelial cells
    B. Opsonization of bacteria
    C. Generation of microbicidal activity
    D. Phagocytosis of bacteria

11. The first vascular response to injury is:
    A. Capillary engorgement
    B. Arteriolar vasodilation
    C. Proliferation of lymphatics
    D. Vasoconstriction of the arterioles

12. A clinical study involves patients diagnosed with carcinoma whose tumor stage is T4N1M1. The patient's survival rate 5 years from the time of diagnosis is less than 50%, regardless of therapy. Which of the following clinical findings is most likely to be characteristic of this group of patients?
    A. Obstruction
    B. Cachexia
    C. Hypercalcemia
    D. Endocrinopathies

13. The organ most frequently involved secondarily in hematogenous spread of cancer cells is:
    A. Lung
    B. Kidney
    C. Heart
    D. Brain

14. Carcinoma cells that fail to express MHC class I antigens are destroyed by one type of immune cell that has been activated by IL-2. This immune cell is most likely:
    A. Macrophage
    B. CD4+ lymphocyte
    C. CD8+ lymphocyte
    D. NK cells

15. 10% of the patients treated with alkylating agent cyclophosphamide subsequently develop a second cancer. The most likely mechanism of action by which occurs is:
    A. Activation of protein kinase C
    B. Blockage of TGF-β pathways
    C. Direct DNA damage
    D. Inhibition of telomerase

16. Principle types of proliferating cells in the granulation tissue are fibroblasts and:
    A. Neutrophils
    B. Endotherial cells
    C. Macrophages
    D. Lymphocytes

17. Healing through regeneration is associated with injury to the:
    A. Liver
    B. Neuron
    C. Epidermis
    D. Kidney

18. Which of the following is TRUE concerning DNA:
    A. It is only found in the nucleus
    B. Contains ribose sugar
    C. Replicates during the M-Phase of cell cycle
    D. It is carried by chromosomes

19. Concerning X-linked genetic disorders:
    A. Most of them are recessive
    B. An affected male transmits the condition to all the sons
    C. Heterozygous women have 25% chance of developing the disorder
    D. An affected female transmits the condition to all her daughters

20. Which of the following conditions is associated with trinucleotide repeat mutations:
    A. Huntington's disease
    B. Cystic fibrosis
    C. Phenylketonuria
    D. Retinoblastoma

SECTION B: SHORT ANSWER QUESTIONS. [40 MARKS]

1. State four (4) applications of pathology in the medical field. [4 Marks]

2. Explain briefly three (3) ways through which cells adapt to a stressful stimuli. [6 Marks]

3. Outline the role of histamine in an acute inflammatory response. [4 Marks]

4. Explain briefly three (3) features that make chronic inflammation different form an acute one. [6 Marks]

5. Outline the key events in the maturation phase of the wound healing process. [5 Marks]

6. Describe briefly the three (3) types of point genetic mutation. [6 Marks]

7. Briefly explain two (2) mechanisms through which Down syndrome occurs. [4 Marks]

8. State five (5) possible effects of cancer of the esophagus. [5 Marks]

SECTION C: LONG ANSWER QUESTIONS. [40 MARKS]

1. Tumor cells are characterized by uncontrolled growth due to self sufficiency in growth signals and ability to evade the immune system.
   (a) Discuss four (4) ways through which tumor cells become self sufficient in growth signals. [8 Marks]

   (b) Discuss four (4) mechanisms through which the tumor cells evade the body's immune system. [12 Marks]

2. When a cell is predisposed to certain agents/factors and it can no longer cope, it is likely to get injured.
   (a) Discuss four (4) possible causes of cell injury giving appropriate example. [8 Marks]

   (b) Discuss three (3) factors that may alter membrane permeability in cell injury indicating the effects of such alteration. [12 Marks]

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