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(*University of Choice*)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

(MAIN CAMPUS)

UNIVERSITY EXAMINATIONS (MAIN PAPER) 2022/2023 ACADEMIC YEAR

FIRST YEAR SECOND SEMESTER EXAMINATIONS

FOR THE DEGREE OF MASTER OF MEDICAL LABORATORY SCIENCES (CLINICAL CHEMISTRY)/ MASTER OF SCIENCE IN BIOMEDICAL SCIENCES (MEDICAL BIOCHEMISTRY)

COURSE CODE: **BMC 824**

COURSE TITLE: **CLINICAL CHEMISTRY OF NEOPLASTIC AND GENETIC DISORDERS**

DATE: **19TH APRIL 2023** **TIME: 11.00AM – 2.00PM**

INSTRUCTIONS TO CANDIDATES

Answer ANY FOUR questions. DO NOT WRITE ON THE QUESTION PAPER.

TIME: 3 Hours

MMUST observes ZERO tolerance to examination cheating

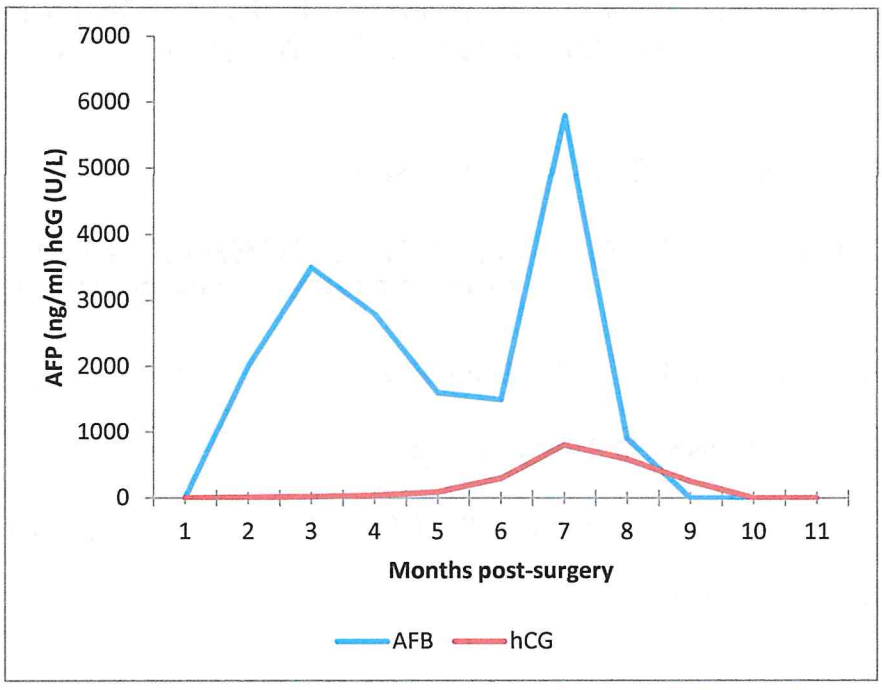
Answer ONLY four questions (100 marks)

1. Explain the role of tumor markers in cancer management (25 marks).

2. Discuss ten five (5) tumor types and their associated markers (25 marks).

3. Explain the use of enzymes and hormones as tumor markers (25 marks).

4. A 65 year old man presents to the emergency department after he had abnormally tarry – colored stool on multiple occasions. He has had gastrointestinal discomfort and has felt increasingly tired during the past 2 months. Physical examination reveals a guaiac – positive stool. A subsequently colonoscopy indentified a circumferential mass in the sigmoid colon. A biopsy was performed, which identified the mass as an adenocarcinoma. CEA level was obtained as part of the presurgery workup.
   a. Is the CEA test useful as a screening test for colon carcinoma? Explain (5 marks).
   b. What other conditions can result in elevated CEA levels? Explain (10 marks).
   c. How is CEA used to monitor patients after surgery for colon cancer? Explain (10 marks).
5. A 25 year old man with a history of testicular cancer is followed postsurgery over the course of 10 months, with β – hCG and AFP monitored. The patient is treated with radiation at 2 months, followed by chemotherapy (taxol, ifosfamide, and cisplatin) from months 6 through 9 as indicated in the figure below.



   a. What type of germ cell tumor might this patient have based on the serum AFP and β – hCG levels? (5 marks).
   b. Explain the pattern of AFP and hCG observed in the graph (10 marks).
   c. Can a final diagnosis be made based only on the tumor marker finding? If not, explain why? (10 marks).