

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

**EXAMINATION FOR THE AWARD OF DEGREE OF MASTER OF SCIENCE
IN MEDICAL PHYSICS**

MPHY 864: ADVANCED TECHNIQUES OF RADIOTHERAPY

STREAMS:

TIME: 3 HOURS

DAY/DATE: FRIDAY 12/4/2024

11.30 A.M. – 2.30 P.M.

INSTRUCTIONS: ANSWER ANY FOUR (4) QUESTIONS

1. a) Explain five (5) key steps involved during treatment planning as described in the treatment planning system (TPS) in cancer treatment. (5 marks)
- b) Describe the inverse treatment planning techniques highlighting its pros and cons over other techniques. (10 marks)
2. a) Explain the principles of dose calculation algorithms for optimization of radiation therapy. (6 marks)
- b) Describe any three processes of interpretation of dose prescription for a particular radiotherapy treatment. (9 marks)
3. Discuss the dose calculation under the following sub -heading;
 - i. Extended SSD
 - ii. Two opposing field/dose tables
 - iii. Treatment time
 - iv. Monitoring and verification (15 marks)
4. a) Explain the principles of DICOM RT (6 marks)
- b) Describe role and applications of information systems and networking in radiotherapy. (9 Marks)
5. Discuss the key aspects of quality control in radiotherapy equipment, treatment planning and data transfer verification (15 marks)

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