

RADIOTHERAPY

PAPER – I

RTH/D/16/41/I

Time : 3 hours

Max. Marks : 100

Important instructions:

- Attempt all questions in order.
- Each question carries 10 marks.
- Read the question carefully and answer to the point neatly and legibly.
- Do not leave any blank pages between two answers.
- Indicate the question number correctly for the answer in the margin space.
- Answer all the parts of a single question together.
- Start the answer to a question on a fresh page or leave adequate space between two answers.
- Draw table/diagrams/flowcharts wherever appropriate.

Write short notes on:

1. a) What is Bragg peak? 2+3+2+3
b) How is Bragg peak converted to useful radiotherapy beam?
c) List the advantages of using such a technique for treatment.
d) Bragg peak is a double edged sword. Why?

2. a) What are the objectives of real-time tumour tracking? 4+6
b) Compare and contrast the two real time imaging systems currently available in clinical use.

3. a) What is the goal of Quality Assurance (QA)? 2+5+3
b) Mention the acceptance tests involved with Multi-leaf-collimator (MLC).
c) List the monthly QA checks done for a Telecobalt machine.

4. a) Draw a teletherapy machine room for Cobalt/Linear Accelerator. 4+4+2
b) List the various methods of radiation protection in Cobalt/Linear Accelerator room.
c) What are the advantages of a maze wall?

5. a) Enumerate the clinical settings in which electrons are used. 2+2+2+4
b) What are the methods for field shaping in electron beam therapy?
c) Give one example where internal shielding is used in electron therapy with rationale.
d) Mention advantages and disadvantages of field matching in the following:
i) Photon-Electron field
ii) Electron-Electron field

P.T.O.

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6. a) Blood supply and lymphatic drainage of testis. 3+5+2
b) Radiotherapy technique and dose for treating stage IIA seminoma.
c) Prognostic factors of non-seminomatous germ cell tumour.
7. a) With regards to a diagnostic test, define sensitivity, specificity, positive predictive value and negative predictive value. 4+2+4
b) Enumerate the general principles of screening.
c) Various methods (modality and schedule) of cervical cancer screening.
8. Molecular grouping of breast cancer and its relevance in choosing the therapy for breast cancer. 5+5
9. a) With reference to medical Statistics, define:- 2+4+4
i) Null hypothesis
ii) Power of a study.
b) Is evidence provided by Randomised Controlled Trial (RCT) better than Case Reports? Explain.
c) What is phase III clinical trial? Give example of a Phase III trial in radiotherapy of breast cancer.
10. a) Embryology, surface anatomy and radiographic anatomy of sella tursica. 6+4
b) Name the techniques of radiotherapy used for sellar and suprasellar tumours
