April-2001

[KD 153] **Sub. Code : 2050**

M.D. DEGREE EXAMINATION.

(Revised Regulations)

Branch IX — Radiotherapy

Part II — Final

Paper I — GENERAL PRINCIPLES OF RADIOTHERAPY INCLUDING RADIOBIOLOGY AND ONCOLOGY

Time : Three hours Maximum : 100 marks

Answer ALL questions.

1. Define the terms SOMA, LENT, TD 5/5 & TD 50/5. What are the limitations of the later? What are the tolerance doses and describe the clinical syndromes, pathophysiology and management of the late effects of the major dose limiting organs. (25)

2. Describe the physical characteristics of electron beams. Discuss its clinical applications? (25)

3. Write briefly on : (5 × 10 = 50)

(a) Frozen section

(b) Oxygen effect

(c) Prospective trial

(d) Tumor markers

(e) Dose specifications in intracavitory brachy therapy.

[KE 153] **Sub. Code : 2050**

M.D. DEGREE EXAMINATION.

(Revised Regulations)

Branch IX — Radiationtherapy

Part II — Final

Paper I — GENERAL PRINCIPLES OF RADIOTHERAPY INCLUDING RADIOBIOLOGY AND ONCOLOGY

Time : Three hours **Maximum : 100 marks**

Answer ALL questions.

1. Discuss the 5R's of radiobiology. Mention the various means of enhancing radiation sensitivity. Discuss the use of radiation sensitizers in clinical practice. (25)

2. Discuss the properties of the various brachytherapy sources commonly used in clinical practice. What are the clinical application of Ir^{192}. Discuss use of templates. (25)

3. Write briefly on : $(5 \times 10 = 50)$

   (a) Intensity modulated radiation therapy.

   (b) TLD.

   (c) Dose rate effect.

   (d) LET.

   (e) Hyperthermia.

March-2002

[KG 153] **Sub. Code : 2050**

M.D. DEGREE EXAMINATION

(Revised Regulations)

Branch IX — Radiationtherapy

Part II — Final

Paper I — GENERAL PRINCIPLES OF RADIOTHERAPY INCLUDING RADIOBIOLOGY AND ONCOLOGY

Time : Three hours Maximum : 100 marks

Answer ALL questions.

1. Discuss the mechanisms of radiation cell killing. Explain the radiobiological basis of early and late normal tissue reactions. What is dose rate effect? (25)

2. Discuss the altered fractionation schedules used in clinical practice. Explain the rationale of combining radiation with chemotherapy. What are the clinical applications of chemoradiation? (25)

3. Write briefly on : (5 × 10 = 50)

   (a) Photodynamic therapy.

   (b) Intraoperative radiationtherapy.

   (c) Tc^{99m} scan.

   (d) Particle therapy.

   (e) Radiation Surveymeter.

[KH 153] **Sub. Code / 2050**

M.D. DEGREE EXAMINATION

(Revised Regulations)

Branch IX — Radiotherapy

Part II — Final

Paper I — GENERAL PRINCIPLES OF RADIOTHERAPY INCLUDING RADIOBIOLOGY AND ONCOLOGY

Time : Three hours Maximum : 100 marks

Answer ALL questions.

1. Describe briefly the interaction of radiation with matter (Photo Electric and Compton Processes, Pair Production). Add a note on attenuation co–efficients. (25)

2. Describe beam modification devices. Mention briefly about multileaf collimator and dynamic wedges. (25)

3. Write briefly on : (5 × 10 = 50)

(a) Thermo huminiscent Dosimeter

(b) Maximum permissible doses.

(c) Gamma Camera.

(d) The 4 R's of Radiobiology.

(e) Hyperthermia.

April-2003

[KI 153] **Sub. Code : 2050**

M.D. DEGREE EXAMINATION.

(Revised Regulations)

Branch IX — Radio Therapy

Part II — Final

Paper I — GENERAL PRINCIPLES OF RADIOTHERAPY INCLUDING RADIOBIOLOGY AND ONCOLOGY

Time : Three hours **Maximum : 100 marks**

Answer ALL questions.

1. Discuss the rationale of combining irradiation with surgery. How will you manage a case of carcinoma of Larynx T_3N, M_0? (25)

2. Write an essay on radiation protection in a radiotherapy department. Outline "safe work practice" in your department. (25)

3. Write short notes on : (5 × 10 = 50)

   (a) Radio immuno globulins in cancer treatment

   (b) Midline granuloma

   (c) Oxygen effect

   (d) Stereotactic radiosurgery

   (e) Radioprotectors.

[KJ 153] **Sub. Code : 2050**

M.D. DEGREE EXAMINATION.

(Revised Regulations)

Branch IX — Radio Therapy

Part II — Final

Paper I — GENERAL PRINCIPLES OF RADIOTHERAPY INCLUDING RADIOBIOLOGY AND ONCOLOGY

Time : Three hours — Maximum : 100 marks

Theory : Two hours and forty minutes — Theory : 80 marks

M.C.Q. : Twenty minutes — M.C.Q. : 20 marks

MCQ must be answered **SEPARATELY** on the Answer Sheet provided as per the instructions on the first page.

Answer ALL questions.

Draw suitable diagrams wherever necessary.

Essay Questions : $(2 \times 15 = 30)$

1. What is LENT (Late Effects Normal Tissue)? State the 10 steps LENT diagnosis process. Discuss in detail LENT on central Nervous system.

2. What are mega voltage units? Describe Cobalt–60 teletherapy Unit.

Short notes : $(10 \times 5 = 50)$

3. (a) Give an account on Dose–fractionation in Radiotherapy.

(b) Write note on Linear–quadratic equation ($\alpha - \beta$ ratio).

(c) Short note on molecular and cellular aspects of Radiobiology.

(d) Write a short note on Altered fractionation schedule.

(e) What are 'strandquist lines'? What is its clinical significance?

(f) Clinical Trials.

(g) What is the rationale for development of chemical modifiers of Radiation?

(h) OER (Oxygen Enhancement Ratio).

(i) Advantage of after loading techniques in Brachytherapy.

(j) Role of radiotherapy simulators.

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[KL 153] **Sub. Code : 2050**

M.D. DEGREE EXAMINATION.

(Revised Regulations)

Branch IX — Radiotherapy

Part II — Final

Paper I — GENERAL PRINCIPLES OF RADIOTHERAPY INCLUDING RADIOBIOLOGY AND ONCOLOGY

Time : Three hours — Maximum : 100 marks

Theory : Two hours and forty minutes — Theory : 80 marks

M.C.Q. : Twenty minutes — M.C.Q. : 20 marks

Answer ALL questions.

Draw suitable diagrams wherever necessary.

I. Essay questions : (2 × 15 = 30)

(1) Discuss the biological basis of fractionation.

(2) Give a summary of different radiotherapy machines.

II. Short notes : (10 × 5 = 50)

(a) D_0 and D_1.

(b) LET.

(c) TNM staging.

(d) Hyperfractionation.

(e) OER.

(f) Simulator.

(g) Apoptosis.

(h) Biological basis of hyperthermia.

(i) Compensators.

(j) SAD and SSD techniques.