

CMSA

		FC Rad O	nc(SA) Part I, Paper 1 - 7	Physics		
		(Duestions 1 & 2 (50%)			
Торіс	Sub-topic (covering all radiation therapy modalities)	Khan reference	Podgorsak reference		Knowledge units	
Basic Radiation Physics	Classification of radiation		1.1.5-7	Classification of fundamental particles	Direct / indirect ionization	Classification of
	Wave and quantum models of radiation	Chapter 1,3,5	Add. notes	Energy and wavelength	Energy spectrum	
	Atomic and nuclear structure	- -	1.2	Nucleus, orbital shells, energy levels, binding energy	Particles - proton, electron, neutron, positron	Atomic number,
	Radioactivity and decay	Chapter 2	1.2.6 1.2.7 1.2.9	Decay processes, half life	Parent-daughter relationships, equilibrium	Nuclear reactions,
	Interactions with matter / processes, attenuation, scatter,	Chapter 5	1.3 1.4 Add. notes 1.2.6 4.4	Absorption, scatter; LET; elastic and inelastic	Photoelectric, Compton effect, Pair Production.	Interactions of
	Radiation quantities and units	F	1.1.9 and Ch 2 6.2 6.3	Fluence, KERMA, dose, Exposure	Absobed dose	Doserate
	1	Chapter 7,8		Mono- and hetero-energetic photon beams	Calculation of absorbed dose from exposure	Relationship between
Treatment Units	Design/construction/field size definition / beam production	Chapter 3.4.15.16, Notes	Ch 5 13.1-2	Physical concepts of beam production; characteristics	Equipment design, selection, specification and	Linear accelerators;
	Physical aspects of beams: Ouantities, %DD, PSF, TMR, OARs.	Chapter 9.10.14.26	Ch 6	Photon, electron and particle beams	ISL. BSF. Electron build up, PDD, EqSq, TAR	
Ouality Assurance	Measurement - Dosimeters	Chapter 6 & 8	Ch 3	Ion chambers	Other methods	
Quant,	Calibration - principles	Chapter 8 + TRS 398	Ch 9	Instruments phantoms	Protocols corrections	Beam quality
	Acceptance tests and commissioning	Chapter 17 PSA Legislation	Ch 10 13 7-8	DoH Radiation Control Legislation	SASOART	Dealli quanty
	Routine OA	License Conditions	12 1 -2 12 4 13.9	Goale	Roles and duties staffing	Linac OA
Padiation Protection	Padiation monitoring instruments	Electise conditions	Ch 4	Area ourseau matere	Individual monitoring	Linac Qri
Radiation Frotection	Dadiation affacte	Charatan 16 Dell Padiation	16.2	Deterministic	Stoneheetie	on embryo and
	Cuantities and units	Control Legislation Notes	16.2	Deterministic Developed quantities	Stoachastic	- Oll childryo and
	Quantities and units.	Collifor Legislation, mores	10.5	Physical quantities	Equivalent (KDE) dose	Effective dose
	Basic framework and standards		10.0	ALAKA	ICRP dose himas	Regulations and
	Dose estimation - MIRD	Notes	Add. notes 16.5.2.4	Committed dose	N 1 1	M. C. Miller
	Shielding		16.10 16.17-19	Principles	Room design	Neutron shielding
	Safety of operation	Chapter 16; DoH Radiation	16.11 16.11.2	Teletherapy equipment	Source storage	Incident reporting
	Types of exposure	Control Legislation	16.4 16.13-15	Medical exposure, prevention of accidental exposure	Occupational exposure	Public exposure
	Dose minimization practices and procedures. Time, Distance,		Add. notes	Radiation protection issues with imaging		
				1 00		
		0	Duestions 3 & 4 (50%)			
Торіс	Sub-topic	(Duestions 3 & 4 (50%) Podgorsak reference		Knowledge units	
Торіс	Sub-topic (covering all radiation therapy modalities)	(Duestions 3 & 4 (50%) Podgorsak reference		Knowledge units	
Topic	Sub-topic (covering all radiation therapy modalities) Diagnostic imaging	(Duestions 3 & 4 (50%) Podgorsak reference Add. notes	Priniciples of image production	Knowledge units Routine imaging principles	Processors
Topic Imaging	Sub-topic (covering all radiation therapy modalities) Diagnostic imaging Modalities available for treatment planning	Chanter 12.1 - 3; Add notes	Add. notes Add. notes	Priniciples of image production CT. US	Knowledge units Routine imaging principles MRI.	Processors SPECT, PET, PET-
Topic Imaging	Sub-topic (covering all radiation therapy modalities) Diagnostic imaging Modalities available for treatment planning Simulation equipment	Chapter 12.1 - 3; Add notes	Add. notes Add. notes Add. notes, 15.11	Priniciples of image production CT, US Simulators	Knowledge units Routine imaging principles MRI. CT-Sims	Processors SPECT, PET, PET- DRR, EPID, CBCT
Topic Imaging	Sub-topic (covering all radiation therapy modalities) Diagnostic imaging Modalities available for treatment planning Simulation equipment Image fusion / registration	Chapter 12.1 - 3; Add notes	Add. notes Add. notes Add. notes Add. notes, 15.11 5.9 Add. notes, 15.11	Priniciples of image production CT, US Simulators Merging systems	Knowledge units Routine imaging principles MRI. CT-Sims Evaluation tools	Processors SPECT, PET, PET- DRR, EPID, CBCT
Topic Imaging Patient Positioning	Sub-topic (covering all radiation therapy modalities) Diagnostic imaging Modalities available for treatment planning Simulation equipment Image fusion / registration Immobilization / positioning	Chapter 12.1 - 3; Add notes Chapter 19.2 Chapter 12.7 + Notes	Add. notes Add. notes, 15.11 5.9 Add. notes, 15.11	Priniciples of image production CT, US Simulators Merging systems Immobilisation devices / methods	Knowledge units Routine imaging principles MRI. CT-Sims Evaluation tools Positionine devices / methods	Processors SPECT, PET, PET- DRR, EPID, CBCT Simulation
Topic Imaging Patient Positioning	Sub-topic (covering all radiation therapy modalities) Diagnostic imaging Modalities available for treatment planning Simulation equipment Image fusion / registration Immobilization / positioning In-room imaging and dose measurements	Chapter 12.1 - 3; Add notes Chapter 19.2 Chapter 12.7 + Notes Chapter 12.3	Add. notes Add. notes Add. notes, 15.11 5.9 Add. notes, 15.11 7.4	Priniciples of image production CT, US Simulators Merging systems Immobilisation devices / methods CBCT. Portal imaging	Knowledge units Routine imaging principles MRI. CT-Sims Evaluation tools Positioning devices / methods Position verification	Processors SPECT, PET, PET- DRR, EPID, CBCT Simulation
Topic Imaging Patient Positioning Treatment Planning	Sub-topic (covering all radiation therapy modalities) Diagnostic imaging Modalities available for treatment planning Simulation equipment Image fusion / registration Immobilization / positioning In-room imaging and dose measurements Target volume & OAR delineation.	Chapter 12.1 - 3; Add notes Chapter 19.2 Chapter 12.7 + Notes Chaper 12.3	Add. notes Add. notes Add. notes, 15.11 5.9 Add. notes, 15.11 7.4	Priniciples of image production CT, US Simulators Merging systems Immobilisation devices / methods CBCT, Portal imaging ICRU 50 & 62	Knowledge units Routine imaging principles MRI. CT-Sims Evaluation tools Positioning devices / methods Position verification GTV / CTV / PTV / JTV	Processors SPECT, PET, PET- DRR, EPID, CBCT Simulation
Topic Imaging Patient Positioning Treatment Planning	Sub-topic (covering all radiation therapy modalities) Diagnostic imaging Modalities available for treatment planning Simulation equipment Image fusion / registration Immobilization / positioning In-room imaging and dose measurements Target volume & OAR delineation. Dose specification and reporting (ICRI)	Chapter 12.1 - 3; Add notes Chapter 19.2 Chapter 12.7 + Notes Chapter 12.3 Chapter 11.8,14	Add. notes Add. notes Add. notes, 15.11 5.9 Add. notes, 15.11 7.4 7.2 7.3 8.3	Priniciples of image production CT, US Simulators Merging systems Immobilisation devices / methods CBCT, Portal imaging ICRU 50 & 62 Photone	Knowledge units Routine imaging principles MRI. CT-Sims Evaluation tools Positioning devices / methods Position verification GTV / CTV / PTV / ITV Flectmas	Processors SPECT, PET, PET- DRR, EPID, CBCT Simulation Margins
Topic Imaging Patient Positioning Treatment Planning	Sub-topic (covering all radiation therapy modalities) Diagnostic imaging Modalities available for treatment planning Simulation equipment Image fusion / registration Immobilization / positioning In-room imaging and dose measurements Target volume & OAR delineation. Dose specification and reporting (ICRU) Patient data acquisition	Chapter 12.1 - 3; Add notes Chapter 19.2 Chapter 12.7 + Notes Chapter 12.3 Chapter 11.8,14 Chapter 19.2	Add. notes Add. notes Add. notes, 15.11 5.9 Add. notes, 15.11 7.4 7.2 7.3, 8.3.1 7.4 1 & 2	Priniciples of image production CT, US Simulators Merging systems Immobilisation devices / methods CBCT, Portal imaging ICRU 50 & 62 Photons Need for nationt data	Knowledge units Routine imaging principles MRI. CT-Sims Evaluation tools Positioning devices / methods Position verification GTV / CTV / PTV / ITV Electrons Nature of rationt data	Processors SPECT, PET, PET- DRR, EPID, CBCT Simulation Margins
Topic Imaging Patient Positioning Treatment Planning	Sub-topic (covering all radiation therapy modalities) Diagnostic imaging Modalities available for treatment planning Simulation equipment Image fusion / registration Immobilization / positioning In-room imaging and dose measurements Target volume & OAR delineation. Dose specification and reporting (ICRU) Patient data acquisition	Chapter 12.1 - 3; Add notes Chapter 19.2 Chapter 12.7 + Notes Chapter 12.3 Chapter 11.8,14 Chapter 19.2 Chapter 19.2	Add. notes Add. notes Add. notes, 15.11 5.9 Add. notes, 15.11 7.4 7.2 7.3, 8.3.1 7.4.1 & 2 5.5.3.7.5.4	Priniciples of image production CT, US Simulators Merging systems Immobilisation devices / methods CBCT, Portal imaging ICRU 50 & 62 Photons Need for patient data Wednas: blocks	Knowledge units Routine imaging principles MRI. CT-Sims Evaluation tools Positioning devices / methods Position verification GTV / CTV / PTV / ITV Electrons Nature of patient data Bodue	Processors SPECT, PET, PET- DRR, EPID, CBCT Simulation Margins Other
Topic Imaging Patient Positioning Treatment Planning	Sub-topic (covering all radiation therapy modalities) Diagnostic imaging Modalities available for treatment planning Simulation equipment Image fusion / registration Immobilization / positioning In-room imaging and dose measurements Target volume & OAR delineation. Dose specification and reporting (ICRU) Patient data acquisition Beam modifiers Beam corrections	Chapter 12.1 - 3; Add notes Chapter 19.2 Chapter 12.7 + Notes Chapter 12.3 Chapter 11.8,14 Chapter 19.2 Chapter 19.2 Chapter 12.4 5 14	Add. notes Add. notes Add. notes, 15.11 5.9 Add. notes, 15.11 7.4 7.2 7.3, 8.3.1 7.4.1 & 2 7.5.2 7.5.3 7.5.4 7.5 7.5 6	Priniciples of image production CT, US Simulators Merging systems Immobilisation devices / methods CBCT, Portal imaging ICRU 50 & 62 Photons Need for patient data Wedges, blocks Surface obligative	Knowledge units Routine imaging principles MRI. CT-Sims Evaluation tools Positioning devices / methods Position verification GTV / CTV / PTV / ITV Electrons Nature of patient data Bolus Hatercogenatiles	Processors SPECT, PET, PET- DRR, EPID, CBCT Simulation Margins Other Compensators
Topic Imaging Patient Positioning Treatment Planning	Sub-topic (covering all radiation therapy modalities) Diagnostic imaging Modalities available for treatment planning Simulation equipment Image fusion / registration Immobilization / positioning In-room imaging and dose measurements Target volume & OAR delineation. Dose specification and reporting (ICRU) Patient data acquisition Beam modifiers Beam corrections Draws constrictions	Chapter 12.1 - 3; Add notes Chapter 19.2 Chapter 12.7 + Notes Chapter 12.3 Chapter 11.8,14 Chapter 19.2 Chapter 11.4, 12.5, 13.1-3,14 Chapter 12.4-5,14 Chapter 12.4-5,14	Duestions 3 & 4 (50%) Podgorsak reference Add. notes Add. notes, 15.11 5.9 Add. notes, 15.11 7.4 7.2 7.3, 8.3.1 7.4.1 & 2 7.5.2 7.5.3 7.5.4 7.5.7 7.5.6 7.5	Priniciples of image production CT, US Simulators Merging systems Immobilisation devices / methods CBCT, Portal imaging ICRU 50 & 62 Photons Need for patient data Wedges, blocks Surface, obliquity Matching	Knowledge units Routine imaging principles MRI. CT-Sims Evaluation tools Positioning devices / methods Position verification GTV / CTV / PTV / ITV Electrons Nature of patient data Bolus Heterogeneities Adjuicing fields	Processors SPECT, PET, PET- DRR, EPID, CBCT Simulation Margins Other Compensators
Topic Imaging Patient Positioning Treatment Planning	Sub-topic (covering all radiation therapy modalities) Diagnostic imaging Modalities available for treatment planning Simulation equipment Image fusion / registration Immobilization / positioning In-room imaging and dose measurements Target volume & OAR delineation. Dose specification and reporting (ICRU) Patient data acquisition Beam modifiers Beam corrections Beam combinations 20 Conformed RT_Dunamic MI C_IMPT_VMAT_OA	Chapter 12.1 - 3; Add notes Chapter 19.2 Chapter 12.7 + Notes Chapter 12.3 Chapter 11.8,14 Chapter 19.2 Chapter 11.4, 12.5, 13.1-3,14 Chapter 12.4-5,14 Chapter 11 & 13.4	Duestions 3 & 4 (50%) Podgorsak reference Add. notes Add. notes, 15.11 5.9 Add. notes, 15.11 7.4 7.2 7.3, 8.3.1 7.4.1 & 2 7.5.2 7.5.3 7.5.4 7.5.7 15.7	Priniciples of image production CT, US Simulators Merging systems Immobilisation devices / methods CBCT, Portal imaging ICRU 50 & 62 Photons Need for patient data Wedges, blocks Surface, obliquity Matching Defensed aceds us traditional PT	Knowledge units Routine imaging principles MRI. CT-Sims Evaluation tools Positioning devices / methods Position verification GTV / CTV / PTV / ITV Electrons Nature of patient data Bolus Heterogeneities Adjoining fields Description	Processors SPECT, PET, PET- DRR, EPID, CBCT Simulation Margins Other Compensators Co-planar beams
Topic Imaging Patient Positioning Treatment Planning	Sub-topic (covering all radiation therapy modalities) Diagnostic imaging Modalities available for treatment planning Simulation equipment Image fusion / registration Immobilization / positioning In-room imaging and dose measurements Target volume & OAR delineation. Dose specification and reporting (ICRU) Patient data acquisition Beam modifiers Beam corrections Beam combinations 3D Conformal RT, Dynamic MLC, IMRT, VMAT, QA	Chapter 12.1 - 3; Add notes Chapter 19.2 Chapter 12.7 + Notes Chapter 12.3 Chapter 11.8,14 Chapter 19.2 Chapter 11.4, 12.5, 13.1-3,14 Chapter 12.4-5,14 Chapter 11.4, 13.4 Chapter 11,13,19 & 20	Add. notes Add. notes Add. notes, 15.11 5.9 Add. notes, 15.11 7.2 7.3, 8.3.1 7.4.1 & 2 7.5.2 7.5.3 7.5.4 7.5.7 7.5.6 7.5.7 15.7	Priniciples of image production CT, US Simulators Merging systems Immobilisation devices / methods CBCT, Portal imaging ICRU 50 & 62 Photons Need for patient data Wedges, blocks Surface, obliquity Matching Defs. and goals vs traditional RT Incoderer	Knowledge units Routine imaging principles MRI. CT-Sims Evaluation tools Positioning devices / methods Position verification GTV / CTV / PTV / ITV Electrons Nature of patient data Bolus Heterogeneities Adjoining fields Prescription, Dose constraints DVU	Processors SPECT, PET, PET- DRR, EPID, CBCT Simulation Margins Other Compensators Co-planar beams Inverse planning and Searcial designator
Topic Imaging Patient Positioning Treatment Planning	Sub-topic (covering all radiation therapy modalities) Diagnostic imaging Modalities available for treatment planning Simulation equipment Image fusion / registration Immobilization / positioning In-room imaging and dose measurements Target volume & OAR delineation. Dose specification and reporting (ICRU) Patient data acquisition Beam modifiers Beam corrections Beam combinations 3D Conformal RT, Dynamic MLC, IMRT, VMAT, QA Plan evaluation	Chapter 12.1 - 3; Add notes Chapter 19.2 Chapter 12.7 + Notes Chapter 12.3 Chapter 11.8,14 Chapter 19.2 Chapter 11.4, 12.5, 13.1-3,14 Chapter 12.4-5,14 Chapter 11.4, 13.4 Chapter 11,13,19 & 20	Duestions 3 & 4 (50%) Podgorsak reference Add. notes Add. notes, 15.11 5.9 Add. notes, 15.11 7.4 7.2 7.3, 8.3.1 7.4.1 & 2 7.5.5 7.5.6 7.5.7 15.7 7.6 8.2	Priniciples of image production CT, US Simulators Merging systems Immobilisation devices / methods CBCT, Portal imaging ICRU 50 & 62 Photons Need for patient data Wedges, blocks Surface, obliquity Matching Defs. and goals vs traditional RT Isodoses IDD:	Knowledge units Routine imaging principles MRI. CT-Sims Evaluation tools Positioning devices / methods Position verification GTV / CTV / PTV / ITV Electrons Nature of patient data Bolus Heterogeneities Adjoining fields Prescription, Dose constraints DVH Deer seriation	Processors SPECT, PET, PET- DRR, EPID, CBCT Simulation Margins Other Compensators Co-planar beams Inverse planning and Special dosimetry
Topic Imaging Patient Positioning Treatment Planning	Sub-topic (covering all radiation therapy modalities) Diagnostic imaging Modalities available for treatment planning Simulation equipment Image fusion / registration Immobilization / positioning In-room imaging and dose measurements Target volume & OAR delineation. Dose specification and reporting (ICRU) Patient data acquisition Beam modifiers Beam corrections Beam combinations 3D Conformal RT, Dynamic MLC, IMRT, VMAT, QA Plan evaluation Electron beams	Chapter 12.1 - 3; Add notes Chapter 19.2 Chapter 12.7 + Notes Chapter 12.3 Chapter 11.8,14 Chapter 19.2 Chapter 11.4, 12.5, 13.1-3,14 Chapter 12.4-5,14 Chapter 11.4, 13.4 Chapter 11,13,19 & 20 Chapter 14	Duestions 3 & 4 (50%) Podgorsak reference Add. notes Add. notes, 15.11 5.9 Add. notes, 15.11 7.4 7.2 7.3, 8.3.1 7.4.1 & 2 7.5.5 7.5.6 7.5.7 15.7 7.6 8.3 7.7	Priniciples of image production CT, US Simulators Merging systems Immobilisation devices / methods CBCT, Portal imaging ICRU 50 & 62 Photons Need for patient data Wedges, blocks Surface, obliquity Matching Defs. and goals vs traditional RT Isodoses PDD, interactions, obliquaty, selection of energy	Knowledge units Routine imaging principles MRI. CT-Sims Evaluation tools Positioning devices / methods Position verification GTV / CTV / PTV / ITV Electrons Nature of patient data Bolus Heterogeneities Adjoining fields Prescription, Dose constraints DVH Dose statistics CAD entry	Processors SPECT, PET, PET- DRR, EPID, CBCT Simulation Margins Other Compensators Co-planar beams Inverse planning and Special dosimetry Clinical
Topic Imaging Patient Positioning Treatment Planning	Sub-topic (covering all radiation therapy modalities) Diagnostic imaging Modalities available for treatment planning Simulation equipment Image fusion / registration Immobilization / positioning In-room imaging and dose measurements Target volume & OAR delineation. Dose specification and reporting (ICRU) Patient data acquisition Beam modifiers Beam combinations 3D Conformal RT, Dynamic MLC, IMRT, VMAT, QA Plan evaluation Electron beams Manual dose calculation	Chapter 12.1 - 3; Add notes Chapter 19.2 Chapter 12.7 + Notes Chapter 12.3 Chapter 11.8,14 Chapter 19.2 Chapter 11.4, 12.5, 13.1-3,14 Chapter 12.4-5,14 Chapter 11.4, 13.4 Chapter 11.4, 13.4 Chapter 11.13,19 & 20 Chapter 14 Chapter 10	Duestions 3 & 4 (50%) Podgorsak reference Add. notes Add. notes, 15.11 5.9 Add. notes, 15.11 7.4 7.2 7.3, 8.3.1 7.4.1 & 2 7.5.5 7.5.6 7.5.7 7.6 8.3 7.7	Priniciples of image production CT, US Simulators Merging systems Immobilisation devices / methods CBCT, Portal imaging ICRU 50 & 62 Photons Need for patient data Wedges, blocks Surface, obliquity Matching Defs. and goals vs traditional RT Isodoses PDD, interactions, obliquaty, selection of energy SSD setup	Knowledge units Routine imaging principles MRI. CT-Sims Evaluation tools Positioning devices / methods Position verification GTV / CTV / PTV / ITV Electrons Nature of patient data Bolus Heterogeneities Adjoining fields Prescription, Dose constraints DVH Dose statistics SAD setup Value	Processors SPECT, PET, PET- DRR, EPID, CBCT Simulation Margins Other Compensators Co-planar beams Inverse planning and Special dosimetry Clinical Output factor, F/S
Topic Imaging Patient Positioning Treatment Planning	Sub-topic (covering all radiation therapy modalities) Diagnostic imaging Modalities available for treatment planning Simulation equipment Image fusion / registration Immobilization / positioning In-room imaging and dose measurements Target volume & OAR delineation. Dose specification and reporting (ICRU) Patient data acquisition Beam corrections Beam corrections Beam combinations 3D Conformal RT, Dynamic MLC, IMRT, VMAT, QA Plan evaluation Electron beams Manual dose calculation Computerized treatment planning systems	Chapter 12.1 - 3; Add notes Chapter 19.2 Chapter 12.7 + Notes Chapter 12.3 Chapter 11.8,14 Chapter 19.2 Chapter 11.4, 12.5, 13.1-3,14 Chapter 12.4-5,14 Chapter 11.8,14 Chapter 11.3,19 & 20 Chapter 14 Chapter 10 Chapter 19.3	Duestions 3 & 4 (50%) Podgorsak reference Add. notes Add. notes, 15.11 5.9 Add. notes, 15.11 7.4 7.2 7.3, 8.3.1 7.4.1 & 2 7.5.7 7.5.6 7.5.7 7.6 8.3 7.7 Ch 11.	Priniciples of image production CT, US Simulators Merging systems Immobilisation devices / methods CBCT, Portal imaging ICRU 50 & 62 Photons Need for patient data Wedges, blocks Surface, obliquity Matching Defs. and goals vs traditional RT Isodoses PDD, interactions, obliquaty, selection of energy SSD setup Hardware	Knowledge units Routine imaging principles MRI. CT-Sims Evaluation tools Positioning devices / methods Position verification GTV / CTV / PTV / ITV Electrons Nature of patient data Bolus Heterogeneities Adjoining fields Prescription, Dose constraints DVH Dose statistics SAD setup Algorithms	Processors SPECT, PET, PET- DRR, EPID, CBCT Simulation Margins Other Compensators Co-planar beams Inverse planning and Special dosimetry Clinical Output factor, F/S Data acquisition
Topic Imaging Patient Positioning Treatment Planning	Sub-topic (covering all radiation therapy modalities) Diagnostic imaging Modalities available for treatment planning Simulation equipment Image fusion / registration Immobilization / positioning In-room imaging and dose measurements Target volume & OAR delineation. Dose specification and reporting (ICRU) Patient data acquisition Beam corrections Beam conformal RT, Dynamic MLC, IMRT, VMAT, QA Plan evaluation Electron beams Manual dose calculation Computerized treatment planning systems	Chapter 12.1 - 3; Add notes Chapter 19.2 Chapter 12.7 + Notes Chapter 12.3 Chapter 11.8,14 Chapter 19.2 Chapter 11.4, 12.5, 13.1-3,14 Chapter 12.4-5,14 Chapter 11.4, 13.4 Chapter 11.3,19 & 20 Chapter 14 Chapter 19.3 Chapter 19.3	Duestions 3 & 4 (50%) Podgorsak reference Add. notes Add. notes, 15.11 5.9 Add. notes, 15.11 7.4 7.2 7.3, 8.3.1 7.4.1 & 2 7.5.2 7.5.3 7.5.4 7.5.7 7.5.6 7.7 7.6 8.3 7.7 Ch 11.	Priniciples of image production CT, US Simulators Merging systems Immobilisation devices / methods CBCT, Portal imaging ICRU 50 & 62 Photons Need for patient data Wedges, blocks Surface, obliquity Matching Defs. and goals vs traditional RT Isodoses PDD, interactions, obliquaty, selection of energy SSD setup Hardware Commissioning and QA	Knowledge units Routine imaging principles MRI. CT-Sims Evaluation tools Positioning devices / methods Position verification GTV / CTV / PTV / ITV Electrons Nature of patient data Bolus Heterogeneities Adjoining fields Prescription, Dose constraints DVH Dose statistics SAD setup Algorithms	Processors SPECT, PET, PET- DRR, EPID, CBCT Simulation Margins Other Compensators Co-planar beams Inverse planning and Special dosimetry Clinical Output factor, F/S Data acquisition
Topic Imaging Patient Positioning Treatment Planning Treatment delivery QA	Sub-topic (covering all radiation therapy modalities) Diagnostic imaging Modalities available for treatment planning Simulation equipment Image fusion / registration Immobilization / positioning In-room imaging and dose measurements Target volume & OAR delineation. Dose specification and reporting (ICRU) Patient data acquisition Beam modifiers Beam combinations 3D Conformal RT, Dynamic MLC, IMRT, VMAT, QA Plan evaluation Electron beams Manual dose calculation Computerized treatment planning systems	Chapter 12.1 - 3; Add notes Chapter 19.2 Chapter 12.7 + Notes Chapter 12.3 Chapter 11.8,14 Chapter 19.2 Chapter 11.4, 12.5, 13.1-3,14 Chapter 12.4-5,14 Chapter 11.4, 13.4 Chapter 11.13,19 & 20 Chapter 14 Chapter 19.3 Chapter 19.3 Chapter 12 + Notes	Puestions 3 & 4 (50%) Podgorsak reference Add. notes Add. notes, 15.11 5.9 Add. notes, 15.11 7.2 7.3, 8.3.1 7.4.1 & 2 7.5.2 7.5.3 7.5.4 7.5.7 15.7 7.6 8.3 7.7 Ch 11. 12.4 7.6.5	Priniciples of image production CT, US Simulators Merging systems Immobilisation devices / methods CBCT, Portal imaging ICRU 50 & 62 Photons Need for patient data Wedges, blocks Surface, obliquity Matching Defs. and goals vs traditional RT Isodoses PDD, interactions, obliquaty, selection of energy SSD setup Hardware Commissioning and QA Patient charts	Knowledge units Routine imaging principles MRI. CT-Sims Evaluation tools Positioning devices / methods Position verification GTV / CTV / PTV / ITV Electrons Nature of patient data Bolus Heterogeneities Adjoining fields Prescription, Dose constraints DVH Dose statistics SAD setup Algorithms	Processors SPECT, PET, PET- DRR, EPID, CBCT Simulation Margins Other Compensators Co-planar beams Inverse planning and Special dosimetry Clinical Output factor, F/S Data acquisition In-vivo dosimetry
Topic Imaging Patient Positioning Treatment Planning Treatment delivery QA	Sub-topic (covering all radiation therapy modalities) Diagnostic imaging Modalities available for treatment planning Simulation equipment Image fusion / registration Immobilization / positioning In-room imaging and dose measurements Target volume & OAR delineation. Dose specification and reporting (ICRU) Patient data acquisition Beam modifiers Beam corrections Beam combinations 3D Conformal RT, Dynamic MLC, IMRT, VMAT, QA Plan evaluation Electron beams Manual dose calculation Computerized treatment planning systems	Chapter 12.1 - 3; Add notes Chapter 19.2 Chapter 12.7 + Notes Chapter 12.3 Chapter 12.3 Chapter 12.4 Chapter 11.4, 12.5, 13.1-3,14 Chapter 11.4, 12.5, 13.1-3,14 Chapter 11.4, 13.4 Chapter 11.4, 13.4 Chapter 11.4, 13.4 Chapter 14 Chapter 14 Chapter 19.3 Chapter 12 + Notes	Duestions 3 & 4 (50%) Podgorsak reference Add. notes Add. notes, 15.11 5.9 Add. notes, 15.11 7.4 7.2 7.3, 8.3.1 7.4.1 & 2 7.5.5 7.5.6 7.5.7 15.7 7.6 8.3 7.7 Ch 11. 12.4 7.6.5	Priniciples of image production CT, US Simulators Merging systems Immobilisation devices / methods CBCT, Portal imaging ICRU 50 & 62 Photons Need for patient data Wedges, blocks Surface, obliquity Matching Defs. and goals vs traditional RT Isodoses PDD, interactions, obliquaty, selection of energy SSD setup Hardware Commisioning and QA Patient charts R&V systems 11.3.6	Knowledge units Routine imaging principles MRI. CT-Sims Evaluation tools Positioning devices / methods Position verification GTV / CTV / PTV / ITV Electrons Nature of patient data Bolus Heterogeneities Adjoining fields Prescription, Dose constraints DVH Dose statistics SAD setup Algorithms Portal imaging CECT	Processors SPECT, PET, PET- DRR, EPID, CBCT Simulation Margins Other Compensators Co-planar beams Inverse planning and Special dosimetry Clinical Output factor, F/S Data acquisition In-vivo dosimetry
Topic Topic Imaging Patient Positioning Treatment Planning Treatment delivery QA Special topics	Sub-topic (covering all radiation therapy modalities) Diagnostic imaging Modalities available for treatment planning Simulation equipment Image fusion / registration Immobilization / positioning In-room imaging and dose measurements Target volume & OAR delineation. Dose specification and reporting (ICRU) Patient data acquisition Beam modifiers Beam corrections Bear combinations 3D Conformal RT, Dynamic MLC, IMRT, VMAT, QA Plan evaluation Electron beams Manual dose calculation Computerized treatment planning systems Techniques and equipment. Anthropomorphic	Chapter 12.1 - 3; Add notes Chapter 19.2 Chapter 12.7 + Notes Chapter 12.7 + Notes Chapter 12.3 Chapter 12.3 Chapter 12.4, 12.5, 13.1-3,14 Chapter 12.4-5,14 Chapter 12.4-5,14 Chapter 11 & 13.4 Chapter 11,13,19 & 20 Chapter 14 Chapter 19.3 Chapter 12 + Notes Chapter 12 + Notes	Duestions 3 & 4 (50%) Podgorsak reference Add. notes Add. notes, 15.11 5.9 Add. notes, 15.11 7.4 7.2 7.3, 8.3.1 7.4.1 & 2 7.5.5 7.5.6 7.5.7 15.7 7.6 8.3 7.7 Ch 11. 12.4 7.6.5 Ch 15.	Priniciples of image production CT, US Simulators Merging systems Immobilisation devices / methods CBCT, Portal imaging ICRU 50 & 62 Photons Need for patient data Wedges, blocks Surface, obliquity Matching Defs. and goals vs traditional RT Isodoses PDD, interactions, obliquaty, selection of energy SSD setup Hardware Commisioning and QA Patient charts R&V systems 11.3.6 Stereotactic radiosurgery (intra-and extra-cranial SRS	Knowledge units Routine imaging principles MRI. CT-Sims Evaluation tools Positioning devices / methods Position verification GTV / CTV / PTV / ITV Electrons Nature of patient data Bolus Heterogeneities Adjoining fields Prescription, Dose constraints DVH Dose statistics SAD setup Algorithms Portal imaging CBCT Total Body Irradiation (TBI), Total skin electron	Processors SPECT, PET, PET- DRR, EPID, CBCT Simulation Margins Other Compensators Co-planar beams Inverse planning and Special dosimetry Clinical Output factor, F/S Data acquisition In-vivo dosimetry
Topic Topic Imaging Patient Positioning Treatment Planning Treatment delivery QA Special topics	Sub-topic (covering all radiation therapy modalities) Diagnostic imaging Modalities available for treatment planning Simulation equipment Image fusion / registration Immobilization / positioning In-room imaging and dose measurements Target volume & OAR delineation. Dose specification and reporting (ICRU) Patient data acquisition Beam modifiers Beam combinations 3D Conformal RT, Dynamic MLC, IMRT, VMAT, QA Plan evaluation Electron beams Manual dose calculation Computerized treatment planning systems Techniques and equipment. Anthropomorphic	Chapter 12.1 - 3; Add notes Chapter 19.2 Chapter 12.7 + Notes Chapter 12.3 Chapter 12.3 Chapter 11.8,14 Chapter 19.2 Chapter 11.4, 12.5, 13.1-3,14 Chapter 12.4-5,14 Chapter 11.4, 13.4 Chapter 11.13,19 & 20 Chapter 14 Chapter 10 Chapter 19.3 Chapter 12 + Notes Chapters 9.1; 14, 15; 18; 21-26	Duestions 3 & 4 (50%) Podgorsak reference Add. notes Add. notes, 15.11 5.9 Add. notes, 15.11 7.4 7.2 7.3, 8.3.1 7.4.1 & 2 7.5.5 7.5.6 7.5.7 7.6 8.3 7.7 Ch 11. 12.4 7.6.5 Ch 15.	Priniciples of image production CT, US Simulators Merging systems Immobilisation devices / methods CBCT, Portal imaging ICRU 50 & 62 Photons Need for patient data Wedges, blocks Surface, obliquity Matching Defs. and goals vs traditional RT Isodoses PDD, interactions, obliquaty, selection of energy SSD setup Hardware Commissioning and QA Patient charts R&V systems 11.3.6 Stereotactic radiosurgery (intra-and extra-cranial SRS Conformal radiotherapy, IMRT, VMAT	Knowledge units Routine imaging principles MRI. CT-Sims Evaluation tools Positioning devices / methods Position verification GTV / CTV / PTV / ITV Electrons Nature of patient data Bolus Heterogeneities Adjoining fields Prescription, Dose constraints DVH Dose statistics SAD setup Algorithms Portal imaging CBCT Total Body Irradiation (TBI), Total skin electron HDR / LDR brachytherapy	Processors SPECT, PET, PET- DRR, EPID, CBCT Simulation Margins Other Compensators Co-planar beams Inverse planning and Special dosimetry Clinical Output factor, F/S Data acquisition In-vivo dosimetry Intraoperative IGRT, ART, Gated